

**MPFILTRI**<sup>®</sup>

PASSION **T** 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.

# HYDRAULIC FILTRATION PRODUCTS

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11	CONTAMINATION MANAGEMENT	
22	FILTER SIZING	
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			up to $Q_{max}$	
<b>30</b>	<b>page</b>	<b>SUCTION FILTERS</b>	<b>l/min</b>	<b>gpm</b>
33	STR & MPA - MPM	Submerged suction filter, with bypass or magnetic filter	1000	264
40	SFEX	In-line filter with plastic bowl	100	26
51	SF2 250 - 350	Semi-submerged positive head suction filter, low flow rate	160	42
59	SF2 500	Semi-submerged positive head suction filter, high flow rate	700	185
709	CLOGGING INDICATORS			

			up to $P_{max}$		up to $Q_{max}$	
<b>70</b>	<b>page</b>	<b>RETURN FILTERS</b>	<b>bar</b>	<b>psi</b>	<b>l/min</b>	<b>gpm</b>
72	RFEX	Return filter, tank mounted filter suitable for all mineral oil and water glycol applications	16	232	260	69
82	MPFX	Tank top semi-immersed filter, standard filter element disassembly	8	116	900	238
110	MPLX	Tank top semi-immersed filter, standard filter element disassembly	10	145	1800	476
118	MPTX	Tank top semi-immersed filter, easy filter element disassembly	8	116	300	79
136	MFBX	Bowl assembly	8	116	700	185
145	MPF	Tank top semi-immersed filter, standard filter element disassembly	8	116	900	238
173	MPT	Tank top semi-immersed filter, easy filter element disassembly	8	116	300	79
191	MFB	Bowl assembly	8	116	700	185
199	MDH	Heavy industrial applications integrated in the tank - air separation	10	145	500	132
207	MPH	Tank top semi-immersed filter, standard filter element disassembly	10	145	3500	925
231	MPI	Tank top semi-immersed filter, standard filter element disassembly	10	145	3500	925
243	FRI	Tank top semi-immersed filter, easy filter element disassembly, it can be used also as in-line filter	20	290	2500	660
259	RF2	Semi-immersed under-head filter, easy filter element disassembly	20	290	615	162
266	ACCESSORIES					
710	CLOGGING INDICATORS					

			up to $P_{max}$		up to $Q_{max}$	
<b>268</b>	<b>page</b>	<b>RETURN / SUCTION FILTERS</b>	<b>bar</b>	<b>psi</b>	<b>l/min</b>	<b>gpm</b>
270	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	250	66
285	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	120	32
712	CLOGGING INDICATORS					

			up to $P_{max}$		up to $Q_{max}$	
<b>292</b>	<b>page</b>	<b>SPIN-ON FILTERS</b>	<b>bar</b>	<b>psi</b>	<b>l/min</b>	<b>gpm</b>
295	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
311	MSH	In-line low and medium pressure filter available with single cartridge (CH)	35	508	195	52
714	CLOGGING INDICATORS					

318 page	LOW & MEDIUM PRESSURE FILTERS	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
320	LFEF	In-line filter with plastic bowl	16	232	300	79
331	LMP 110	In-line low & medium pressure filter, low to medium flow rate	80	1160	165	44
339	LMP 112 - 123 MULTIPORT	In-line filter with Multiport design for multiple choice connection	80	1160	175	46
355	LMP 210 - 211	In-line low & medium pressure filter, low flow rate	60	870	365	96
365	LPH 630	Off-line low pressure filter	10	145	1600	352
373	LMP 400 - 401 & 430 - 431	In-line low & medium pressure filter, high flow rate	60	870	780	206
385	LMP 950 - 951	In-line filter, available with 2 and up to 6 different heads	30	435	2400	634
393	LMP 952 - 953 - 954	In-line low pressure filter specifically designed to be mounted in series	25	363	4500	1189
405	LMD 211	In-line duplex medium pressure filter	60	870	200	53
413	LMD 400 - 401 & 431	In-line duplex low pressure filter	16	232	600	159
429	LMD 951	In-line duplex filter, available with 2 up to 6 different heads	16	232	1200	317
437		Filter elements designed according to DIN 24550				
439	LDP - LDD	In-line and duplex medium pressure filter	60	870	360	95
449	LMP 900 - 901	In-line low pressure filter	30	435	2000	528
457	LMP 902 - 903	In-line filter specifically designed to be mounted in series	20	290	3000	793
466	ACCESSORIES					
716	CLOGGING INDICATORS					

468 page	HIGH PRESSURE FILTERS	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
470	FMMX 050	Typical high pressure filter for mobile applications, low flow rate	420	6092	154	41
479	FMM	Typical high pressure filter for mobile applications, low flow rate	420	6092	300	79
489	FHA 051	Filter optimized for use in high pressure operating systems, low flow rate	560	8122	150	40
497	FMP 039	Filter high pressure, low flow rate applications	110	1595	80	21
505	FMP	Filter high pressure, high flow rate applications	320	4641	500	132
517	FHP	Typical high pressure filter for mobile applications, high flow rate	450	6527	630	166
537	FHM	High pressure filter with intermediate manifold construction	320	4641	400	106
555	FHB	High pressure for block mounting	320	4641	485	128
569	FHF 325	In-line manifold top mounting	350	5076	550	145
579	FHD	In-line duplex high pressure filter	350	5076	250	66
593	HPB	Pressure filter kits for integration in control manifolds	420	6092	300	79
717	CLOGGING INDICATORS					

602 page	STAINLESS STEEL HIGH PRESSURE FILTERS	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
605	FZP	In-line pressure filter with threaded mount	420	6092	160	42
615	FZH	In-line pressure filter with threaded mount for higher pressure	700	10153	80	21
625	FZX	In-line pressure filter with threaded mount up to 1000 bar	1000	14504	10	3
633	FZM	Manifold top mounting	320	4641	70	18
641	FZB	Manifold side mounting	320	4641	70	18
649	FZD	Duplex pressure filter for continuous operation requirements	350	5076	60	16
718	CLOGGING INDICATORS					

660 page	FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE	up to P <sub>max</sub>		up to Q <sub>max</sub>		
		bar	psi	l/min	gpm	
663	FMMX 050	Typical high pressure filter for mobile applications, low flow rate	420	6092	154	41
671	FZP	In-line pressure filter with threaded mount	700	10153	80	21
681	FZH	In-line pressure filter with threaded mount for higher pressure	1000	14504	10	3
691	FZX	In-line pressure filter with threaded mount up to 1000 bar	320	4641	70	18
719	CLOGGING INDICATORS					

699 page	CLOGGING INDICATORS
704	QUICK REFERENCE GUIDE
708	DESIGNATION AND ORDERING CODES
720	TECHNICAL DATA

## 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 **9** business branches



## TECHNOLOGY

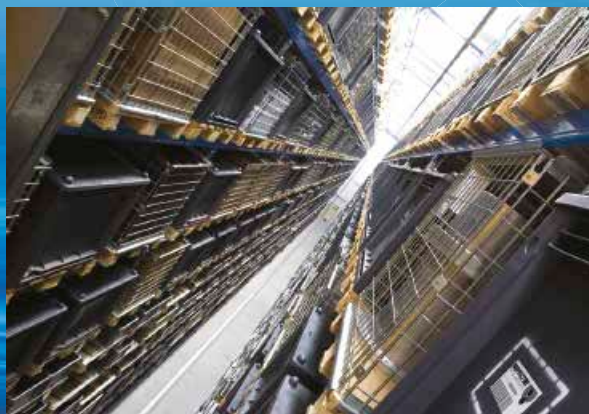
Our constant **quest for excellence in quality and technological innovation** allows us to offer only the best solutions and services for applications in many fields, including general industry, test rigs, lubrication, heavy engineering, renewable energies, naval engineering, offshore engineering, aviation 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, ATEX filters) 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 150 l/min

Pressure from 320 bar up to 1000 bar

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

## FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Flow rates up to 154 l/min

Pressure from 420 bar up to 1000 bar

- Mounting:
- In-Line

## CONTAMINATION CONTROL SOLUTIONS

- Off-line, 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 with 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



# CONTAMINATION MANAGEMENT

## INDEX

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## 1 HYDRAULIC FLUIDS

The fluid is the vector that transmits power, energy within an oleodynamic circuit. In addition to transmitting energy through the circuit, it also performs additional functions such as lubrication, protection and cooling of the surfaces.

The classification of fluids used in hydraulic systems is coded in many regulatory references, different Standards.

The most popular classification criterion divides them into the following families:

- MINERAL OILS

Commonly used oil derived fluids.

- FIRE RESISTANT FLUIDS

Fluids with intrinsic characteristics of incombustibility or high flash point.

- SYNTHETIC FLUIDS

Modified chemical products to obtain specific optimized features.

- ECOLOGICAL FLUIDS

Synthetic or vegetable origin fluids with high biodegradability characteristics.

The choice of fluid for an hydraulic system must take into account several parameters.

These parameters can adversely affect the performance of an hydraulic system, causing delay in the controls, pump cavitation, excessive absorption, excessive temperature rise, efficiency reduction, increased drainage, wear, jam/block or air intake in the plant.

The main properties that characterize hydraulic fluids and affect their choice are:

- DYNAMIC VISCOSITY

It identifies the fluid's resistance to sliding due to the impact of the particles forming it.

- KINEMATIC VISCOSITY

It is a widespread formal dimension in the hydraulic field.

It is calculated with the ratio between the dynamic viscosity and the fluid density.

Kinematic viscosity varies with temperature and pressure variations.

- VISCOSITY INDEX

This value expresses the ability of a fluid to maintain viscosity when the temperature changes.

A high viscosity index indicates the fluid's ability to limit viscosity variations by varying the temperature.

- FILTERABILITY INDEX

It is the value that indicates the ability of a fluid to cross the filter materials. A low filterability index could cause premature clogging of the filter material.

- WORKING TEMPERATURE

Working temperature affects the fundamental characteristics of the fluid. As already seen, some fluid characteristics, such as cinematic viscosity, vary with the temperature variation.

When choosing a hydraulic oil, must therefore be taken into account of the environmental conditions in which the machine will operate.

- COMPRESSIBILITY MODULE

Every fluid subjected to a pressure contracts, increasing its density.

The compressibility module identifies the increase in pressure required to cause a corresponding increase in density.

- HYDROLYTIC STABILITY

It is the characteristic that prevents galvanic pairs that can cause wear in the plant/system.

- ANTIOXIDANT STABILITY AND WEAR PROTECTION

These features translate into the capacity of a hydraulic oil to avoid corrosion of metal elements inside the system.

- HEAT TRANSFER CAPACITY

It is the characteristic that indicates the capacity of hydraulic oil to exchange heat with the surfaces and then cool them.

## 2 FLUID CONTAMINATION

Whatever the nature and properties of fluids, they are inevitably subject to contamination. Fluid contamination can have two origins:

- INITIAL CONTAMINATION

Caused by the introduction of contaminated fluid into the circuit, or by incorrect storage, transport or transfer operations.

- PROGRESSIVE CONTAMINATION

Caused by factors related to the operation of the system, such as metal surface wear, sealing wear, oxidation or degradation of the fluid, the introduction of contaminants during maintenance, corrosion due to chemical or electrochemical action between fluid and components, cavitation. The contamination of hydraulic systems can be of different nature:

- SOLID CONTAMINATION

For example rust, slag, metal particles, fibers, rubber particles, paint particles or additives

- LIQUID CONTAMINATION

For example, the presence of water due to condensation or external infiltration or acids

- GASEOUS CONTAMINATION

For example, the presence of air due to inadequate oil level in the tank, drainage in suction ducts, incorrect sizing of tubes or tanks.

## 3 FLUID COMPATIBILITY CHARTS

For general fluid compatibility with Contamination Monitoring Products the below rules can be used:

- For mineral oils, synthetic fluids and diesel - the 'M' type variant of unit is recommended.

- For water based/ subsea fluids & 'M' type fluids - the 'N' type variant of unit is recommended.

- For Aerospace phosphate esters, Skydrols® and aggressive fluids along with 'M' & 'N' type fluids - the 'S' type variant is recommended.

**All fluids are required to be clear in appearance to allow light to penetrate unhindered.**



For further and more detailed information on specific fluid compatibility please refer to the fluid compatibility list

## ④ EFFECTS OF CONTAMINATION ON HYDRAULIC COMPONENTS

Solid contamination is recognized as the main cause of malfunction, failure and early degradation in hydraulic systems. It is impossible to delete it completely, but it can be effectively controlled by appropriate devices.

CONTAMINATION IN PRESENCE OF LARGE TOLERANCES



CONTAMINATION IN PRESENCE OF NARROW TOLERANCES



Solid contamination mainly causes surface damage and component wear.

- ABRASION OF SURFACES  
Cause of leakage through mechanical seals, reduction of system performance, failures.
- SURFACE EROSION  
Cause of leakage through mechanical seals, reduction of system performance, variation in adjustment of control components, failures.
- ADHESION OF MOVING PARTS  
Cause of failure due to lack of lubrication.
- DAMAGES DUE TO FATIGUE  
Cause of breakdowns and components breakdown.

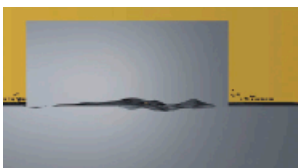
ABRASION



EROSION



ADHESION



FATIGUE



Liquid contamination mainly results in decay of lubrication performance and protection of fluid surfaces.

### DISSOLVED WATER

- INCREASING FLUID ACIDITY  
Cause of surface corrosion and premature fluid oxidation
- GALVANIC COUPLE AT HIGH TEMPERATURES  
Cause of corrosion

### FREE WATER - ADDITIONAL EFFECTS

- DECAY OF LUBRICANT PERFORMANCE  
Cause of rust and sludge formation, metal corrosion and increased solid contamination
- BATTERY COLONY CREATION  
Cause of worsening in the filterability feature

- ICE CREATION AT LOW TEMPERATURES  
Cause damage to the surface
- ADDITIVE DEPLETION  
Free water retains polar additives

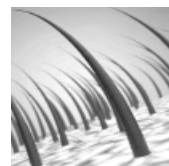
Gaseous contamination mainly results in decay of system performance.

- CUSHION SUSPENSION  
Cause of increased noise and cavitation.
- FLUID OXIDATION  
Cause of corrosion acceleration of metal parts.
- MODIFICATION OF FLUID PROPERTIES (COMPRESSIBILITY MODULE, DENSITY, VISCOSITY)  
Cause of system's reduction of efficiency and of control. It is easy to understand how a system without proper contamination management is subject to higher costs than a system that is provided.
- MAINTENANCE  
Increase maintenance activities, spare parts, machine stop costs.
- ENERGY AND EFFICIENCY  
Efficiency and performance reduction due to friction, drainage, cavitation.

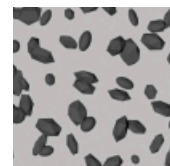
## ⑤ MEASURING THE SOLID CONTAMINATION LEVEL

The level of contamination of a system identifies the amount of contaminant contained in a fluid. This parameter refers to a unit volume of fluid. The level of contamination may be different at different points in the system. From the information in the previous paragraphs it is also apparent that the level of contamination is heavily influenced by the working conditions of the system, by its working years and by the environmental conditions.

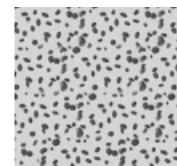
What is the size of the contaminating particles that we must handle in our hydraulic circuit?



HUMAN HAIR (75 µm)



MINIMUM DIMENSION VISIBLE WITH HUMAN EYES (40 µm)



TYPICAL CONTAMINANT DIMENSION IN A HYDRAULIC CIRCUIT (4 - 14 µm)

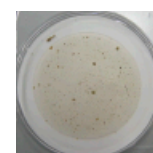
Contamination level analysis is significant only if performed with a uniform and repeatable method, conducted with standard test methods and suitably calibrated equipment. To this end, ISO has issued a set of standards that allow tests to be conducted and express the measured values in the following ways.

- GRAVIMETRIC LEVEL - ISO 4405

The level of contamination is defined by checking the weight of particles collected by a laboratory membrane. The membrane must be cleaned, dried and desiccated, with fluid and conditions defined by the Standard. The volume of fluid is filtered through the membrane by using a suitable suction system. The weight of the contaminant is determined by checking the weight of the membrane before and after the fluid filtration.



CLEAN MEMBRANE



CONTAMINATED MEMBRANE

# CONTAMINATION MANAGEMENT

## - CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4406

The level of contamination is defined by counting the number of particles of certain dimensions per unit of volume of fluid. Measurement is performed by Contamination Monitoring Products (CMP).

Following the count, the contamination classes are determined, corresponding to the number of particles detected in the unit of fluid.

The most common classification methods follow ISO 4406 and SAE AS 4059 (Aerospace Sector) regulations.

NAS 1638 is still used although obsolete.

### Classification example according to ISO 4406

The International Standards Organization standard ISO 4406 is the preferred method of quoting the number of solid contaminant particles in a sample. The level of contamination is defined by counting the number of particles of certain dimensions per unit of volume of fluid. The measurement is performed by Contamination Monitoring Products (CMP).

The numbers represent a code which identifies the number of particles of certain sizes in 1ml of fluid. Each code number has a particular size range. The first scale number represents the number of particles equal to or larger than 4  $\mu\text{m}_{(c)}$  per millilitre of fluid; The second scale number represents the number of particles equal to or larger than 6  $\mu\text{m}_{(c)}$  per millilitre of fluid; The third scale number represents the number of particles equal to or larger than 14  $\mu\text{m}_{(c)}$  per millilitre of fluid.

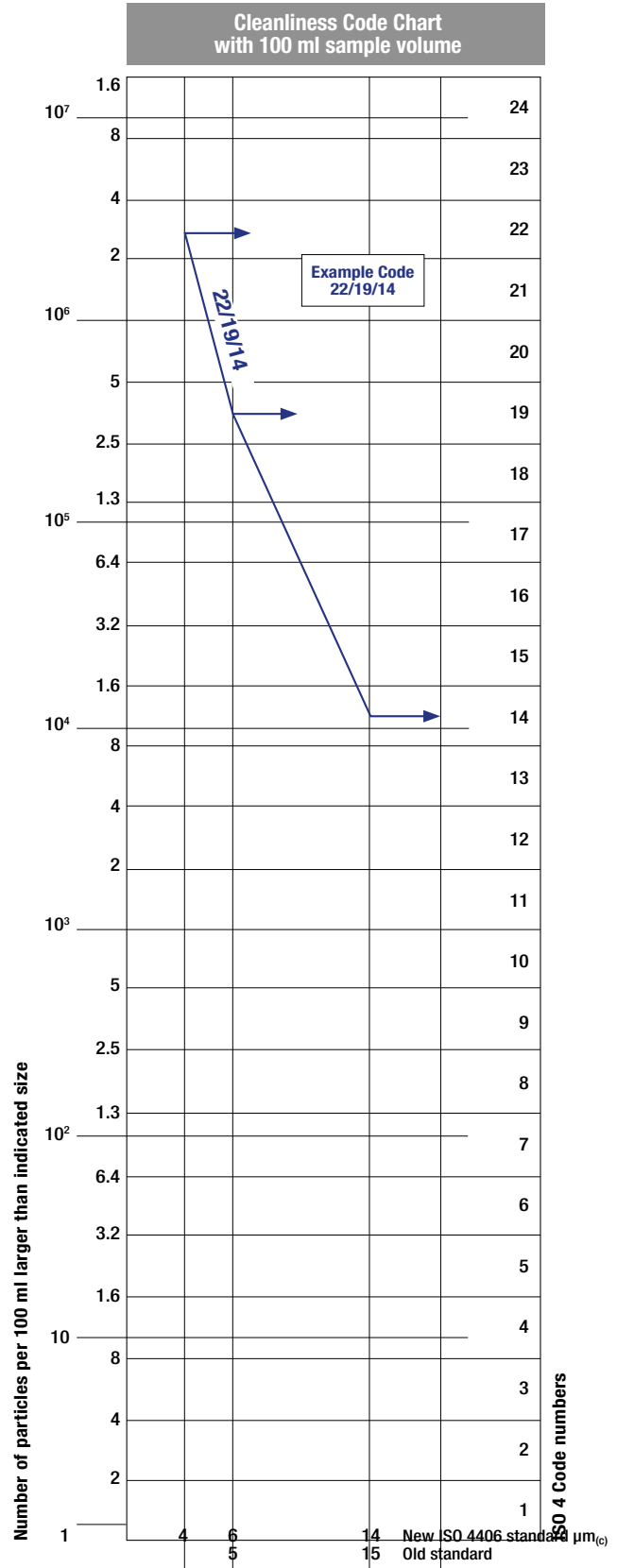
ISO 4406 - Allocation of Scale Numbers

Class	Number of particles per ml	
	Over	Up to
28	1 300 000	2 500 000
27	640 000	1 300 000
26	320 000	640 000
25	160 000	320 000
24	80 000	160 000
23	40 000	80 000
22	20 000	40 000
21	10 000	20 000
20	5 000	10 000
19	2 500	5 000
18	1 300	2 500
17	640	1 300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2.5	5
8	1.3	2.5
7	0.64	1.3
6	0.32	0.64
5	0.16	0.32
4	0.08	0.16
3	0.04	0.08
2	0.02	0.04
1	0.01	0.02
0	0	0.01

- > 4  $\mu\text{m}_{(c)}$  = 350 particles
  - > 6  $\mu\text{m}_{(c)}$  = 100 particles
  - > 14  $\mu\text{m}_{(c)}$  = 25 particles
- 16 / 14 / 12

### ISO 4406 Cleanliness Code System

Microscope counting examines the particles differently to Contamination Monitoring Products (CMP) and the code is given with two scale numbers only. These are at 5  $\mu\text{m}$  and 15  $\mu\text{m}$  equivalent to the 6  $\mu\text{m}_{(c)}$  and 14  $\mu\text{m}_{(c)}$  of Contamination Monitoring Products (CMP).





- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE  
SAE AS4059-1 and SAE AS4059-2

### Classification example according to SAE AS4059 - Rev. G

The code, prepared for the aerospace industry, is based on the size, quantity, and particle spacing in a 100 ml fluid sample. The contamination classes are defined by numeric codes, the size of the contaminant is identified by letters (A-F).

This SAE Aerospace Standard (AS) defines cleanliness levels for particulate contamination of hydraulic fluids and includes methods of reporting data relating to the contamination levels. Tables 1 and 2 below provide differential and cumulative particle counts respectively for counts obtained by an automatic particle counter, e.g. LPA3.

Table 1 - Class for differential measurement

Class	Dimension of contaminant Maximum Contamination Limits per 100 ml (3)				
	5-15 µm	15-25 µm	25-50 µm	50-100 µm	>100 µm (1)
	6-14 µm(c)	14-21 µm(c)	21-38 µm(c)	38-70 µm(c)	>70 µm(c) (2)
00	125	22	4	1	0
0	250	44	8	2	0
1	500	89	16	3	1
2	1 000	178	32	6	1
3	2 000	356	63	11	2
4	4 000	712	126	22	4
5	8 000	1 425	253	45	8
6	16 000	2 850	506	90	16
7	32 000	5 700	1 012	180	32
8	64 000	11 400	2 025	360	64
9	128 000	22 800	4 050	720	128
10	256 000	45 600	8 100	1 440	256
11	512 000	91 200	16 200	2 880	512
12	1 024 000	182 400	32 400	5 760	1 024

6 - 14 µm(c) = 15 000 particles
14 - 21 µm(c) = 2 200 particles
21 - 38 µm(c) = 200 particles
38 - 70 µm(c) = 35 particles
> 70 µm(c) = 3 particles
SAE AS4059 REV G - Class 6

(1) Size range, optical microscope, based on longest dimension as measured per AS598 or ISO 4407. (2) Size range CMP calibrated per ISO 11171 or an optical or electron microscope with image analysis software, based on projected area equivalent diameter. (3) Contamination classes and particle count limits are identical to NAS 1638.

Table 2 - Class for cumulative measurement

Class	Dimension of contaminant Maximum Contamination Limits per 100 ml					
	>1 µm	>5 µm	>15 µm	>25 µm	>50 µm	>100 µm (1)
	>4 µm(c)	>6 µm(c)	>14 µm(c)	>21 µm(c)	>38 µm(c)	>70 µm(c) (2)
000	195	76	14	3	1	0
00	390	152	27	5	1	0
0	780	304	54	10	2	0
1	1 560	609	109	20	4	1
2	3 120	1 217	217	39	7	1
3	6 250	2 432	432	76	13	2
4	12 500	4 864	864	152	26	4
5	25 000	9 731	1 731	306	53	8
6	50 000	19 462	3 462	612	106	16
7	100 000	38 924	6 924	1 224	212	32
8	200 000	77 849	13 849	2 449	424	64
9	400 000	155 698	27 698	4 898	848	128
10	800 000	311 396	55 396	9 796	1 696	256
11	1 600 000	622 792	110 792	19 592	3 392	512
12	3 200 000	1 245 584	221 584	39 184	6 784	1 024

> 4 µm(c) = 45 000 particles
> 6 µm(c) = 15 000 particles
> 14 µm(c) = 1 500 particles
> 21 µm(c) = 250 particles
> 38 µm(c) = 15 particles
> 70 µm(c) = 3 particle
SAE AS4059 REV G cpc* Class 6 6/6/5/5/4/2

\* cumulative particle count

(1) Size range, optical microscope, based on longest dimension as measured per AS598 or ISO 4407. (2) Size range, CMP calibrated per ISO 11171 or an optical or electron microscope with image analysis software, based on projected area equivalent diameter. (3) Contamination classes and particle count limits are identical to NAS 1638.

- CLASSES OF CONTAMINATION ACCORDING TO NAS 1638 (January 1964)

The NAS system was originally developed in 1964 to define contamination classes for the contamination contained within aircraft components.

The application of this standard was extended to industrial hydraulic systems simply because nothing else existed at the time.

The coding system defines the maximum numbers permitted of 100 ml volume at various size intervals (differential counts) rather than using cumulative counts as in ISO 4406. Although there is no guidance given in the standard on how to quote the levels, most industrial users quote a single code which is the highest recorded in all sizes and this convention is used on MP Filtri Contamination Monitoring Products (CMP).

The contamination classes are defined by a number (from 00 to 12) which indicates the maximum number of particles per 100 ml, counted on a differential basis, in a given size bracket.

Size Range Classes (in microns)

Class	Maximum Contamination Limits per 100 ml				
	5-15	15-25	25-50	50-100	>100
	5-15 µm	15-25 µm	25-50 µm	50-100 µm	>100 µm
00	125	22	4	1	0
0	250	44	8	2	0
1	500	89	16	3	1
2	1 000	178	32	6	1
3	2 000	356	63	11	2
4	4 000	712	126	22	4
5	8 000	1 425	253	45	8
6	16 000	2 850	506	90	16
7	32 000	5 700	1 012	180	32
8	64 000	11 400	2 025	360	64
9	128 000	22 800	4 050	720	128
10	256 000	45 600	8 100	1 440	256
11	512 000	91 200	16 200	2 880	512
12	1 024 000	182 400	32 400	5 760	1 024

5-15 µm = 42 000 particles
15-25 µm = 2 200 particles
25-50 µm = 150 particles
50-100 µm = 18 particles
> 100 µm = 3 particles
Class NAS 8

- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4407

The level of contamination is defined by counting the number of particles collected by a laboratory membrane per unit of fluid volume. The measurement is done by a microscope. The membrane must be cleaned, dried and desiccated, with fluid and conditions defined by the Standard. The fluid volume is filtered through the membrane, using a suitable suction system.

The level of contamination is identified by dividing the membrane into a predefined number of areas and by counting the contaminant particles using a suitable laboratory microscope.

MICROSCOPE CONTROL AND MEASUREMENT



Example figure 1 and 2

COMPARISON PHOTOGRAPHS  
1 graduation = 10µm

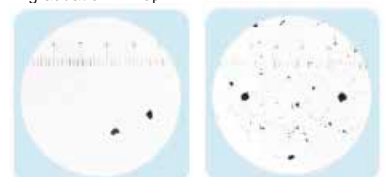


Fig. 1

Fig. 2

For other comparison photographs for contamination classes see the "Fluid Condition and Filtration Handbook".

## - CLEANLINESS CODE COMPARISON

Although ISO 4406 standard is being used extensively within the hydraulics industry other standards are occasionally required and a comparison may be requested. The table below gives a very general comparison but often no direct comparison is possible due to the different classes and sizes involved.

ISO 4406	SAE AS4059 Table 2	SAE AS4059 Table 1	NAS 1638
> 4 $\mu\text{m}_{(c)}$ 6 $\mu\text{m}_{(c)}$ 14 $\mu\text{m}_{(c)}$	> 4 $\mu\text{m}_{(c)}$ 6 $\mu\text{m}_{(c)}$ 14 $\mu\text{m}_{(c)}$	4-6 6-14 14-21 21-38 38-70 >70	5-15 15-25 25-50 50-100 >100
23 / 21 / 18	13A / 12B / 12C	12	12
22 / 20 / 17	12A / 11B / 11C	11	11
21 / 19 / 16	11A / 10B / 10C	10	10
20 / 18 / 15	10A / 9B / 9B	9	9
19 / 17 / 14	9A / 8B / 8C	8	8
18 / 16 / 13	8A / 7B / 7C	7	7
17 / 15 / 12	7A / 6B / 6C	6	6
16 / 14 / 11	6A / 5B / 5C	5	5
15 / 13 / 10	5A / 4B / 4C	4	4
14 / 12 / 09	4A / 3B / 3C	3	3

## 6 FILTRATION TECHNOLOGIES

Various mechanisms such as mechanical stoppage, magnetism, gravimetric deposit, or centrifugal separation can be used to reduce the level of contamination.

The mechanical stoppage method is most effective and can take place in two ways:

### - SURFACE FILTRATION

It is by direct interception. The filter prevents particles larger than the pores from continuing in the plant / system. Surface filters are generally manufactured with metal canvases or meshes.

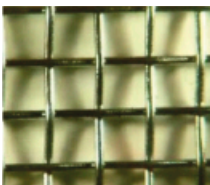
### - DEPTH FILTERING

Filters are constructed by fiber interlacing. Such wraps form pathways of different shapes and sizes in which the particles remain trapped when they find smaller apertures than their diameter.

Depth filters are generally produced with papers impregnated with phenolic resins, metal fibers or inorganic fibers.

In inorganic fiber filtration, commonly called microfibre, the filtering layers are often overlapped in order to increase the ability to retain the contaminant.

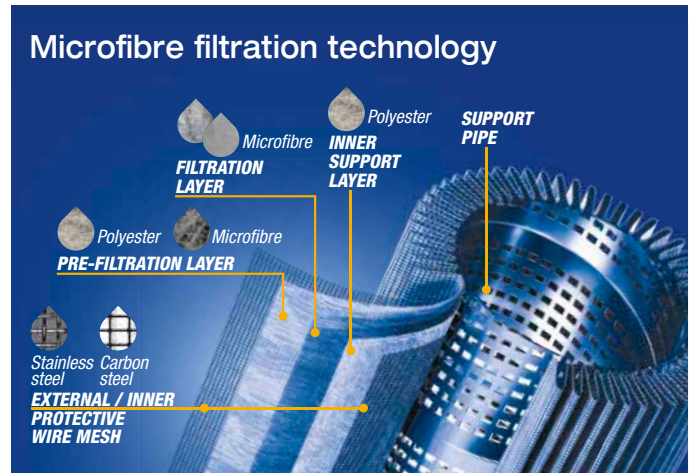
WIRE MESH FILTRATION



PAPER FILTRATION



MICROFIBER FILTRATION



The filtration efficiency of metallic mesh filtrations is defined as the maximum particle size that can pass through the meshes of the filtering grid.

The efficiency of microfibre and paper filtration ( $\beta_{x(c)}$ ) is defined through a lab test called Multipass Test. The efficiency value ( $\beta_{x(c)}$ ) is defined as the ratio between the number of particles of certain dimensions detected upstream and downstream of the filter.

$$\frac{\text{Upstream particles number} > X \mu\text{m}_{(c)}}{\text{Downstream particles number} > X \mu\text{m}_{(c)}} = \beta_{x(c)}$$



Value ( $\beta_{x(c)}$ )	2	10	75	100	200	1000
Efficiency	50%	90%	98.7%	99%	99.5%	99.9%

Test conditions, such as type of fluid to be used (MIL-H-5606), type of contaminant to be used (ISO MTD), fluid viscosity, test temperature, are determined by ISO 16889.

In addition to the filtration efficiency value during the Multipass test, other important features, such as filtration stability ( $\beta$  stability) and dirt holding capacity (DHC), are also tested.

Poor filtration stability is the cause of the filtering quality worsening as the filter life rises. Low dirt holding capacity causes a reduction in the life of the filter.

Filtration ISO Standard Comparison

$\beta_{x(c)} > 1000$ ISO 16889	$\beta_x > 200$ ISO 4572	MP Filtri Filter media code
5 $\mu\text{m}_{(c)}$	3 $\mu\text{m}$	A03
7 $\mu\text{m}_{(c)}$	6 $\mu\text{m}$	A06
10 $\mu\text{m}_{(c)}$	10 $\mu\text{m}$	A10
16 $\mu\text{m}_{(c)}$	18 $\mu\text{m}$	A16
21 $\mu\text{m}_{(c)}$	25 $\mu\text{m}$	A25

## 7 RECOMMENDED CONTAMINATION CLASSES

Any are the nature and the properties of fluids, they are inevitably subject to contamination. The level of contamination can be managed by using special components called filters.

Hydraulic components builders, knowing the problem of contamination, recommend the filtration level appropriate to the use of their products.

Example of recommended contamination levels for pressures below 140 bar.

Piston pumps with fixed flow rate	•					
Piston pumps with variable flow rate			•			
Vane pumps with fixed flow rate		•				
Vane pumps with variable flow			•			
Engines	•					
Hydraulic cylinders	•					
Actuators					•	
Test benches						•
Check valve	•					
Directional valves	•					
Flow regulating valves	•					
Proportional valves				•		
Servo-valves					•	
Flat bearings			•			
Ball bearings				•		
ISO 4406 CODE	20/18/15	19/17/14	18/16/13	17/15/12	16/14/11	15/13/10
Recommended filtration $\beta_{x(c)} \geq 1.000$	$\beta_{21(c)} > 1000$	$\beta_{15(c)} > 1000$	$\beta_{10(c)} > 1000$	$\beta_{7(c)} > 1000$	$\beta_{7(c)} > 1000$	$\beta_{5(c)} > 1000$
MP Filtri media code	A25	A16	A10	A06	A06	A03

The common classification of filters is determined by their position in the plant.

## 8 TYPES OF FILTERS

### Suction filters

They are positioned before the pump and are responsible for protecting the pump from dirty contaminants. It also provides additional flow guidance to the pump suction line.

Being subject to negligible working pressures are manufactured with simple and lightweight construction.

They are mainly produced with gross grade surface filtrations, mainly  $60 \div 125 \mu\text{m}$ .

They can be equipped with a magnetic filter for retaining ferrous particles.

They are generally placed under the fluid head to take advantage of the piezometric thrust of the fluid and reduce the risk of cavitation.

There are two types of suction filters:

#### - IMMERSION FILTERS

Simple filter element screwed on the suction pipe

#### - FILTERS WITH CONTAINER

Container filters that are more bulky, but provide easier maintenance of the tank

### Delivery (or Pressure) filters

They are positioned between the pump and most sensitive regulating and controlling components, such as servo valves or proportional valves, and are designed to ensure the class of contamination required by the components used in the circuit.

Being subjected to high working pressures are manufactured with more robust and articulated construction. In particular situations of corrosive environments or aggressive fluids can be made of stainless steel.

They are mainly produced with filtering depths of  $3 \div 25 \mu\text{m}$ .

They can be manufactured with in-line connections, with plate or flange connections or directly integrated into the circuit control blocks / manifolds.

They can also be manufactured in duplex configuration to allow the contaminated section to be maintained even when the plant / system is in operation without interruption of the working cycle.

### Return filters

They are positioned on the return line to the tank and perform the task of filtering the fluid from particles entering the system from the outside or generated by the wear of the components.

They are generally fixed to the reservoir (for this reason also called top tank mounted), positioned semi-immersed or completely immersed.

The positioning of the return filters must guarantee in all operating conditions that the fluid drainage takes place in immersed condition; this is to avoid creating foams in the tank that can cause malfunctions or cavitation in the pumps.

For the sizing of the return filters, account must be taken of the presence of accumulators or cylinders that can make the return flow considerably greater than the pump suction flow rate.

Being subject to contained working pressures are manufactured with simple and lightweight construction.

Normally it is possible to extract the filter element without disconnecting the filter from the rest of the system.

### Combined filters

They are designed to be applied to systems with two or more circuits. They are commonly used in hydrostatic transmission machines where they have a dual filtration function of the return line and suction line of the hydrostatic transmission pump.

The filter is equipped with a valve that keeps the 0.5 bar pressure inside the filter. A portion of the fluid that returns to the tank is filtered by the return filter element, generally produced with absolute filtration, and returns to the transmission booster pump.

Only excess fluid returns to the tank through the valve.

The internal pressure of the filter and the absolute filtration help to avoid the cavitation phenomenon inside the pump.

### Off-line filters

They are generally used in very large systems / plants, placed in a closed circuit independent from the main circuit. They remain in operation regardless of the operation of the main circuit and are crossed by a constant flow rate.

They can also be manufactured in duplex configuration to allow the contaminated section to be maintained even when the unit is in operation without interruption of the work cycle.

### Venting filters

During the operation of the plants, the fluid level present in the reservoir changes continuously.

The result of this continuous fluctuation is an exchange of air with the outside environment.

The venting filter function, positioned on the tank, is to filter the air that enters the tank to compensate for fluid level variations.

## 9 FILTER SIZING PARAMETERS

The choice of the filter system for an hydraulic system is influenced by several factors.

It is necessary to consider the characteristics of the various components present in the plant and their sensitivity to contamination.

It is also necessary to consider all the tasks that the filter will have to do within the plant:

- FLUID PROTECTION FROM CONTAMINATION
- PROTECTION OF OLEODYNAMIC COMPONENTS SENSITIVE TO CONTAMINATION
- PROTECTION OF OLEODYNAMIC PLANTS FROM ENVIRONMENTAL WASTE
- PROTECTION OF OLEODYNAMIC PLANTS FROM CONTAMINATION CAUSED BY COMPONENTS' FAILURES

The advantages of proper positioning and sizing of the filters are

- MORE RELIABILITY OF THE SYSTEM
- LONGER LIFE OF THE FLUID COMPONENTS
- REDUCTION OF STOP TIME
- REDUCTION OF FAILURE CASUALTIES

Each hydraulic filter is described by general features that identify the possibility of use in different applications.

- **MAXIMUM WORKING PRESSURE ( $P_{max}$ )**

The maximum working pressure of the filter must be greater than or equal to the pressure of the circuit section in which it will be installed.

- **PRESSURE DROP ( $\Delta P$ )**

The pressure drop depends on a number of factors, such as the working circuit temperature, the fluid viscosity, the filter element cleaning condition.

- **WORKING TEMPERATURE ( $T$ )**

The working temperature deeply affect the choice of materials. Excessively high or low temperatures may adversely affect the strength of the materials or the characteristics of the seals.

- **FILTRATION EFFICIENCY (%) / FILTRATION RATIO ( $\beta_{x(c)}$ )**

Filtration efficiency is the most important parameter to consider when selecting a filter.

When choosing the filtration performances, the needs of the most sensitive components in the system must be considered.

- **FLUID TYPE**

The type of fluid influences the choice of filters in terms of compatibility and viscosity. It is always mandatory to check the filterability.

- **PLACEMENT IN THE PLANT**

The position of the filter in the system conditions the efficiency of all filter performances.

## 10 APPLICABLE STANDARDS FOR FILTER DEVELOPMENT

In order to obtain unique criteria for development and verification of the filters performance, specific regulations for the filters and filter elements testing have been issued by ISO. These norms describe the target, the methodology, the conditions and the presentation methods for the test results.

### ISO 2941

*Hydraulic fluid power -- Filter elements -- Verification of collapse/burst pressure rating*

This Standard describes the method for testing the collapse / burst resistance of the filter elements.

The test is performed by crossing the contaminated fluid filter element at a predefined flow rate. The progressive clogging of the filter element, determined by contamination, causes an increase in differential pressure.

### ISO 2942

*Hydraulic fluid power -- Filter elements -- Verification of fabrication integrity and determination of the first bubble point*

This Standard describes the method to verify the integrity of the assembled filter elements.

It can be used to verify the quality of the production process or the quality of the materials by verifying the pressure value of the first bubble point.

### ISO 2943

*Hydraulic fluid power -- Filter elements -- Verification of material compatibility with fluids*

This Standard describes the method to verify the compatibility of materials with certain hydraulic fluids.

The test is carried out by keeping the element (the material sample) immersed in the fluid under high or low temperature conditions for a given period of time and verifying the retention of the characteristics.

### ISO 3723

*Hydraulic fluid power -- Filter elements -- Method for end load test*

This Standard describes the method for verifying the axial load resistance of the filter elements.

After performing the procedure described in ISO 2943, the designed axial load is applied to the filter element. To verify the test results, then the test described in ISO 2941 is performed.

### ISO 3968

*Hydraulic fluid power -- Filters -- Evaluation of differential pressure versus flow characteristics*

This Standard describes the method for checking the pressure drop across the filter.

The test is carried out by crossing the filter from a given fluid and by detecting upstream and downstream pressures.

Some of the parameters defined by the Standard are the fluid, the test temperature, the size of the tubes, the position of the pressure detection points.

### ISO 16889

*Hydraulic fluid power -- Filters -- Multi-pass method for evaluating filtration performance of a filter element*

This Standard describes the method to check the filtration characteristics of the filter elements.

The test is performed by constant introduction of contaminant (ISO MTD). The characteristics observed during the test are the filtration efficiency and the dirty holding capacity related to the differential pressure.

## ISO 23181

*Hydraulic fluid power -- Filter elements -- Determination of resistance to flow fatigue using high viscosity fluid*

This Standard describes the method for testing the fatigue resistance of the filter elements. The test is carried out by subjecting the filter to continuous flow variations, thus differential pressure, using a high viscosity fluid.

## ISO 11170

*Hydraulic fluid power -- Sequence of tests for verifying performance characteristics of filter elements*

The Standard describes the method for testing the performance of filter elements. The protocol described by the regulations provides the sequence of all the tests described above in order to verify all the working characteristics (mechanical, hydraulic and filtration).

## ISO 10771-1

*Hydraulic fluid power -- Fatigue pressure testing of metal pressure-containing envelopes -- Test method*

This Standard describes the method to check the resistance of the hydraulic components with pulsing pressure.

It can be applied to all metal components (excluding tubes) subject to cyclic pressure used in the hydraulic field.

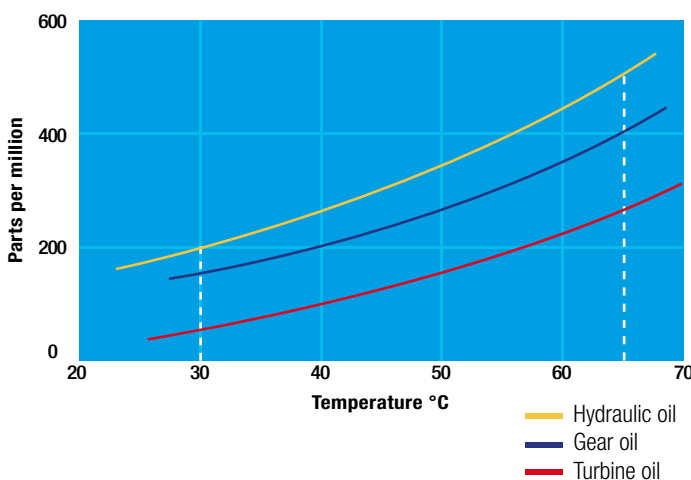
## 11 WATER IN HYDRAULIC AND LUBRICATING FLUIDS

### Water Content

In mineral oils and non aqueous resistant fluids water is undesirable. Mineral oil usually has a water content of 50-300 ppm (@40°C) which it can support without adverse consequences.

Once the water content exceeds about 300ppm the oil starts to appear hazy. Above this level there is a danger of free water accumulating in the system in areas of low flow. This can lead to corrosion and accelerated wear.

Similarly, fire resistant fluids have a natural water which may be different to mineral oil.



### Saturation Levels

Since the effects of free (also emulsified) water is more harmful than those of dissolved water, water levels should remain well below the saturation point.

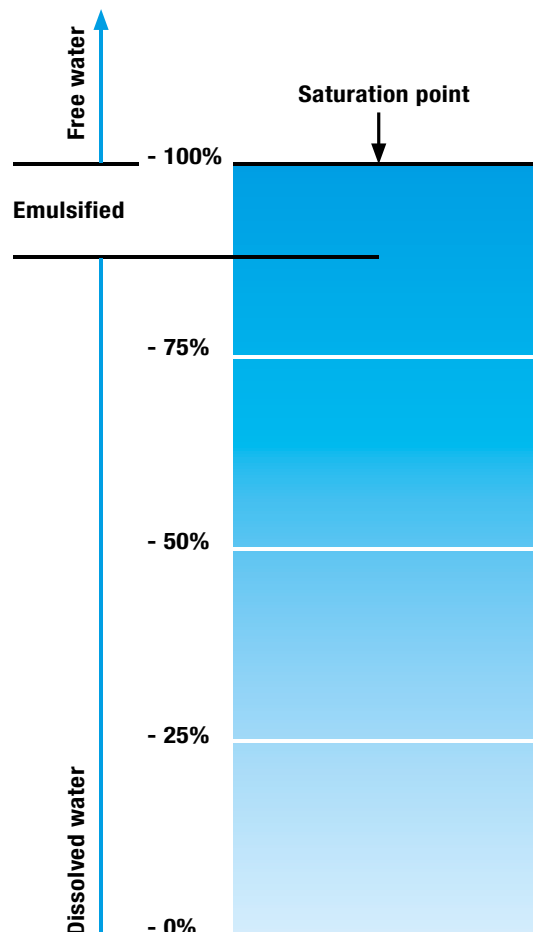
However, even water in solution can cause damage and therefore every reasonable effort should be made to keep saturation levels as low as possible. There is no such thing as too little water. As a guideline, we recommend maintaining saturation levels below 50% in all equipment.

### TYPICAL WATER SATURATION LEVEL FOR NEW OILS

Examples:

Hydraulic oil @ 30°C = 200 ppm = 100% saturation

Hydraulic oil @ 65°C = 500 ppm = 100% saturation



## WATER REMOVAL

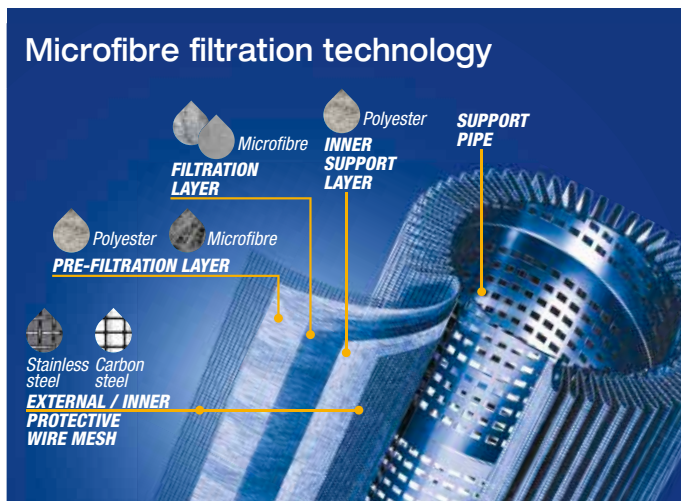
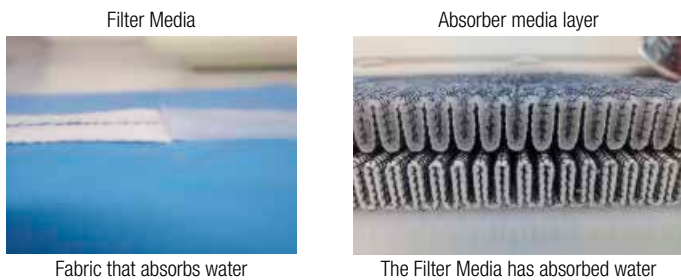
Water is present everywhere, during storage, handling and servicing.

MP Filtri filter elements feature an absorbent media which protects hydraulic systems from both particulate and water contamination.

MP Filtri's filter element technology is available with inorganic microfiber media with a filtration rating 25 µm (therefore identified with media designation WA025), providing absolute filtration of solid particles to  $\beta_{x(c)} = 1000$ .

Absorbent media is made by water absorbent fibres which increase in size during the absorption process.

Free water is thus bonded to the filter media and completely removed from the system (it cannot even be squeezed out).



By removing water from your fluid power system, you can prevent such key problems as:

- corrosion (metal etching)
- loss of lubricant power
- accelerated abrasive wear in hydraulic components
- valve-locking
- bearing fatigue
- viscosity variance (reduction in lubricating properties)
- additive precipitation and oil oxidation
- increase in acidity level
- increased electrical conductivity (loss of dielectric strength)
- slow/weak response of control systems



For more details please refer to our dedicate brochure "WATER REMOVAL"



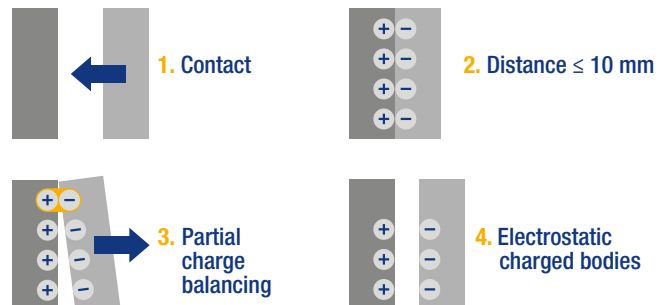
## 12 THE ANTI-STATIC FILTERS



zerospark is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

### THE TRIBOELECTRIC EFFECT

The body with the most electronegativity strips electrons from the other, generating a build-up of a net negative charge on itself. The other body is charged by the same amount but with the opposite sign, giving rise to very high potential differences. These, if not dissipated, can give rise to electrostatic discharges.



For more details please refer to our dedicate brochure "ZEROSPARK"



# FILTER SIZING

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# FILTER SIZING Calculation

## THE CORRECT FILTER SIZING HAS TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING ON THE APPLICATION.

FOR EXAMPLE, THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN RETURN FILTER HAS TO BE IN THE RANGE 0.4 - 0.6 bar / 5.80 - 8.70 psi.

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 ( $\text{kg}/\text{dm}^3$  /  $\text{lb}/\text{ft}^3$ ). The filter element pressure drop  $\Delta p_e$  is proportional to its viscosity ( $\text{mm}^2/\text{s}$  / SUS), the corrective factor Y have to be used in case of an oil viscosity different than  $30 \text{ mm}^2/\text{s}$  (cSt) / 150 SUS.

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

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

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

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 - gpm)

V1 reference oil viscosity =  $30 \text{ mm}^2/\text{s}$  (cSt) / 150 SUS

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

### Filter element pressure drop calculation with an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt) / 150 SUS

International system:

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

Imperial system:

$$\Delta p_e = Y : 17.2 \times Q \times (V2:V1)$$

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

### 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

Filter family	$\Delta p_{\text{max}}$	
	[ bar ]	[ psi ]
Suction	0.08 bar	1.15 psi
Return	0.50 bar	7.25 psi
Return - Suction (*)	1.50 bar	22.00 psi
Low & Medium Pressure/Duplex	0.70 bar	10.15 psi
High Pressure Pressure/Duplex	1.50 bar	22.00 psi
Stainless Steel	1.50 bar	22.00 psi
ATEX	1.50 bar	22.00 psi

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

### Generic filter calculation example

Application data:

Tank top return filter

Pressure Pmax = 10 bar / 145.03 psi

Flow rate Q = 120 l/min / 31.7 gpm

Viscosity V2 =  $46 \text{ mm}^2/\text{s}$  (cSt) / 216 SUS

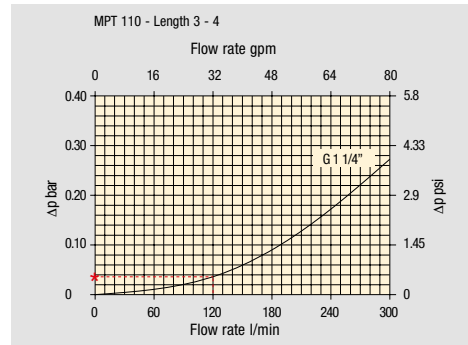
Oil density =  $0.86 \text{ kg}/\text{dm}^3$  /  $53.68 \text{ lb}/\text{ft}^3$

Required filtration efficiency = 25  $\mu\text{m}$  with absolute filtration

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

Calculation:

$\Delta p_c = 0.03 \text{ bar} / 0.43 \text{ psi}$  (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.

$$\Delta p_e = (2.00 : 1000) \times 120 \times (46 : 30) = 0.37 \text{ bar}$$

$$\Delta p_e = (2.00 : 17.2) \times 32 \times (216 : 150) = 5.36 \text{ psi}$$

Filter element	Absolute filtration H Series					Nominal filtration N Series		
	A03	A06	A10	A16	A25	P(00)10	P(00)25	M(00)25 M(00)60 M(00)90
<b>Return filters</b>	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
<b>MF 020</b>	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
<b>MF 030</b>	1 74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
<b>MFX 030</b>	1 28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
<b>MF 100</b>	2 17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
<b>MFX 100</b>	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

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

$$\Delta p_{\text{Tot.}} = 0.43 + 5.36 = 5.79 \text{ psi}$$

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

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



## SUCTION FILTERS

Filter element		Nominal filtration Collapse $\Delta P$ : A = 1 bar					
Type	Length	P10	P25	M25	M60	M90	M250
SF 250	1	78.00	48.00	28.00	24.00	9.33	9.33
SF 503	2	25.88	20.88	10.44	10.00	3.78	3.78
SF 504	3	15.20	14.53	5.14	4.95	2.00	2.00
SF 505	4	3.25	2.55	1.55	1.35	0.71	0.71
SF 510	5	1.96	1.68	0.85	0.72	0.24	0.24
SF 535	2	1.06	0.84	0.42	0.33	0.17	0.17
SF 540	4	1.06	0.84	0.42	0.33	0.17	0.17
FEX 060	-	4.58	3.22	1.02	0.89	0.63	0.63
FEX 080	-	1.97	1.38	0.62	0.45	0.29	0.29
FEX 110	-	1.33	1.12	0.22	0.18	0.14	0.14
FEX 160	-	0.90	0,76	0.15	0.10	0.09	0.09

## RETURN FILTERS

Filter element		Absolute filtration H Series					Nominal filtration N Series		
Type	Length	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
MLX 250	2	3.00	3.04	1.46	1.25	1.17	-	-	M25 0.20
MLX 660	2	1.29	1.26	0.52	0.44	0.38	-	-	M25 0.10
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	0.24	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04

TO BE CONTINUED >>

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

# FILTER SIZING Corrective factor

## RETURN FILTERS

Filter element		Absolute filtration H Series					Nominal filtration N Series		
Type	Length	A03	A06	A10	A16	A25	P10	P25	M25 - M60 - M90
MR 250	2	3.61	4.08	1.81	1.71	1.35	-	-	M25 0.55
	4	2.10	1.70	1.14	0.77	0.53	-	-	0.60
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

## RETURN / SUCTION FILTERS

Filter element		Absolute filtration		
Type	Length	A10	A16	A25
RSX 116	1	5.12	4.33	3.85
	2	2.22	1.87	1.22
RSX 165 RSX 166	1	2.06	1.75	1.46
	2	1.24	1.05	0.96
	3	0.94	0.86	0.61

Filter element		Absolute filtration N Series							
Type	Length	A03	A06	A10	A16	A25	P10	P25	M25 - M60 - M90
CU 110	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	4.16	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	4.05	2.36	1.14	0.91	0.85	0.05

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

## LOW & MEDIUM PRESSURE FILTERS

Filter element		Absolute filtration N - W Series					Nominal filtration N Series		
Type	Length	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	3.14	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	0.105
<b>CU 900</b>	1	0.86	0.63	0.32	0.30	0.21	-	-	0.05
<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

## HIGH PRESSURE FILTERS

Filter element		Absolute filtration N - R Series					Nominal filtration N Series
Type	Length	A03	A06	A10	A16	A25	M25
<b>HP 010 HP 011</b>	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	-
<b>HP 039</b>	2	70.66	53.20	25.77	20.57	14.67	4.90
	3	36.57	32.28	18.00	13.38	8.00	2.90
	4	26.57	23.27	12.46	8.80	5.58	2.20
<b>HP 050 HPX 050</b>	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
<b>HP 065</b>	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
<b>HP 135</b>	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
<b>HP 150</b>	1	17.53	15.91	7.48	6.96	5.94	1.07
	2	8.60	8.37	3.54	3.38	3.15	0.58
	3	6.53	5.90	2.93	2.79	2.12	0.49

TO BE CONTINUED >>

**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

# FILTER SIZING Corrective factor

## HIGH PRESSURE FILTERS

Filter element		Absolute filtration N - R Series					Nominal filtration N Series
Type	Length	A03	A06	A10	A16	A25	M25
<b>HP 320</b>	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
<b>HP 500</b>	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
<b>HP 325</b>	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

Filter element		Absolute filtration S - H - U Series				
Type	Length	A03	A06	A10	A16	A25
<b>HP 010</b>	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.35	75.45	47.26
<b>HP 011</b>	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
<b>HP 039</b>	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
<b>HP 050</b> <b>HPX 050</b>	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	10.04	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
<b>HP 135</b>	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.90	4.44
	3	8.96	7.46	4.89	4.16	3.07
<b>HP 320</b>	1	13.00	12.19	6.80	6.40	3.32
	2	6.45	5.31	3.01	2.89	1.73
	3	4.13	3.14	1.90	1.78	1.17
	4	3.17	2.71	1.80	1.70	1.10
<b>HP 500</b>	1	9.70	8.81	4.55	4.47	2.80
	2	5.46	4.63	2.88	2.68	2.20
	3	3.90	3.74	2.22	2.07	1.53
	4	3.10	2.84	1.56	1.53	1.02
	5	1.93	1.83	1.14	1.08	0.69

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

## STAINLESS STEEL HIGH PRESSURE FILTERS

Filter element		Absolute filtration N - R Series					Nominal filtration N Series
Type	Length	A03	A06	A10	A16	A25	M25
<b>HP 010 HP 011</b>	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	-
<b>HP 039</b>	2	70.66	53.20	25.77	20.57	14.67	4.90
	3	36.57	32.28	18.00	13.38	8.00	2.90
	4	26.57	23.27	12.46	8.80	5.58	2.20
<b>HP 050</b>	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
<b>HP 135</b>	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

Filter element		Absolute filtration S - H - U Series				
Type	Length	A03	A06	A10	A16	A25
<b>HP 010 HP 011</b>	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.35	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
<b>HP 039</b>	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
<b>HP 050</b>	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	10.04	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
<b>HP 135</b>	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.90	4.44
	3	8.96	7.46	4.89	4.16	3.07

**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

# FILTER SIZING Corrective factor

## FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Filter element		Absolute filtration N - R Series					Nominal filtration N Series
Type	Length	A03	A06	A10	A16	A25	M25
<b>HP 010</b> <b>HP 011</b>	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	-
<b>HP 039</b>	2	70.66	53.20	25.77	20.57	14.67	4.90
	3	36.57	32.28	18.00	13.38	8.00	2.90
	4	26.57	23.27	12.46	8.80	5.58	2.20
<b>HPX 050</b>	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
<b>HP 135</b>	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

Filter element		Absolute filtration S - H - U Series				
Type	Length	A03	A06	A10	A16	A25
<b>HP 010</b> <b>HP 011</b>	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.35	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
<b>HP 039</b>	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
<b>HPX 050</b>	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	10.04	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
<b>HP 135</b>	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.90	4.44
	3	8.96	7.46	4.89	4.16	3.07

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.

# Filters sizing software

The web-based software program will allow you to select the most suitable MP Filtri's Filters, in accordance with your process design requirements.

The program will automatically check your input design process prior to propose you the acceptable solutions and create an output in PDF report style format.

The MP Filtri Selection Tool software program is easy to use with a flexible fast design method and provides improved layout formats with full descriptions.

The web-based tool is available at MP Filtri website at following link:  
<https://www.mpfiltri.com/tools/>

The related, complete user guide is available as Manual and downloadable from the "Download" section of MP Filtri website, as well as scanning the following QR code



**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 Strainers (STR, MPA, MPM)**
- **SF2 external filters, for mounting semi-immersed under the oil level**
- **SFEX ELIXIR® series, for protection of the downstream pump against the coarse contamination**

**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 see chapter at page 23**



# Suction filters



STR & MPA - MPM	page 33
SFEX	40
SF2 250 - 350	51
SF2 500	59
INDICATORS	709



# STR & MPA - MPM series

Flow rate up to 1000 l/min



# STR & MPA-MPM GENERAL INFORMATION

## Description

## Technical data

### Suction filters

**Flow rate up to 1000 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 1000 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 1000 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 - Polyamide

#### Bypass valve

Opening pressure 30 kPa (0.3 bar)

#### Elements

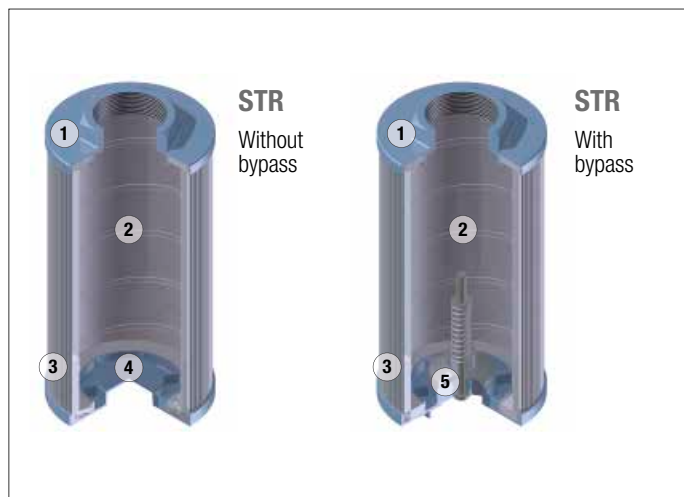
Fluid flow through the filter element from OUT to IN.

#### Temperature

From -25 °C to +110 °C

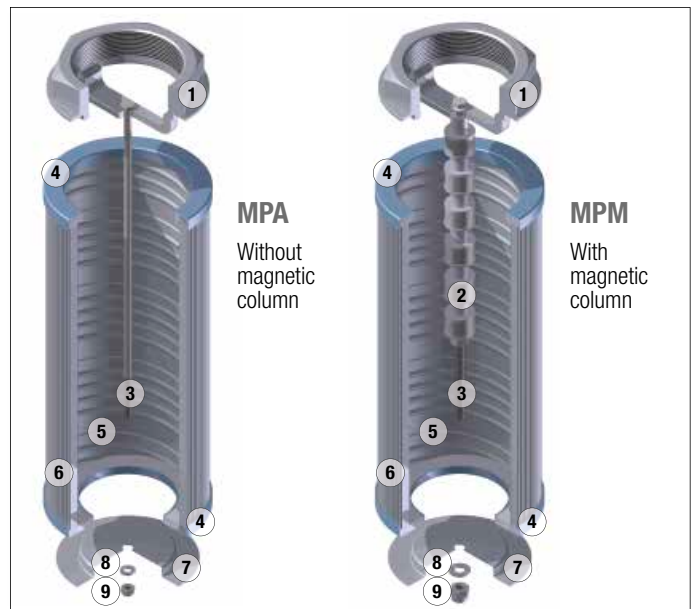
## Quantity

Series and size	pcs/pack
<b>STR</b> 045 - 050	12
<b>STR</b> 065 - 070 - 086 - 100	6
<b>STR</b> 140 - 150	1
<b>MPA - MPM</b> 012	12
<b>MPA - MPM</b> 015 - 025 - 030 - 045 - 050 - 075 - 095 - 120 - 150	6
<b>MPA - MPM</b> 180 - 220 - 280 - 300 - 380 - 430	1



## Weights [kg]

Filter series	
<b>STR</b>	see page 37
<b>MPA - MPM</b>	see page 39



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.

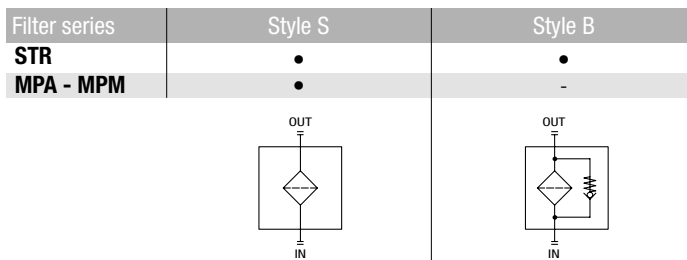
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

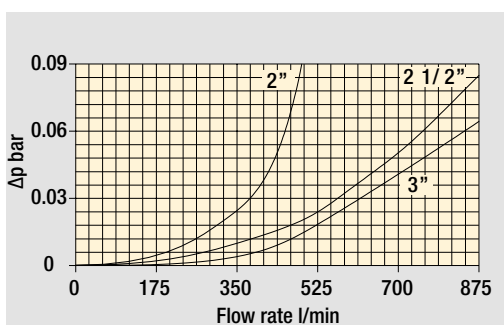
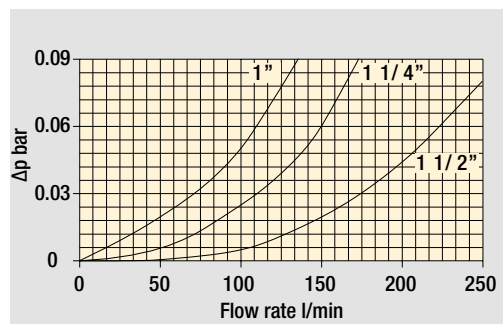
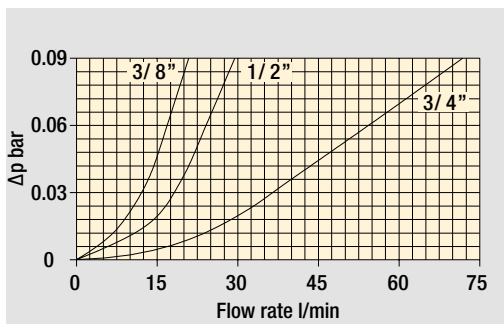
Please, contact our Sales Department for further additional information.

## 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.

## Designation & Ordering code

### COMPLETE FILTER

#### 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

Configuration example 2: STR100 4 S G2 M250 P01

#### Length and connection

	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"	-

#### Bypass valve

<b>S</b>	Without bypass
<b>B</b>	With bypass 0.3 bar

#### Thread

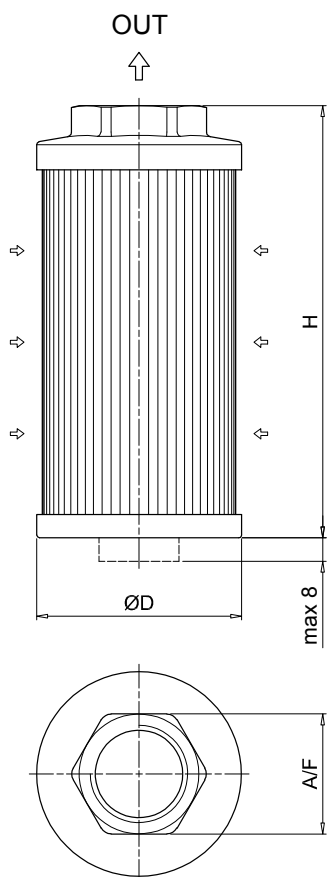
<b>G1</b>	GAS
<b>G2</b>	NPT

#### Filtration rating

<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



STR						
Size	Length	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
	4	1"	65	144	41	0.22
<b>070</b>	1	1/2"	70	95	41	0.18
	2	3/4"	70	95	41	0.17
	3	3/4"	70	141	41	0.23
	4	1"	70	141	41	0.22
	6	1/2"	70	141	41	0.24
<b>086</b>	1	1 1/2"	86	143	69	0.33
	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
<b>100</b>	1	1 1/4"	99	137	69	0.47
	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
<b>140</b>	1	1 1/2"	130	160	69	0.70
	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
<b>150</b>	1	2"	150	150	70	0.34
	2	2 1/2"	150	212	90	0.37
	3	3"	150	272	100	0.40

# MPA-MPM

## Designation & Ordering code

### COMPLETE FILTER

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**

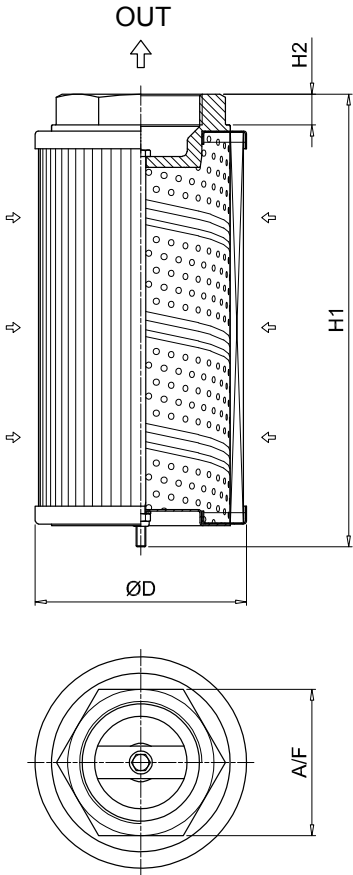
Connections	
<b>012</b>	3/8"
<b>015</b>	1/2"
<b>025</b>	1/2"
<b>030</b>	3/4"
<b>045</b>	3/4"
<b>050</b>	1"
<b>075</b>	1"
<b>095</b>	1 1/4"
<b>120</b>	1 1/4"
<b>150</b>	1 1/2"
<b>180</b>	1 1/2"
<b>220</b>	2"
<b>280</b>	2"
<b>300</b>	2 1/2"
<b>380</b>	2"
<b>430</b>	3"

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

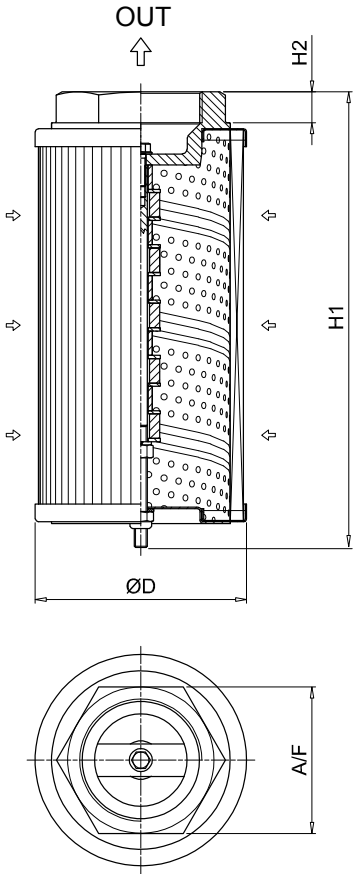
Filtration rating		
<b>M25</b>	Wire mesh	25 µm
<b>M60</b>	Wire mesh	60 µm
<b>M90</b>	Wire mesh	90 µm
<b>M250</b>	Wire mesh	250 µm

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





MPA						
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						
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



THE **X** CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

SFEX series

with **MYCLEAN** FEX Filter Element



- ◆ **Protects the machine from improper use of non-original products.**
- ◆ **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as SFEX are protected by:

- ◆ Italian Patent n° 102014902261205
- ◆ Canadian Patent n° 2,937,258
- ◆ European Patent n° 3 124 092 B1
- ◆ US Patent n° 20170030384 A1

# SFEX series

Flow rate up to 100 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



SFEX060



SFEX080



SFEX110



SFEX160

## Description

## Technical data

### Suction filters

#### Flow rate up to 100 l/min

SFEX are range of suction filters 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 in-line mounted.

#### Available features:

- Female threaded connections up to 1 1/4" and flanged connections up to 1 5/8", for a maximum flow rate of 100 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical, axial and radial vacuum gauges
- MYclean interface connection for the filter element, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

#### Common application:

- Mobile machines
- Industrial equipment

#### Filter housing materials

- Head: Aluminium
- Bypass valve: Polyamide - Steel
- Bowl: Polyamide

#### Bypass valve

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

#### Elements

Fluid flow through the filter element from OUT to IN

#### Seals

Standard NBR series A

#### Temperature

From -25 °C to +110 °C

#### Note

SFEX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>SFEX 060</b>	1.00	0.60
<b>SFEX 080</b>	1.15	0.80
<b>SFEX 110</b>	1.90	1.60
<b>SFEX 160</b>	2.10	2.00

## Hydraulic symbols

Filter series	Style S	Style B
<b>SFEX 060</b>	•	•
<b>SFEX 080</b>	•	•
<b>SFEX 110</b>	•	•
<b>SFEX 160</b>	•	•

### Filter element design - N Series

Filter series	M60	M90	M250	P10	P25
<b>SFEX 060</b>	26	27	27	14	17
<b>SFEX 080</b>	28	29	29	21	23

Connections of filter under test G 3/4"

Filter series	M60	M90	M250	P10	P25
<b>SFEX 060</b>	31	33	33	13	20
<b>SFEX 080</b>	34	35	35	24	30

Connections of filter under test G 1"

Filter series	M60	M90	M250	P10	P25
<b>SFEX 110</b>	93	96	96	48	53
<b>SFEX 160</b>	98	99	99	60	65

Connections of filter under test G 1 1/4"

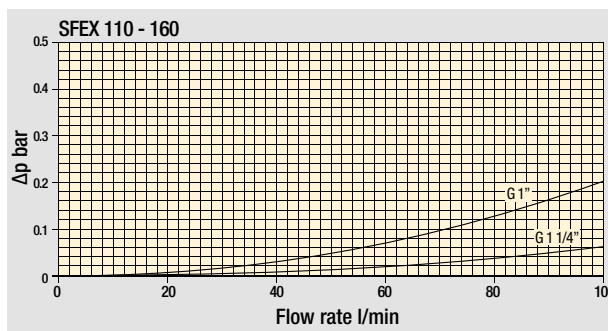
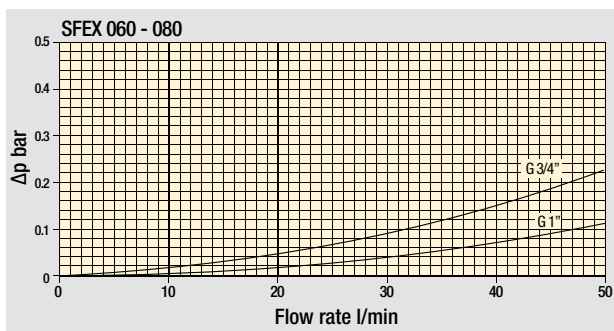
### Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

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>.

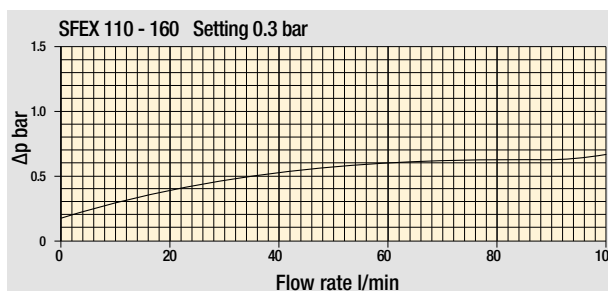
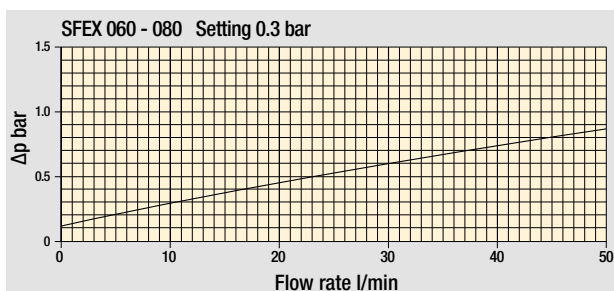
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

Please, contact our Sales Department for further additional information.

### 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.

# SFEX SFEX060 - SFEX080

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>SFEX060</b> <b>B</b> <b>A</b> <b>A</b> <b>6</b> <b>M60</b> <b>N</b> <b>P01</b>							
<b>SFEX060</b>   <b>SFEX080</b> Filter featuring <b>MY CLEAN</b> Filter Element								
<b>Bypass valve</b>								
<b>S</b> Without bypass								
<b>B</b> With bypass 0.3 bar								
<b>Seals and treatments</b>								
<b>A</b> NBR								
<b>Connections</b>								
<b>A</b> G 3/4"								
<b>B</b> G 1"								
<b>C</b> 3/4" NPT								
<b>D</b> 1" NPT								
<b>E</b> SAE 12 - 1 1/16" - 12 UN								
<b>F</b> SAE 16 - 1 5/16" - 12 UN								
<b>Connection for clogging indicator</b>								
<b>6</b> With plugged connections								
<b>Filtration rating</b>								
<b>M60</b> Wire mesh 60 µm								
<b>M90</b> Wire mesh 90 µm								
<b>M250</b> Wire mesh 250 µm								
<b>P10</b> Resin impregnated paper 10 µm								
<b>P25</b> Resin impregnated paper 25 µm								
						<b>Element Δp</b>	<b>Execution</b>	
						<b>N</b> 8 bar	<b>P01</b> MP Filtri standard	
							<b>Pxx</b> Customized	

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example: <b>FEX060</b> <b>M60</b> <b>A</b> <b>N</b> <b>P01</b>				
<b>FEX060</b>   <b>FEX080</b> Filter Element with <b>MY CLEAN</b> feature					
<b>Filtration rating</b>					
<b>M60</b> Wire mesh 60 µm					
<b>M90</b> Wire mesh 90 µm					
<b>M250</b> Wire mesh 250 µm					
<b>P10</b> Resin impregnated paper 10 µm					
<b>P25</b> Resin impregnated paper 25 µm					
<b>Seals and treatments</b>					
<b>A</b> NBR					
					<b>Element Δp</b>
					<b>N</b> 8 bar
					<b>Execution</b>
					<b>P01</b> MP Filtri standard
					<b>Pxx</b> Customized

### CLOGGING INDICATORS

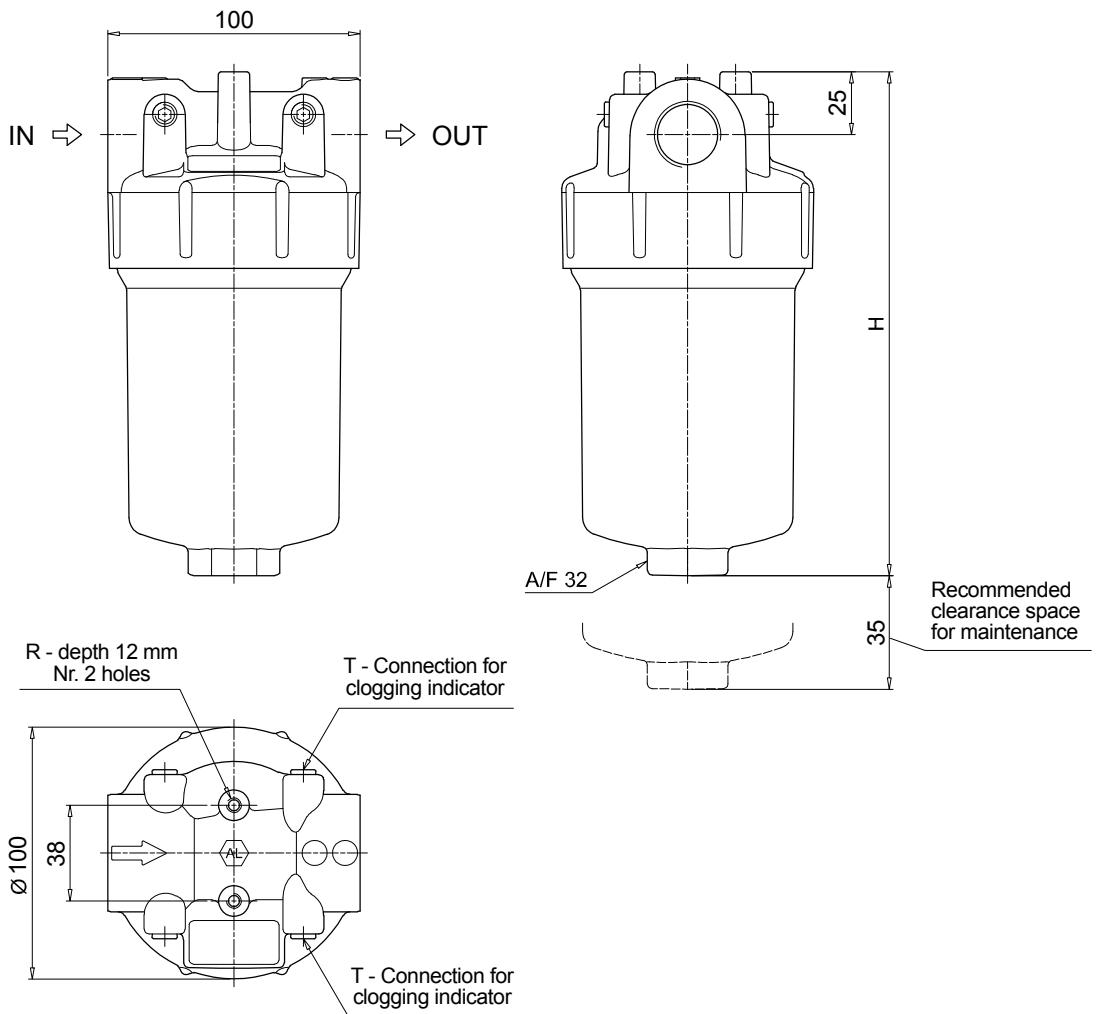
See page 709

<b>VEB</b> Electrical vacuum indicator	<b>VVB</b> Axial pressure gauge
<b>VLB</b> Electrical / visual vacuum indicator	<b>VVS</b> Radial pressure gauge

Filter size	H [mm]	
<b>060</b>	202	
<b>080</b>	265	

Connections	T	R
<b>A</b>	G 1/8"	M6
<b>B</b>	G 1/8"	M6
<b>C</b>	1/8" NPT	1/4" UNC
<b>D</b>	1/8" NPT	1/4" UNC
<b>E</b>	1/8" NPT	1/4" UNC
<b>F</b>	1/8" NPT	1/4" UNC



# SFEX SFEX110 - SFEX160

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **SFEX110** **B** **A** **A** **6** **M60** **N** **P01**

**SFEX110** | **SFEX160** Filter featuring **MYCLEAN** Filter Element

#### Bypass valve

- S** Without bypass
- B** With bypass 0.3 bar

#### Seals and treatments

- A** NBR

#### Connections

- A** G 1"
- B** G 1 1/4"
- C** 1" NPT
- D** 1 1/4" NPT
- E** SAE 16 - 1 5/16" - 12 UN
- F** SAE 20 - 1 5/8" - 12 UN

#### Connection for clogging indicator

- 6** With plugged connections

#### Filtration rating

- |                       |        |                                    |       |
|-----------------------|--------|------------------------------------|-------|
| <b>M60</b> Wire mesh  | 60 µm  | <b>P10</b> Resin impregnated paper | 10 µm |
| <b>M90</b> Wire mesh  | 90 µm  | <b>P25</b> Resin impregnated paper | 25 µm |
| <b>M250</b> Wire mesh | 250 µm |                                    |       |

Element Δp  
**N** 8 bar

Execution  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series and size Configuration example: **FEX110** **M60** **A** **N** **P01**

**FEX110** | **FEX160** Filter Element with **MYCLEAN** feature

#### Filtration rating

- |                       |        |                                    |       |
|-----------------------|--------|------------------------------------|-------|
| <b>M60</b> Wire mesh  | 60 µm  | <b>P10</b> Resin impregnated paper | 10 µm |
| <b>M90</b> Wire mesh  | 90 µm  | <b>P25</b> Resin impregnated paper | 25 µm |
| <b>M250</b> Wire mesh | 250 µm |                                    |       |

#### Seals and treatments

- A** NBR

Element Δp  
**N** 8 bar

Execution  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 709

**VEB** Electrical vacuum indicator

**VVB** Axial pressure gauge

**VLB** Electrical / visual vacuum indicator

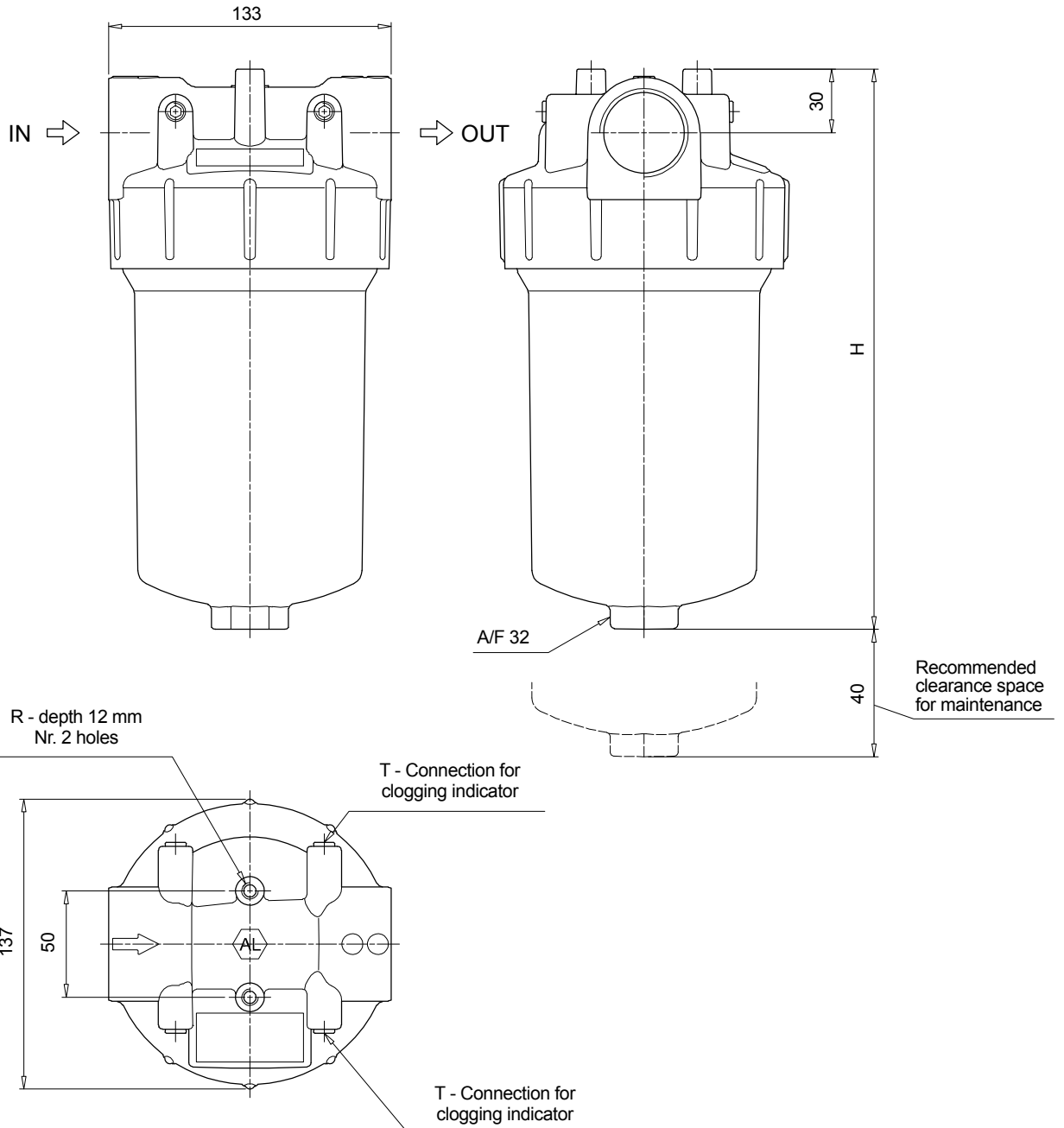
**VVS** Radial pressure gauge



Filter size	H [mm]	
<b>110</b>	266	
<b>160</b>	315	

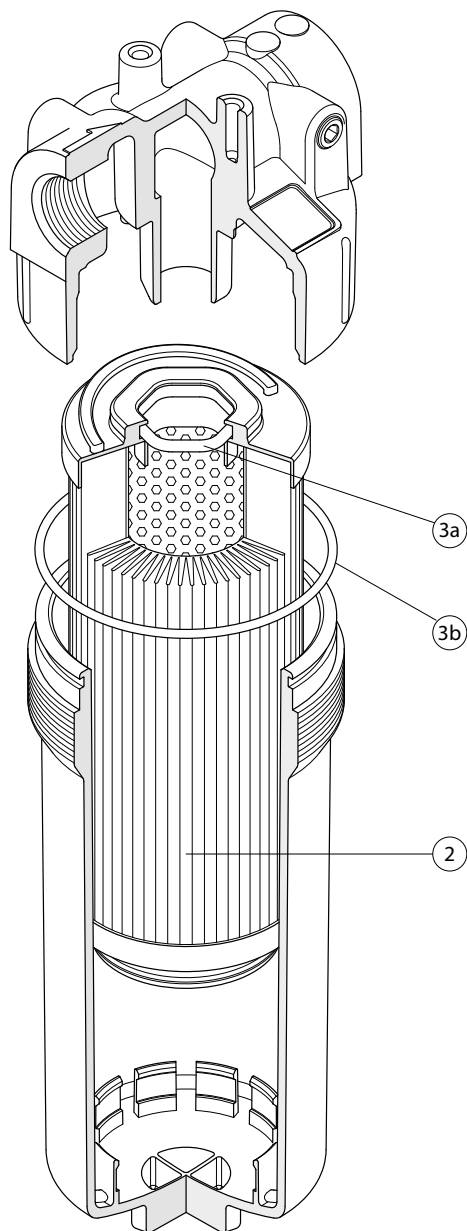
  

Connections	T	R
<b>A</b>	G 1/8"	M8
<b>B</b>	G 1/8"	M8
<b>C</b>	1/8" NPT	5/16" UNC
<b>D</b>	1/8" NPT	5/16" UNC
<b>E</b>	1/8" NPT	5/16" UNC
<b>F</b>	1/8" NPT	5/16" UNC



# SFEX SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.
	<b>2</b>	<b>3</b> (3a ÷ 3b)
Filter series	Filter element	Seal Kit code number NBR
<b>SFEX 060-080</b>	See order table	02050771
<b>SFEX 110-160</b>		02050772





# 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 filter, 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 55 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.

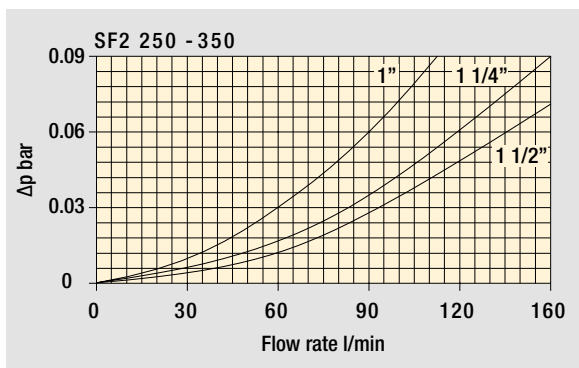
## Hydraulic symbols

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

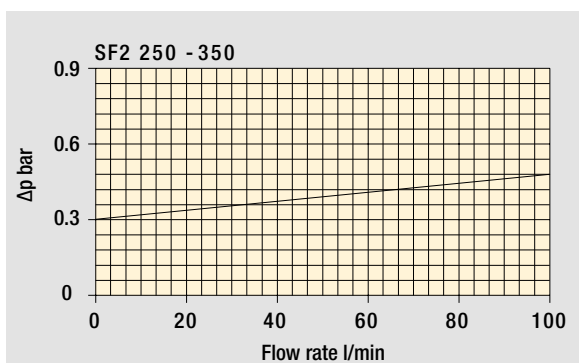
  

## Pressure drop

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:	SF2250	W	F2	R	M25	P01
<b>SF2250</b>	Configuration example 2:	SF2350	A	G1	S	M90	P01
<b>SF2350</b>							

Seals and treatments	Filtration rating	
	Mxx	Pxx
<b>A</b> NBR	•	•
<b>V</b> FPM	•	•
<b>W</b> NBR	•	-
<b>Z</b> FPM	•	-

Connections	Aux (only SF2350)	SF2250	SF2350
<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	-	•	-

Bypass valve and magnetic filter			
<b>R</b> With bypass, with magnetic filter	<b>Q</b> Without bypass, with magnetic filter		
<b>S</b> With bypass, without magnetic filter	<b>H</b> Without bypass, without magnetic filter		

Filtration rating (filter media)			
<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			

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

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1:	SF250	M25	W	P01
<b>SF250</b>	Configuration example 2:	SF250	M90	N	P01

Filtration rating (filter media)			
<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			

Seals and treatments	Filtration rating	
	Mxx	Pxx
<b>N</b> NBR	•	•
<b>V</b> FPM	•	•
<b>W</b> NBR	•	-
<b>Z</b> FPM	•	-

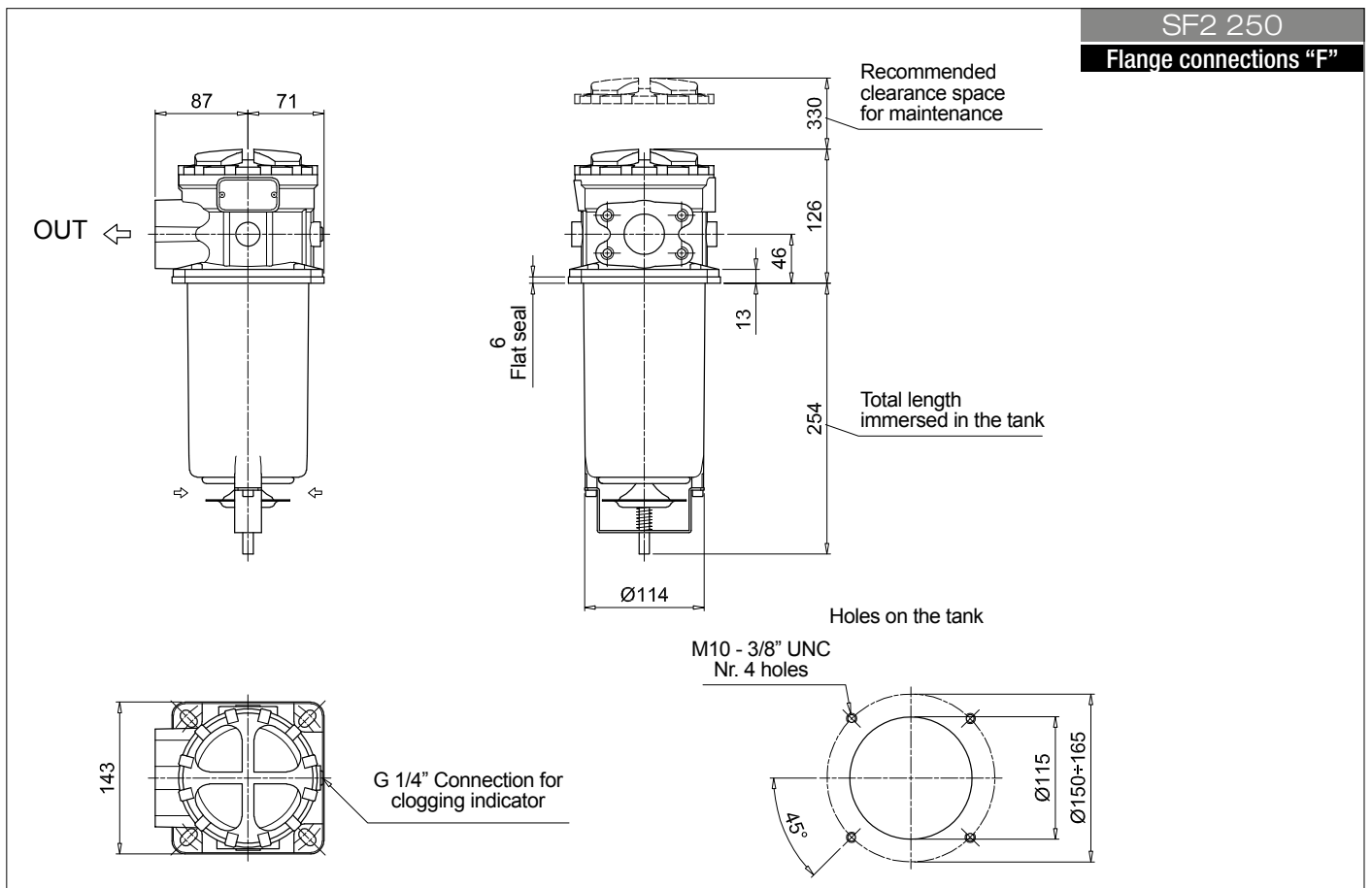
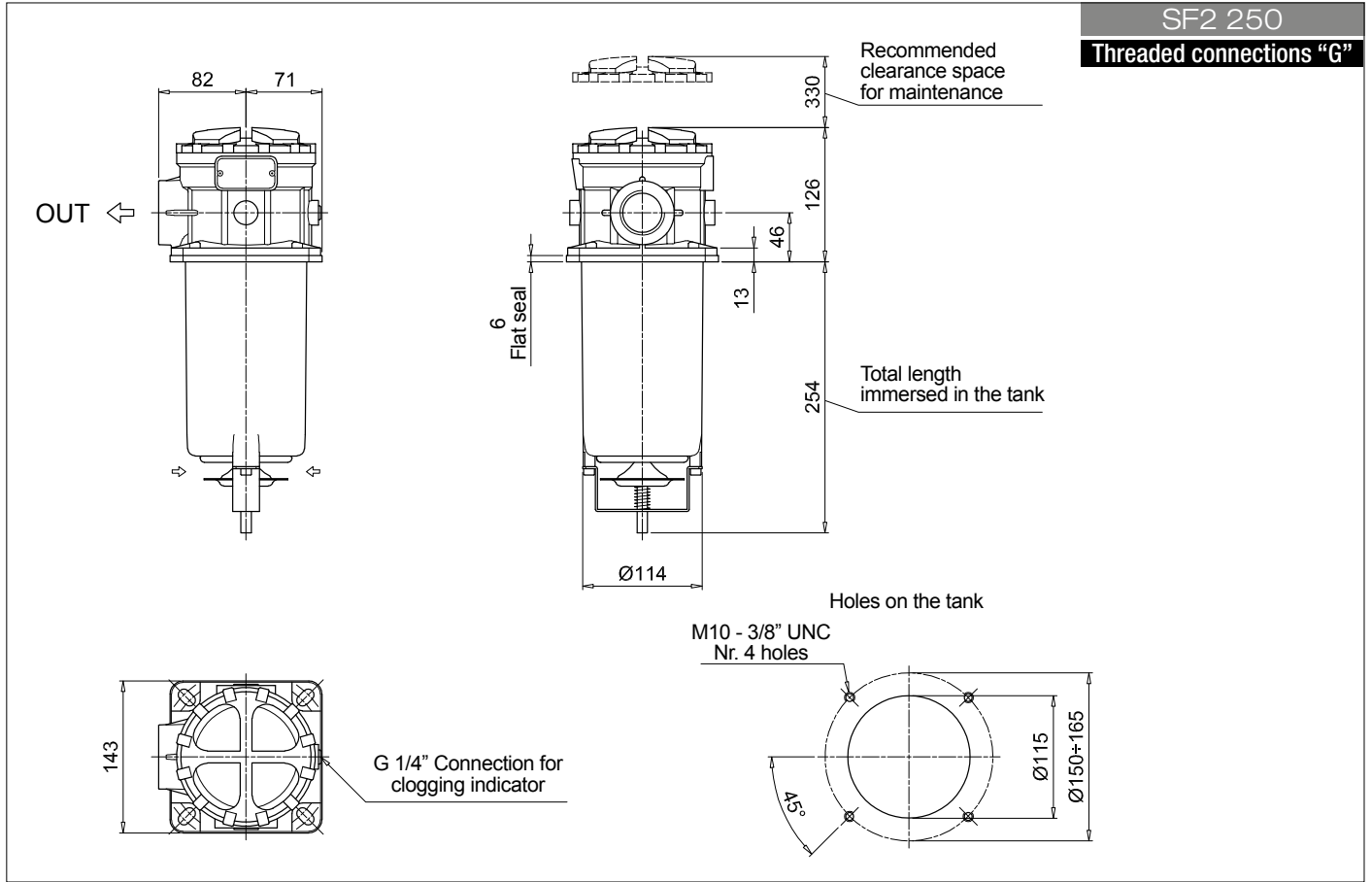
Execution	
<b>P01</b>	MP Filtri standard
<b>Pxx</b>	Customized

### CLOGGING INDICATORS

See page 709

<b>VEA</b> Electrical vacuum indicator	<b>VVA</b> Axial vacuum gauge
<b>VLA</b> Electrical / visual vacuum indicator	<b>VVR</b> Radial vacuum gauge

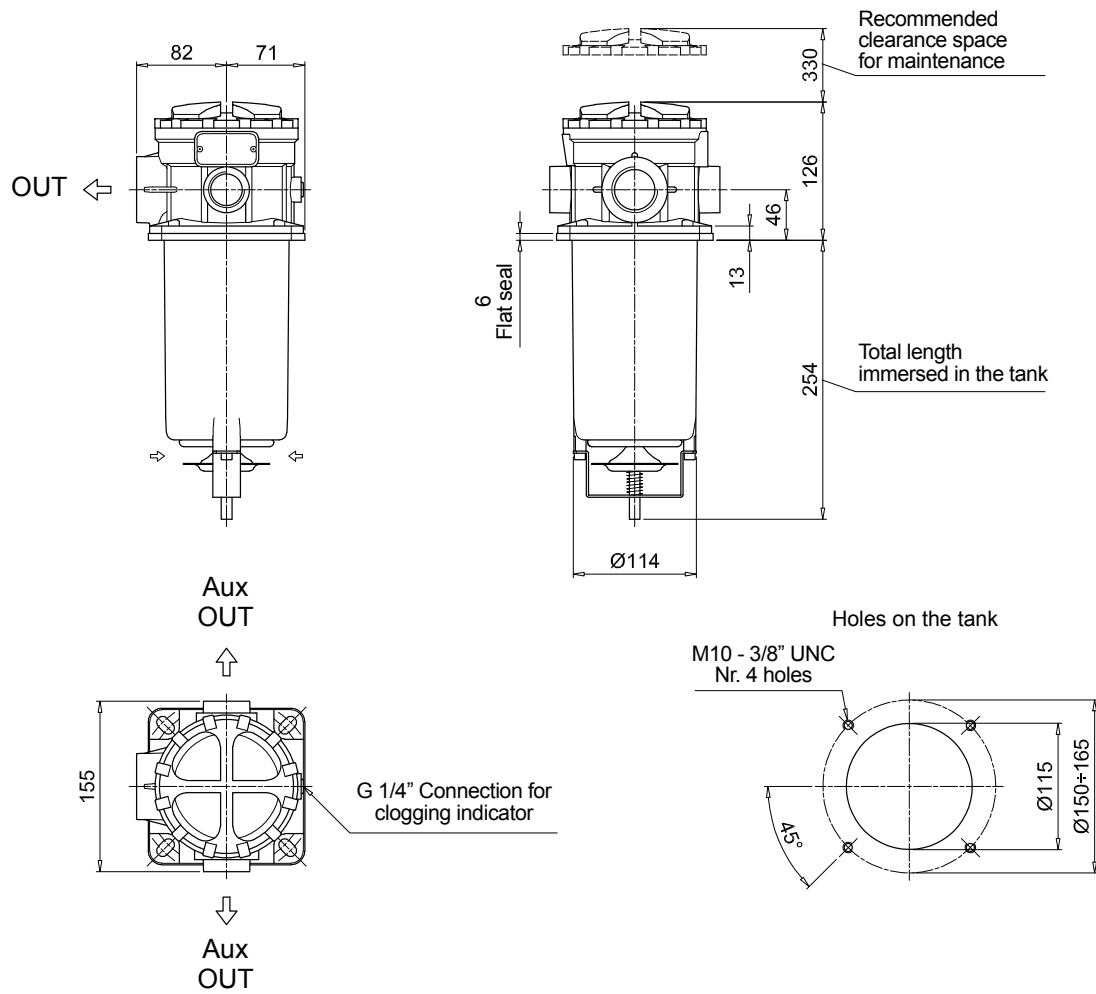




# SF2 250-350

## Dimensions

SF2 350

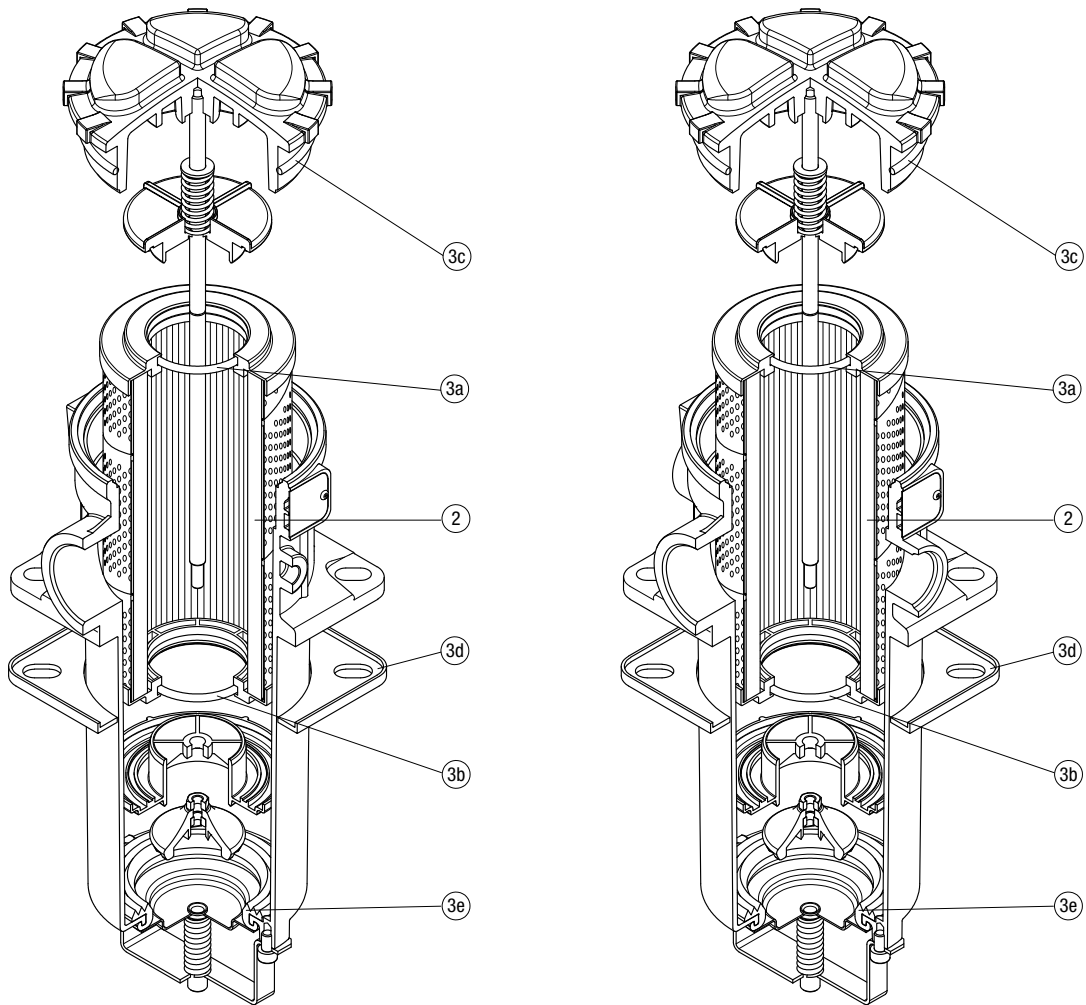


# SPARE PARTS SF2 250-350

Order number for spare parts

SF2 250

SF2 350



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



# SF2 500 series

Flow rate up to 700 l/min



# SF2 500 GENERAL INFORMATION

## Description

## Technical data

### Suction filters

#### Flow rate up to 700 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 700 l/min
- Optional hose fitting installed, to connect the suction line without the use of flanges
- Magnetic filter, 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

### 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 63 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

# GENERAL INFORMATION SF2 500

## FILTER ASSEMBLY SIZING Flow rates [l/min]

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

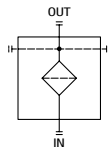
### Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

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.

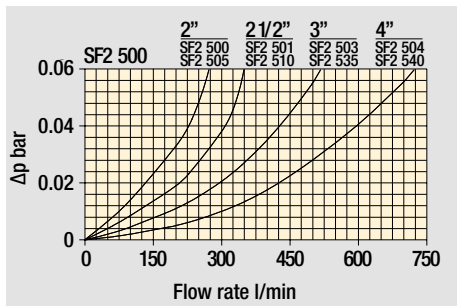
Filter series	
SF2 500	•



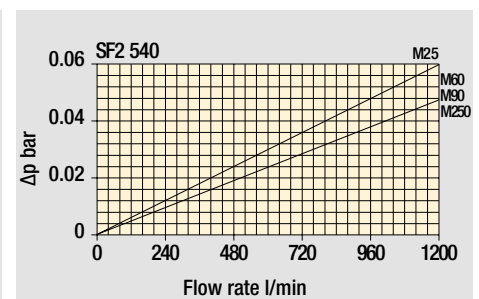
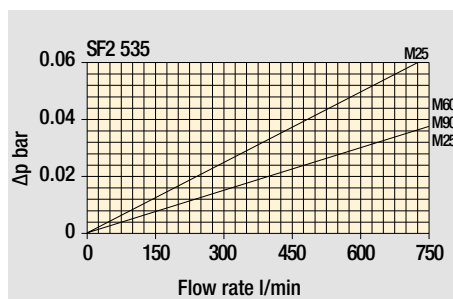
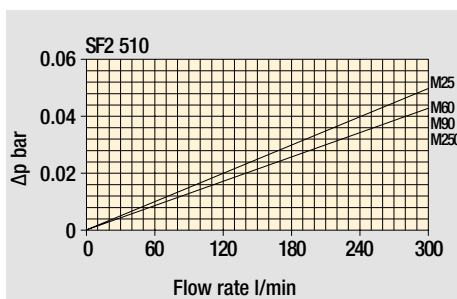
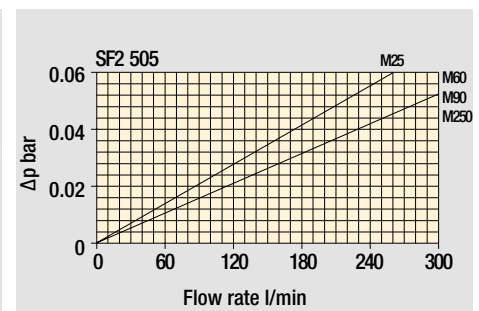
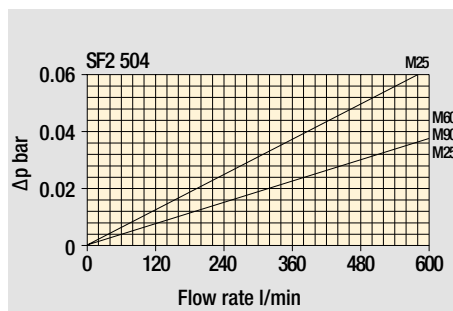
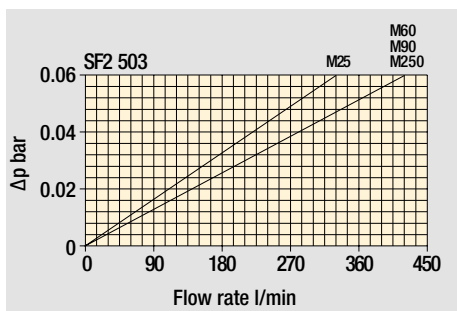
## Hydraulic symbols

### 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:	SF2500	W	F1	D	M25	P01
<b>SF2500</b>					Configuration example 2:	SF2535	A	F2	C	M60	P01
<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>											
<b>A</b> NBR											
<b>V</b> FPM											
<b>W</b> NBR											
<b>Z</b> FPM											
<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 handwheel		•		•		•		•		
<b>C</b>	With microswitch, without handwheel		-		-		•		•		
<b>D</b>	With microswitch, with polyamide handwheel		•		•		-		-		
<b>K</b>	With microswitch, with steel handwheel		•		•		-		-		
<b>M</b>	Without microswitch, with polyamide handwheel		•		•		-		-		
<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

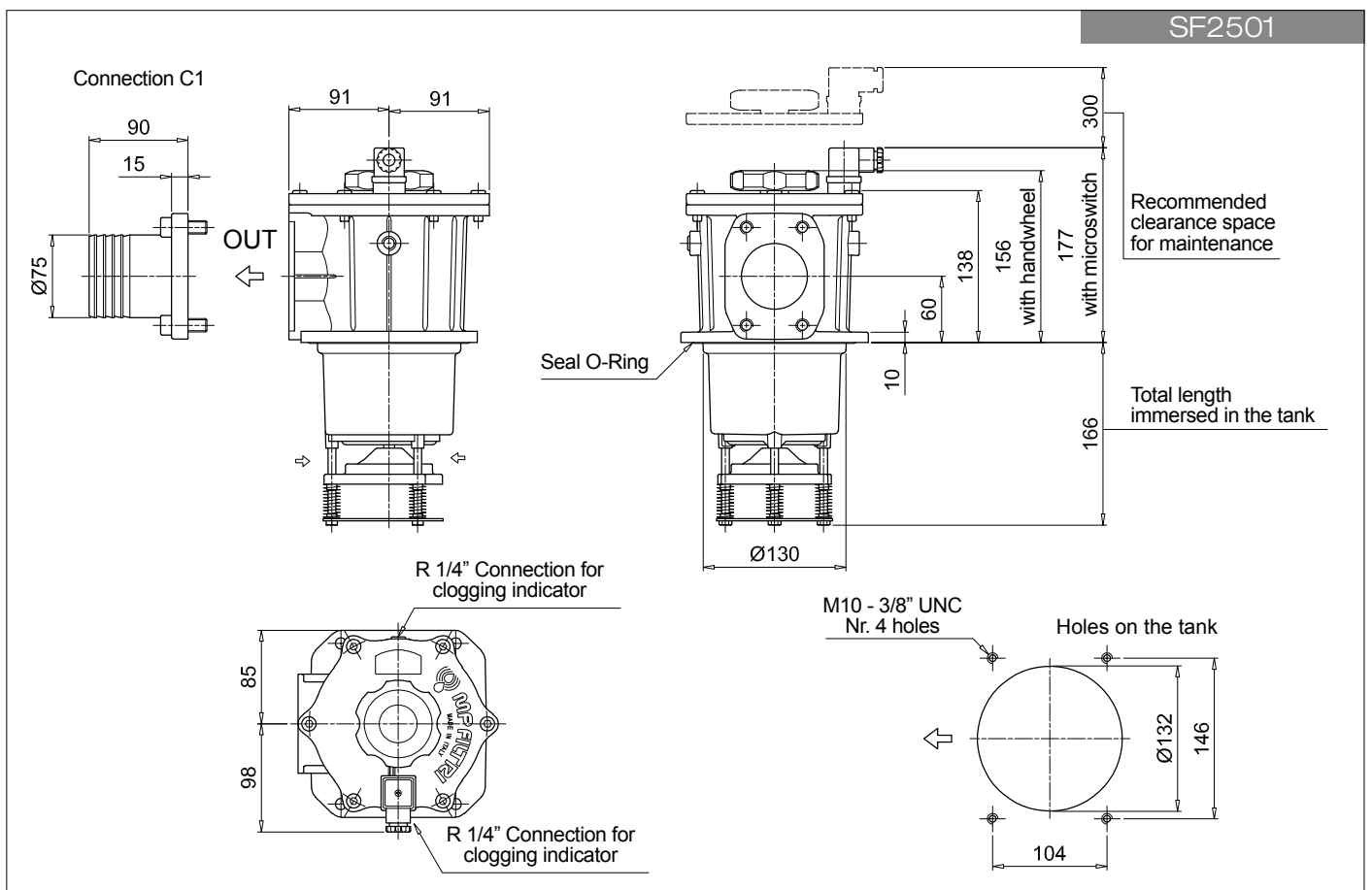
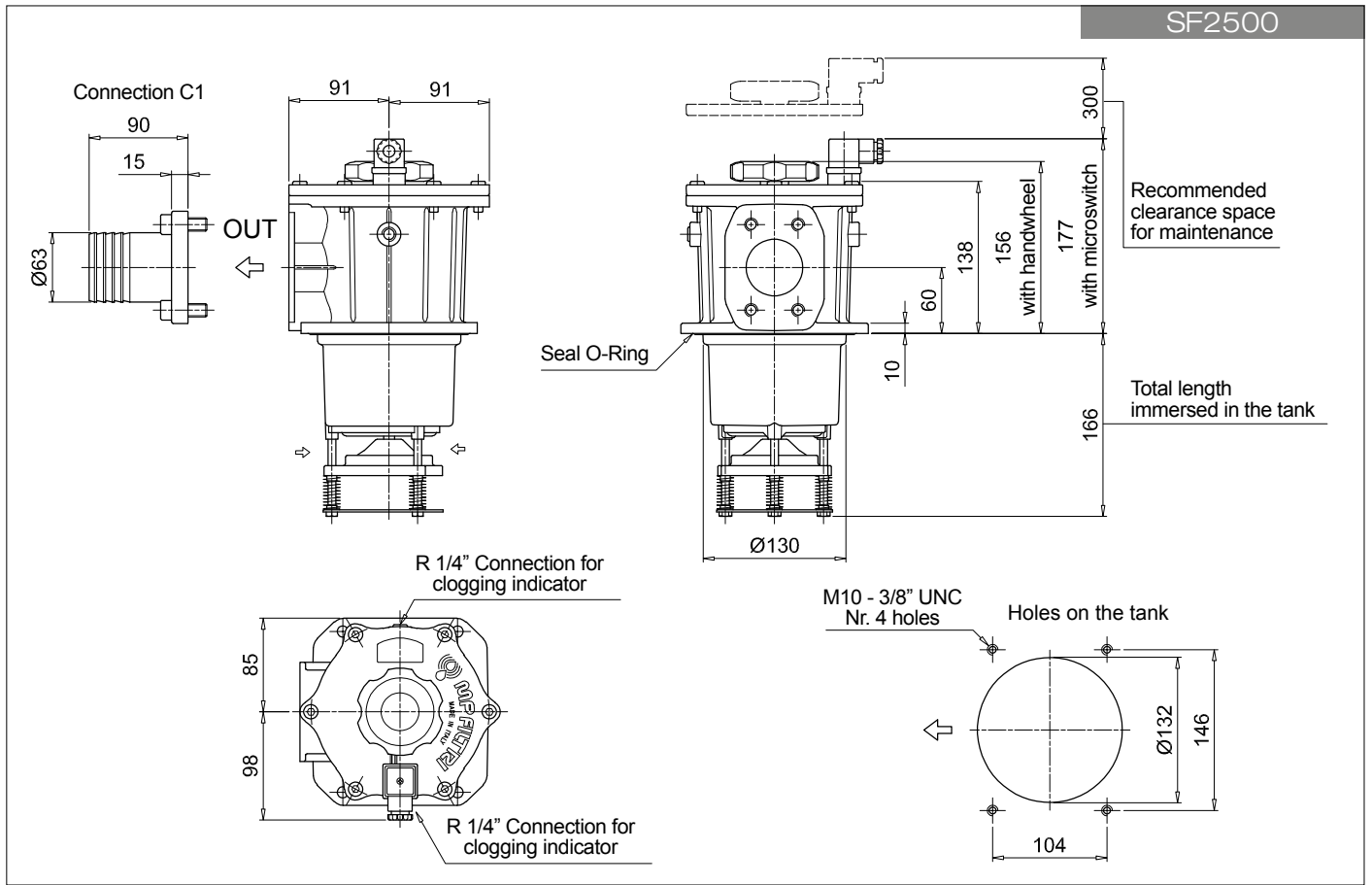
<b>Element series and size</b>									Configuration example 1:	SF510	M25	W	P01
	SF2500	SF2501	SF2503	SF2504	SF2505	SF2510	SF2535	SF2540	Configuration example 2:	SF535	M60		P01
<b>SF503</b>	-	-	•	-	-	-	-	-					
<b>SF504</b>	-	-	-	•	-	-	-	-					
<b>SF505</b>	-	-	-	-	•	-	-	-					
<b>SF510</b>	•	•	-	-	-	•	-	-					
<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>													
- Standard version													
<b>W</b> Compatible with fluids HFA-HFB-HFC													
<b>Execution</b>													
<b>P01</b> MP Filtri standard													
<b>Pxx</b> Customized													

### CLOGGING INDICATORS

See page 709

<b>VEA</b> Electrical vacuum indicator	<b>VVA</b> Axial vacuum gauge
<b>VLA</b> Electrical / visual vacuum indicator	<b>VVR</b> Radial vacuum gauge

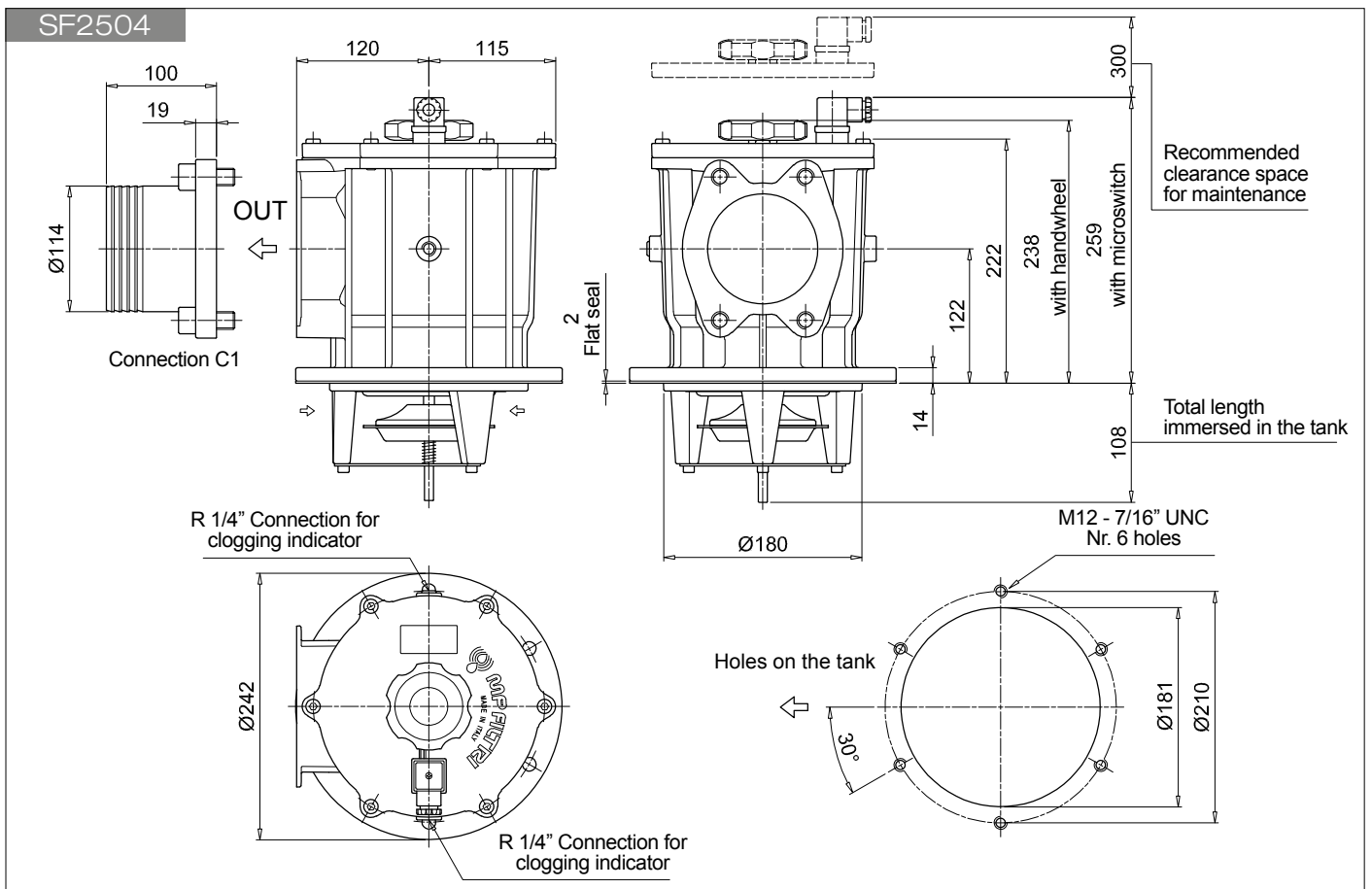
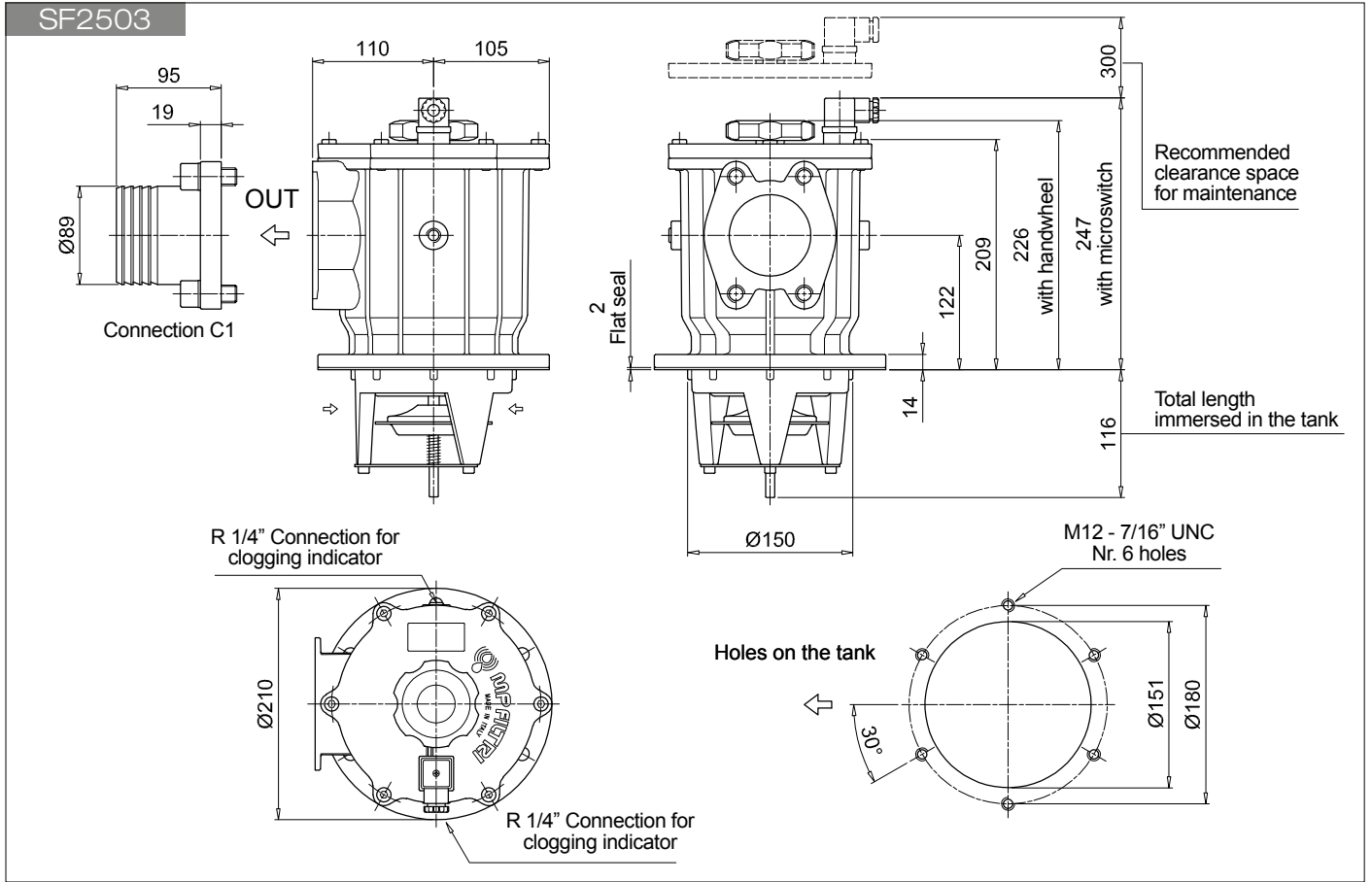




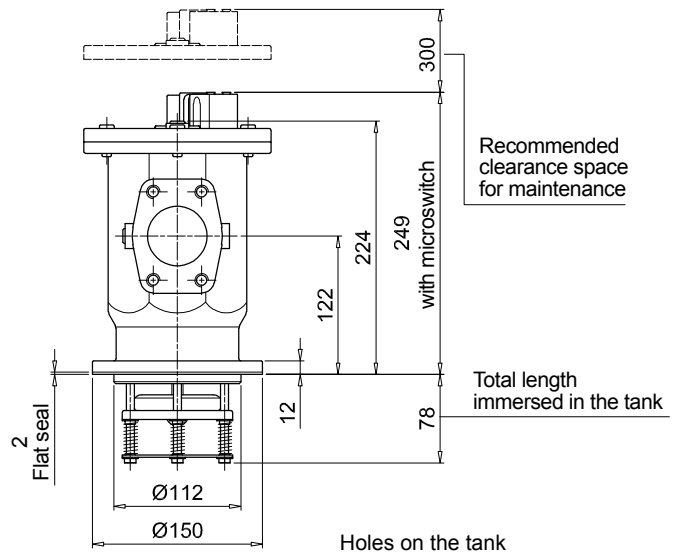
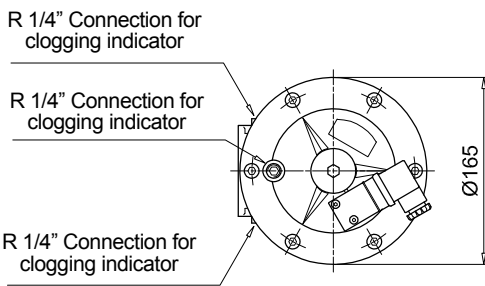
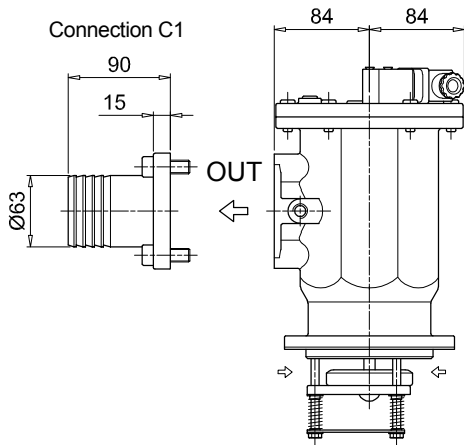
# SF2 500

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

## Dimensions

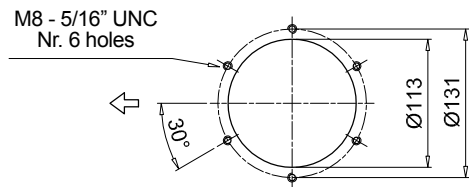


SF2505

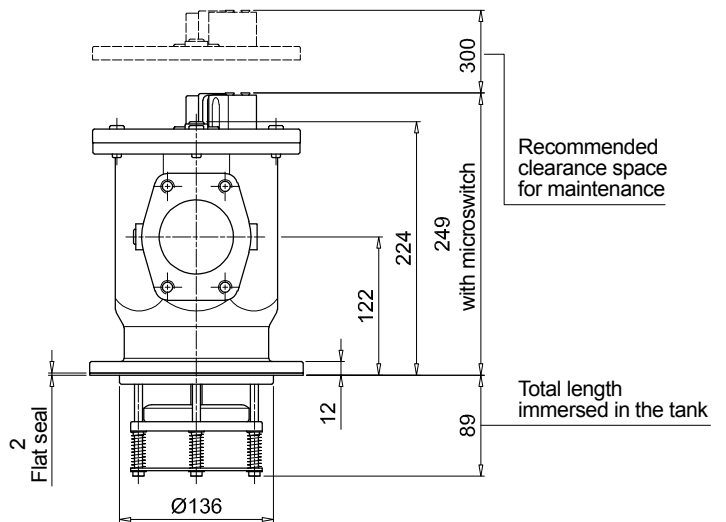
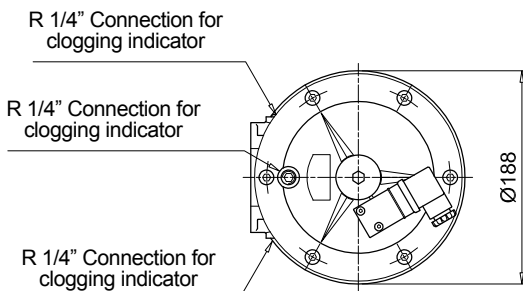
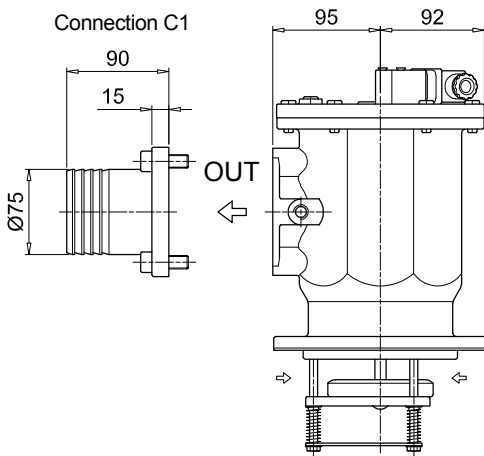


Recommended clearance space for maintenance

Total length immersed in the tank

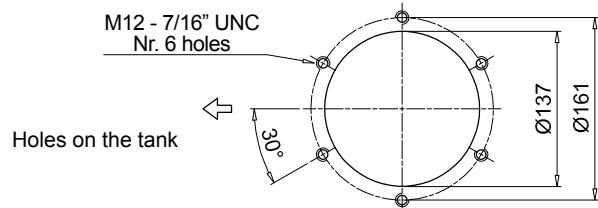


SF2510



Recommended clearance space for maintenance

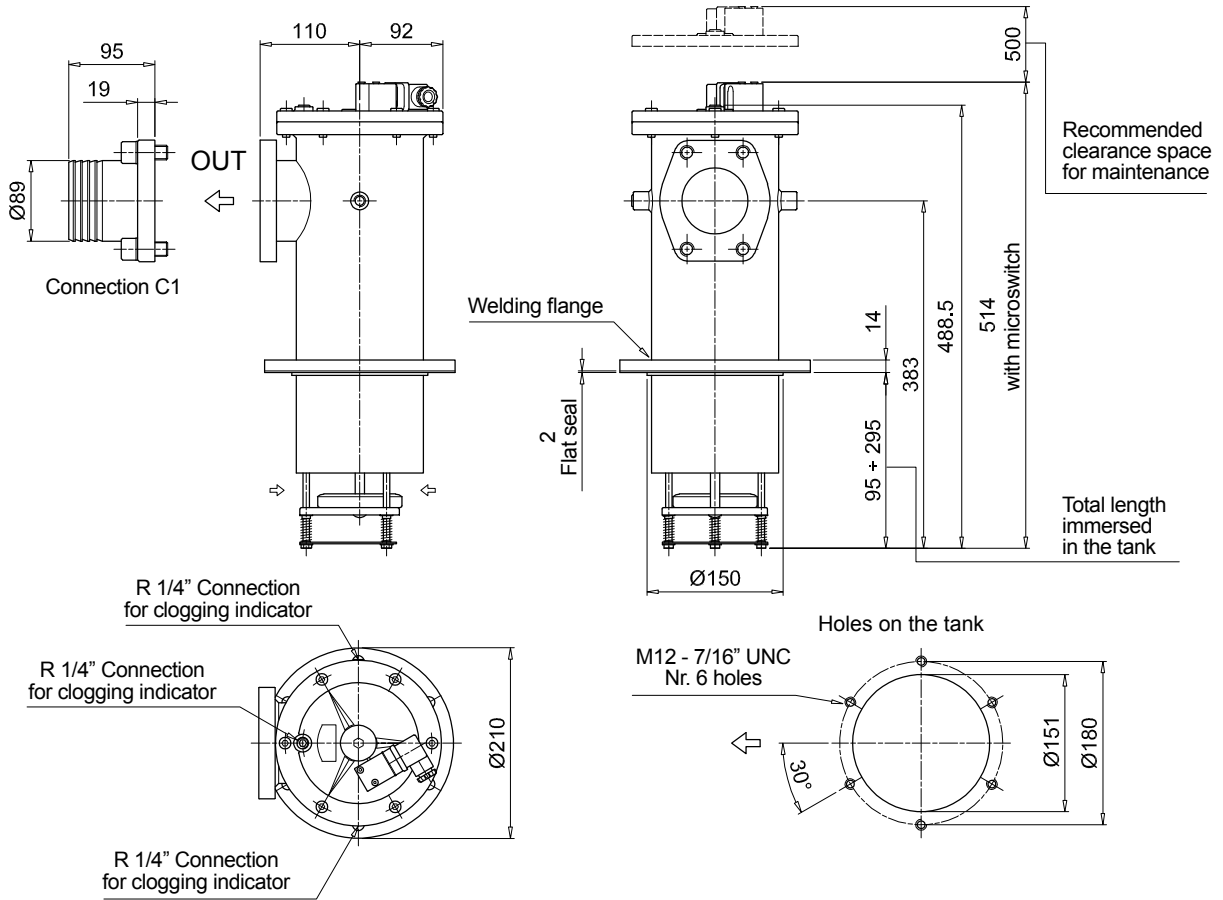
Total length immersed in the tank



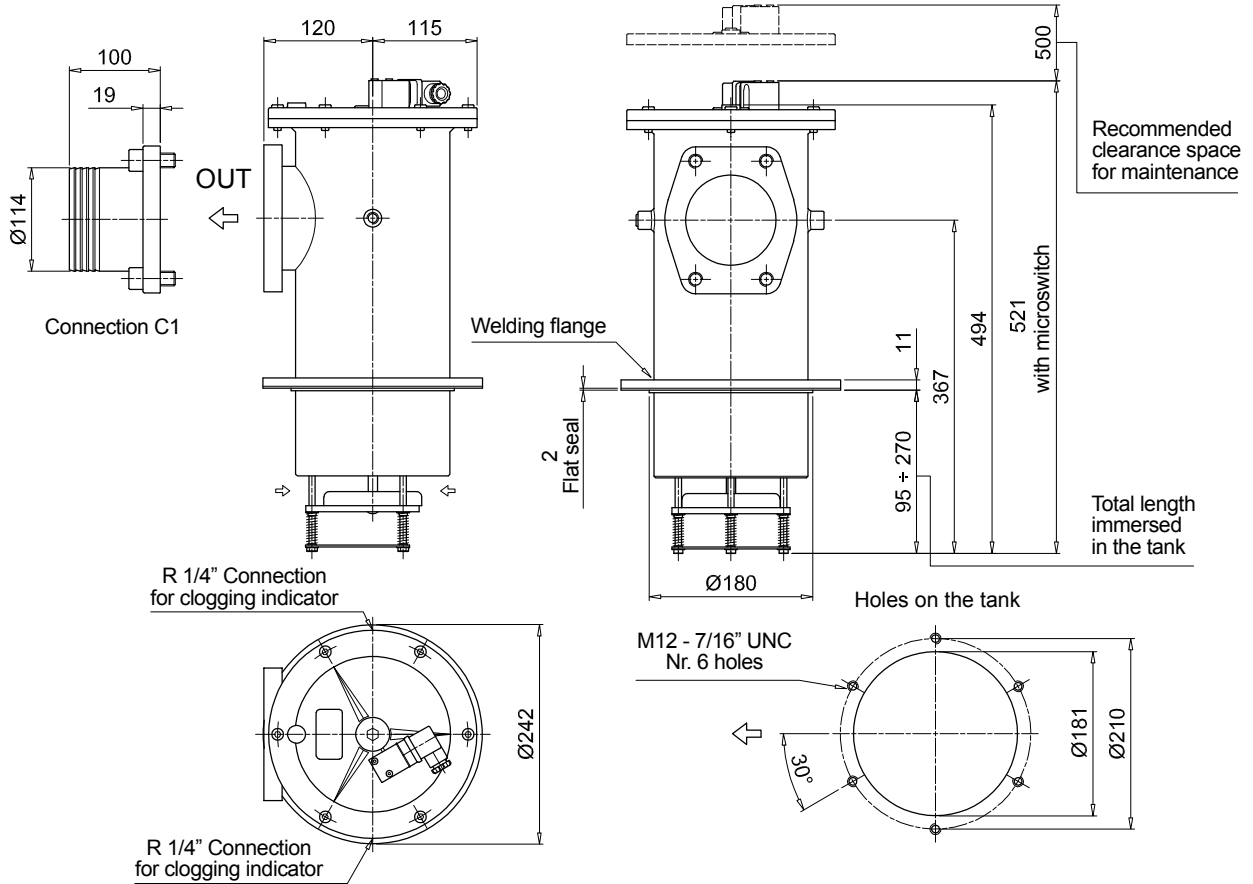
Holes on the tank

## Dimensions

### SF2535



SF2540

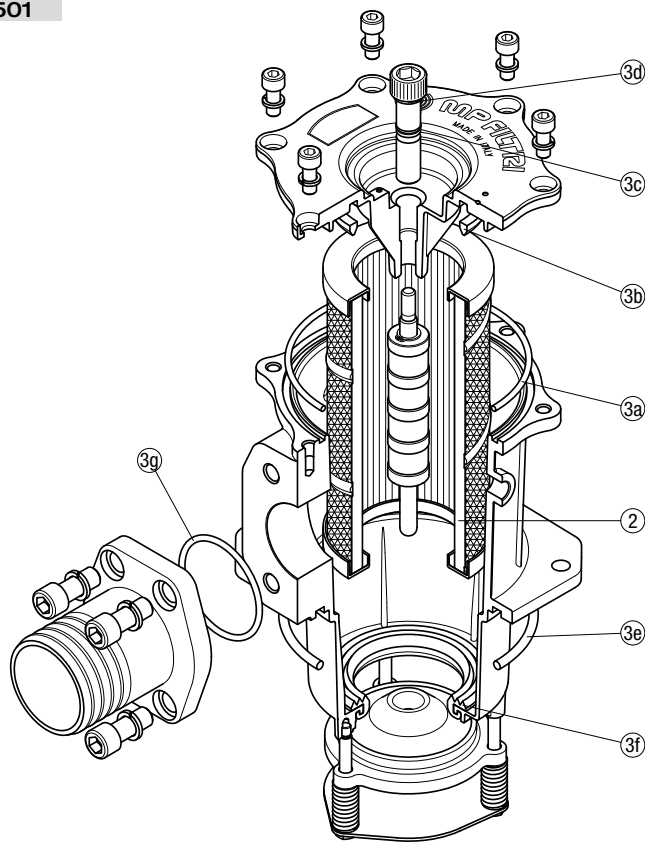


# SF2 500 SPARE PARTS

Order number for spare parts

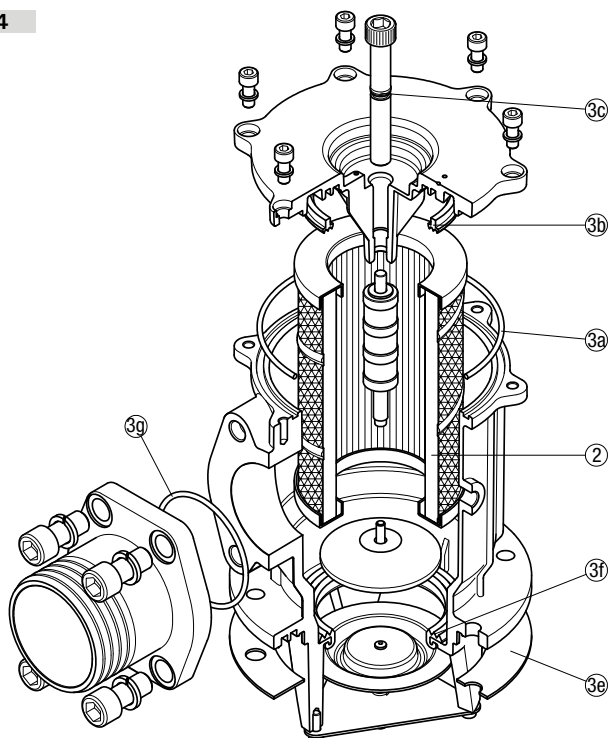
SF2 500

SF2 501



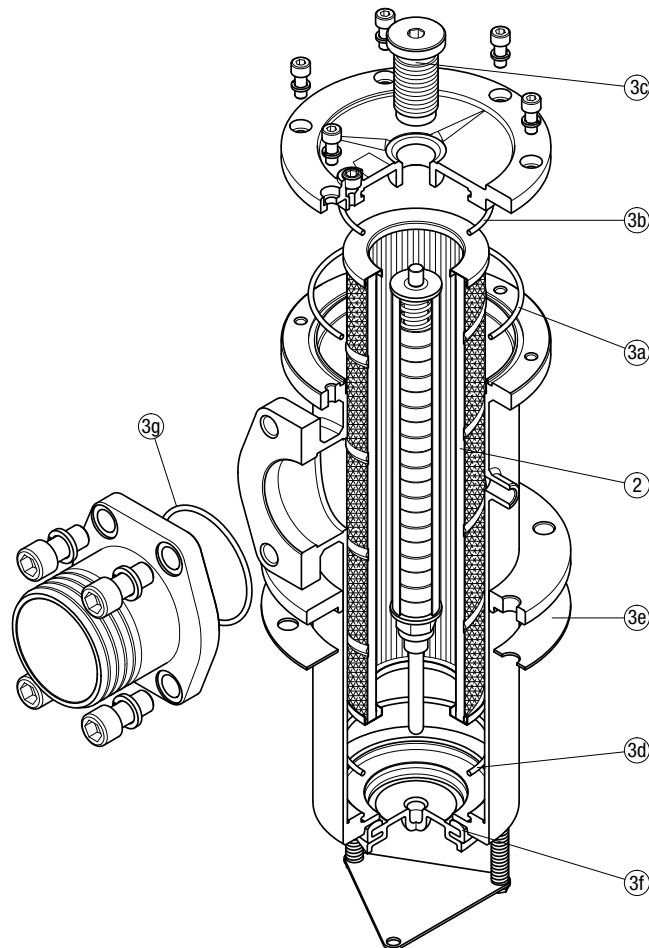
SF2 503

SF2 504



Item:	Q.ty: 1 pc.	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
- SF2 510
- SF2 535
- SF2 540



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
SF2 505	See order table	02050043	02050044
SF2 510		02050045	02050046
SF2 535		02050051	02050052
SF2 540		02050053	02050054

**Return filters are used as process and safety filters to protect pumps and hydraulic circuits from contamination as per ISO 4406.**

**They are available in 8 styles:**

- **MPFX-MPF tank top semi-immersed filter with external / internal oil flow; standard filter element disassembly**
- **MPLX tank top semi-immersed filter completely interchangeable with Pall 8420 & 8520, with external / internal oil flow; easy filter element disassembly**
- **MPTX-MPT tank top semi-immersed filter with external / internal oil flow; easy filter element disassembly without any specific tool**
- **MFBX-MFB element and bowl assembly with optional cover and hold-down spring for dirtbox or molded tank applications**
- **MPH tank top semi-immersed filter with internal / external oil flow, therefore keeping the dirt inside the bowl and not on the filter element; standard filter element disassembly, magnetic filter as option**
- **MPI semi-immersed filter element specifically designed to be mounted directly on the oil tank; magnetic filter as option**
- **FRI, the oldest tank top semi-immersed return filter manufactured by MP FILTRI, with external / internal oil flow; available in the single or duplex versions with outlet connection, it can be used also as in-line filter**
- **RF2 semi-immersed filter with shut-off valve for side tank mounting, with external / internal oil flow; easy filter element disassembly without any specific tool.**

## FILTER SIZING

For the proper corrective factor Y see chapter at page 23 - 24



# Return filters



RFEX ELIXIR®	page 72	MDH	page 199
MPFX	82	MPH	207
MPLX	110	MPI	231
MPTX	118	FRI	243
MFBX	136	RF2	259
MPF	145	ACCESSORIES	266
MPT	173		
MFB	191	INDICATORS	710



THE **X** CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

RFEX series

with **MYCLEAN** FEX Filter Element



- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as RFEX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

# RFEX series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 260 l/min

 ELIXIR®

## Description

## Technical data

### Return filter

**Maximum working pressure up to 1.6 MPa (16 bar)**  
**Flow rate up to 260 l/min**

RFEX is a range of return filters for protection of the reservoir against the system contamination. They are mounted in line to limit aeration or foam generation into the reservoir.

#### Available features:

- Female threaded connections up to 1 1/4" and flanged connections up to 1 5/8", for a maximum flow rate of 260 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical, axial and radial pressure gauges
- MYclean interface connection for the filter element, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

#### Common applications:

- Light Industrial equipment
- Mobile application

### Filter housing materials

- Head: Aluminium
- Bypass valve: Polyamide - Steel
- Bowl: Polyamide

### Bypass valve

Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$

### $\Delta p$ element type

- Microfibre filter elements - series N: 8 bar
- Fluid flow through the filter element from OUT to IN

### Seals

Standard NBR series A

### Temperature

From -25 °C to +110 °C

### Note

RFEX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>RFEX 060</b>	1.00	0.60
<b>RFEX 080</b>	1.15	0.80
<b>RFEX 110</b>	1.90	1.60
<b>RFEX 160</b>	2.10	2.00

## Hydraulic symbols

Filter series	Style S	Style B
<b>RFEX 060</b>	•	•
<b>RFEX 080</b>	•	•
<b>RFEX 110</b>	•	•
<b>RFEX 160</b>	•	•

### Filter element design - N Series

Filter series	A10	A16	A25	M60	M90	P10	P25
<b>RFX 060</b>	52	53	55	71	72	54	59
<b>RFX 080</b>	59	59	62	73	74	65	68

Connections of filter under test G 3/4"

Filter series	A10	A16	A25	M60	M90	P10	P25
<b>RFX 060</b>	60	61	64	87	89	62	77
<b>RFX 080</b>	69	70	75	91	92	79	93

Connections of filter under test G 1"

Filter series	A10	A16	A25	M60	M90	P10	P25
<b>RFX 110</b>	141	153	172	250	252	186	196
<b>RFX 160</b>	166	168	191	255	256	207	215

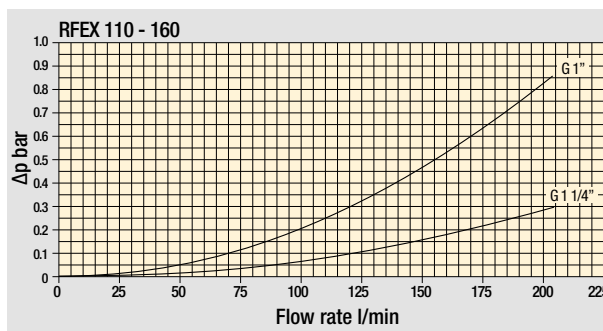
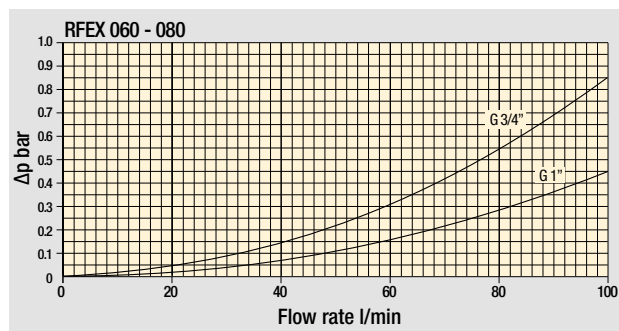
Connections of filter under test G 1 1/4"

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ 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>.

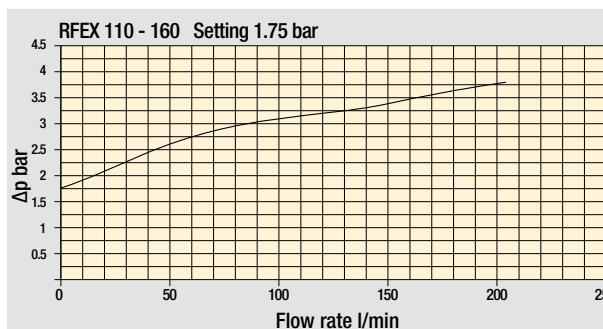
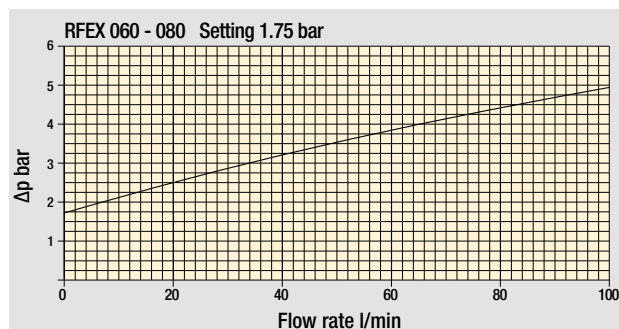
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

Please, contact our Sales Department for further additional information.



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.

# RFEX RFEX060 - RFEX080

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>RFEX060</b>							<b>B</b>	<b>A</b>	<b>A</b>	<b>6</b>	<b>A10</b>	<b>N</b>	<b>P01</b>
<b>RFEX060</b> Filter featuring  Filter Element														
<b>RFEX080</b> Filter featuring  Filter Element														
<b>Bypass valve</b>														
<b>S</b> Without bypass														
<b>B</b> 1.75 bar														
<b>Seals and treatments</b>														
<b>A</b> NBR														
<b>Connections</b>														
<b>A</b> G 3/4"														
<b>B</b> G 1"														
<b>C</b> 3/4" NPT														
<b>D</b> 1" NPT														
<b>E</b> SAE 12 - 1 1/16" - 12 UN														
<b>F</b> SAE 16 - 1 5/16" - 12 UN														
<b>Connection for clogging indicator</b>														
<b>6</b> With plugged connections														
<b>Filtration rating</b>														
<b>A10</b> Inorganic microfiber 10 µm	<b>P10</b> Resin impregnated paper 10 µm													
<b>A16</b> Inorganic microfiber 16 µm	<b>P25</b> Resin impregnated paper 25 µm													
<b>A25</b> Inorganic microfiber 25 µm														
<b>M60</b> Wire mesh 60 µm														
<b>M90</b> Wire mesh 90 µm														
	<b>Element Δp</b>							<b>Execution</b>						
	<b>N</b> 8 bar							<b>P01</b> MP Filtri standard						
								<b>Pxx</b> Customized						

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example: <b>FEX060</b>							<b>A10</b>	<b>A</b>	<b>N</b>	<b>P01</b>
<b>FEX060</b> Filter Element with  feature											
<b>FEX080</b> Filter Element with  feature											
<b>Filtration rating</b>											
<b>A10</b> Inorganic microfiber 10 µm	<b>P10</b> Resin impregnated paper 10 µm										
<b>A16</b> Inorganic microfiber 16 µm	<b>P25</b> Resin impregnated paper 25 µm										
<b>A25</b> Inorganic microfiber 25 µm											
<b>M60</b> Wire mesh 60 µm											
<b>M90</b> Wire mesh 90 µm											
<b>Seals and treatments</b>											
<b>A</b> NBR											
	<b>Element Δp</b>							<b>Execution</b>			
	<b>N</b> 8 bar							<b>P01</b> MP Filtri standard			
								<b>Pxx</b> Customized			

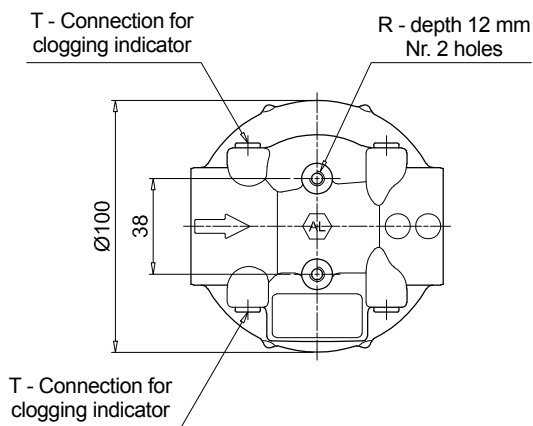
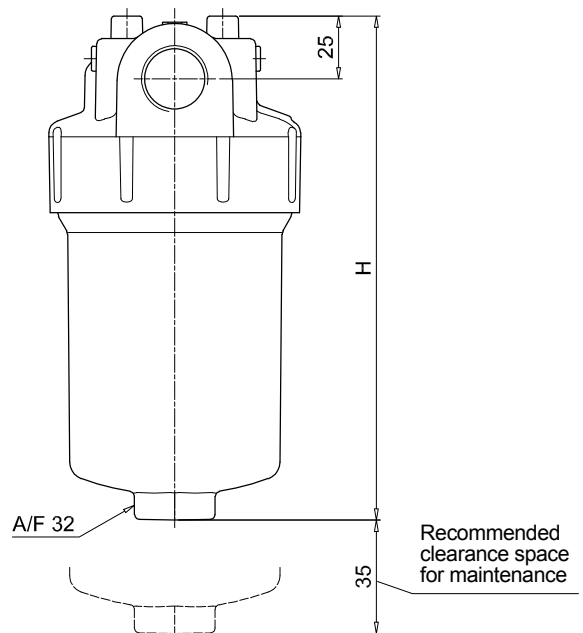
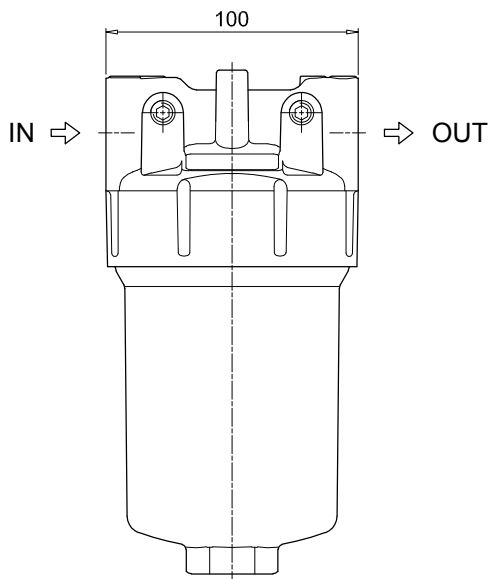
### CLOGGING INDICATORS

See page 710-711

<b>BEA</b> Electrical pressure indicator	<b>BVA</b> Axial pressure gauge
<b>BEM</b> Electrical pressure indicator	<b>BVR</b> Radial pressure gauge
<b>BLA</b> Electrical / visual pressure indicator	<b>BVP</b> Visual pressure indicator with automatic reset
	<b>BVQ</b> Visual pressure indicator with manual reset

Filter size	H [mm]
<b>060</b>	202
<b>080</b>	265

Connections	T	R
<b>A</b>	G 1/8"	M6
<b>B</b>	G 1/8"	M6
<b>C</b>	1/8" NPT	1/4" UNC
<b>D</b>	1/8" NPT	1/4" UNC
<b>E</b>	1/8" NPT	1/4" UNC
<b>F</b>	1/8" NPT	1/4" UNC




# RFEX RFEX110 - RFEX160

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: RFEX110 **B** **A** **A** **6** **A10** **N** **P01**

**RFEX110** Filter featuring  Filter Element

**RFEX160** Filter featuring  Filter Element

#### Bypass valve

**S** Without bypass

**B** 1.75 bar

#### Seals and treatments

**A** NBR

#### Connections

**A** G 1"

**B** G 1 1/4"

**C** 1" NPT

**D** 1 1/4" NPT

**E** SAE 16 - 1 5/16" - 12 UN

**F** SAE 20 - 1 5/8" - 12 UN

#### Connection for clogging indicator

**6** With plugged connections

#### Filtration rating

**A10** Inorganic microfiber 10 µm

**A16** Inorganic microfiber 16 µm

**A25** Inorganic microfiber 25 µm

**M60** Wire mesh 60 µm

**M90** Wire mesh 90 µm

**P10** Resin impregnated paper 10 µm

**P25** Resin impregnated paper 25 µm

#### Element Δp

**N** 8 bar

#### Execution


**P01** MP Filtri standard


**Pxx** Customized

### FILTER ELEMENT

#### Element series and size

Configuration example: FEX110 **A10** **A** **N** **P01**

**FEX110** Filter Element with  feature

**FEX160** Filter Element with  feature

#### Filtration rating

**A10** Inorganic microfiber 10 µm

**A16** Inorganic microfiber 16 µm

**A25** Inorganic microfiber 25 µm

**M60** Wire mesh 60 µm

**M90** Wire mesh 90 µm

**P10** Resin impregnated paper 10 µm

**P25** Resin impregnated paper 25 µm

#### Seals and treatments

**A** NBR

#### Element Δp

**N** 8 bar

#### Execution

**P01** MP Filtri standard

**Pxx** Customized

### CLOGGING INDICATORS

See page 710-711

**BEA** Electrical pressure indicator

**BEM** Electrical pressure indicator

**BLA** Electrical / visual pressure indicator

**BVA** Axial pressure gauge

**BVR** Radial pressure gauge

**BVP** Visual pressure indicator with automatic reset

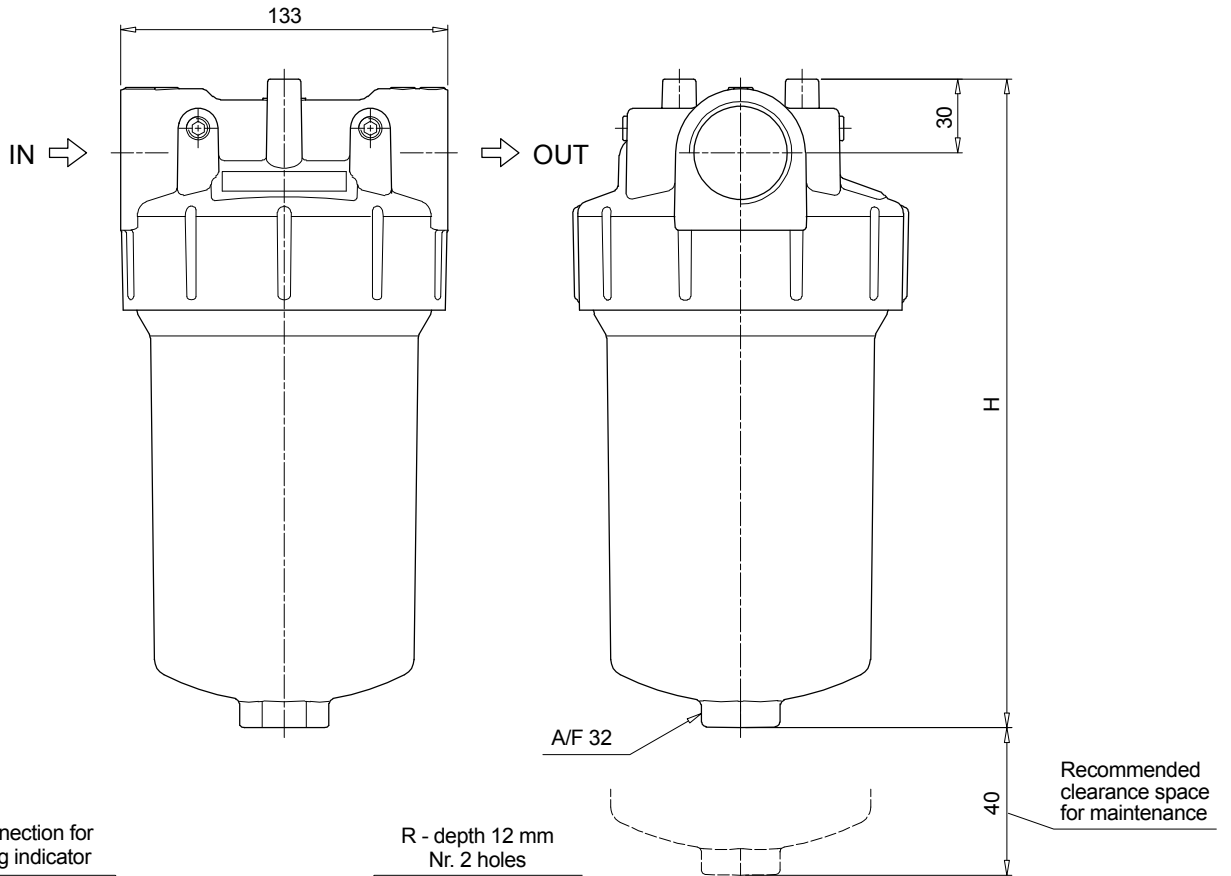
**BVQ** Visual pressure indicator with manual reset



Filter size	H [mm]	
<b>110</b>	266	
<b>160</b>	315	

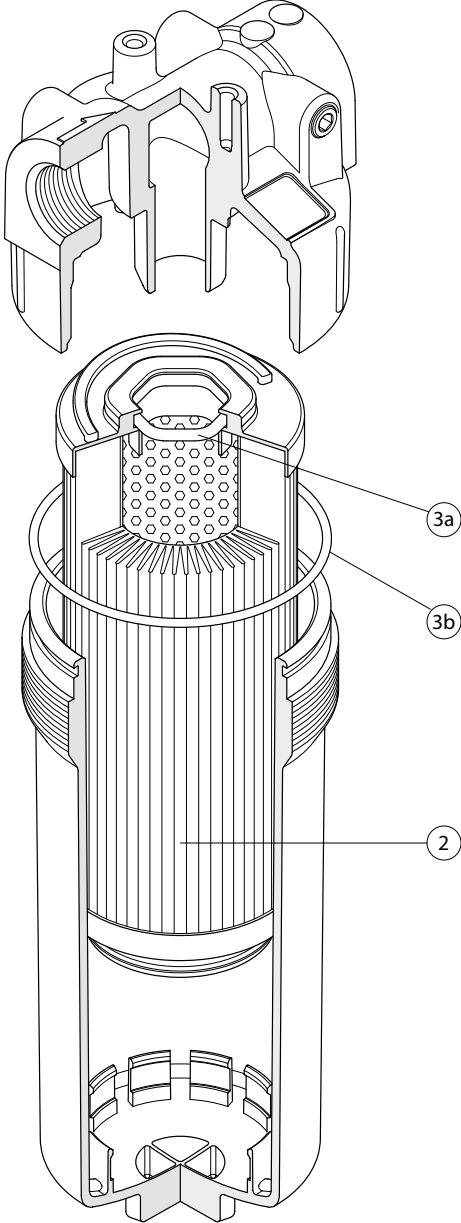
  

Connections	T	R
<b>A</b>	G 1/8"	M8
<b>B</b>	G 1/8"	M8
<b>C</b>	1/8" NPT	5/16" UNC
<b>D</b>	1/8" NPT	5/16" UNC
<b>E</b>	1/8" NPT	5/16" UNC
<b>F</b>	1/8" NPT	5/16" UNC



# RFEX SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.
	<b>2</b>	<b>3</b> (3a ÷ 3b)
Filter series	Filter element	Seal Kit code number NBR
<b>RFEX 060-080</b>	See order table	02050771
<b>RFEX 110-160</b>		02050772





THE **X** CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

MPFX series

with **MYCLEAN** MFX Filter Element



- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as MPFX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1



TOGETHER WITH **MYCLEAN**, AS OPTION, MPFX SERIES CAN BE PROVIDED WITH

**zerospark**<sup>®</sup>  
THE ANTI-STATIC FILTERS

THE **Z** CONCEPT FOR OUR FILTERS



Zerospark<sup>®</sup> is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

# MPFX series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 900 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 800 kPa (8 bar)**

**Flow rate up to 900 l/min**

MPFX is a range of return filters for protection of the reservoir against the system contamination.

They are directly fixed to the reservoir, in immersed or semi-immersed position.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

### Available features:

- Female threaded connections up to 2" and flanged connections up to 2", for a maximum flow rate of 900 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic clogging indicators
- MYclean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

### Common applications:

- Light Industrial equipment
- Mobile application

### Filter housing materials

- Head: Aluminium

- Cover

Polyamide: MPFX 030-100-104-110

Aluminium: MPFX 181-182-184-191-192-194-400-410-450-451-750

- Bowl: Polyamide

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$

- Opening pressure 300 kPa (3 bar)  $\pm 10\%$

### $\Delta p$ element type

- Microfiber filter elements - series H: 10 bar

- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A

- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPFX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>MPFX 030</b>		0.40	-	-	-		0.29	-	-	-
<b>MPFX 100</b>		0.61	0.64	0.67	0.74		0.64	0.85	1.20	1.65
<b>MPFX 104</b>		0.82	0.96	1.02	1.25		0.64	0.85	1.20	1.65
<b>MPFX 110</b>		0.64	0.68	0.71	0.78		-	-	-	-
<b>MPFX 181</b>		2.20	3.00	-	-		2.50	4.00	-	-
<b>MPFX 182</b>		2.30	3.10	-	-		2.50	4.00	-	-
<b>MPFX 184</b>		2.55	3.45	-	-		2.65	4.45	-	-
<b>MPFX 191</b>		-	3.00	-	-		-	4.25	-	-
<b>MPFX 192</b>		-	3.10	-	-		-	4.25	-	-
<b>MPFX 194</b>		-	3.45	-	-		-	4.45	-	-
<b>MPFX 400</b>		3.35	3.65	3.90	-		3.70	4.60	5.40	-
<b>MPFX 410</b>		3.55	3.85	4.10	-		3.70	4.60	5.40	-
<b>MPFX 450-451</b>		3.95	4.25	4.50	-		3.70	4.60	5.40	-
<b>MPFX 750</b>		6.30	-	-	-		8.45	-	-	-

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPFX 030</b>	<b>1</b>	7	10	24	29	47	84	60	66
<b>MPFX 100-104-110</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289
<b>MPFX 181-182-184</b>	<b>1</b>	127	148	235	243	278	441	285	299
	<b>2</b>	231	262	358	382	388	472	404	412
<b>MPFX 191-192-194</b>	<b>2</b>	261	305	489	528	546	696	583	598
<b>MPFX 400</b>	<b>1</b>	150	171	294	304	350	585	370	390
	<b>2</b>	237	252	454	462	589	868	619	645
	<b>3</b>	248	288	553	609	621	885	680	703
<b>MPFX 410</b>	<b>1</b>	146	167	277	285	325	512	341	357
	<b>2</b>	226	239	396	402	485	644	503	519
	<b>3</b>	236	269	462	497	505	653	539	553
<b>MPFX 450-451</b>	<b>1</b>	150	171	294	304	350	585	370	390
	<b>2</b>	237	252	454	462	589	868	619	645
	<b>3</b>	248	288	553	609	621	885	680	703
<b>MPFX 750</b>	<b>1</b>	392	465	623	700	769	929	804	819

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

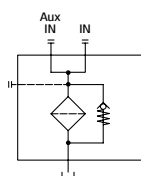
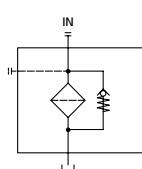
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

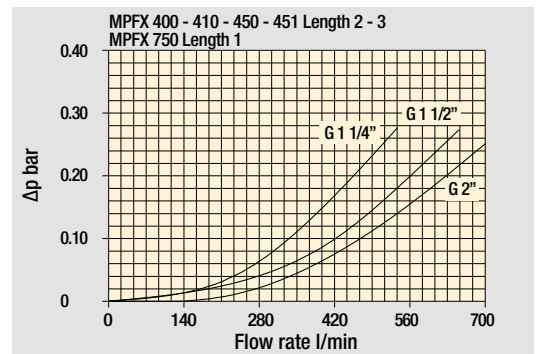
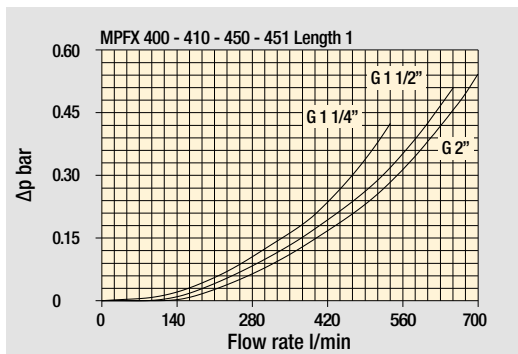
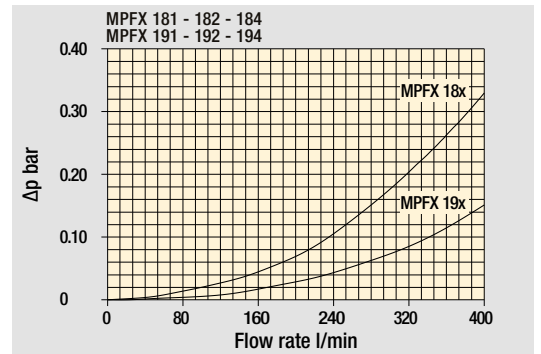
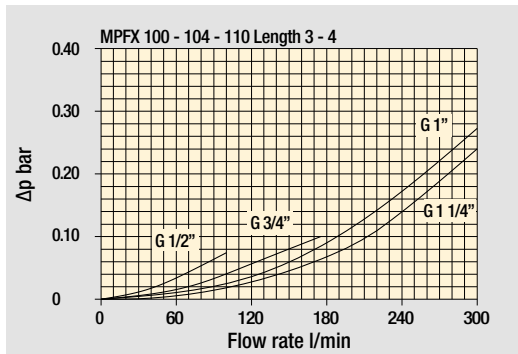
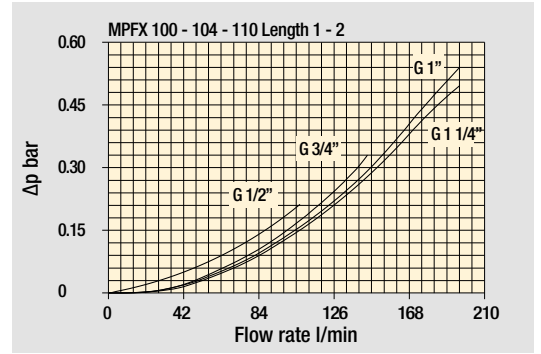
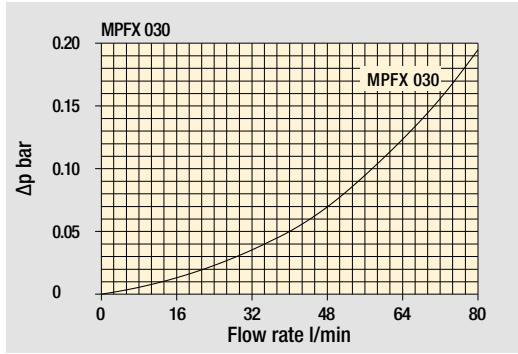
Filter series	Style 1 connection	Style 2 connections
<b>MPFX 030</b>	●	-
<b>MPFX 100</b>	●	-
<b>MPFX 104</b>	●	-
<b>MPFX 110</b>	-	●
<b>MPFX 181</b>	●	-
<b>MPFX 182</b>	-	●
<b>MPFX 184</b>	●	●
<b>MPFX 191</b>	●	-
<b>MPFX 192</b>	●	-
<b>MPFX 194</b>	●	●
<b>MPFX 400</b>	●	-
<b>MPFX 410</b>	-	●
<b>MPFX 450</b>	●	-
<b>MPFX 451</b>	-	●
<b>MPFX 750</b>	●	-



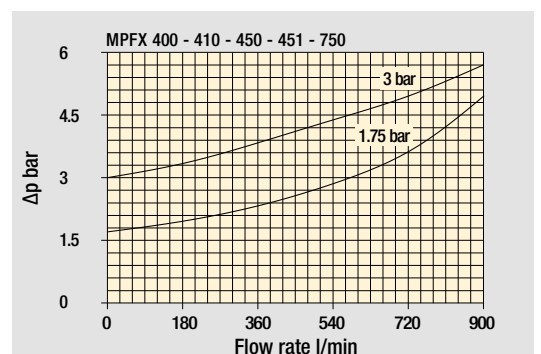
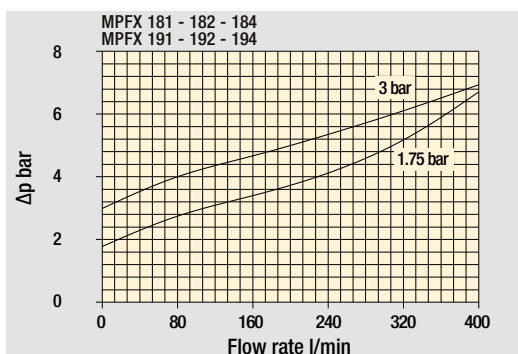
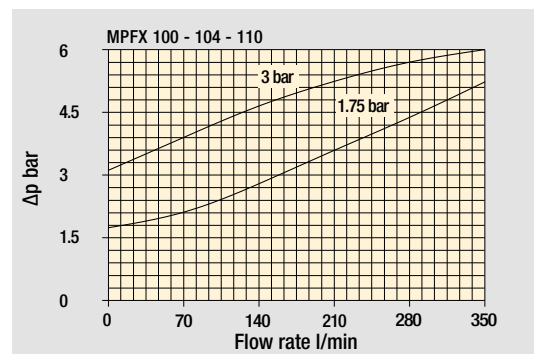
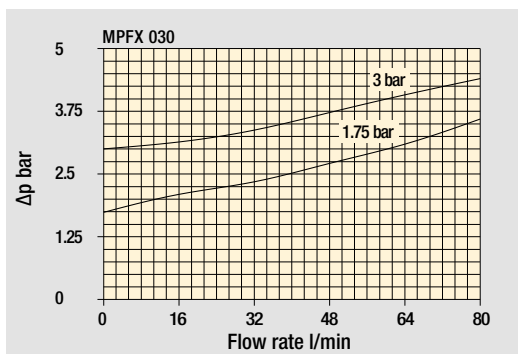
# MPFX GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



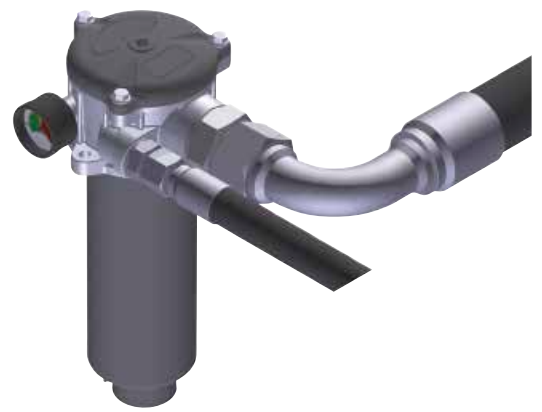
The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.



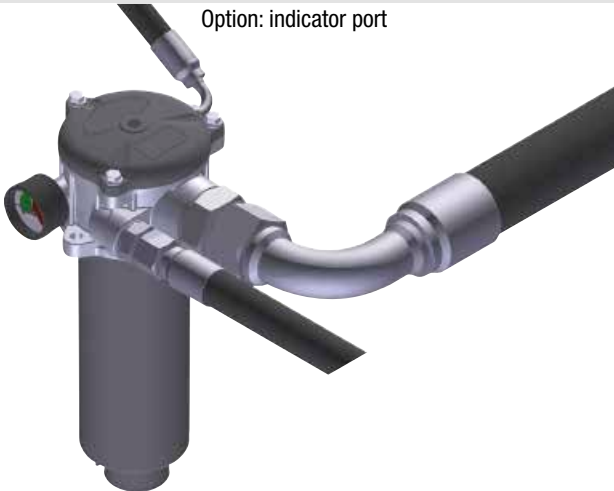
Standard - Single IN port



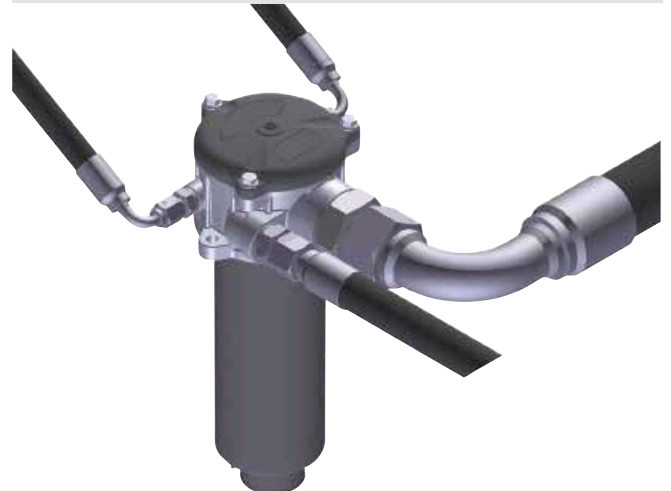
Double IN port  
Option: double indicator port



Double IN port - Drain port  
Option: indicator port



Double IN port - Double drain port



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	MPFX030	1	V	G1	M25	N	B	P01
<b>MPFX030</b> Filter featuring <b>MY CLEAN</b> Filter Element	Configuration example 2:	MPFX030	1	A	G4	A10	H	E	P01
<b>Length</b>									
<b>1</b>									
<b>Seals and treatments</b>									
<b>A</b> NBR									
<b>V</b> FPM									
<b>W</b> NBR head anodized									
<b>Z</b> FPM head anodized									
<b>Connections</b>									
<b>G1</b> G 1/2"									
<b>G4</b> 1/2" NPT									
<b>G7</b> SAE 8 - 3/4" - 16 UNF									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm									
<b>A06</b> Inorganic microfiber 6 µm									
<b>A10</b> Inorganic microfiber 10 µm									
<b>A16</b> Inorganic microfiber 16 µm									
<b>A25</b> Inorganic microfiber 25 µm									
<b>M25</b> Wire mesh 25 µm									
<b>M60</b> Wire mesh 60 µm									
<b>M90</b> Wire mesh 90 µm									
<b>P10</b> Resin impregnated paper 10 µm									
<b>P25</b> Resin impregnated paper 25 µm									

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Bypass valve
<b>E</b> 3 bar
<b>B</b> 1.75 bar

Executions		
Base	zérospark®	
<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>Pxx</b>	<b>Zxx</b>	Customized

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1:	MFX030	1	M25	N	V	P01	
<b>MFX030</b> Filter Element with <b>MY CLEAN</b> feature	Configuration example 2:	MFX030	1	A10	H	B	E	P01
<b>Element length</b>								
<b>1</b>								
<b>Filtration rating (filter media)</b>								
<b>A03</b> Inorganic microfiber 3 µm								
<b>A06</b> Inorganic microfiber 6 µm								
<b>A10</b> Inorganic microfiber 10 µm								
<b>A16</b> Inorganic microfiber 16 µm								
<b>A25</b> Inorganic microfiber 25 µm								
<b>M25</b> Wire mesh 25 µm								
<b>M60</b> Wire mesh 60 µm								
<b>M90</b> Wire mesh 90 µm								
<b>P10</b> Resin impregnated paper 10 µm								
<b>P25</b> Resin impregnated paper 25 µm								

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Seals
<b>B</b> NBR
<b>V</b> FPM

Bypass valve
<b>E</b> 3 bar
<b>-</b> 1.75 bar

Executions		
Base	zérospark®	
<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>Pxx</b>	<b>Zxx</b>	Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

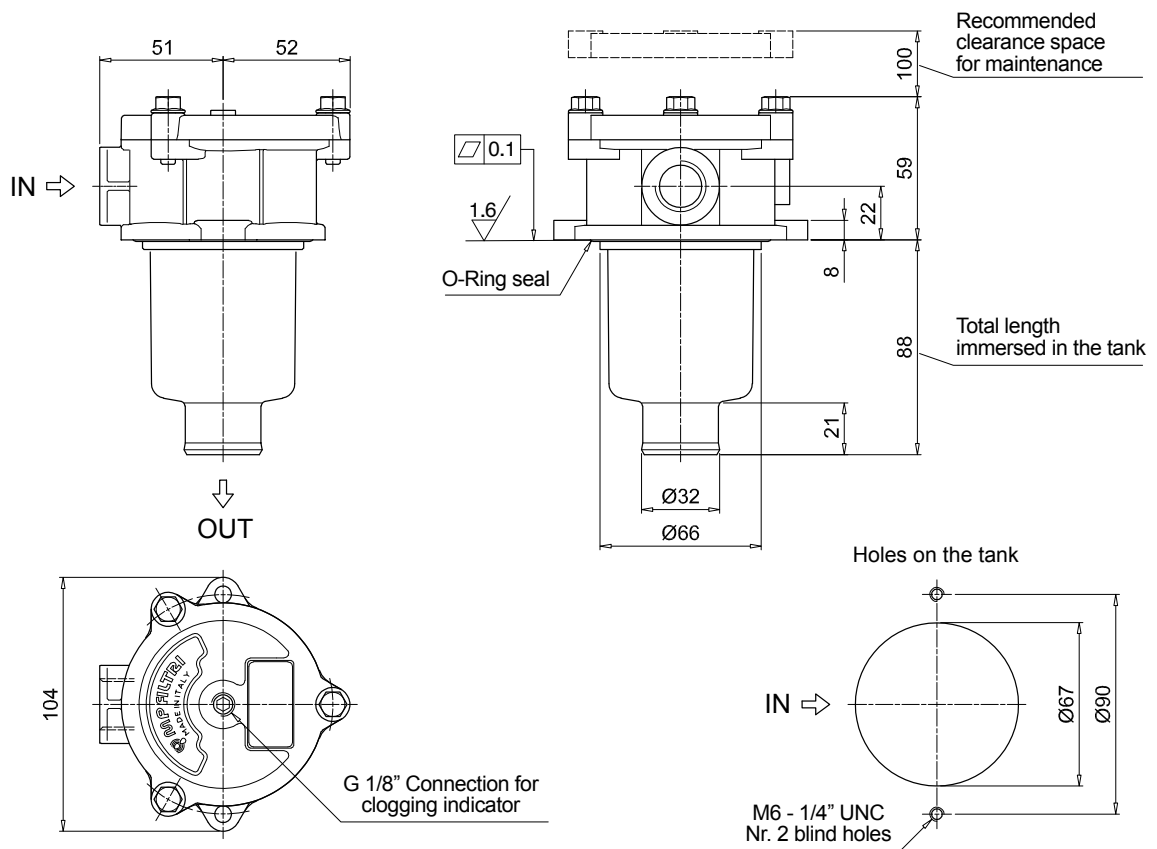
<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube
<b>T5</b> Filler plug M30x1.5

MPFX030



# MPFX MPFX100 - MPFX104

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>MPFX100</b> <b>2</b> <b>W</b> <b>G3</b> <b>A06</b> <b>H</b> <b>B</b> <b>P01</b>									
<b>MPFX100</b>   <b>MPFX104</b> Filter featuring <b>MYCLEAN</b> Filter Element		Configuration example 2: <b>MPFX104</b> <b>4</b> <b>A</b> <b>G8</b> <b>P10</b> <b>N</b> <b>E</b> <b>P01</b>									
<b>Length</b>											
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>											
<b>Seals and treatments</b>											
<b>A</b> NBR											
<b>V</b> FPM											
<b>W</b> NBR head anodized											
<b>Z</b> FPM head anodized											
<b>Connections</b>		<b>Size 100</b>		<b>Size 104</b>		<b>Connections</b>		<b>Size 100</b>		<b>Size 104</b>	
<b>G1</b> G 1/2"		•		•		<b>G7</b> SAE 8 - 3/4" - 16 UNF		•		•	
<b>G2</b> G 3/4"		•		•		<b>G8</b> SAE 12 - 1 1/16" - 12 UN		•		•	
<b>G3</b> G 1"		•		•		<b>G9</b> SAE 16 - 1 5/16" - 12 UN		•		•	
<b>G4</b> 1/2" NPT		•		•							
<b>G5</b> 3/4" NPT		•		•							
<b>G6</b> 1" NPT		•		•							
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm											
<b>A06</b> Inorganic microfiber 6 µm											
<b>A10</b> Inorganic microfiber 10 µm											
<b>A16</b> Inorganic microfiber 16 µm											
<b>A25</b> Inorganic microfiber 25 µm											
<b>M25</b> Wire mesh 25 µm											
<b>M60</b> Wire mesh 60 µm											
<b>M90</b> Wire mesh 90 µm											
<b>P10</b> Resin impregnated paper 10 µm											
<b>P25</b> Resin impregnated paper 25 µm											

<b>Element Δp</b>		<b>Filter media</b>			<b>Bypass valve</b>		<b>Base</b>			<b>Executions</b>		
<b>N</b> 10 bar		Axx   Mxx   Pxx			<b>E</b> 3 bar		<b>P01</b> <b>zere<span style="color:blue">spark</span></b>			<b>Z01</b> MP Filtri standard		
<b>H</b> 10 bar		•   -   -			<b>B</b> 1.75 bar		<b>Pxx</b>			<b>Zxx</b> Customized		

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>MFX100</b> <b>2</b> <b>A06</b> <b>H</b> <b>B</b> <b>P01</b>									
<b>MFX100</b> Filter Element with <b>MYCLEAN</b> feature		Configuration example 2: <b>MFX100</b> <b>4</b> <b>P10</b> <b>N</b> <b>B</b> <b>E</b> <b>P01</b>									
<b>Element length</b>											
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>											
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm											
<b>A06</b> Inorganic microfiber 6 µm											
<b>A10</b> Inorganic microfiber 10 µm											
<b>A16</b> Inorganic microfiber 16 µm											
<b>A25</b> Inorganic microfiber 25 µm											
<b>M25</b> Wire mesh 25 µm											
<b>M60</b> Wire mesh 60 µm											
<b>M90</b> Wire mesh 90 µm											
<b>P10</b> Resin impregnated paper 10 µm											
<b>P25</b> Resin impregnated paper 25 µm											

<b>Element Δp</b>		<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Base</b>			<b>Executions</b>		
<b>N</b> 10 bar		Axx   Mxx   Pxx			<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> <b>zere<span style="color:blue">spark</span></b>			<b>Z01</b> MP Filtri standard		
<b>H</b> 10 bar		•   -   -			<b>V</b> FPM		- 1.75 bar		<b>Pxx</b>			<b>Zxx</b> Customized		

### CLOGGING INDICATORS

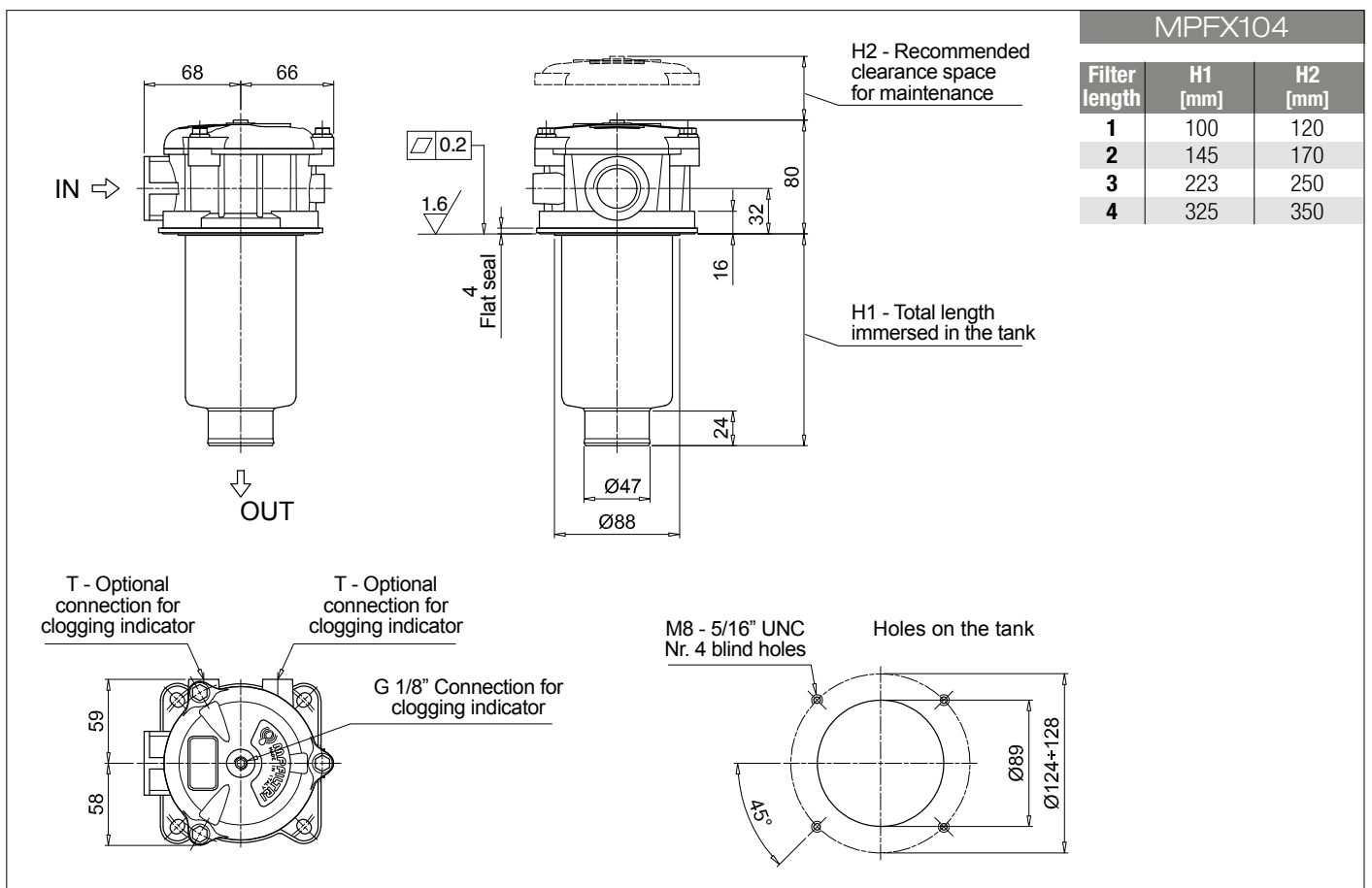
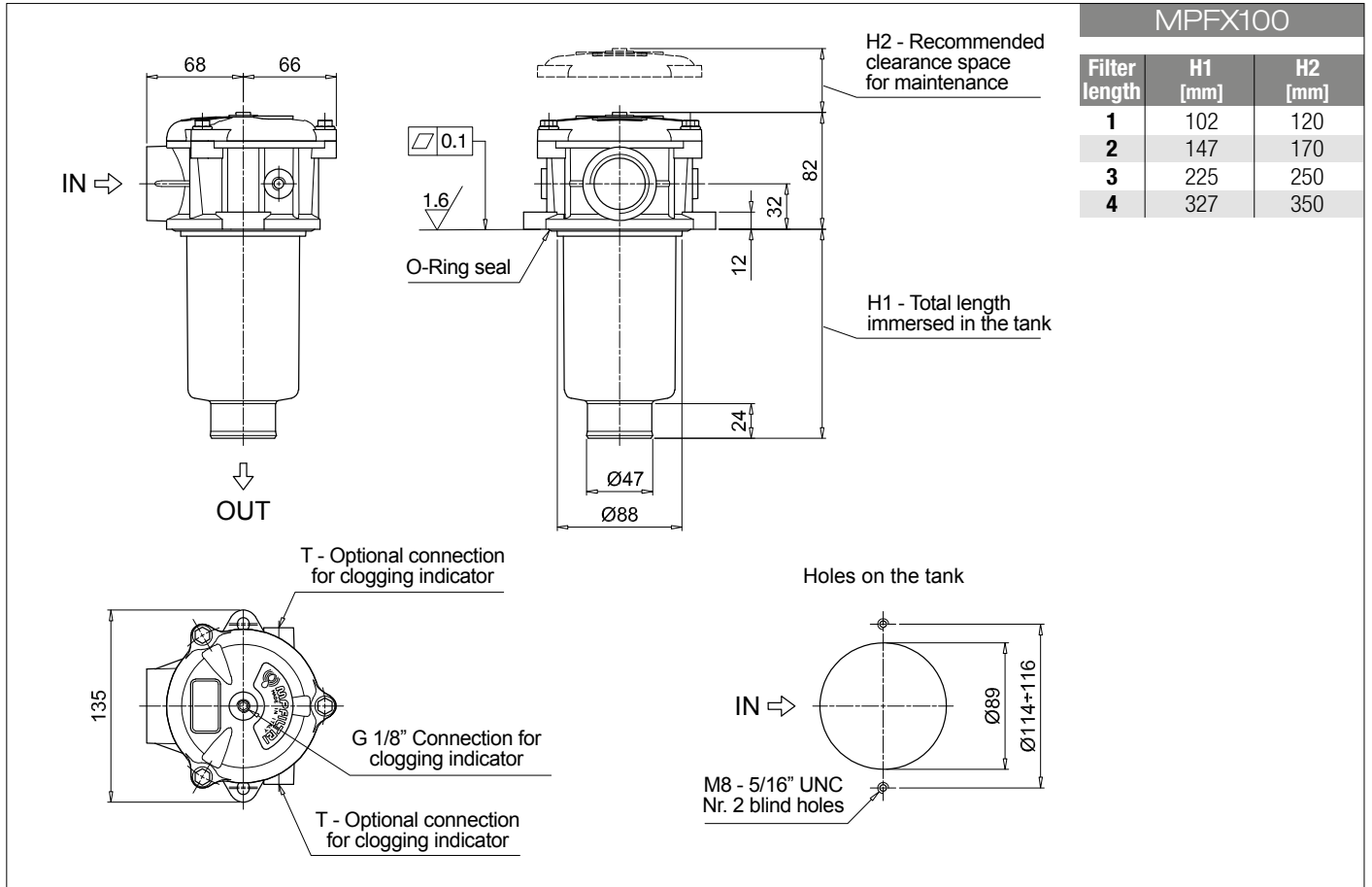
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube	<b>T5</b> Filler plug M30x1.5
<b>DFS</b> Diffuser with fast lock connection	<b>DPT</b> Dipstick



# MPFX MPFX110

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1: <b>MPFX110</b>   <b>3</b>   <b>Z</b>   <b>G4</b>   <b>2</b>   <b>M25</b>   <b>H</b>   <b>B</b>   <b>P01</b>												
<b>MPFX110</b> Filter featuring <b>MY CLEAN</b> Filter Element			Configuration example 2: <b>MPFX110</b>   <b>4</b>   <b>A</b>   <b>G8</b>   <b>1</b>   <b>P10</b>   <b>N</b>   <b>E</b>   <b>P01</b>												
<b>Length</b>			<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>												
<b>Seals and treatments</b>			<table border="0"> <tr> <td><b>A</b> NBR</td> <td><b>W</b> NBR head anodized</td> </tr> <tr> <td><b>V</b> FPM</td> <td><b>Z</b> FPM head anodized</td> </tr> </table>									<b>A</b> NBR	<b>W</b> NBR head anodized	<b>V</b> FPM	<b>Z</b> FPM head anodized
<b>A</b> NBR	<b>W</b> NBR head anodized														
<b>V</b> FPM	<b>Z</b> FPM head anodized														
<b>Main Connections</b>	<b>Aux size 1</b>	<b>Aux size 2</b>	<b>Main Connections</b>	<b>Aux size 1</b>	<b>Aux size 2</b>										
<b>G1</b> G 1/2"	G 3/8"	G 1/2"	<b>G7</b> SAE 8 - 3/4" - 16 UNF	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF										
<b>G2</b> G 3/4"			<b>G8</b> SAE 12 - 1 1/16" - 12 UN												
<b>G3</b> G 1"	3/8" NPT	1/2" NPT	<b>G9</b> SAE 16 - 1 5/16" - 12 UN	G 3/8"	G 1/2"										
<b>G4</b> 1/2" NPT			<b>G10</b> G 1 1/4"												
<b>G5</b> 3/4" NPT			<b>G11</b> 1 1/4" NPT												
<b>G6</b> 1" NPT			<b>G12</b> SAE 20 - 1 5/8" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF										
<b>Aux connection - see previous table</b>															
<b>1</b> Aux size 1									<b>2</b> Aux size 2						
<b>Filtration rating (filter media)</b>															
<b>A03</b> Inorganic microfiber 3 µm									<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm									<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm									<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm									<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm									<b>P25</b> Resin impregnated paper 25 µm						

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Bypass valve	Executions		
	Base	zereospark®	
<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b>	<b>Zxx</b>	Customized

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1: <b>MFx100</b>   <b>3</b>   <b>M25</b>   <b>H</b>   <b>V</b>   <b>P01</b>								
<b>MFx100</b> Filter Element with <b>MY CLEAN</b> feature			Configuration example 2: <b>MFx100</b>   <b>4</b>   <b>P10</b>   <b>N</b>   <b>B</b>   <b>E</b>   <b>P01</b>								
<b>Element length</b>			<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>								
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm									<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm									<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm									<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm									<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm									<b>P25</b> Resin impregnated paper 25 µm		

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Seals	Bypass valve	Executions		
		Base	zereospark®	
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b>	<b>Zxx</b>	Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

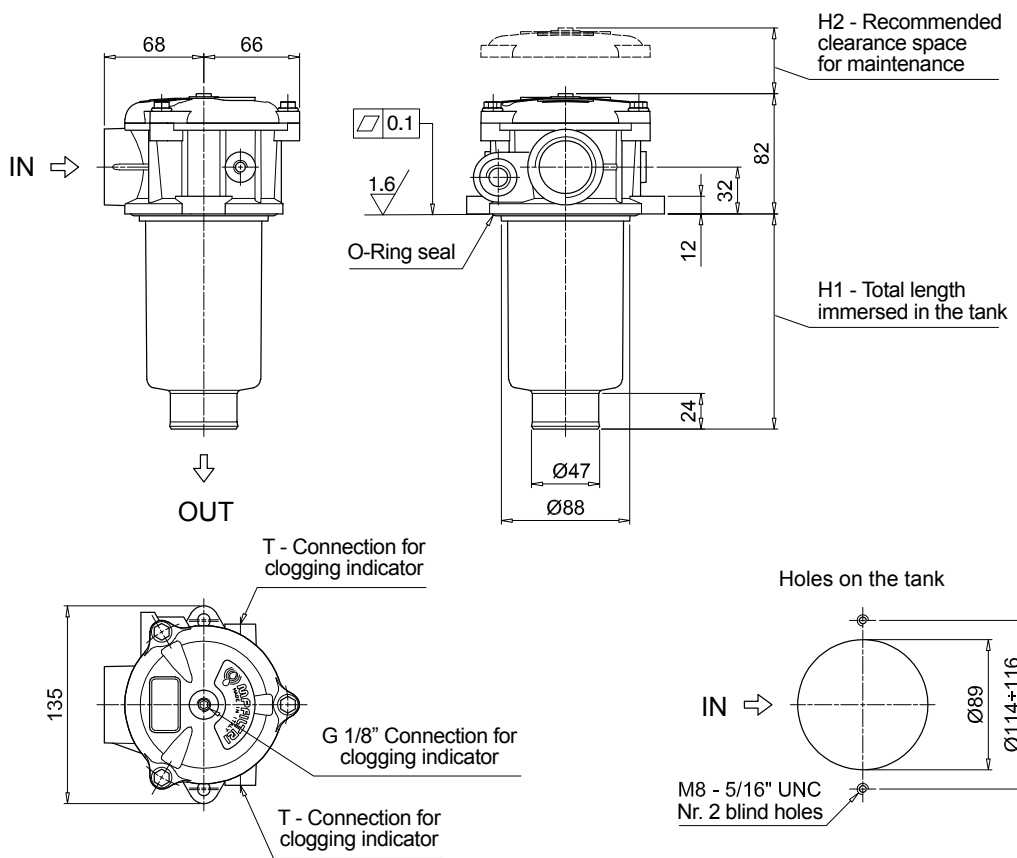
See page 266

<b>TE</b> Extension tube	<b>T5</b> Filler plug M30x1.5
<b>DFS</b> Diffuser with fast lock connection	<b>DPT</b> Dipstick

MPFX110		
Filter length	H1 [mm]	H2 [mm]
<b>1</b>	102	120
<b>2</b>	147	170
<b>3</b>	225	250
<b>4</b>	327	350

Connections	T
<b>G1-G2-G3</b>	G 1/8"
<b>G4-G5-G6-G7-G8-G9</b>	1/8" NPT
<b>G10</b>	G 1/8"
<b>G11-G12</b>	1/8" NPT



# MPFX MPFX181 - MPFX191

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1: <b>MPFX181</b>   1   A   G1   A25   H   E   P01								
<b>MPFX181 MPFX191</b> Filter featuring <b>MYCLEAN</b> Filter Element			Configuration example 2: <b>MPFX191</b>   2   V   G2   P10   N   B   P01								
<b>Length</b>											
	Size 181	Size 191									
1	•	-									
2	•	•									
<b>Seals and treatments</b>											
<b>A</b>	NBR	<b>B</b>	NBR flat seal on head								
<b>V</b>	FPM	<b>D</b>	FPM flat seal on head								
<b>W</b>	NBR head anodized	<b>L</b>	NBR head anodized, flat seal on head								
<b>Z</b>	FPM head anodized	<b>M</b>	FPM head anodized, flat seal on head								
<b>Connections</b>											
<b>G1</b>	G 1 1/4"	<b>G5</b>	1 1/2" NPT								
<b>G2</b>	G 1 1/2"	<b>G7</b>	SAE 20 - 1 5/8" - 12 UN								
<b>G4</b>	1 1/4" NPT	<b>G8</b>	SAE 24 - 1 7/8" - 12 UN								
<b>Filtration rating (filter media)</b>											
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm								
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm								
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm								
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>	Resin impregnated paper 10 µm								
<b>A25</b>	Inorganic microfiber 25 µm	<b>P25</b>	Resin impregnated paper 25 µm								
<b>Filter media</b>											
<b>Element Δp</b>	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>								
<b>N</b> 10 bar	-	•	•								
<b>H</b> 10 bar	•	-	-								
<b>Bypass valve</b>											
<b>E</b>	3 bar										
<b>B</b>	1.75 bar										
<b>Executions</b>											
<b>Base</b>	<b>P01</b>	<b>Z01</b>	MP Filtri standard								
	<b>Pxx</b>	<b>Zxx</b>	Customized								

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1: <b>MFX180</b>   1   A25   H   B   E   P01								
<b>MFX180</b> Filter Element with <b>MYCLEAN</b> feature			Configuration example 2: <b>MFX180</b>   2   P10   N   V   P01								
<b>Element length</b>											
	1	2									
<b>Filtration rating (filter media)</b>											
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm								
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm								
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm								
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>	Resin impregnated paper 10 µm								
<b>A25</b>	Inorganic microfiber 25 µm	<b>P25</b>	Resin impregnated paper 25 µm								
<b>Filter media</b>											
<b>Element Δp</b>	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>								
<b>N</b> 10 bar	-	•	•								
<b>H</b> 10 bar	•	-	-								
<b>Seals</b>											
<b>B</b>	NBR										
<b>V</b>	FPM										
<b>Bypass valve</b>											
<b>E</b>	3 bar										
	-	1.75 bar									
<b>Executions</b>											
<b>Base</b>	<b>P01</b>	<b>Z01</b>	MP Filtri standard								
	<b>Pxx</b>	<b>Zxx</b>	Customized								

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b>	Axial pressure gauge
<b>BVR</b>	Radial pressure gauge
<b>BVP</b>	Visual pressure indicator with automatic reset
<b>BVQ</b>	Visual pressure indicator with manual reset

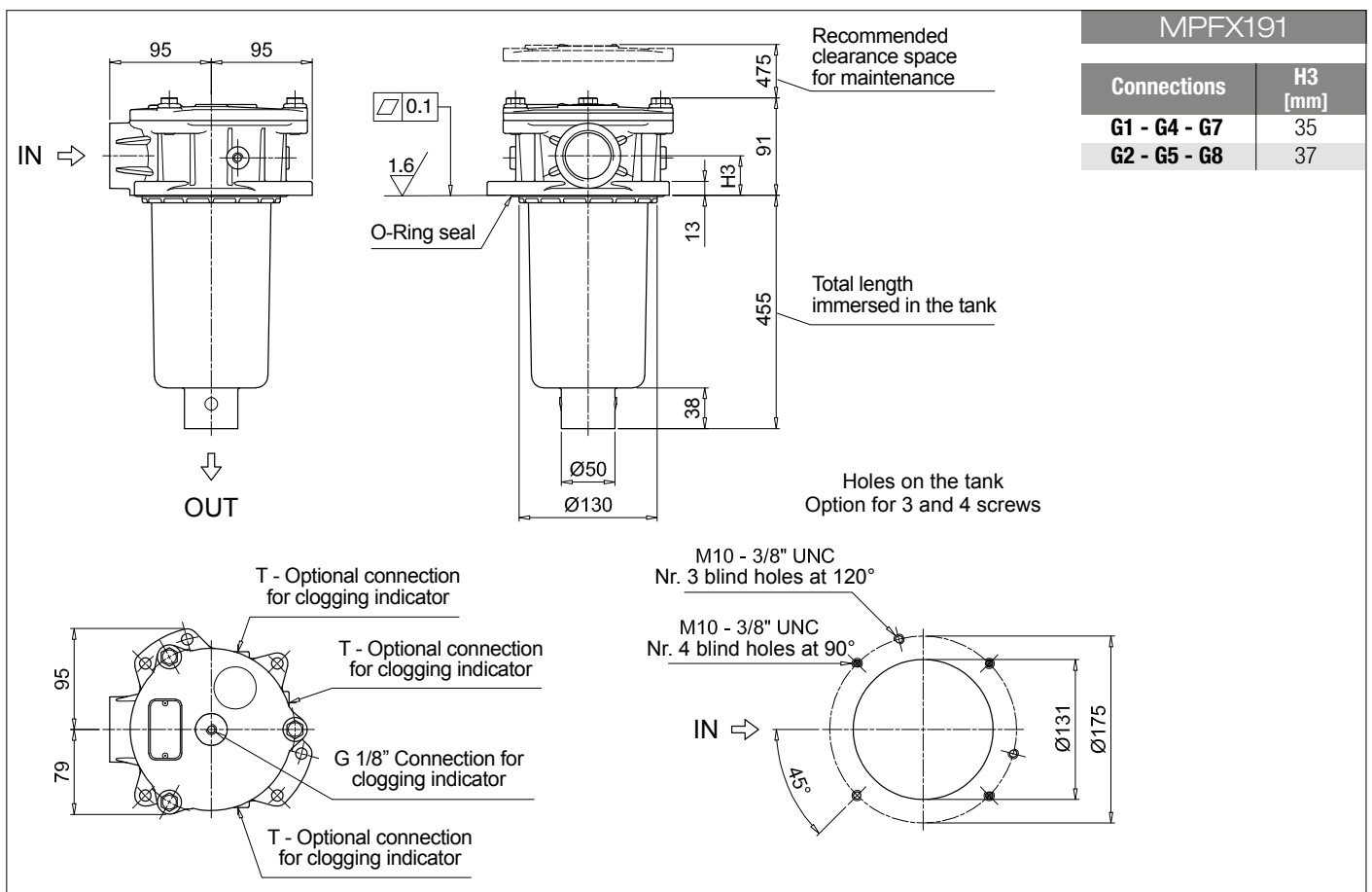
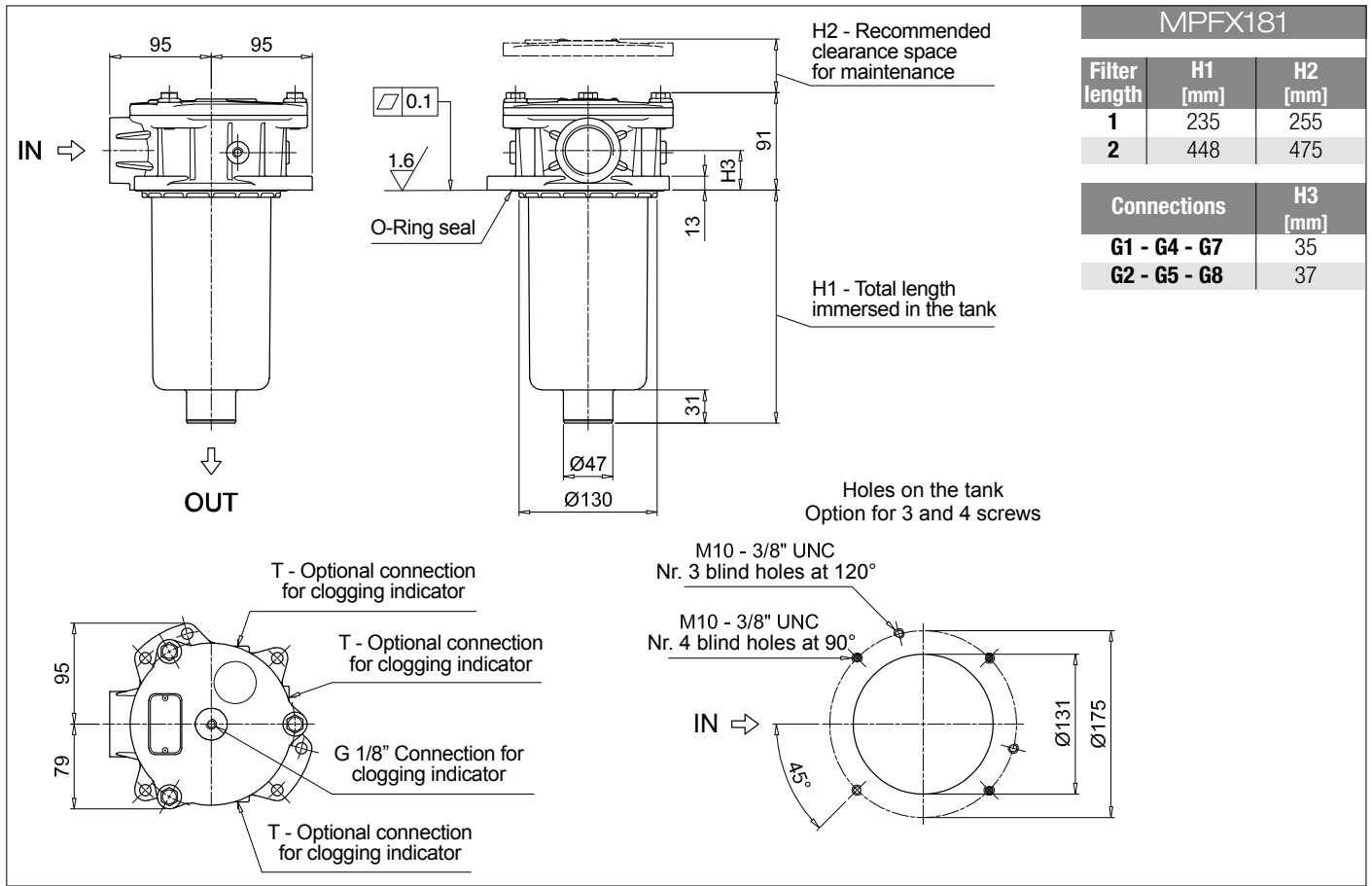
<b>BEA</b>	Electrical pressure indicator
<b>BEM</b>	Electrical pressure indicator
<b>BLA</b>	Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

<b>TE</b>	Extension tube
<b>T5</b>	Filler plug M30x1.5





# MPFX MPFX182 - MPFX192

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>MPFX182</b>   1   A   G1   1   A25   H   E   P01									
<b>MPFX182   MPFX192</b> Filter featuring <b>MYCLEAN</b> Filter Element		Configuration example 2: <b>MPFX192</b>   2   V   G4   2   P10   N   B   P01									
<b>Length</b>	<b>Size 182</b>	<b>Size 192</b>									
1	•	-									
2	•	•									
<b>Seals and treatments</b>											
<b>A</b> NBR	<b>B</b> NBR flat seal on head										
<b>V</b> FPM	<b>D</b> FPM flat seal on head										
<b>W</b> NBR head anodized	<b>L</b> NBR head anodized, flat seal on head										
<b>Z</b> FPM head anodized	<b>M</b> FPM head anodized, flat seal on head										
<b>Main Connections</b>			<b>Aux size 1</b>	<b>Aux size 2</b>							
<b>G1</b> G 1 1/4"	<b>G 1/2"</b>		<b>G 3/4"</b>								
<b>G4</b> 1 1/4" NPT	<b>1/2" NPT</b>		<b>3/4" NPT</b>								
<b>G7</b> SAE 20 - 1 5/8" - 12 UN	<b>SAE 8 - 3/16" - 16 UNF</b>		<b>SAE 12 - 1 1/16" - 12 UN</b>								
<b>Aux connection</b> - see previous table											
<b>1</b> Aux size 1	<b>2</b> Aux size 2										
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm										
<b>Element Δp</b>			<b>Filter media</b>			<b>Bypass valve</b>				<b>Executions</b>	
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>E</b> 3 bar	<b>B</b> 1.75 bar	<b>Base</b>	<b>zérospark<sup>®</sup></b>	<b>Z01</b>	<b>MP Filtri standard</b>		
<b>H</b> 10 bar	•	-	-			<b>Pxx</b>	<b>Zxx</b>		<b>Customized</b>		

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>MFX180</b>   1   A25   H   B   E   P01									
<b>MFX180</b> Filter Element with <b>MYCLEAN</b> feature		Configuration example 2: <b>MFX180</b>   2   P10   N   V   P01									
<b>Element length</b>											
1	2										
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm										
<b>Element Δp</b>		<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Executions</b>		
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>B</b> NBR	<b>E</b> 3 bar	<b>Base</b>	<b>zérospark<sup>®</sup></b>	<b>Z01</b>	<b>MP Filtri standard</b>		
<b>H</b> 10 bar	•	-	-	<b>V</b> FPM	- 1.75 bar	<b>Pxx</b>	<b>Zxx</b>		<b>Customized</b>		

### CLOGGING INDICATORS

See page 710-711

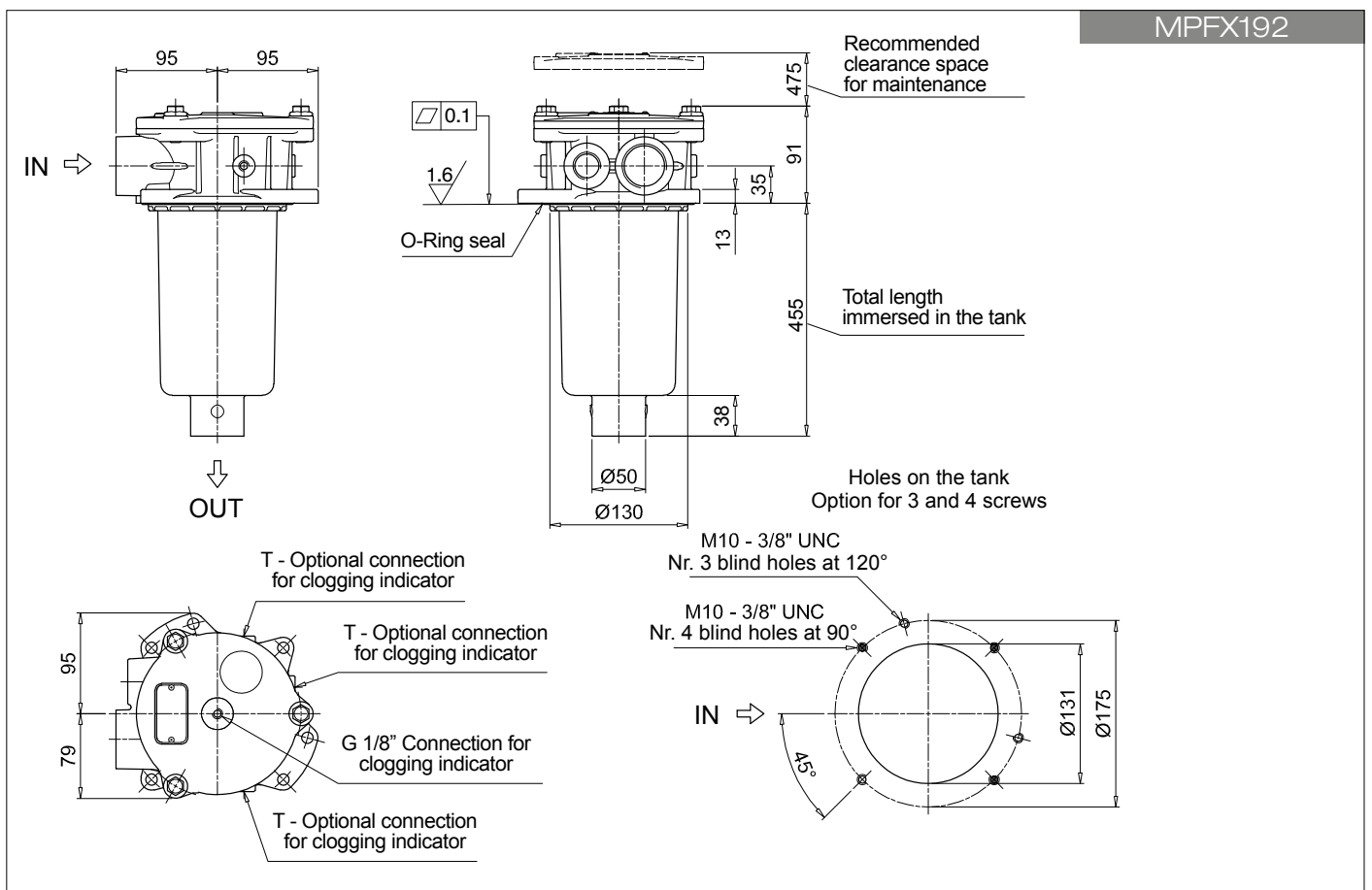
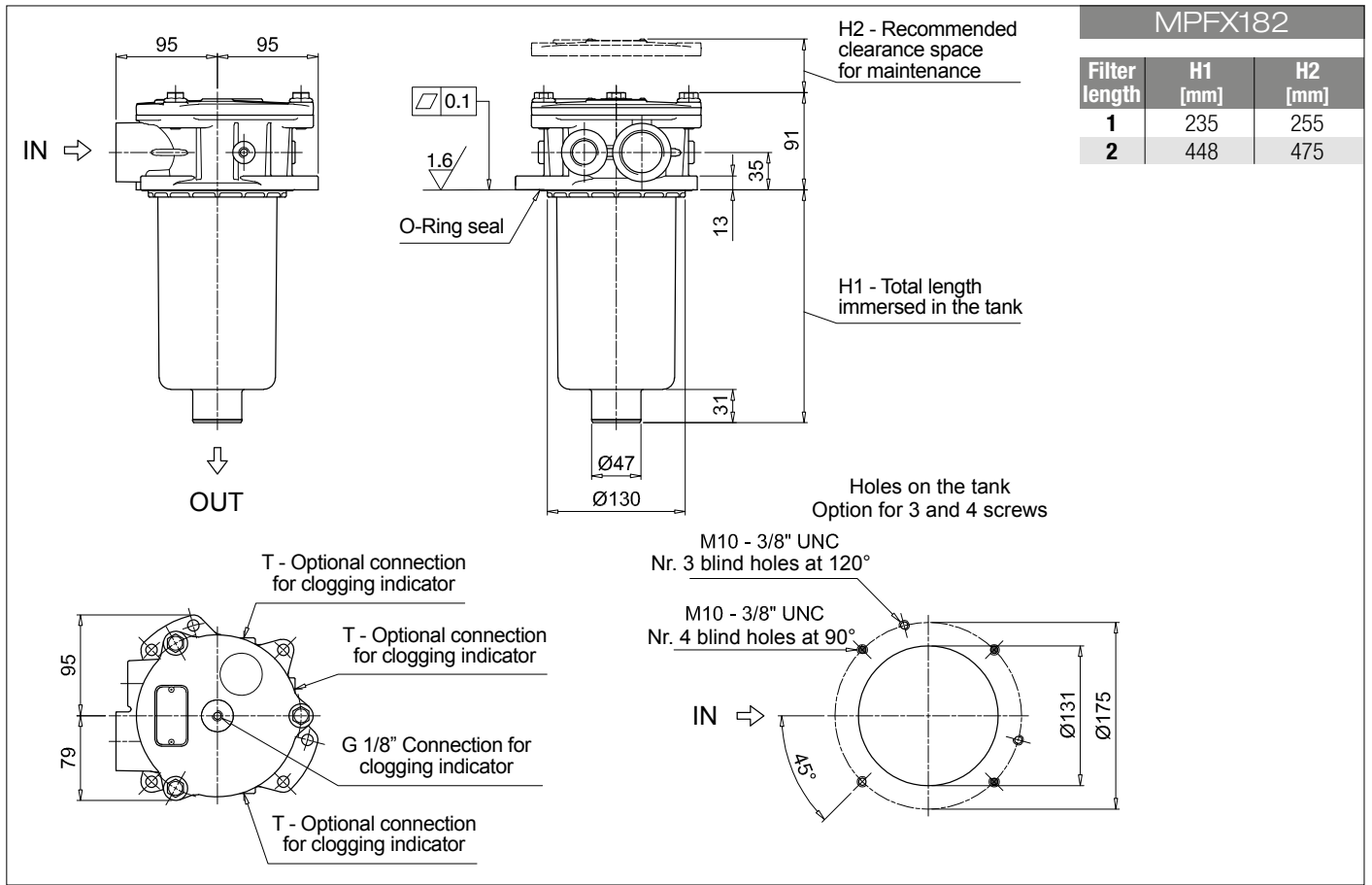
<b>BVA</b> Axial pressure gauge	
<b>BVR</b> Radial pressure gauge	
<b>BVP</b> Visual pressure indicator with automatic reset	
<b>BVQ</b> Visual pressure indicator with manual reset	

<b>BEA</b> Electrical pressure indicator	
<b>BEM</b> Electrical pressure indicator	
<b>BLA</b> Electrical / visual pressure indicator	

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube	
<b>T5</b> Filler plug M30x1.5	



# MPFX MPFX184 - MPFX194

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>MPFX184</b>   1   A   G1   A25   H   E   P01									
<b>MPFX184 MPFX194</b> Filter featuring <b>MYCLEAN</b> Filter Element		Configuration example 2: <b>MPFX194</b>   2   V   F3   P10   N   B   P01									
<b>Length</b>		Size 184		Size 194							
1		•		-							
2		•		•							
<b>Seals and treatments</b>		A NBR		W NBR head anodized							
V FPM		Z FPM head anodized									
<b>Main Connections</b>		<b>Rear connections</b>		<b>Main Connections</b>		<b>Rear connections</b>					
G1 G 1 1/4"		-		G13 G 1 1/2"		-					
G2 G 1 1/4"		G 1 1/4"		G14 G 1 1/2"		G 1 1/4"					
G4 1 1/4" NPT		-		G15 1 1/2" NPT		-					
G5 1 1/4" NPT		1 1/4" NPT		G16 1 1/2" NPT		1 1/4" NPT					
G7 SAE 20 - 1 5/8" - 12 UN		-		F1 1 1/2" SAE 3000 psi/M		-					
G8 SAE 20 - 1 5/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN		F2 1 1/2" SAE 3000 psi/UNC		-					
G10 SAE 24 - 1 7/8" - 12 UN		-		F3 1 1/2" SAE 3000 psi/M		1 1/2" SAE 3000 psi/M					
G11 SAE 24 - 1 7/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN		F4 1 1/2" SAE 3000 psi/UNC		1 1/2" SAE 3000 psi/UNC					
<b>Filtration rating (filter media)</b>		A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
<b>Element Δp</b>		Axx		Mxx		Pxx					
N 10 bar		-		•		•					
H 10 bar		•		-		-					
		Filter media									
		Bypass valve		Base		zereospark®					
		E 3 bar		P01		Z01		MP Filtri standard			
		B 1.75 bar		Pxx		Zxx		Customized			

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>MFx180</b>   1   A25   H   B   E   P01									
<b>MFx180</b> Filter Element with <b>MYCLEAN</b> feature		Configuration example 2: <b>MFx180</b>   2   P10   N   V   P01									
<b>Element length</b>		1		2							
<b>Filtration rating (filter media)</b>		A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
<b>Element Δp</b>		Axx		Mxx		Pxx					
N 10 bar		-		•		•					
H 10 bar		•		-		-					
		Filter media									
		Seals		Bypass valve		Base		zereospark®			
		B NBR		E 3 bar		P01		Z01		MP Filtri standard	
		V FPM		- 1.75 bar		Pxx		Zxx		Customized	

### CLOGGING INDICATORS

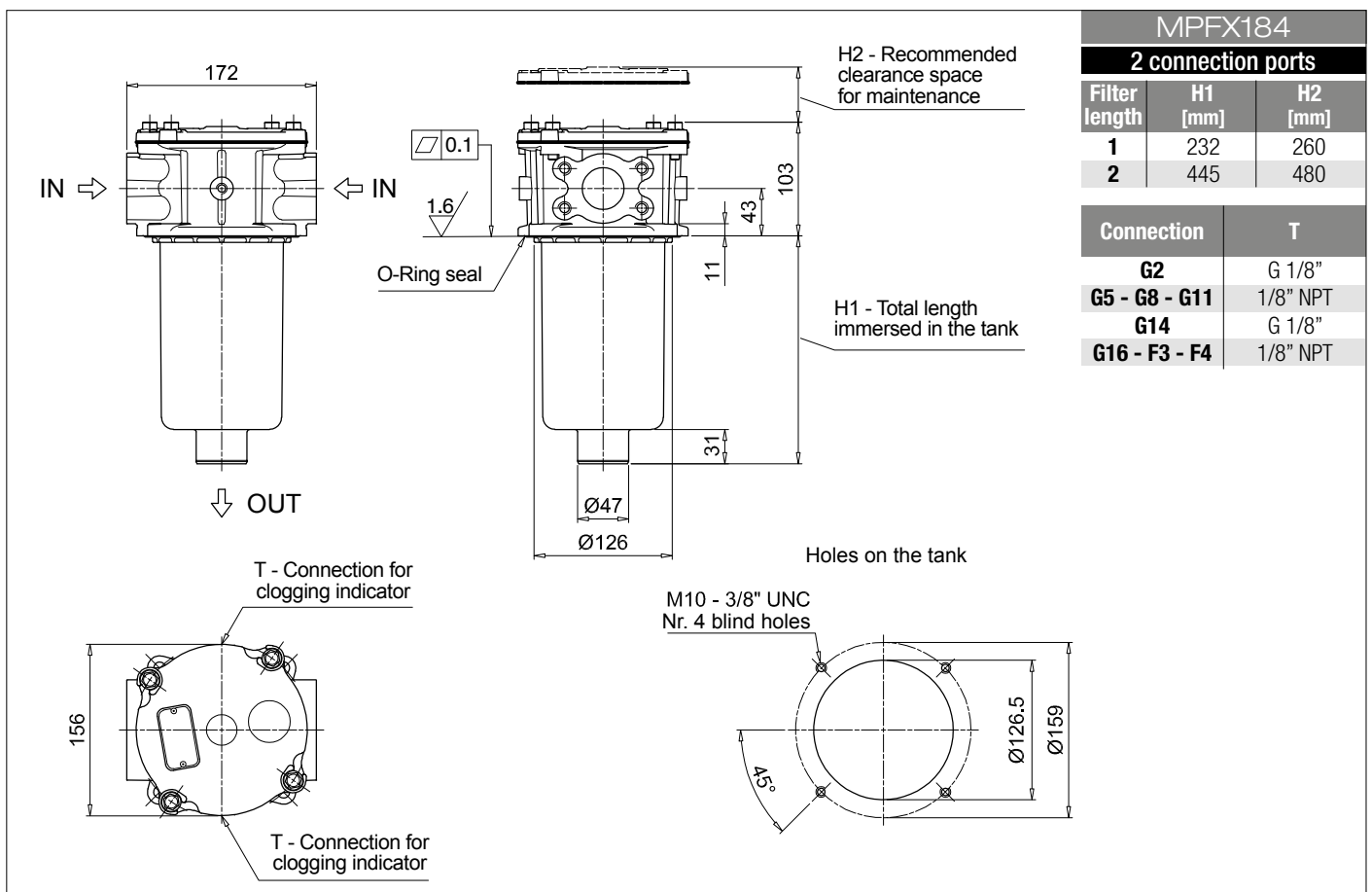
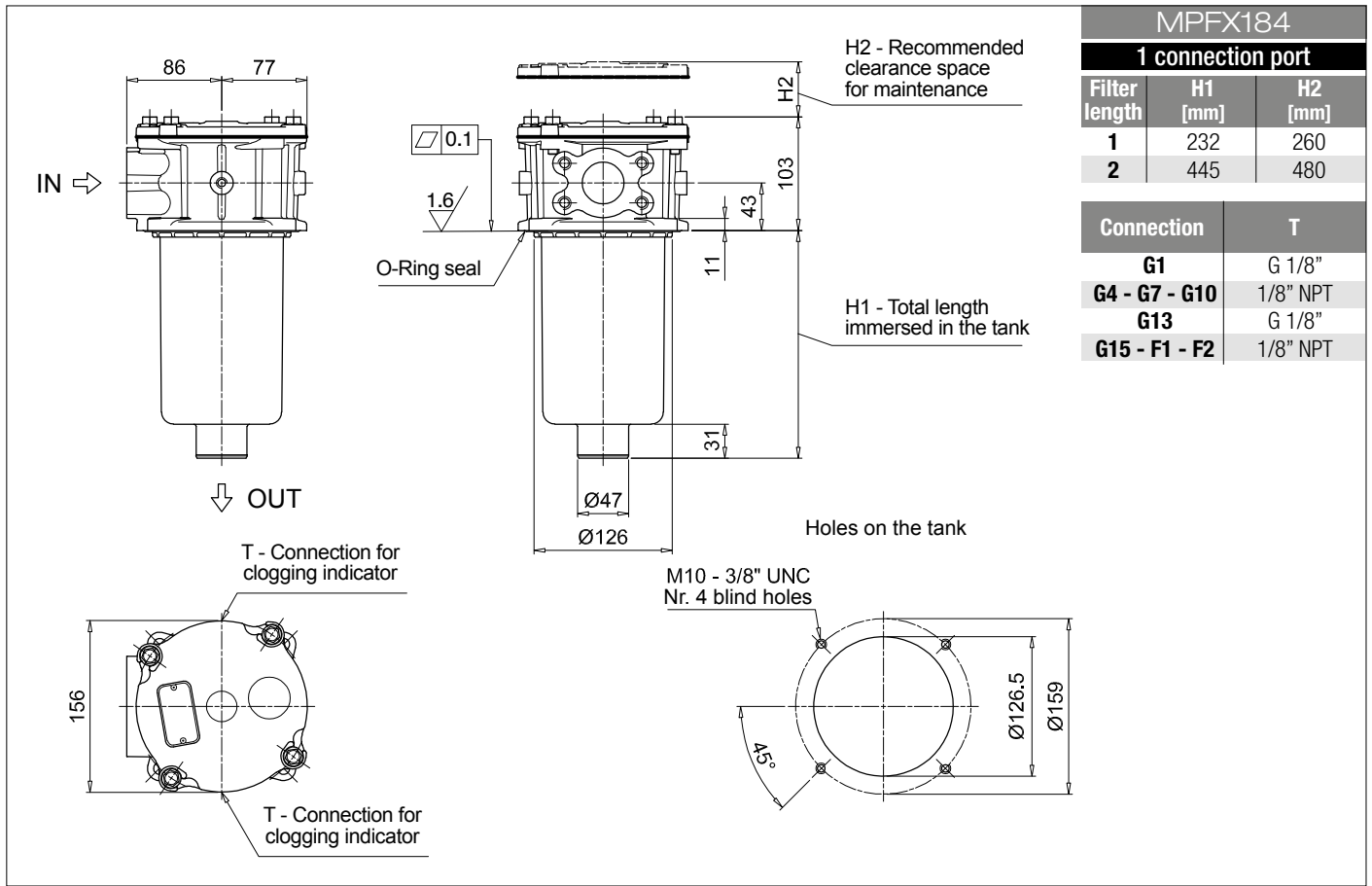
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

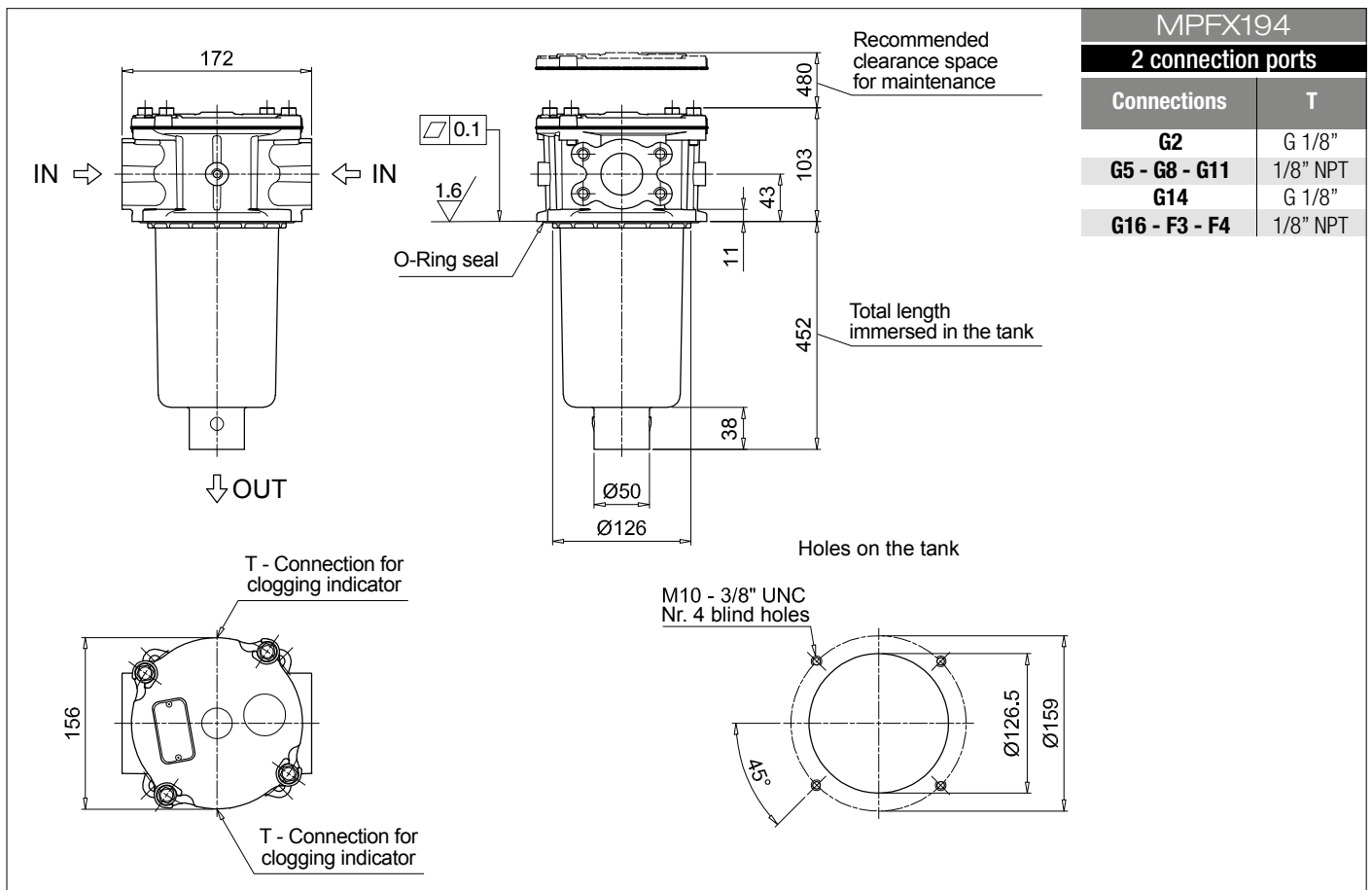
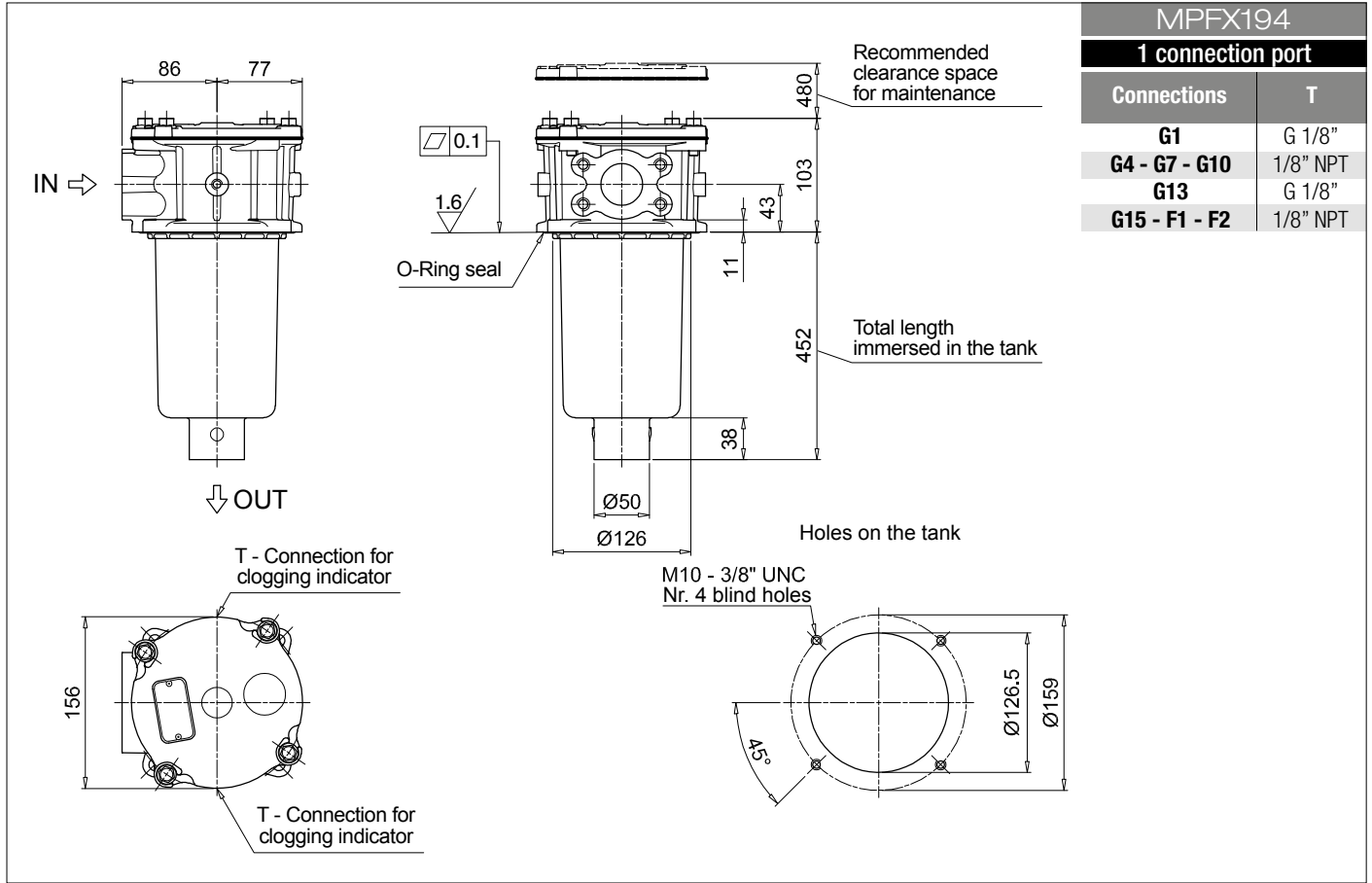
See page 266

<b>TE</b> Extension tube
<b>T5</b> Filler plug M30x1.5



# MPFX MPFX184 - MPFX194

## Dimensions





# MPFX MPFX400

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>MPFX400</b>   <b>1</b>   <b>A</b>   <b>G9</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>P01</b>	
<b>MPFX400</b> Filter featuring <b>MYCLEAN</b> Filter Element		Configuration example 2: <b>MPFX400</b>   <b>2</b>   <b>V</b>   <b>G4</b>   <b>P10</b>   <b>N</b>   <b>E</b>   <b>P01</b>	
<b>Length</b>		<b>1</b>   <b>2</b>   <b>3</b>	
<b>Seals and treatments</b>			
<b>A</b> NBR			
<b>V</b> FPM			
<b>W</b> NBR head anodized			
<b>Z</b> FPM head anodized			
<b>Connections</b>			
<b>G1</b> G 1 1/4"	<b>G6</b> 2" NPT		
<b>G2</b> G 1 1/2"	<b>G7</b> SAE 20 - 1 5/8" - 12 UN		
<b>G3</b> G 2"	<b>G8</b> SAE 24 - 1 7/8" - 12 UN		
<b>G4</b> 1 1/4" NPT	<b>G9</b> SAE 32 - 2 1/2" - 12 UN		
<b>G5</b> 1 1/2" NPT			
<b>Filtration rating (filter media)</b>			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm		
<b>Filter media</b>		<b>Executions</b>	
<b>Element Δp</b>	<b>Axx</b>   <b>Mxx</b>   <b>Pxx</b>	<b>Bypass valve</b>	<b>Base</b>   <b>zereospark</b>
<b>N</b> 10 bar	-   •   •	<b>E</b> 3 bar	<b>P01</b>   <b>Z01</b> MP Filtri standard
<b>H</b> 10 bar	•   -   -	<b>B</b> 1.75 bar	<b>Pxx</b>   <b>Zxx</b> Customized

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>MPFX400</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>P01</b>	
<b>MPFX400</b> Filter Element with <b>MYCLEAN</b> feature		Configuration example 2: <b>MPFX400</b>   <b>2</b>   <b>P10</b>   <b>N</b>   <b>V</b>   <b>E</b>   <b>P01</b>	
<b>Element length</b>		<b>1</b>   <b>2</b>   <b>3</b>	
<b>Filtration rating (filter media)</b>			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm		
<b>Filter media</b>		<b>Executions</b>	
<b>Element Δp</b>	<b>Axx</b>   <b>Mxx</b>   <b>Pxx</b>	<b>Seals</b>	<b>Bypass valve</b>
<b>N</b> 10 bar	-   •   •	<b>B</b> NBR	<b>E</b> 3 bar
<b>H</b> 10 bar	•   -   -	<b>V</b> FPM	- 1.75 bar
		<b>Base</b>   <b>zereospark</b>	
		<b>P01</b>   <b>Z01</b> MP Filtri standard	
		<b>Pxx</b>   <b>Zxx</b> Customized	

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

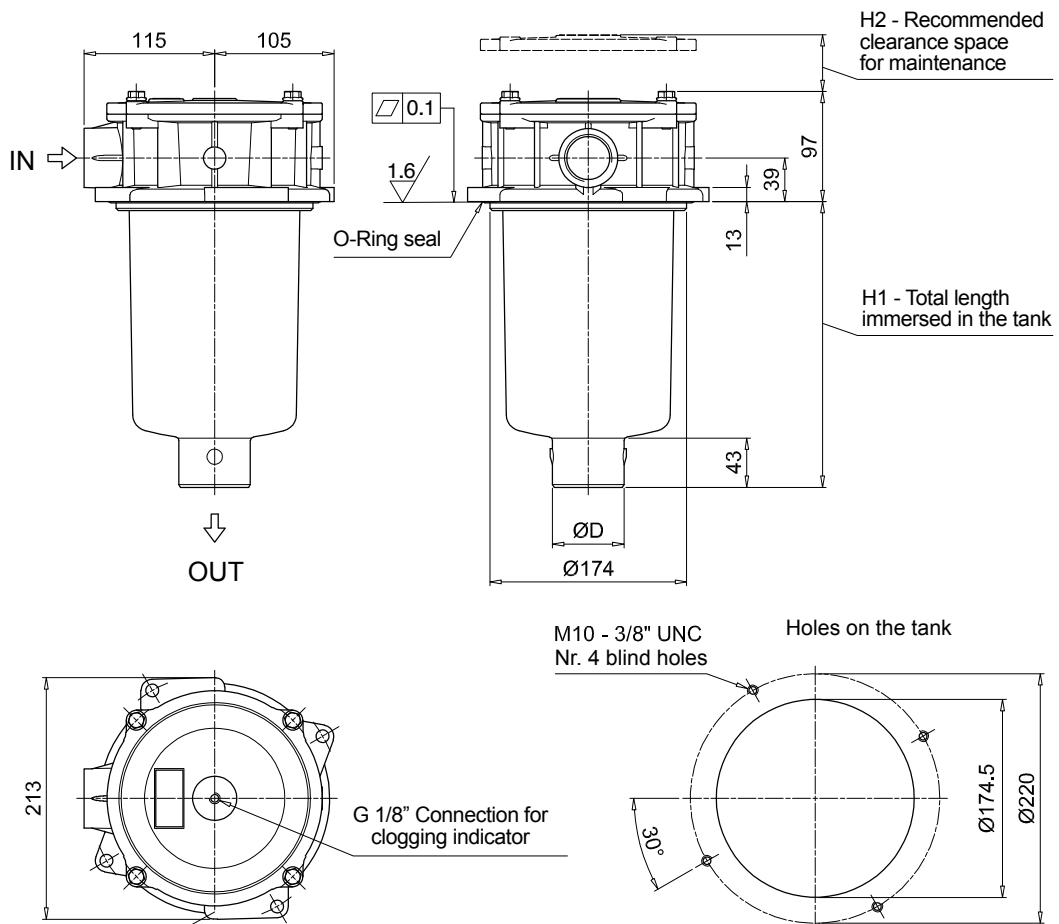
### ADDITIONAL FEATURES

See page 266

<b>T5</b> Filler plug M30x1.5
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MPFX400			
Filter length	H1 [mm]	H2 [mm]	D [mm]
<b>1</b>	187	210	50
<b>2</b>	252	270	63
<b>3</b>	300	315	63



# MPFX MPFX410

## Designation & Ordering code

### COMPLETE FILTER

**Series and size**  
**MPFX410** Filter featuring **MYCLEAN** Filter Element

Configuration example 1: **MPFX410** | 1 | V | G4 | 1 | P10 | N | E | P01  
 Configuration example 2: **MPFX410** | 1 | A | G1 | 1 | A25 | H | B | P01

**Length**  
 1 | 2 | 3

**Seals and treatments**  
**A** NBR  
**V** FPM  
**W** NBR head anodized  
**Z** FPM head anodized

Main Connections	Aux size 1
<b>G1</b> G 1 1/4"	G 1"
<b>G4</b> 1 1/4" NPT	1" NPT
<b>G7</b> SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN

**Aux connection** - see previous table  
 1 Aux size 1

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Bypass valve	Executions		
	Base	zere <span style="color: blue;">spark</span>	
<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b>	<b>Zxx</b>	Customized

### FILTER ELEMENT

**Element series and size**  
**MF400** Filter Element with **MYCLEAN** feature

Configuration example 1: **MF400** | 1 | P10 | N | V | E | P01  
 Configuration example 2: **MF400** | 1 | A25 | H | B | P01

**Element length**  
 1 | 2 | 3

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Seals	Bypass valve	Executions		
		Base	zere <span style="color: blue;">spark</span>	
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b>	<b>Zxx</b>	Customized

### CLOGGING INDICATORS

See page 710-711

**BVA** Axial pressure gauge  
**BVR** Radial pressure gauge  
**BVP** Visual pressure indicator with automatic reset  
**BVQ** Visual pressure indicator with manual reset

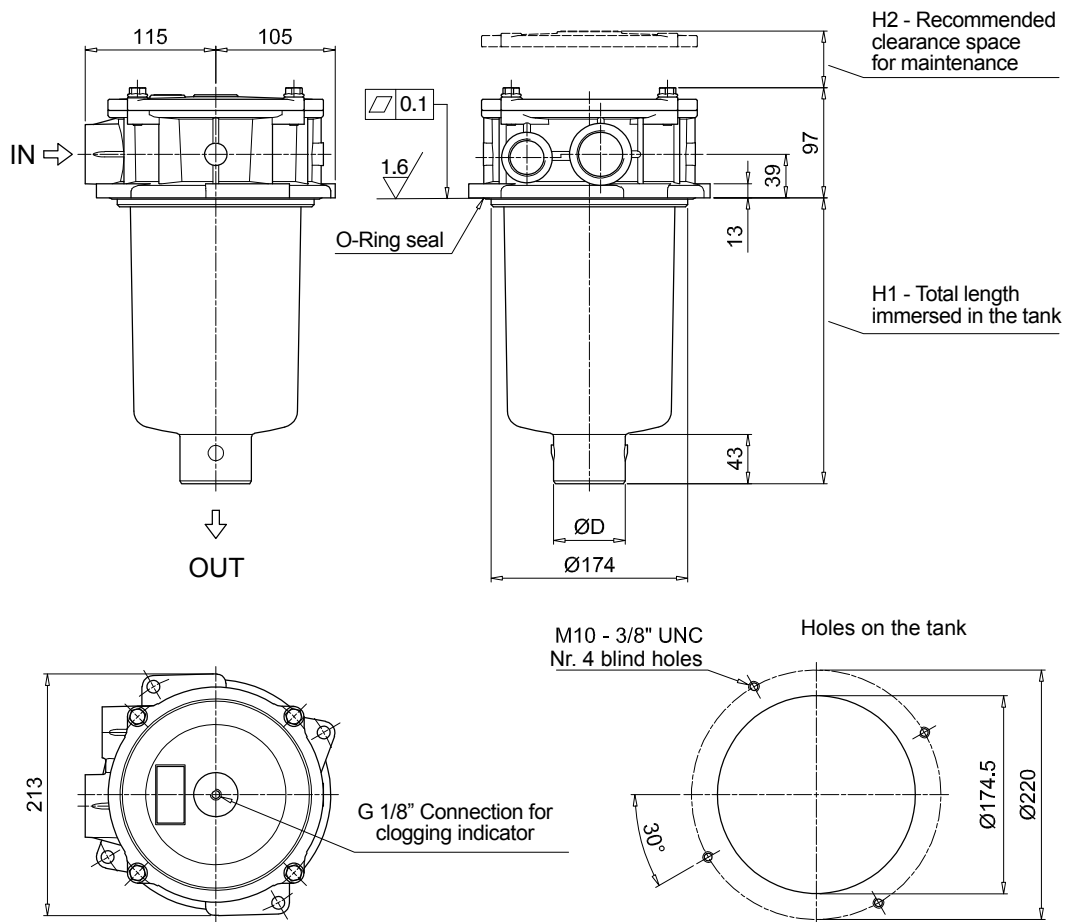
**BEA** Electrical pressure indicator  
**BEM** Electrical pressure indicator  
**BLA** Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

**T5** Filler plug M30x1.5

MPFX410			
Filter length	H1 [mm]	H2 [mm]	D [mm]
<b>1</b>	187	210	50
<b>2</b>	252	270	63
<b>3</b>	300	315	63



# MPFX MPFX450 - MPFX451 - MPFX750

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>				Configuration example 1: <b>MPFX450</b>   1   A   G1   A25   H   B   P01									
<b>MPFX450   MPFX451   MPFX750</b>				Configuration example 2: <b>MPFX750</b>   1   V   F2   P10   N   E   P01									
Filter featuring <b>MYCLEAN</b> Filter Element													
<b>Length</b>				<b>MPFX 450</b>	<b>MPFX 451</b>	<b>MPFX 750</b>							
<b>1</b>				•	•	•							
<b>2</b>				•	•	-							
<b>3</b>				•	•	-							
<b>Seals and treatments</b>													
<b>A</b> NBR		<b>W</b> NBR head anodized											
<b>V</b> FPM		<b>Z</b> FPM head anodized											
<b>Connections</b>				<b>Aux (only size 451)</b>									
<b>G1</b> G 2"		<b>G3/4"</b>											
<b>G4</b> 2" NPT		<b>3/4" NPT</b>											
<b>G7</b> SAE 32 - 2 1/2" - 12 UN		<b>SAE 12 - 1 1/16" - 12 UN</b>											
<b>F1</b> 2" SAE 3000 psi/M		<b>G 3/4"</b>											
<b>F2</b> 2" SAE 3000 psi/UNC		<b>3/4" NPT</b>											
<b>Filtration rating (filter media)</b>													
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm											
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm											
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm											
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm											
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm											
<b>Element Δp</b>				<b>Filter media</b>				<b>Bypass valve</b>					
<b>N</b> 10 bar		<b>Axx</b>		<b>Mxx</b>		<b>Pxx</b>		<b>E</b> 3 bar		<b>Base</b>		<b>zereospark<sup>+</sup></b>	
<b>H</b> 10 bar		-		•		•		<b>B</b> 1.75 bar		<b>P01</b>		<b>Z01</b> MP Filtri standard	
		•		-		-				<b>Pxx</b>		<b>Zxx</b> Customized	

### FILTER ELEMENT

<b>Element series and size</b>				Configuration example 1: <b>MFX400</b>   1   A25   H   B   P01											
<b>MFX400   MFX750</b>				Configuration example 2: <b>MFX750</b>   1   P10   N   V   E   P01											
Filter Element with <b>MYCLEAN</b> feature															
<b>Element length</b>				<b>MPFX 450</b>	<b>MPFX 451</b>	<b>MPFX 750</b>									
<b>1</b>				•	•	•									
<b>2</b>				•	•	-									
<b>3</b>				•	•	-									
<b>Filtration rating (filter media)</b>															
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm													
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm													
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm													
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm													
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm													
<b>Element Δp</b>				<b>Filter media</b>				<b>Seals</b>							
<b>N</b> 10 bar		<b>Axx</b>		<b>Mxx</b>		<b>Pxx</b>		<b>B</b> NBR		<b>E</b> 3 bar		<b>Base</b>		<b>zereospark<sup>+</sup></b>	
<b>H</b> 10 bar		-		•		•		<b>V</b> FPM		-		<b>P01</b>		<b>Z01</b> MP Filtri standard	
		•		-		-				<b>1.75 bar</b>		<b>Pxx</b>		<b>Zxx</b> Customized	

### CLOGGING INDICATORS

See page 710-711

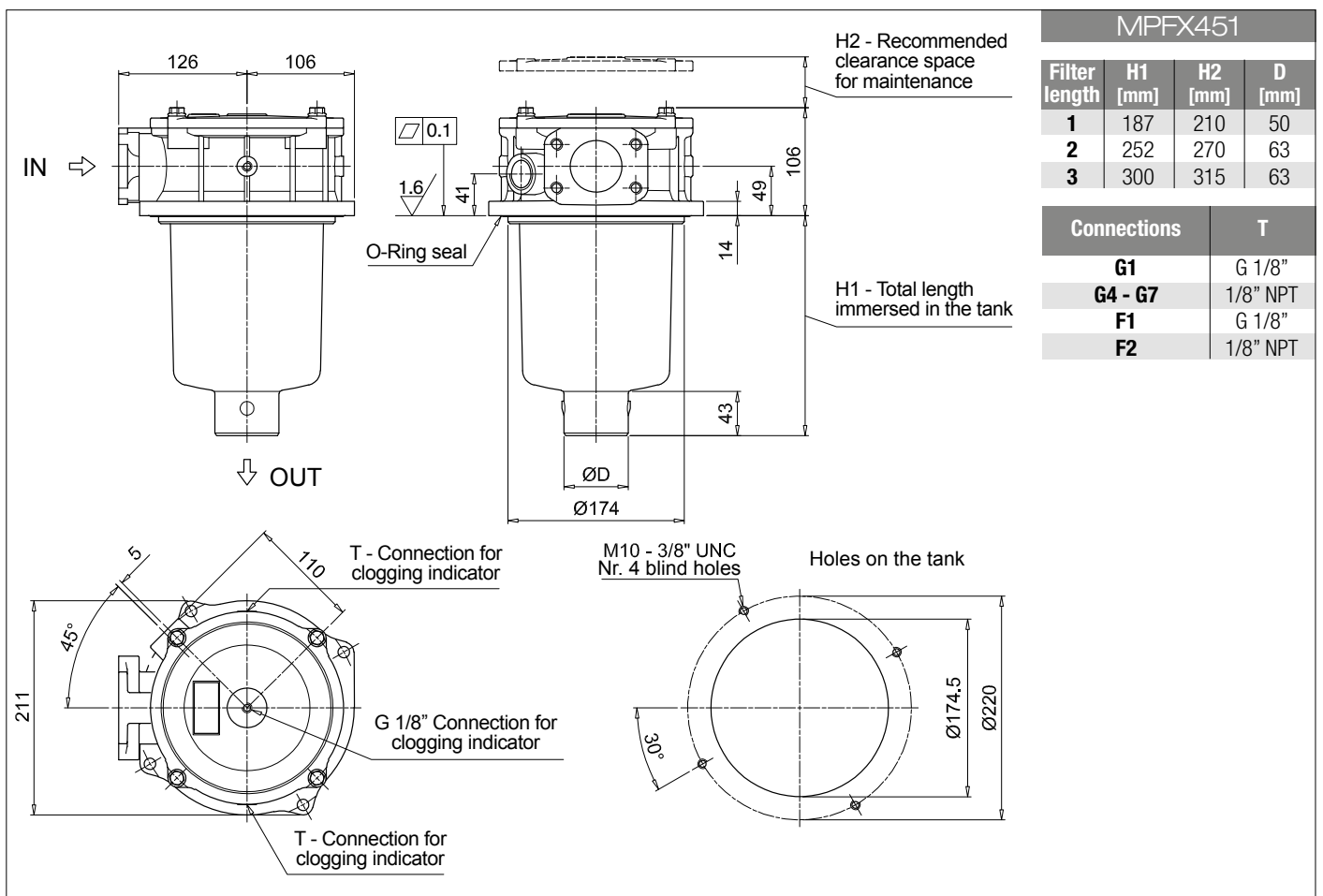
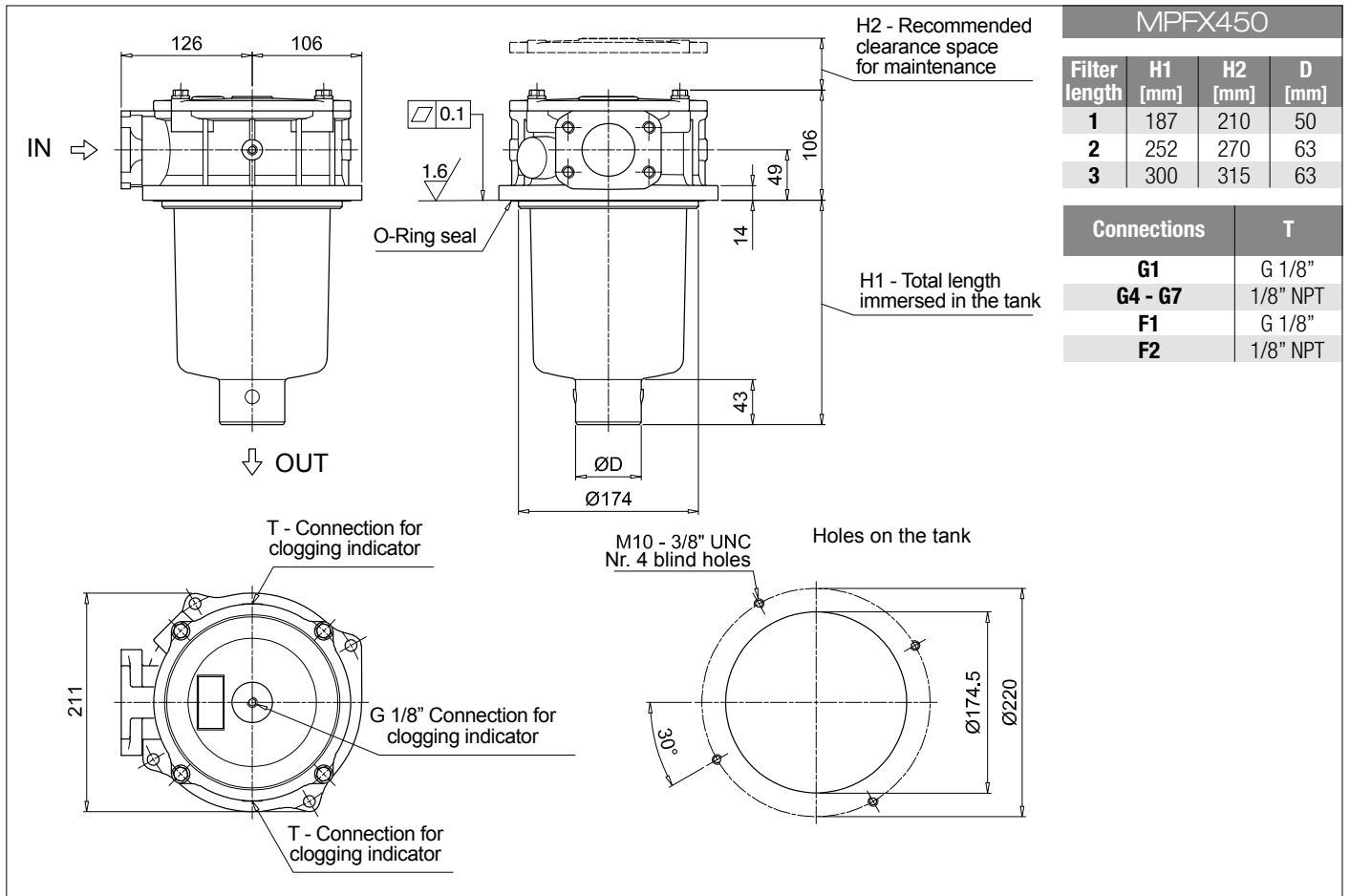
<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

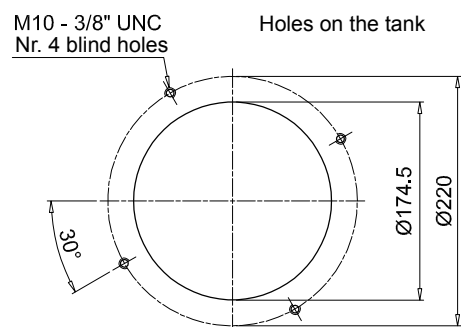
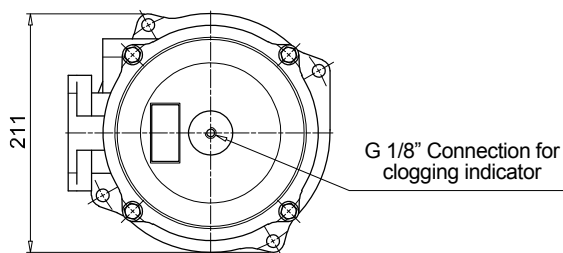
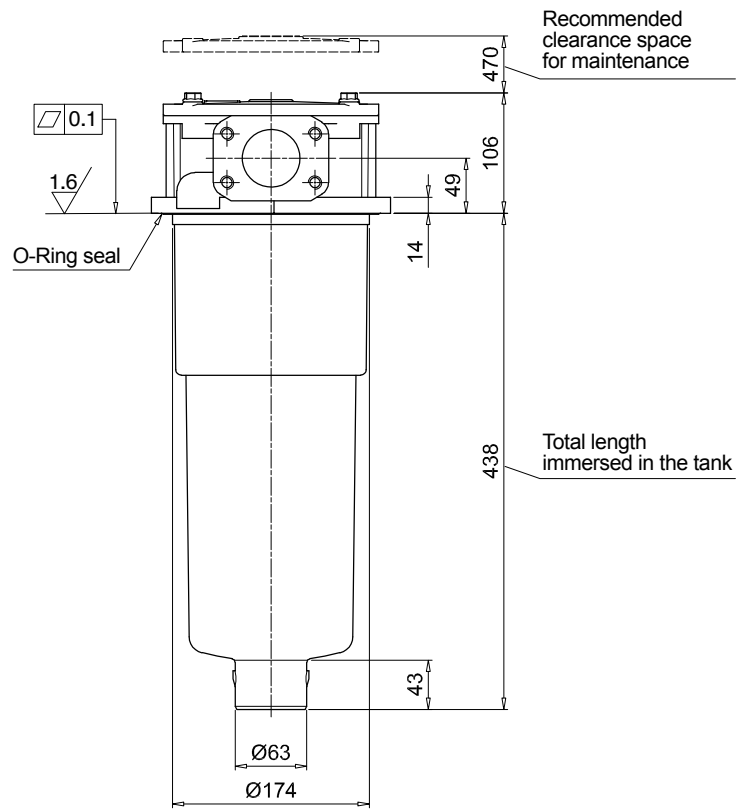
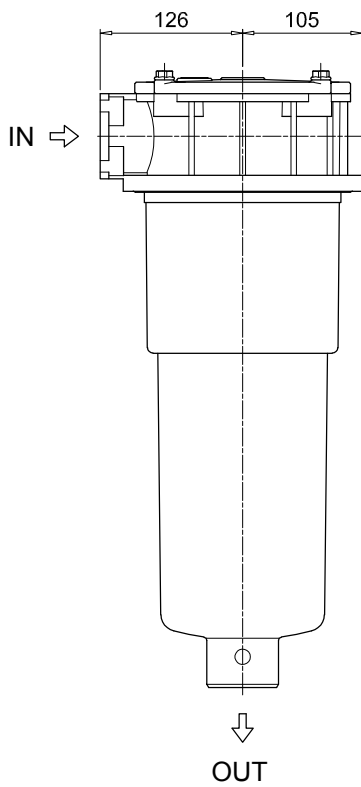
<b>T5</b> Filler plug M30x1.5
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# MPFX MPFX450 - MPFX451 - MPFX750

## Dimensions

MPFX750



**MPFX 100**

**MPFX 181**

**O-RING SEAL**

	Q.ty: 1 pc.	Q.ty: 1 pc.	
Item:	<b>2</b>	<b>3</b> (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPFX 030</b>	See order table	02050675	02050676
<b>MPFX 100-110</b>		02050677	02050678
<b>MPFX 181-182</b>		02050681	02050682
<b>MPFX 184</b>		02050685	02050686
<b>MPFX 191-192</b>		02050683	02050684
<b>MPFX 194</b>		02050687	02050688
<b>MPFX 400-410</b>		02050695	02050696
<b>MPFX 450-451</b>		02050697	02050698
<b>MPFX 750</b>		02050699	02050700

**MPFX 104**

**MPFX 181**

**FLAT SEAL**

	Q.ty: 1 pc.	Q.ty: 1 pc.	
Item:	<b>2</b>	<b>3</b> (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPFX 104</b>	See order table	02050679	02050680
<b>MPFX 181-182</b>		02050691	02050692
<b>MPFX 191-192</b>		02050691	02050692



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

MPLXseries

with MYCLEAN MLX Filter Element



- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as MPLX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1



# MPLX series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 1800 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 1 MPa (10 bar)**  
**Flow rate up to 1800 l/min**

MPLX is a range of return filters for protection of the reservoir against the system contamination.

Completely interchangeable with Pall 8420 & 8520, they are directly fixed to the reservoir, in immersed or semi-immersed position.

The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

#### Available features:

- Flanged connections up to 3", for a maximum flow rate of 1800 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- 6 fixing holes for installation, to suit a variety of reservoir surfaces
- Diffuser, to reduce the risk of aeration, foaming and noise
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic differential clogging indicators
- MYclean interface connection for the filter element, to protect the product against non-original spare parts

#### Common applications:

- Heavy duty industrial equipment
- Heavy duty mobile equipment

### Filter housing materials

- Head: Anodized aluminium
- Cover: Anodized aluminium
- Bowl: Phosphatized steel
- Bypass valve: Steel

### Bypass valve

- Opening pressure 450 kPa (4.5 bar)  $\pm$ 10%

### $\Delta p$ element type

- Microfiber filter elements: 10 bar
- Fluid flow through the filter element from OUT to IN.

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPLX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	2	Length	2
<b>MPLX 250</b>		8.95		2.90
<b>MPLX 660</b>		20.20		11.00

Filter series	Length	Filter element design - N Series						
		A03	A06	A10	A16	A25	M25 M60 M90	P10 P25
<b>MPLX 250</b>	<b>2</b>	157	155	281	312	325	583	392
<b>MPLX 660</b>	<b>2</b>	376	384	820	925	1018	1732	1332

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ 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.

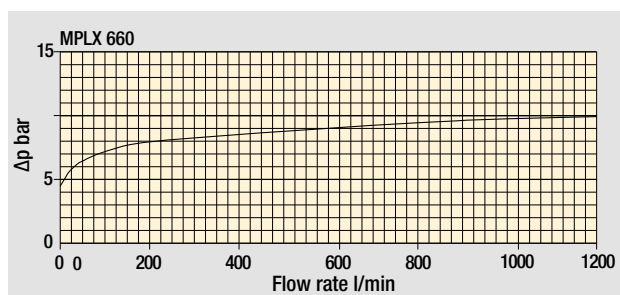
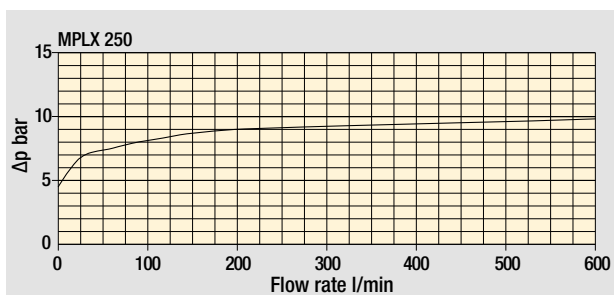
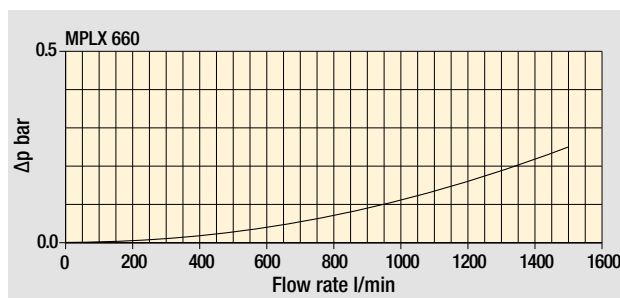
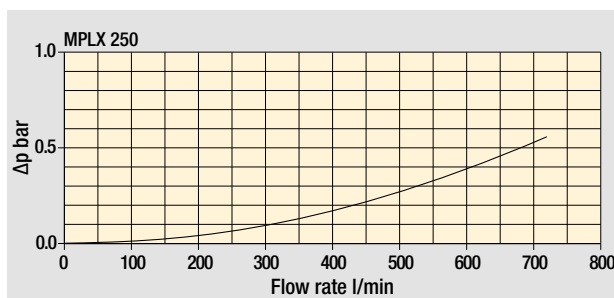
### Hydraulic symbols

Filter series	Style 1 connection + Diff. indic.
<b>MPLX 250</b>	●
<b>MPLX 660</b>	●

### 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.


# MPLX MPLX250 - MPLX660

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>MPLX250</b>   <b>2</b>   <b>D</b>   <b>S</b>   <b>V</b>   <b>A</b>   <b>6</b>   <b>M25</b>   <b>P01</b>																			
<b>MPLX250   MPLX660</b> Filter featuring  Filter Element	Configuration example 2: <b>MPLX660</b>   <b>2</b>   <b>D</b>   <b>D</b>   <b>A</b>   <b>B</b>   <b>6</b>   <b>A10</b>   <b>P01</b>																			
<b>Length</b>	2																			
<b>By-pass valve</b>	D 4.5 bar																			
<b>Diffuser</b>	S Without diffuser D With standard diffuser																			
<b>Seals and treatments</b>	A NBR V FPM																			
<b>Connections</b>	MPLX250					MPLX660														
<b>A</b>	2" SAE 3000 psi/M					3" SAE 3000 psi/M														
<b>B</b>	2" SAE 3000 psi/UNC					3" SAE 3000 psi/UNC														
<b>Connection for differential pressure indicator</b>	6 With plugged connection																			
<b>Filtration rating (filter media)</b>	<table border="0"> <tr> <td><b>A03</b> Inorganic microfiber 3 µm</td> <td><b>M25</b> Wire mesh 25 µm</td> </tr> <tr> <td><b>A06</b> Inorganic microfiber 6 µm</td> <td><b>M60</b> Wire mesh 60 µm</td> </tr> <tr> <td><b>A10</b> Inorganic microfiber 10 µm</td> <td><b>M90</b> Wire mesh 90 µm</td> </tr> <tr> <td><b>A16</b> Inorganic microfiber 16 µm</td> <td><b>P10</b> Resin impregnated paper 10 µm</td> </tr> <tr> <td><b>A25</b> Inorganic microfiber 25 µm</td> <td><b>P25</b> Resin impregnated paper 25 µm</td> </tr> </table>										<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
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<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 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>MLX250</b>   <b>2</b>   <b>M25</b>   <b>V</b>   <b>P01</b>																			
<b>MLX250   MLX660</b> Filter Element with  feature	Configuration example 2: <b>MLX660</b>   <b>2</b>   <b>A10</b>   <b>A</b>   <b>P01</b>																			
<b>Element length</b>	2																			
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<b>Seals and treatments</b>									<b>Execution</b>											
<b>A</b> NBR									<b>P01</b> MP Filtri standard											
<b>V</b> FPM									<b>Pxx</b> Customized											

### CLOGGING INDICATORS

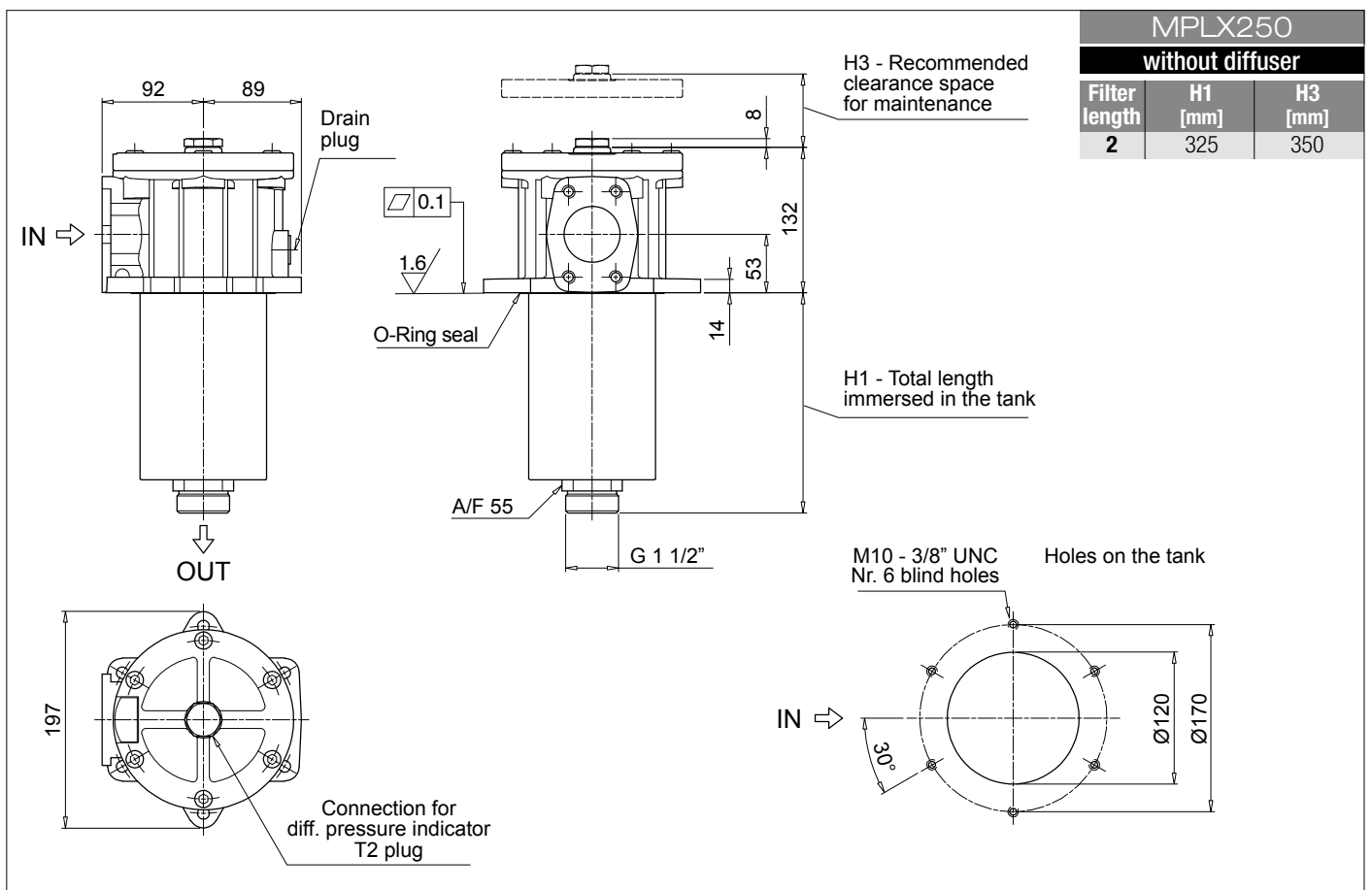
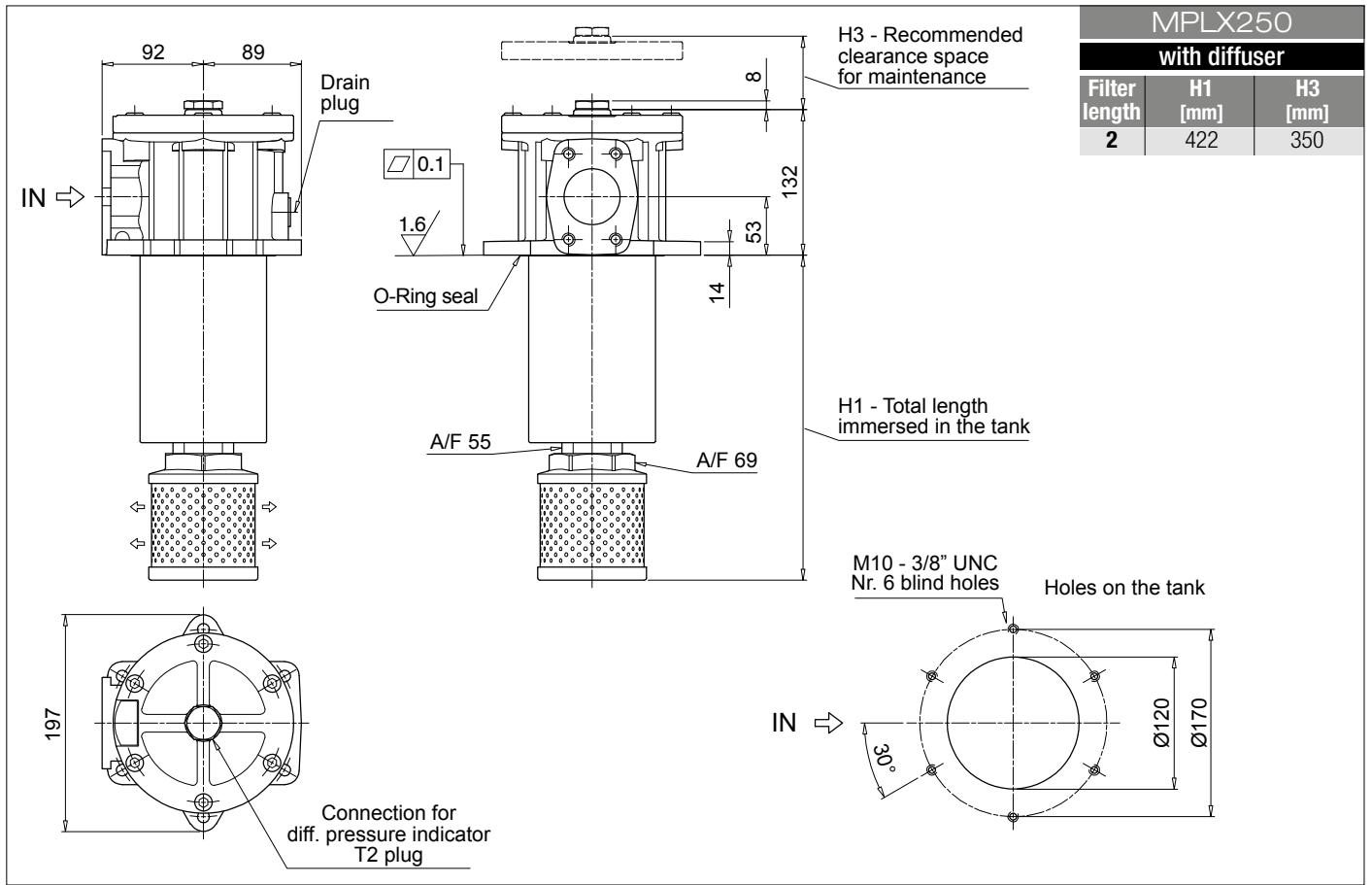
See page 710-711

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

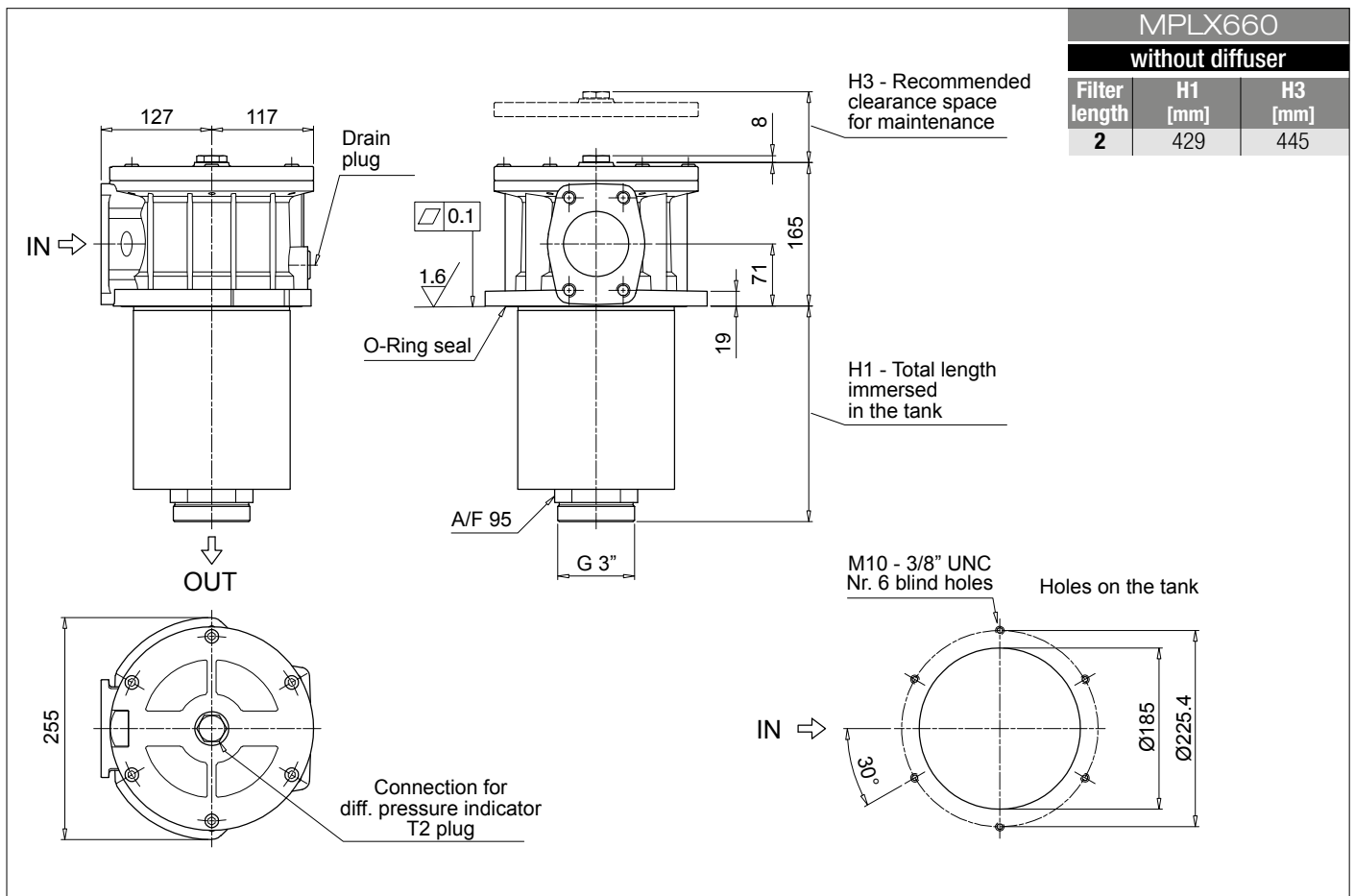
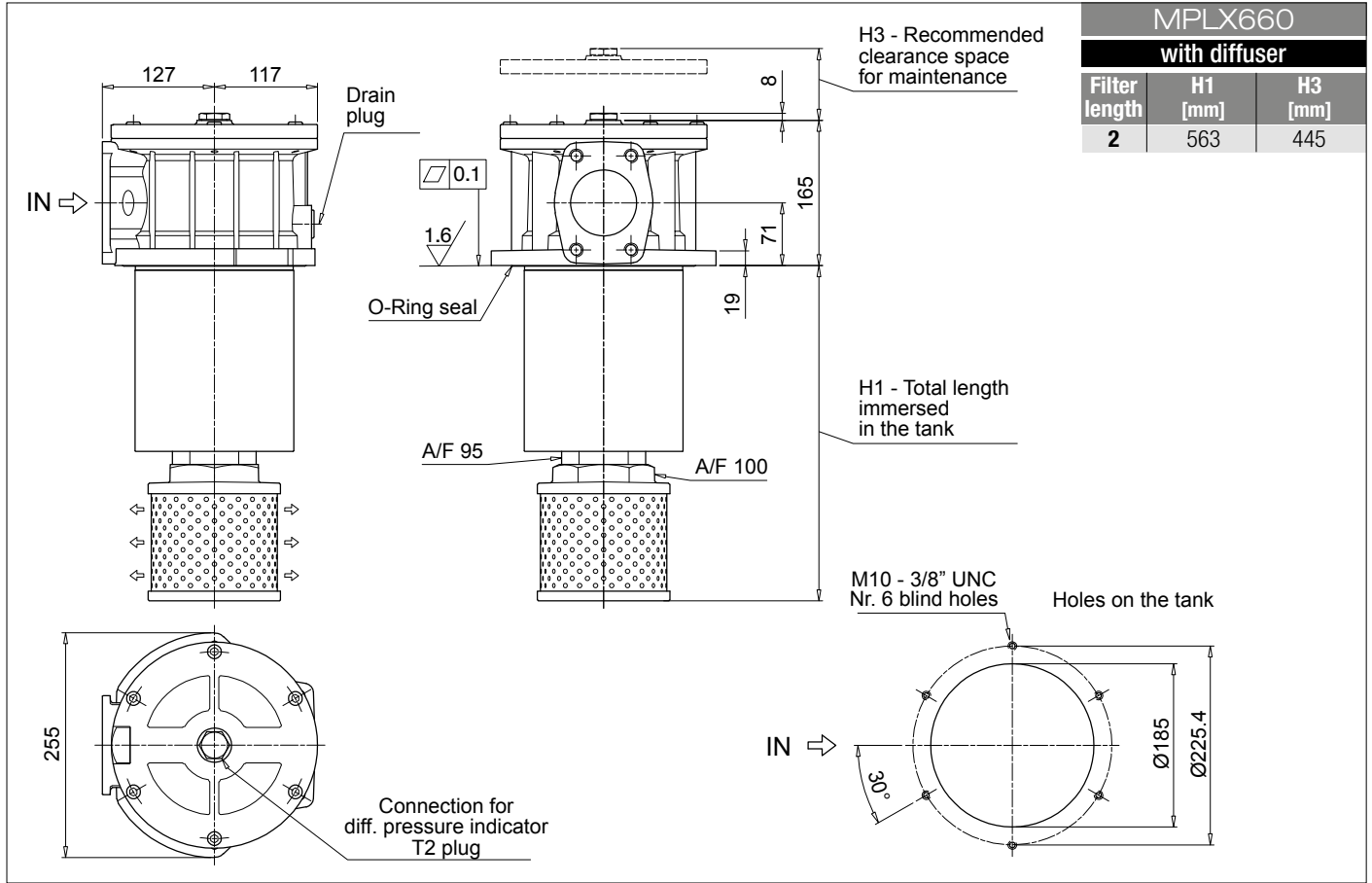
See page 737

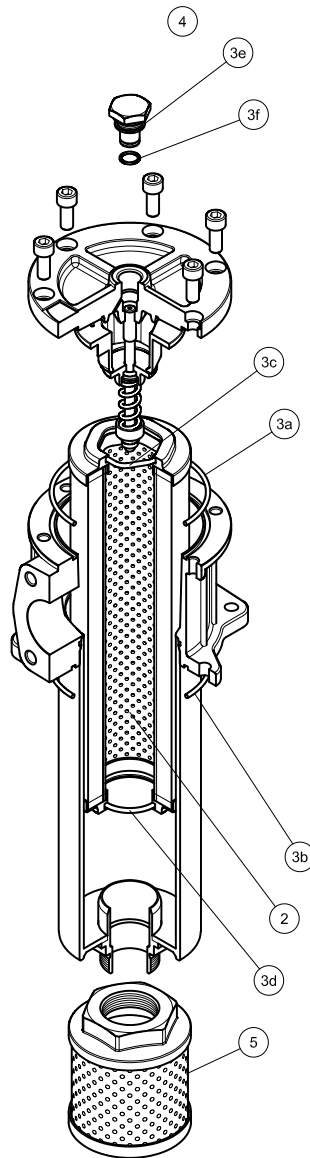
<b>T2</b> Plug
----------------



# MPLX MPLX660

## Dimensions





Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Diffuser
MPLX 250	See order table	NBR	FPM	NBR	FPM	STD 100 C 115 P01
MPLX 660	See order table	02050745	02050746	T2H	T2V	STD 150 E 155 P01
		02050747	02050748			



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MPTX series

with MYCLEAN MFX Filter Element



- Protects the machine from improper use of non-original products.
- Safety of constant quality protection & reliability

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as MPTX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

TOGETHER WITH MYCLEAN, AS OPTION, MPTX SERIES CAN BE PROVIDED WITH

zerospark®  
THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS



Zerospark® is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.



# MPTX series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 300 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 800 kPa (8 bar)**

**Flow rate up to 300 l/min**

MPTX is a range of return filters with integrated breather filter, for protection of the reservoir against the system contamination.

They are directly fixed to the reservoir, in immersed or semi-immersed position.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 300 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 6 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Screw-in cover with a special shape, to allow the filter element replacement without the use of specific tools
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Integrated breather filter, to clean the air that moves into the reservoir as result of the oil level fluctuation
- Integrated breather filter with pressurization valve, to clean the air that moves into the reservoir as result of the oil level fluctuation and to guarantee the pressurization into the reservoir
- Visual, electrical and electronic clogging indicators
- MYclean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

### Common applications:

- Light industrial equipment
- Mobile application

### Filter housing materials

- Head: Aluminium
- Cover: Polyamide
- Bowl: Polyamide

### Bypass valve

- Opening pressure 175 kPa (1.75 bar) ±10%
- Opening pressure 300 kPa (3 bar) ±10%

### Δp element type

- Microfiber filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPTX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>MPTX 025</b>		0.41	0.45	0.50	-		0.24	0.35	0.42	-
<b>MPTX 027</b>		0.44	0.48	0.55	-		0.24	0.35	0.42	-
<b>MPTX 110</b>		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
<b>MPTX 114</b>		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
<b>MPTX 116</b>		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
<b>MPTX 120</b>		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPTX 025-027</b>	<b>1</b>	7	10	23	28	42	59	51	54
	<b>2</b>	17	20	45	48	56	72	64	67
	<b>3</b>	21	24	50	55	59	76	74	75
<b>MPTX 110-120 114-116</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

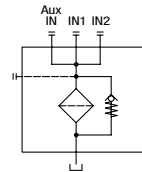
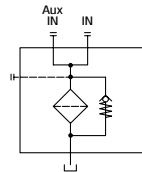
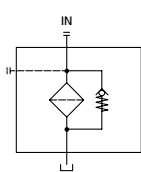
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For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

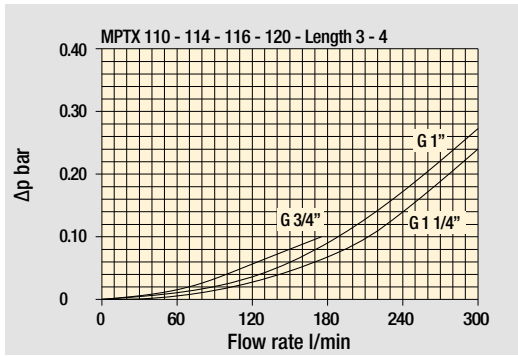
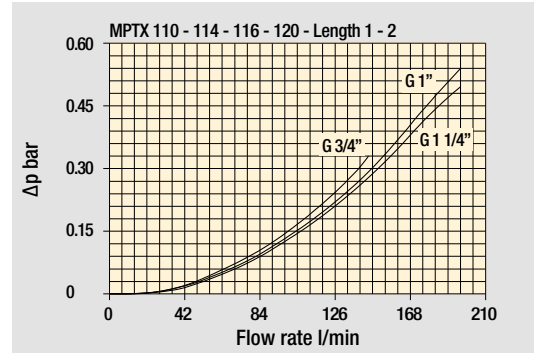
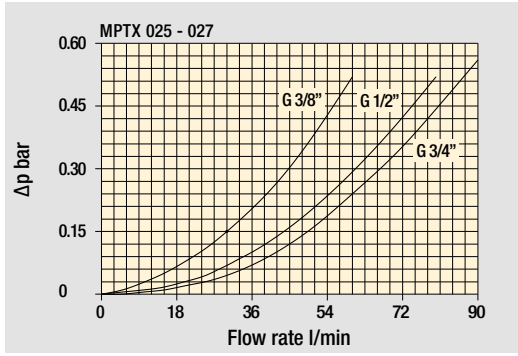
Filter series	Style 1 connection	Style 2 connections	Style 3 connections
<b>MPTX 025</b>	•	-	-
<b>MPTX 027</b>	•	-	-
<b>MPTX 110</b>	-	•	-
<b>MPTX 114</b>	•	-	-
<b>MPTX 116</b>	•	-	-
<b>MPTX 120</b>	-	-	•



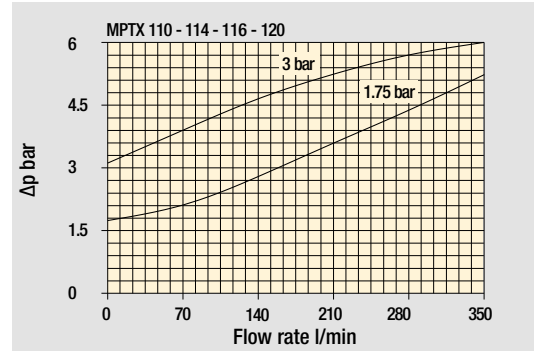
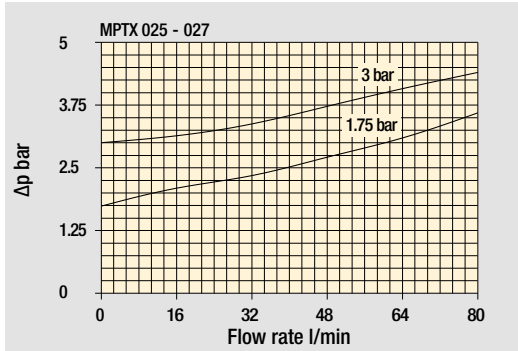
# MPTX GENERAL INFORMATION

## Pressure drop

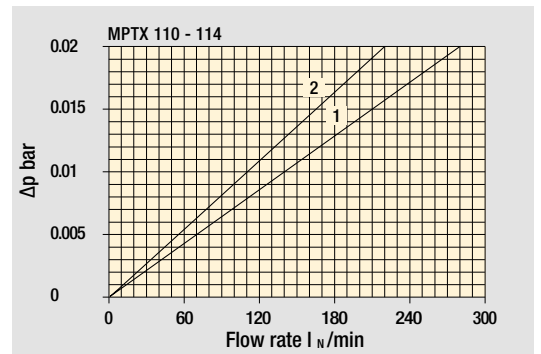
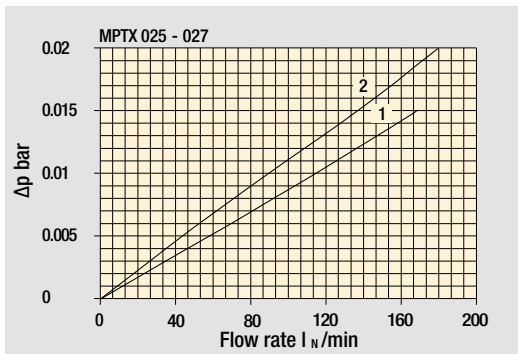
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Air breather pressure drop







- 1  C With air breather 10  $\mu m$
- 2  D With anti-splash and SAP50 10  $\mu m$

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.

MPTX 025 -027		
Air breather port plugged Indicator port	Air breather standard Indicator port	Anti-splash air breather & pressurized Double indicator port
		

## Multiport - Multifunction

MPTX 110	
Standard - Single IN Port	Double IN Port - Double indicator port
	
Double IN Port Option: double drain port	Double IN Port - Indicator port Option: drain port
	

## MPTX 120

Triple IN port

Option: double drain port



# MPTX MPTX025 - MPTX027

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>MPTX025</b>   <b>1</b>   <b>S</b>   <b>A</b>   <b>G3</b>   <b>A10</b>   <b>E</b>   <b>P01</b>																																
<b>MPTX025   MPTX027</b> Filter featuring <b>MYCLEAN</b> Filter Element	Configuration example 2: <b>MPTX027</b>   <b>3</b>   <b>C</b>   <b>W</b>   <b>G6</b>   <b>A03</b>   <b>B</b>   <b>P01</b>																																
<b>Length</b>	<table border="1"> <tr> <td><b>1</b></td> <td><b>2</b></td> <td><b>3</b></td> </tr> </table>									<b>1</b>	<b>2</b>	<b>3</b>																					
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<b>Connections</b>	<table border="1"> <tr> <td><b>G1</b> G 3/8"</td> <td><b>G6</b> 3/4" NPT</td> </tr> <tr> <td><b>G2</b> G 1/2"</td> <td><b>G7</b> SAE 6 - 9/16" - 18 UNF</td> </tr> <tr> <td><b>G3</b> G 3/4"</td> <td><b>G8</b> SAE 8 - 3/4" - 16 UNF</td> </tr> <tr> <td><b>G4</b> 3/8" NPT</td> <td><b>G9</b> SAE 12 - 1 1/16" - 12 UN</td> </tr> <tr> <td><b>G5</b> 1/2" NPT</td> <td></td> </tr> </table>									<b>G1</b> G 3/8"	<b>G6</b> 3/4" NPT	<b>G2</b> G 1/2"	<b>G7</b> SAE 6 - 9/16" - 18 UNF	<b>G3</b> G 3/4"	<b>G8</b> SAE 8 - 3/4" - 16 UNF	<b>G4</b> 3/8" NPT	<b>G9</b> SAE 12 - 1 1/16" - 12 UN	<b>G5</b> 1/2" NPT															
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<b>Filtration rating (filter media)</b>	<table border="1"> <tr> <td><b>A03</b> Inorganic microfiber 3 µm</td> <td><b>M25</b> Wire mesh 25 µm</td> </tr> <tr> <td><b>A06</b> Inorganic microfiber 6 µm</td> <td><b>M60</b> Wire mesh 60 µm</td> </tr> <tr> <td><b>A10</b> Inorganic microfiber 10 µm</td> <td><b>M90</b> Wire mesh 90 µm</td> </tr> <tr> <td><b>A16</b> Inorganic microfiber 16 µm</td> <td><b>P10</b> Resin impregnated paper 10 µm</td> </tr> <tr> <td><b>A25</b> Inorganic microfiber 25 µm</td> <td><b>P25</b> Resin impregnated paper 25 µm</td> </tr> </table>									<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm														
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		<b>Pxx</b>	<b>Zxx</b>	Customized																													

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 2: <b>MFx020</b>   <b>1</b>   <b>A10</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>																																				
<b>MFx020</b> Filter Element with <b>MYCLEAN</b> feature	Configuration example 1: <b>MFx020</b>   <b>3</b>   <b>A03</b>   <b>N</b>   <b>B</b>   <b>P01</b>																																				
<b>Element length</b>	<table border="1"> <tr> <td><b>1</b></td> <td><b>2</b></td> <td><b>3</b></td> </tr> </table>									<b>1</b>	<b>2</b>	<b>3</b>																									
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<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm																																				
<b>Element Δp</b>	<table border="1"> <thead> <tr> <th></th> <th colspan="3">Filter media</th> </tr> <tr> <th></th> <th>Axx</th> <th>Mxx</th> <th>Pxx</th> </tr> </thead> <tbody> <tr> <td><b>N</b> 10 bar</td> <td>-</td> <td>•</td> <td>•</td> </tr> <tr> <td><b>H</b> 10 bar</td> <td>•</td> <td>-</td> <td>-</td> </tr> </tbody> </table>										Filter media				Axx	Mxx	Pxx	<b>N</b> 10 bar	-	•	•	<b>H</b> 10 bar	•	-	-												
	Filter media																																				
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<b>N</b> 10 bar	-	•	•																																		
<b>H</b> 10 bar	•	-	-																																		
	<table border="1"> <tr> <th colspan="2">Seals</th> <th colspan="2">Bypass valve</th> <th colspan="3">Executions</th> </tr> <tr> <td><b>B</b> NBR</td> <td><b>V</b> FPM</td> <td><b>E</b> 3 bar</td> <td>- 1.75 bar</td> <td><b>Base</b></td> <td><b>zereospark<sup>+</sup></b></td> <td></td> </tr> <tr> <td></td> <td></td> <td><b>P01</b></td> <td><b>Z01</b></td> <td>MP Filtri standard</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td><b>Pxx</b></td> <td><b>Zxx</b></td> <td>Customized</td> <td></td> <td></td> </tr> </table>									Seals		Bypass valve		Executions			<b>B</b> NBR	<b>V</b> FPM	<b>E</b> 3 bar	- 1.75 bar	<b>Base</b>	<b>zereospark<sup>+</sup></b>				<b>P01</b>	<b>Z01</b>	MP Filtri standard					<b>Pxx</b>	<b>Zxx</b>	Customized		
Seals		Bypass valve		Executions																																	
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		<b>Pxx</b>	<b>Zxx</b>	Customized																																	

### CLOGGING INDICATORS

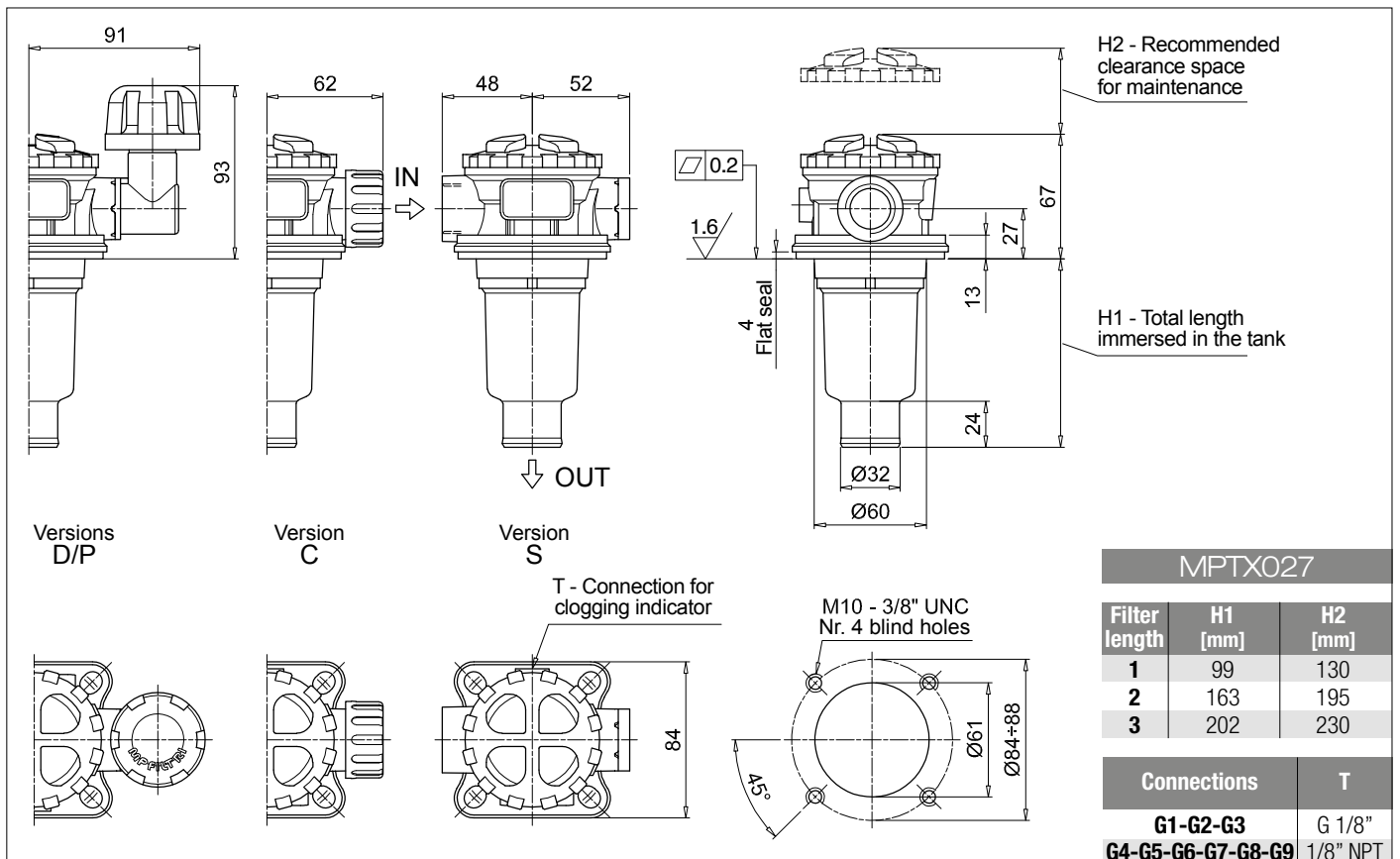
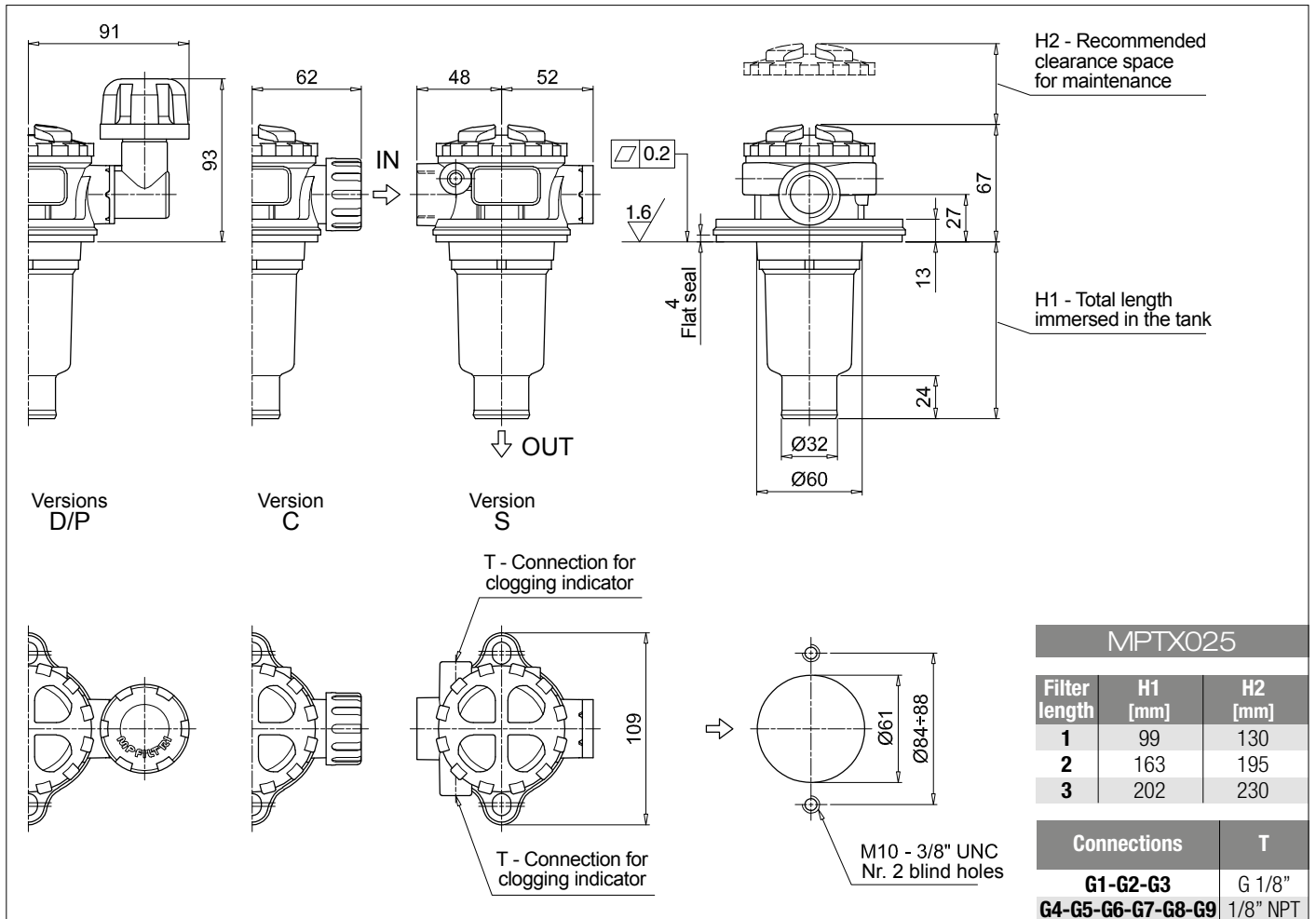
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube
<b>DPT</b> Dipstick



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1: <b>MPTX110</b>   1   S   A   G1   0   A06   E   P01								
<b>MPTX110</b> Filter featuring <b>MYCLEAN</b> Filter Element			Configuration example 2: <b>MPTX110</b>   3   P   V   G4   1   M25   B   P01								
<b>Length</b>											
1   2   3   4											
<b>Air breather</b>											
S Without air breather											
C With air breather 10 µm											
D With anti-splash and air breather SAP050 10 µm											
P With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar											
<b>Seals and treatments</b>			Filtration rating								
			Axx	Mxx	Pxx						
A NBR			•	•	•						
V FPM			•	•	•						
W NBR head anodized			•	•	-						
Z FPM head anodized			•	•	-						
<b>Main Connections</b>		<b>Aux size 1</b>	<b>Aux size 2</b>	<b>Main Connections</b>		<b>Aux size 1</b>	<b>Aux size 2</b>				
G1 G 3/4"		G 3/8"	G 1/2"	G6 1 1/4" NPT		3/8" NPT	1/2" NPT				
G2 G 1"				G7 SAE 12 - 1 1/16" - 12 UN		SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF				
G3 G 1 1/4"		3/8" NPT	1/2" NPT	G8 SAE 16 - 1 5/16" - 12 UN							
G4 3/4" NPT				G9 SAE 20 - 1 5/8" - 12 UN							
G5 1" NPT											
<b>Aux connection</b> - see previous table											
0 Not machined   1 Aux size 1   2 Aux size 2											
<b>Filtration rating (filter media)</b>											
A03 Inorganic microfiber 3 µm			M25 Wire mesh 25 µm								
A06 Inorganic microfiber 6 µm			M60 Wire mesh 60 µm								
A10 Inorganic microfiber 10 µm			M90 Wire mesh 90 µm								
A16 Inorganic microfiber 16 µm			P10 Resin impregnated paper 10 µm								
A25 Inorganic microfiber 25 µm			P25 Resin impregnated paper 25 µm								
			<b>Executions</b>								
			<b>Bypass valve</b>			<b>Base</b>   <b>zerospark*</b>					
			E 3 bar			P01 Z01 MP Filtri standard					
			B 1.75 bar			Pxx Zxx Customized					

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1: <b>MFx100</b>   1   A06   H   B   E   P01								
<b>MFx100</b> Filter Element with <b>MYCLEAN</b> feature			Configuration example 2: <b>MFx100</b>   3   M25   N   V   P01								
<b>Element length</b>											
1   2   3   4											
<b>Filtration rating (filter media)</b>											
A03 Inorganic microfiber 3 µm			M25 Wire mesh 25 µm								
A06 Inorganic microfiber 6 µm			M60 Wire mesh 60 µm								
A10 Inorganic microfiber 10 µm			M90 Wire mesh 90 µm								
A16 Inorganic microfiber 16 µm			P10 Resin impregnated paper 10 µm								
A25 Inorganic microfiber 25 µm			P25 Resin impregnated paper 25 µm								
<b>Element Δp</b>			Filter media								
			Axx	Mxx	Pxx						
N 10 bar			-	•	•						
H 10 bar			•	-	-						
			<b>Seals</b>			<b>Bypass valve</b>					
			B NBR			E 3 bar					
			V FPM			- 1.75 bar					
						<b>Executions</b>					
						<b>Base</b>   <b>zerospark*</b>					
						P01 Z01 MP Filtri standard					
						Pxx Zxx Customized					

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

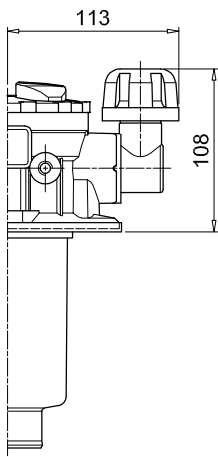
<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	



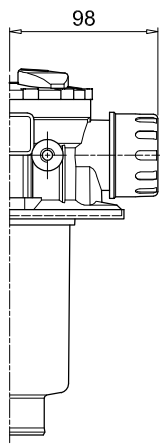
MPTX110		
Filter length	H1 [mm]	H2 [mm]
1	99	120
2	144	170
3	222	250
4	324	350

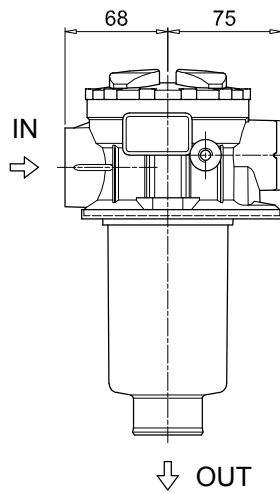
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



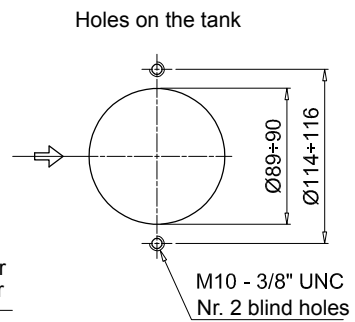
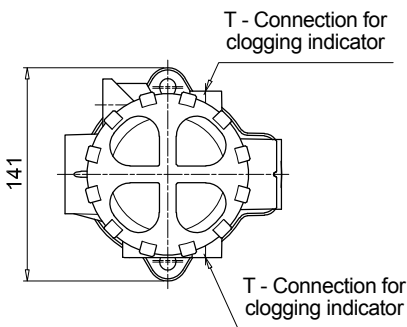
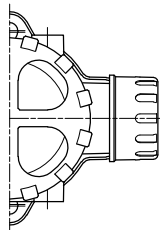
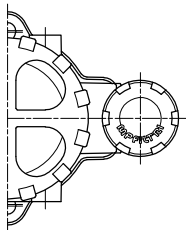
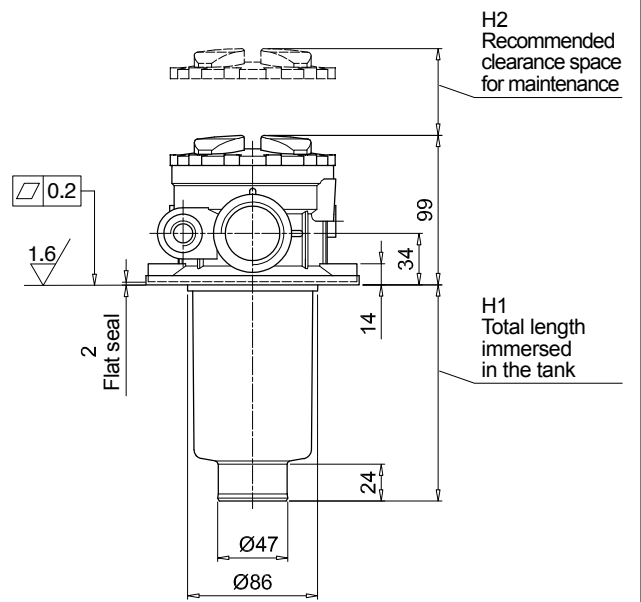
Versions D/P



Version C



Version S



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>MPTX114</b>	<b>4</b>	<b>S</b>	<b>A</b>	<b>G3</b>	<b>A10</b>	<b>E</b>	<b>P01</b>	
<b>MPTX114</b> Filter featuring <b>MYCLEAN</b> Filter Element	Configuration example 2: <b>MPTX114</b>	<b>3</b>	<b>C</b>	<b>W</b>	<b>G6</b>	<b>A03</b>	<b>B</b>	<b>P01</b>	
<b>Length</b>									
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
<b>Air breather</b>									
<b>S</b> Without air breather									
<b>C</b> With air breather 10 µm									
<b>D</b> With anti-splash and air breather SAP050 10 µm									
<b>P</b> With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar									
<b>Seals and treatments</b>	Filtration rating								
<b>A</b> NBR	Axx	Mxx	Pxx						
<b>V</b> FPM	•	•	•						
<b>W</b> NBR head anodized	•	•	-						
<b>Z</b> FPM head anodized	•	•	-						
<b>Connections</b>									
<b>G1</b> G 3/4"	<b>G6</b> 1 1/4" NPT								
<b>G2</b> G 1"	<b>G7</b> SAE 12 - 1 1/16" - 12 UN								
<b>G3</b> G 1 1/4"	<b>G8</b> SAE 16 - 1 5/16" - 12 UN								
<b>G4</b> 3/4" NPT	<b>G9</b> SAE 20 - 1 5/8" - 12 UN								
<b>G5</b> 1" NPT									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm								
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm								
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm								
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm								
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm								
<b>Bypass valve</b>									
<b>E</b> 3 bar									
<b>B</b> 1.75 bar									
<b>Executions</b>									
<b>Base</b>	<b>zerospark</b>								
<b>P01</b>	<b>Z01</b>							MP Filtri standard	
<b>Pxx</b>	<b>Zxx</b>							Customized	

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 2: <b>MFX100</b>	<b>4</b>	<b>A10</b>	<b>H</b>	<b>B</b>	<b>E</b>	<b>P01</b>
<b>MFX100</b> Filter Element with <b>MYCLEAN</b> feature	Configuration example 1: <b>MFX100</b>	<b>3</b>	<b>A03</b>	<b>N</b>	<b>B</b>		<b>P01</b>
<b>Element length</b>							
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>							
<b>Filtration rating (filter media)</b>							
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm						
<b>Element Δp</b>	Filter media						
<b>N</b> 10 bar	Axx	Mxx	Pxx				
<b>H</b> 10 bar	-	•	•				
<b>Seals</b>							
<b>B</b> NBR							
<b>V</b> FPM							
<b>Bypass valve</b>							
<b>E</b> 3 bar							
<b>-</b> 1.75 bar							
<b>Executions</b>							
<b>Base</b>	<b>zerospark</b>						
<b>P01</b>	<b>Z01</b>						MP Filtri standard
<b>Pxx</b>	<b>Zxx</b>						Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

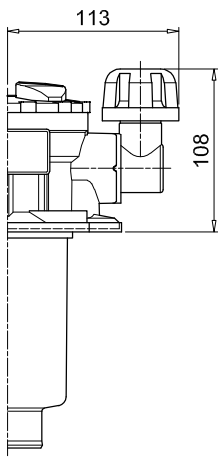
See page 266

<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	

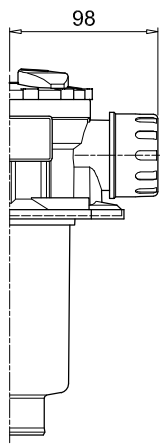
MPTX114		
Filter length	H1 [mm]	H2 [mm]
1	99	120
2	144	170
3	222	250
4	324	350

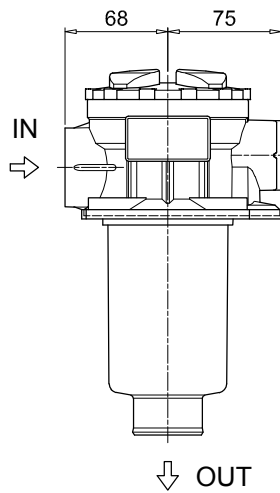
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



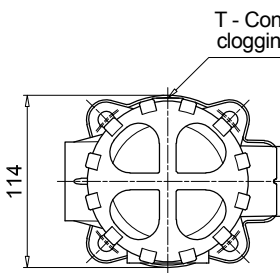
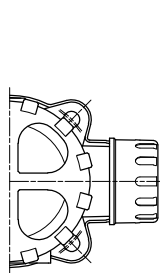
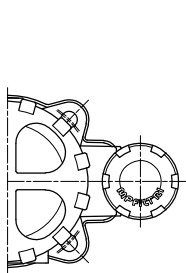
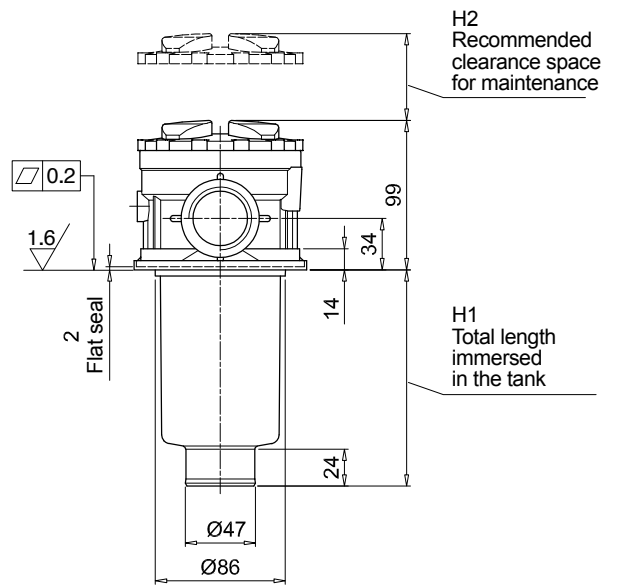
Versions D/P



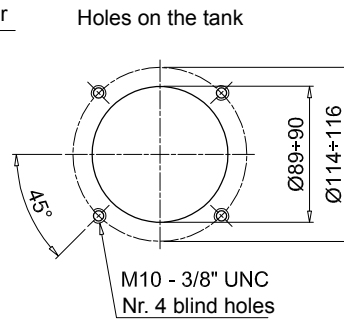
Version C



Version S



T - Connection for clogging indicator



Holes on the tank

M10 - 3/8" UNC  
Nr. 4 blind holes

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>MPTX116</b>   1   S   A   G1   M90   E   P01								
<b>MPTX116</b> Filter featuring <b>MY CLEAN</b> Filter Element	Configuration example 2: <b>MPTX116</b>   2   S   Z   G9   A03   B   P01								
<b>Length</b>	1   2   3   4								
<b>Air breather</b>	S Without air breather								
<b>Seals and treatments</b>	Filtration rating								
	Axx	Mxx	Pxx						
<b>A</b> NBR	•	•	•						
<b>V</b> FPM	•	•	•						
<b>W</b> NBR head anodized	•	•	-						
<b>Z</b> FPM head anodized	•	•	-						
Flat seal on the head on request									
<b>Connections</b>									
<b>G1</b> G 3/4"	<b>G6</b> 1 1/4" NPT								
<b>G2</b> G 1"	<b>G7</b> SAE 12 - 1 1/16" - 12 UN								
<b>G3</b> G 1 1/4"	<b>G8</b> SAE 16 - 1 5/16" - 12 UN								
<b>G4</b> 3/4" NPT	<b>G9</b> SAE 20 - 1 5/8" - 12 UN								
<b>G5</b> 1" NPT									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm								
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm								
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm								
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm								
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm								
<b>Bypass valve</b>									
<b>E</b> 3 bar									
<b>B</b> 1.75 bar									
<b>Base</b>	<b>zérospark+</b>								
<b>P01</b>	<b>Z01</b>		MP Filtri standard						
<b>Pxx</b>	<b>Zxx</b>		Customized						

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 2: <b>MFx100</b>   1   M90   N   B   E   P01								
<b>MFx100</b> Filter Element with <b>MY CLEAN</b> feature	Configuration example 1: <b>MFx100</b>   2   A03   H   V   P01								
<b>Element length</b>	1   2   3   4								
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm								
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm								
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm								
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm								
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm								
<b>Element Δp</b>	Filter media								
	Axx	Mxx	Pxx						
<b>N</b> 10 bar	-	•	•						
<b>H</b> 10 bar	•	-	-						
<b>Seals</b>									
<b>B</b> NBR									
<b>V</b> FPM									
<b>Bypass valve</b>									
<b>E</b> 3 bar									
-	1.75 bar								
<b>Base</b>	<b>zérospark+</b>								
<b>P01</b>	<b>Z01</b>		MP Filtri standard						
<b>Pxx</b>	<b>Zxx</b>		Customized						

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

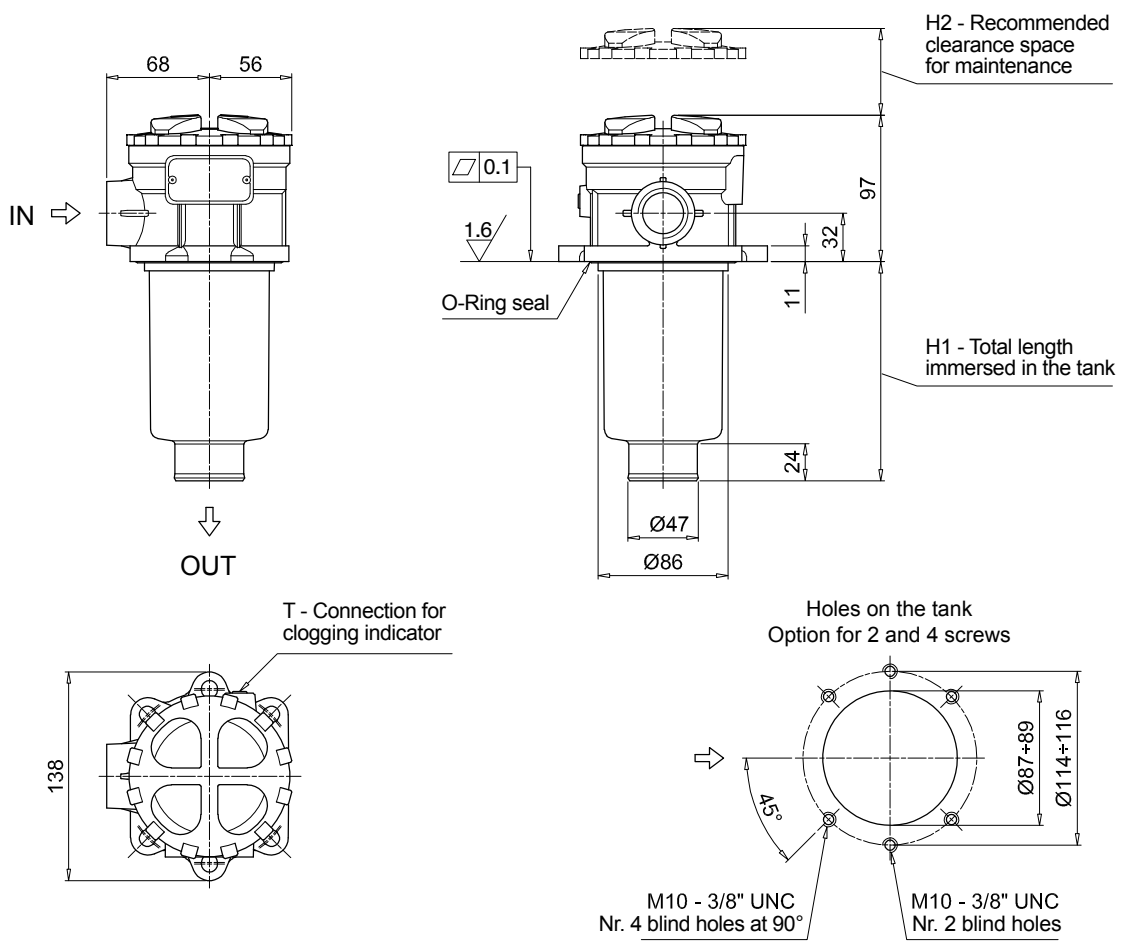
See page 266

<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	

MPTX116		
Filter length	H1 [mm]	H2 [mm]
1	99	120
2	146	170
3	224	250
4	326	350

Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



## Designation & Ordering code

### COMPLETE FILTER

**Series and size**  
**MPTX120** Filter featuring **MY CLEAN** Filter Element

Configuration example 1: **MPTX120** | **1** | **A** | **G1** | **0** | **A06** | **E** | **P01**  
 Configuration example 2: **MPTX120** | **3** | **V** | **G4** | **1** | **M25** | **B** | **P01**

**Length**  
**1** | **2** | **3** | **4**

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Main Connections	Rear connections	Aux size 1	Aux size 2
<b>G1</b> G 3/4"	G 3/4"	G 3/8"	G 1/2"
<b>G2</b> G 1"	G 1"		
<b>G3</b> G 1 1/4"	G 3/4"	3/8" NPT	1/2" NPT
<b>G4</b> 3/4" NPT	3/4" NPT		
<b>G5</b> 1" NPT	1" NPT	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
<b>G6</b> 1 1/4" NPT	3/4" NPT		
<b>G7</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN		
<b>G8</b> SAE 16 - 1 5/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN		
<b>G9</b> SAE 20 - 1 5/8" - 12 UN	SAE 12 - 1 1/16" - 12 UN		

**Aux connection** - see previous table  
**0** Not machined | **1** Aux size 1 | **2** Aux size 2

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Bypass valve			Executions		
<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	<b>zero</b>	<b>spark</b>	MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b>	<b>Zxx</b>			Customized

### FILTER ELEMENT

**Element series and size**  
**MFx100** Filter Element with **MY CLEAN** feature

Configuration example 1: **MFx100** | **1** | **A06** | **H** | **B** | **E** | **P01**  
 Configuration example 2: **MFx100** | **3** | **M25** | **N** | **V** | **P01**

**Element length**  
**1** | **2** | **3** | **4**

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Seals		Bypass valve		Executions		
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	<b>zero</b>	<b>spark</b>	MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b>	<b>Zxx</b>			Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

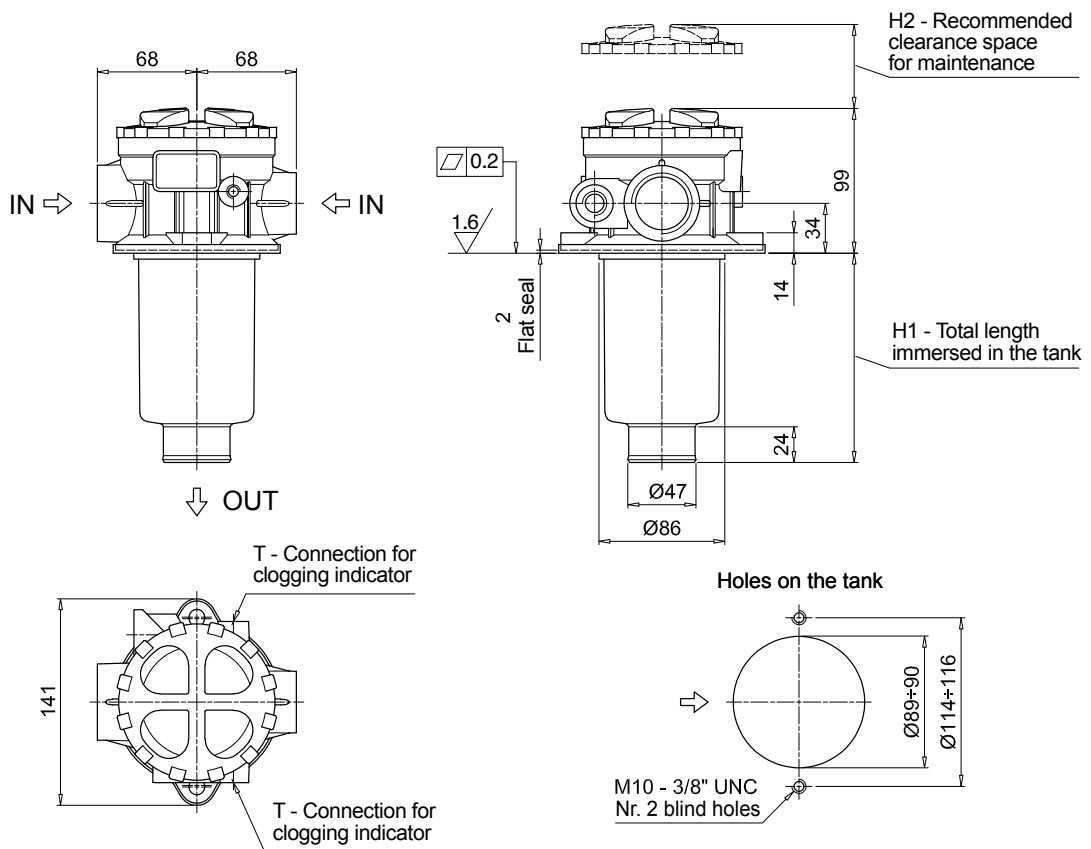
See page 266

<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	

MPTX120		
Filter length	H1 [mm]	H2 [mm]
<b>1</b>	99	120
<b>2</b>	144	170
<b>3</b>	222	250
<b>4</b>	324	350

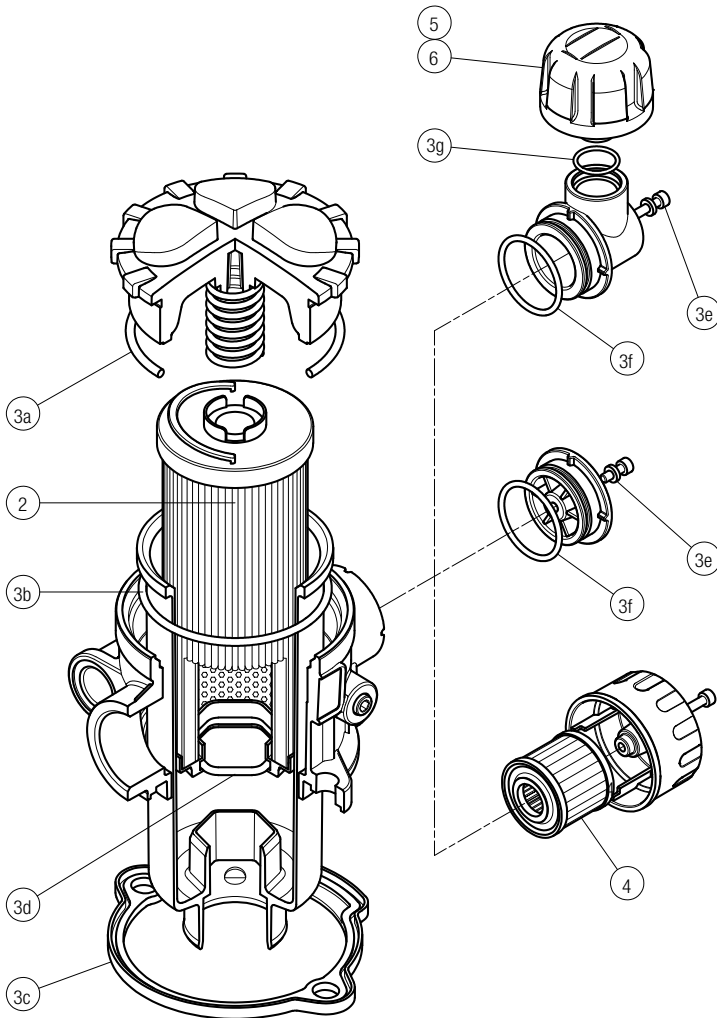
Connections	T
<b>G1-G2-G3</b>	G 1/8"
<b>G4-G5-G6-G7-G8-G9</b>	1/8" NPT



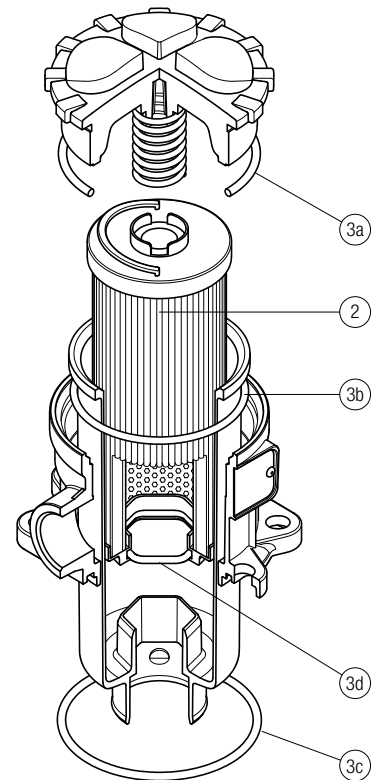
# MPTX SPARE PARTS

Order number for spare parts

**MPTX 025 - 027 - 110**



**MPTX 116**

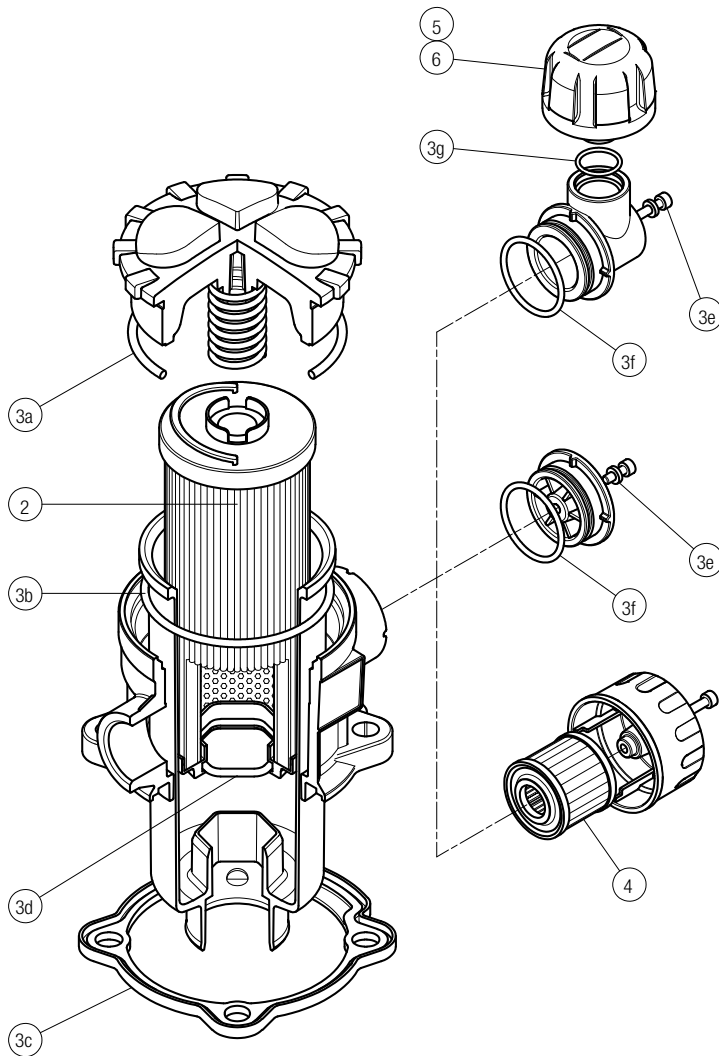


Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number NBR	FPM	Air breather filter element - version:		
				C	D	P
<b>MPTX 025</b>	See order table	02050701	02050702	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
<b>MPTX 027</b>		02050703	02050704	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
<b>MPTX 110</b>		02050709	02050710	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

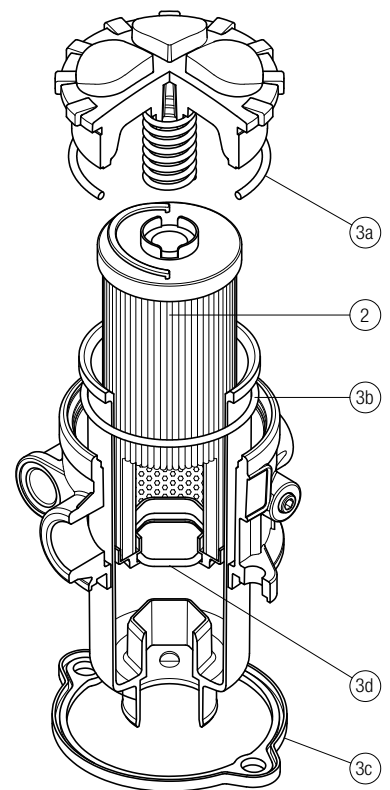
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number NBR	FPM
<b>MPTX 116</b>	See order table	02050737	02050738



**MPTX 114**



**MPTX 120**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		
		NBR	FPM	C	D	P
<b>MPTX 114</b>	See order table	02050707	02050708	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPTX 120</b>	See order table	02050711	02050712



THE **X** CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

MFBX series

with **MYCLEAN** MFX Filter Element



- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as MFBX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1



TOGETHER WITH **MYCLEAN**, AS OPTION, MFBX SERIES CAN BE PROVIDED WITH

**zerospark**<sup>®</sup>  
THE ANTI-STATIC FILTERS

THE **Z** CONCEPT FOR OUR FILTERS



Zerospark<sup>®</sup> is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.

# MFBX series

BOWL ASSEMBLY

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 700 l/min



## Description

## Technical data

### Return filter Bowl assembly

**Maximum working pressure up to 800 kPa (8 bar)**

**Flow rate up to 700 l/min**

MFBX is a range of return filter kits for protection of the reservoir against the system contamination.

They are directly integrated in the moulded reservoir in immersed or semi-immersed position to save space into the tank.

Treaded or flanged covers can be provided.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

#### Available features:

- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- MyClean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

#### Common applications:

Mobile machines

#### Bowl assembly materials

- Cover  
Polyamide: MFBX 020-030-100  
Aluminium: MFBX 180-190

- Bowl: Polyamide

#### Filter element materials

- Caps: Polyamide
- Spring: Spring steel

#### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 300 kPa (3 bar)  $\pm 10\%$

#### $\Delta p$ element type

- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

MFBX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>MFBX 020</b>		0.25	0.35	0.40	-		0.10	0.15	0.20	-
<b>MFBX 030</b>		0.25	-	-	-		0.15	-	-	-
<b>MFBX 100</b>		0.50	0.60	0.75	0.95		0.35	0.50	0.80	1.10
<b>MFBX 180</b>		1.60	2.40	-	-		1.50	2.90	-	-
<b>MFBX 190</b>		-	2.40	-	-		-	3.00	-	-

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MFBX 020</b>	<b>1</b>	7	10	23	28	42	59	51	54
	<b>2</b>	17	20	45	48	56	72	64	67
	<b>3</b>	21	24	50	55	59	76	74	75
<b>MFBX 030</b>	<b>1</b>	7	10	24	29	47	84	60	66
<b>MFBX 100</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289
<b>MFBX 180</b>	<b>1</b>	127	148	235	243	278	441	285	299
	<b>2</b>	231	262	358	382	388	472	404	412
<b>MFBX 190</b>	<b>2</b>	261	305	489	528	546	696	583	598

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

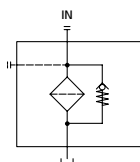
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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 1 connection
<b>MFBX 020</b>	•
<b>MFBX 030</b>	•
<b>MFBX 100</b>	•
<b>MFBX 180</b>	•
<b>MFBX 190</b>	•



## Designation & Ordering code

### COMPLETE FILTER

**Series and size**  
**MFBX020 | MFBX100 | MFBX190** Filter featuring **MYCLEAN** Filter Element  
**MFBX030 | MFBX180**

Configuration example 1: **MFBX100** | **1** | **A** | **2** | **A10** | **H** | **E** | **P01**  
 Configuration example 2: **MFBX180** | **2** | **V** | **1** | **M25** | **N** | **B** | **P01**

Length	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190
1	•	•	•	•	-
2	•	-	•	•	•
3	•	-	•	-	-
4	-	-	•	-	-

**Seals**  
**A** NBR  
**V** FPM

Version	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190
1 Without cover	•	•	•	•	•
2 With flanged cover type MPF	-	•	•	•	•
3 With threaded cover type MPT	•	-	•	-	-

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Bypass valve	Executions		
	Base	zérospark*	
<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b>	<b>Zxx</b>	Customized

### FILTER ELEMENT

**Element series and size**  
**MFXX020 | MFXX100** Filter Element with **MYCLEAN** feature  
**MFXX030 | MFXX180**

Configuration example 1: **MFXX180** | **2** | **M25** | **H** | **V** | **P01**  
 Configuration example 2: **MFXX100** | **1** | **A10** | **N** | **B** | **E** | **P01**

Element length	MFXX020	MFXX030	MFXX100	MFXX180	MFXX190
1	•	•	•	•	-
2	•	-	•	•	•
3	•	-	•	-	-
4	-	-	•	-	-

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

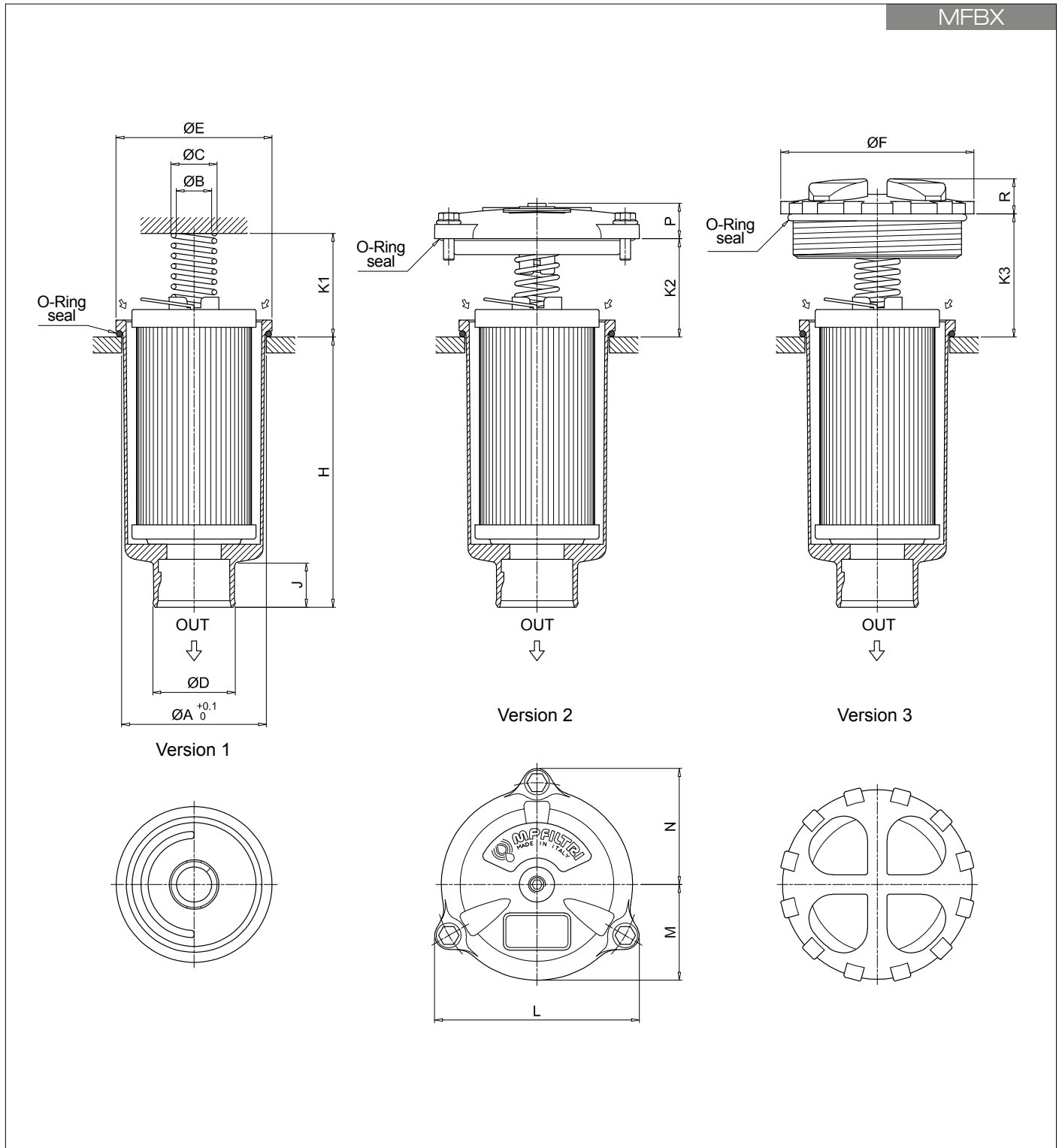
Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Seals	Bypass valve	Executions		
		Base	zérospark*	
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b>	<b>Zxx</b>	Customized

### ACCESSORIES

See page 266

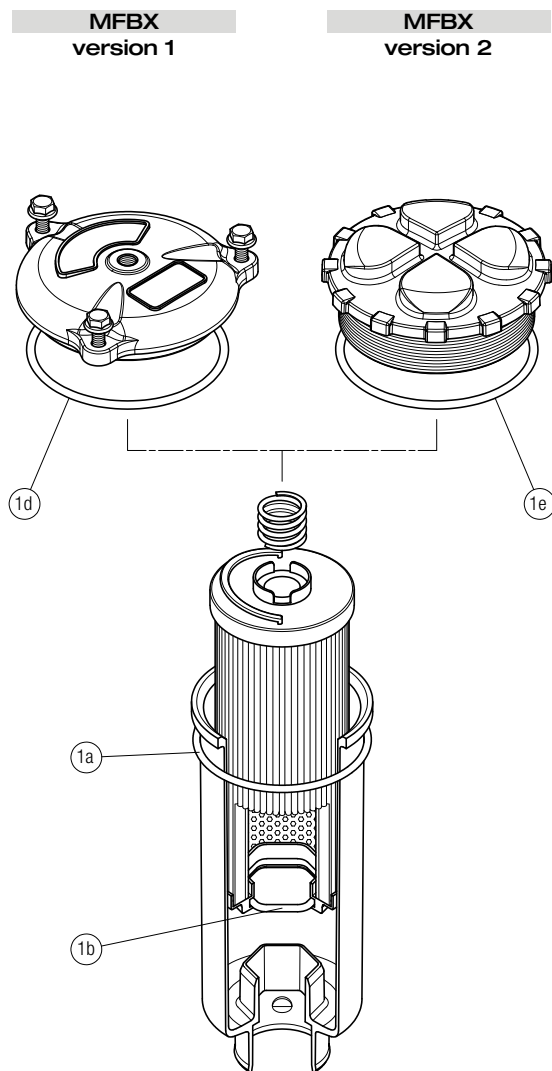
	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190
<b>TE</b> Extension tube	•	•	•	•	•
<b>DFS</b> Diffuser with fast lock connection	-	-	•	-	-



Filter size	Filter Length	ø A [mm]	ø B [mm]	ø C [mm]	ø D [mm]	ø E [mm]	ø F [mm]	H [mm]	J [mm]	K1 [mm]	K2 [mm]	K3 [mm]	L [mm]	M [mm]	N [mm]	P [mm]	R [mm]
<b>020</b>	1	52	20.5	26	32	56	75	111	24	42	-	36	-	-	-	-	18
	2	52	20.5	26	32	56	75	175	24	42	-	36	-	-	-	-	18
	3	52	20.5	26	32	56	75	214	24	42	-	36	-	-	-	-	18
<b>030</b>	1	60.5	20	25.5	32	68	-	93	21	33	35	-	92	42	52	18	-
	2	80.5	20	26	47	88	111	109	24	58	55	69	116	54	66	20	20
<b>100</b>	1	80.5	20	26	47	88	111	154	24	58	55	69	116	54	66	20	20
	2	80.5	20	26	47	88	111	232	24	58	55	69	116	54	66	20	20
	3	80.5	20	26	47	88	111	334	24	58	55	69	116	54	66	20	20
<b>180</b>	1	112.5	26	33.5	47	121	-	234	31	58	69	-	159	76	95	21	-
	2	112.5	26	33.5	47	121	-	447	31	58	69	-	159	76	95	21	-
<b>190</b>	2	112.5	26	33.5	50	121	-	454	38	58	69	-	159	76	95	21	-

# MFBX SPARE PARTS

Order number for spare parts



Item: <b>1</b> (1a ÷ 1d) <span style="float: right;">Q.ty: 1 pc.</span>		
Filter series	Seal Kit code number	
	NBR	FPM
<b>MFBX 020</b>	02050713	02050714
<b>MFBX 030</b>	02050715	02050716
<b>MFBX 100</b>	02050717	02050718
<b>MFBX 180-190</b>	02050719	02050720







# MPF series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 900 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 800 kPa (8 bar)**

**Flow rate up to 900 l/min**

MPF is a range of return filters for protection of the reservoir against the system contamination.

They are directly fixed to the reservoir, in immersed or semi-immersed position.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

### Available features:

- Female threaded connections up to 2" and flanged connections up to 2", for a maximum flow rate of 900 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic clogging indicators

### Common applications:

- Light industrial equipment
- Mobile application

### Filter housing materials

- Head: Aluminium
- Cover  
Polyamide: MPF 020-030-100-104-110  
Aluminium: MPF 181-182-184-191-192-194-400-410-450-451-750
- Bowl: Polyamide

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 300 kPa (3 bar)  $\pm 10\%$

### $\Delta p$ element type

- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPF filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>MPF 020</b>		0.30	-	-	-		0.26	-	-	-
<b>MPF 030</b>		0.40	-	-	-		0.29	-	-	-
<b>MPF 100</b>		0.61	0.64	0.67	0.74		0.64	0.85	1.20	1.65
<b>MPF 104</b>		0.82	0.96	1.02	1.25		0.64	0.85	1.20	1.65
<b>MPF 110</b>		0.64	0.68	0.71	0.78		-	-	-	-
<b>MPF 181</b>		2.20	3.00	-	-		2.50	4.00	-	-
<b>MPF 182</b>		2.30	3.10	-	-		2.50	4.00	-	-
<b>MPF 184</b>		2.55	3.45	-	-		2.65	4.45	-	-
<b>MPF 191</b>		-	3.00	-	-		-	4.25	-	-
<b>MPF 192</b>		-	3.10	-	-		-	4.25	-	-
<b>MPF 194</b>		-	3.45	-	-		-	4.45	-	-
<b>MPF 400</b>		3.35	3.65	3.90	-		3.70	4.60	5.40	-
<b>MPF 410</b>		3.55	3.85	4.10	-		3.70	4.60	5.40	-
<b>MPF 450-451</b>		3.95	4.25	4.50	-		3.70	4.60	5.40	-
<b>MPF 750</b>		6.30	-	-	-		8.45	-	-	-

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPF 020</b>	<b>1</b>	7	10	23	28	42	59	51	54
<b>MPF 030</b>	<b>1</b>	7	10	24	29	47	84	60	66
<b>MPF 100-104-110</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289
<b>MPF 181-182-184</b>	<b>1</b>	127	148	235	243	278	441	285	299
	<b>2</b>	231	262	358	382	388	472	404	412
<b>MPF 191-192-194</b>	<b>2</b>	261	305	489	528	546	696	583	598
<b>MPF 400</b>	<b>1</b>	150	171	294	304	350	585	370	390
	<b>2</b>	237	252	454	462	589	868	619	645
	<b>3</b>	248	288	553	609	621	885	680	703
<b>MPF 410</b>	<b>1</b>	146	167	277	285	325	512	341	357
	<b>2</b>	226	239	396	402	485	644	503	519
	<b>3</b>	236	269	462	497	505	653	539	553
<b>MPF 450-451</b>	<b>1</b>	150	171	294	304	350	585	370	390
	<b>2</b>	237	252	454	462	589	868	619	645
	<b>3</b>	248	288	553	609	621	885	680	703
<b>MPF 750</b>	<b>1</b>	392	465	623	700	769	929	804	819

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

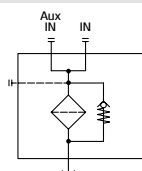
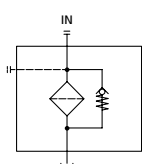
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

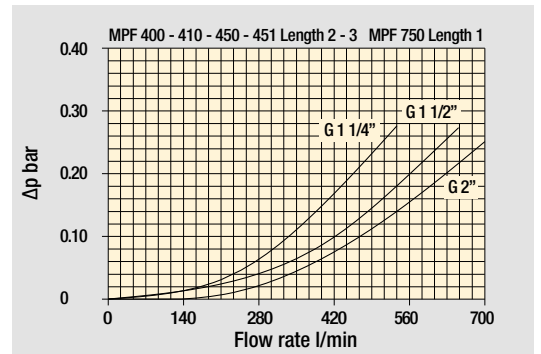
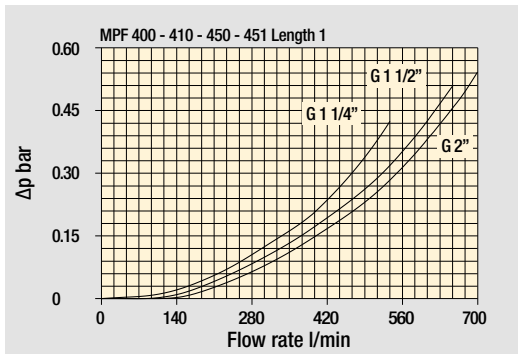
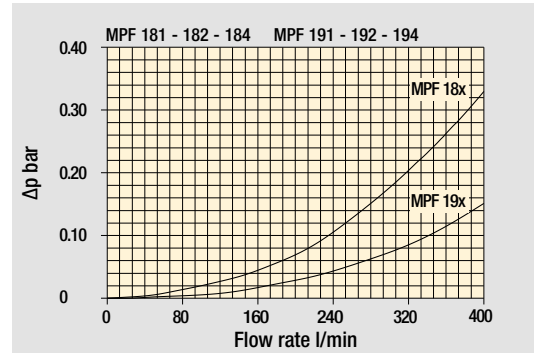
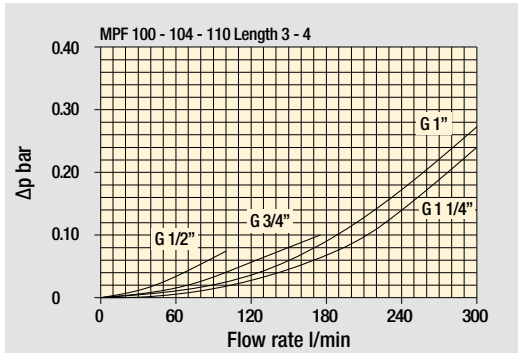
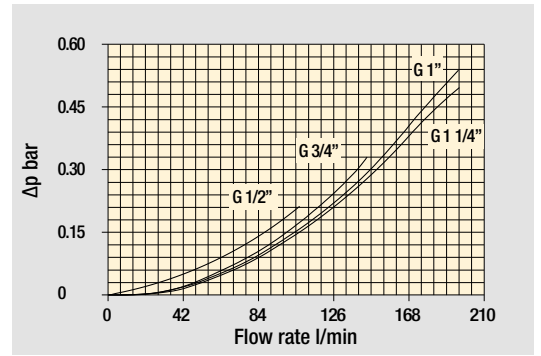
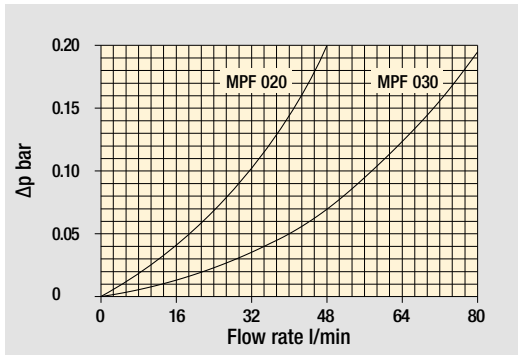
Filter series	Style 1 connection	Style 2 connections
<b>MPF 020</b>	•	-
<b>MPF 030</b>	•	-
<b>MPF 100</b>	•	-
<b>MPF 104</b>	•	-
<b>MPF 110</b>		•
<b>MPF 181</b>	•	-
<b>MPF 182</b>		•
<b>MPF 184</b>	•	•
<b>MPF 191</b>	•	-
<b>MPF 192</b>	•	-
<b>MPF 194</b>	•	•
<b>MPF 400</b>	•	-
<b>MPF 410</b>		•
<b>MPF 450</b>	•	-
<b>MPF 451</b>		•
<b>MPF 750</b>	•	-



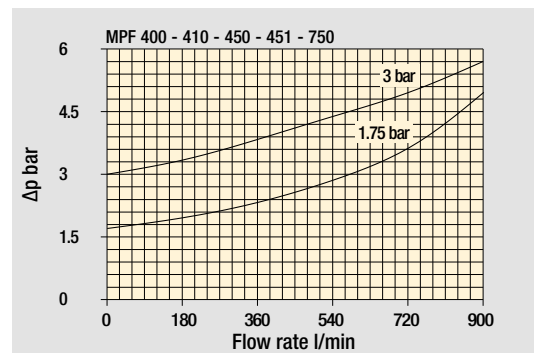
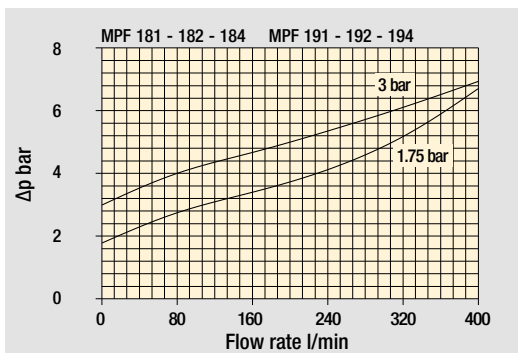
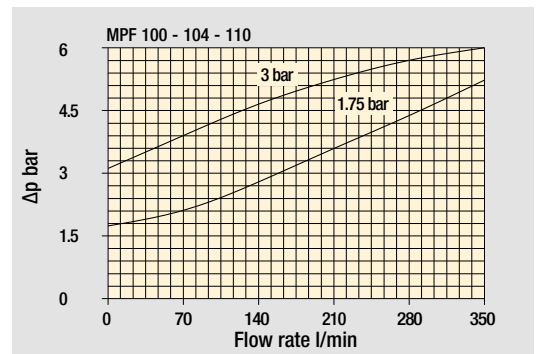
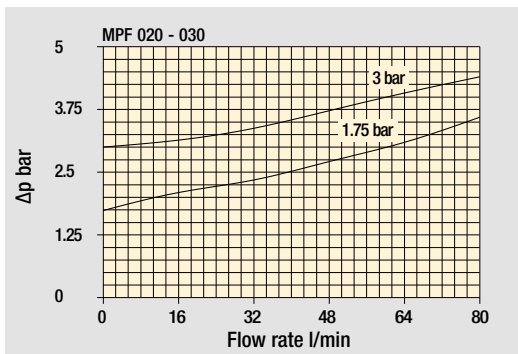
# MPF GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop

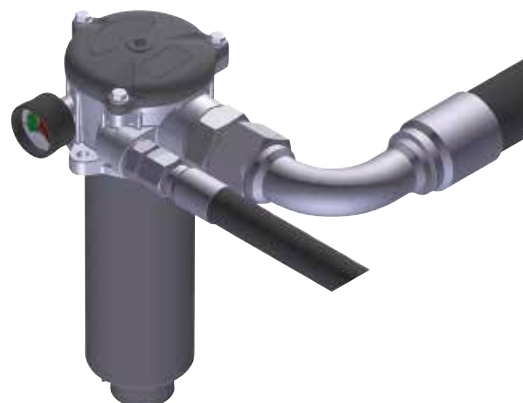


The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

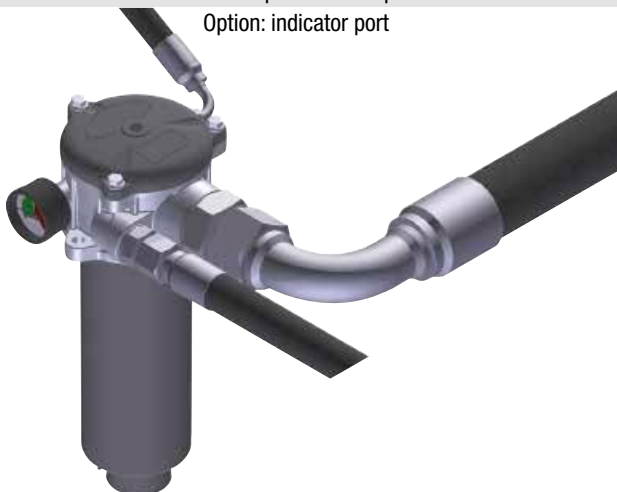
Standard - Single IN port



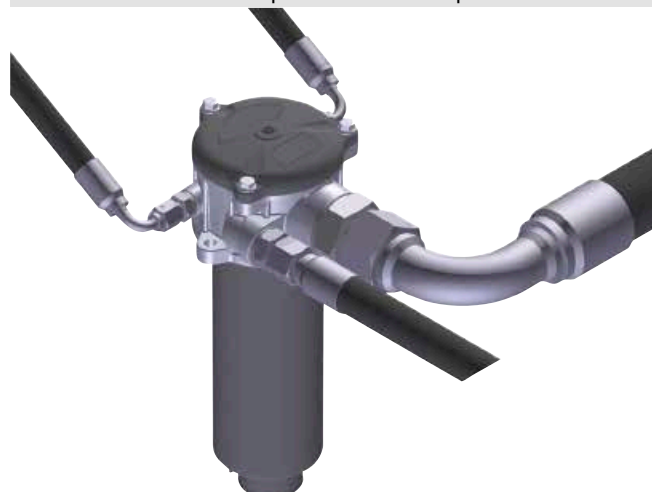
Double IN port  
Option: double indicator port



Double IN port - Drain port  
Option: indicator port



Double IN port - Double drain port



# MPF MPF020 - MPF030

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	<b>MPF020</b>	<b>1</b>	<b>A</b>	<b>P1</b>	<b>A10</b>	<b>H</b>	<b>E</b>	<b>P01</b>
<b>MPF020 MPF030</b> Filter element with standard spigot	Configuration example 2:	<b>MPF030</b>	<b>1</b>	<b>V</b>	<b>G1</b>	<b>M25</b>	<b>N</b>	<b>B</b>	<b>P01</b>

<b>Length</b>	
<b>1</b>	

<b>Seals and treatments</b>	
<b>A</b> NBR	
<b>V</b> FPM	
<b>W</b> NBR head anodized	
<b>Z</b> FPM head anodized	

<b>Connections</b>	<b>Size 20</b>	<b>Size 30</b>
<b>P1</b> Hose barb ø12	•	-
<b>G1</b> G 1/2"	-	•
<b>G4</b> 1/2" NPT	-	•
<b>G7</b> SAE 8 - 3/4" - 16 UNF	-	•

<b>Filtration rating (filter media)</b>	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

		<b>Filter media</b>		
<b>Element Δp</b>		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>
<b>N</b> 10 bar		-	•	•
<b>H</b> 10 bar		•	-	-

<b>Bypass valve</b>	<b>Execution</b>
<b>E</b> 3 bar	<b>P01</b> MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b> Customized

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1:	<b>MF030</b>	<b>1</b>	<b>A10</b>	<b>H</b>	<b>B</b>	<b>E</b>	<b>P01</b>
<b>MF030</b> Filter element with standard spigot	Configuration example 2:	<b>MF030</b>	<b>1</b>	<b>M25</b>	<b>N</b>	<b>V</b>		<b>P01</b>

<b>Element length</b>	
<b>1</b>	

<b>Filtration rating (filter media)</b>	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

		<b>Filter media</b>		
<b>Element Δp</b>		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>
<b>N</b> 10 bar		-	•	•
<b>H</b> 10 bar		•	-	-

<b>Seals</b>	<b>Bypass valve</b>	<b>Execution</b>
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

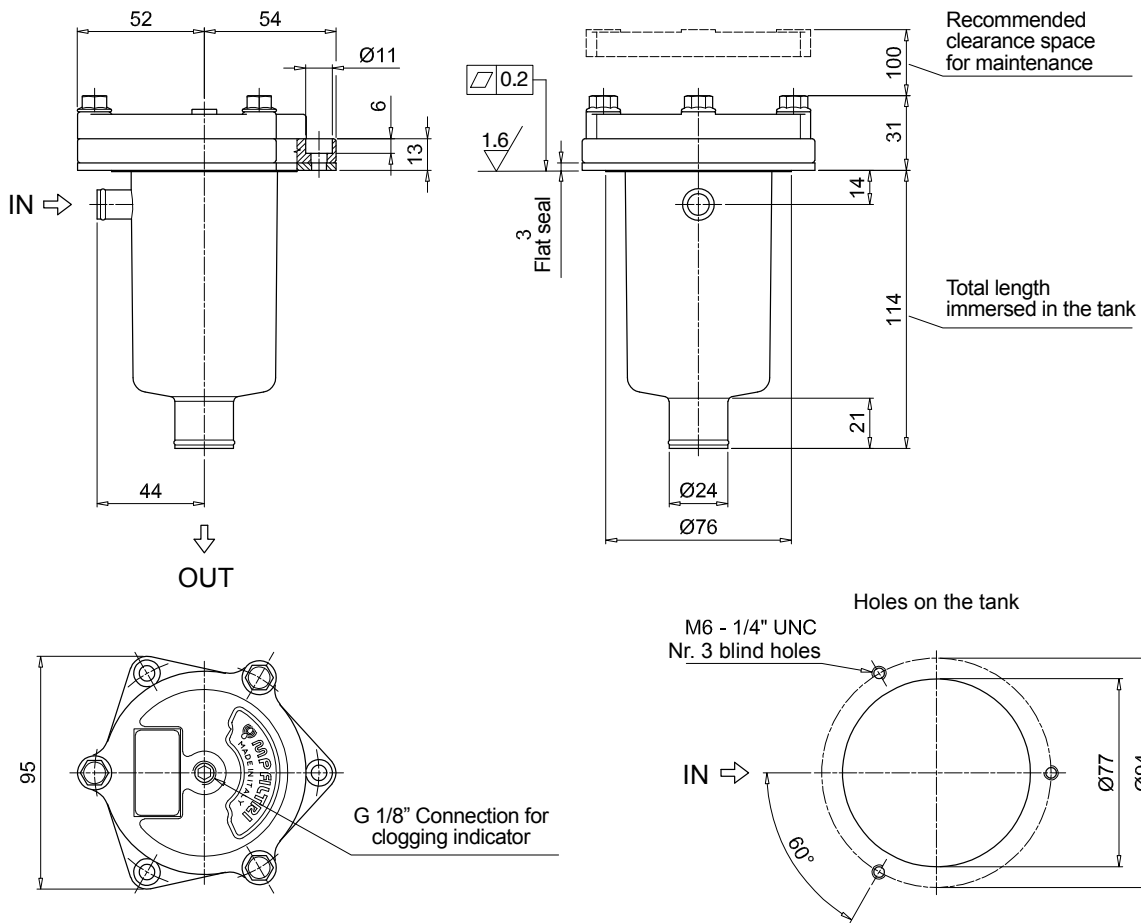
### ADDITIONAL FEATURES

See page 266

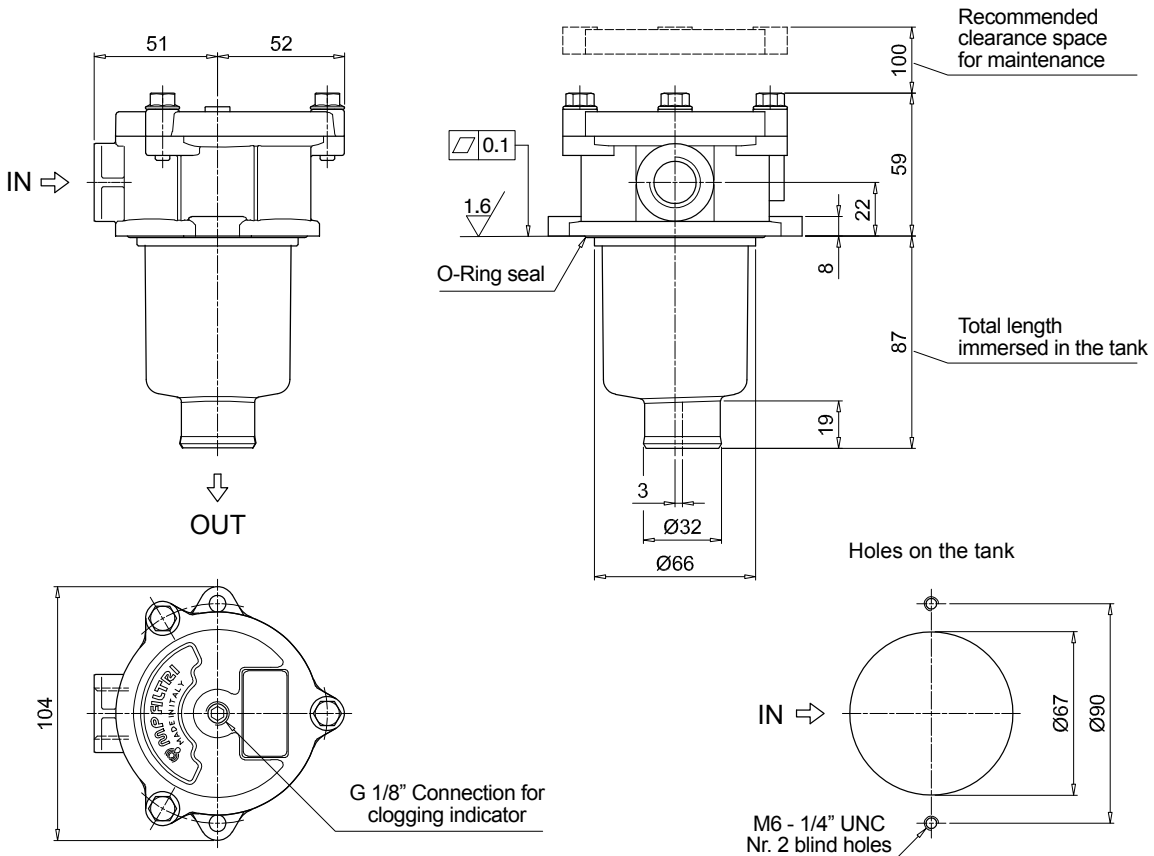
<b>TE</b> Extension tube
<b>T5</b> Filler plug M30x1.5



### MPF020



### MPF030



# MPF MPF100 - MPF104

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>MPF100</b>   <b>2</b>   <b>W</b>   <b>G3</b>   <b>A06</b>   <b>H</b>   <b>B</b>   <b>P01</b>									
<b>MPF100</b>   <b>MPF104</b> Filter element with standard spigot		Configuration example 2: <b>MPF104</b>   <b>4</b>   <b>A</b>   <b>G8</b>   <b>P10</b>   <b>N</b>   <b>E</b>   <b>P01</b>									
<b>Length</b>											
1   2   3   4											
<b>Seals and treatments</b>											
<b>A</b> NBR											
<b>V</b> FPM											
<b>W</b> NBR head anodized											
<b>Z</b> FPM head anodized											
<b>Connections</b>		<b>Size 100</b>		<b>Size 104</b>		<b>Connections</b>		<b>Size 100</b>		<b>Size 104</b>	
<b>G1</b> G 1/2"		•		•		<b>G7</b> SAE 8 - 3/4" - 16 UNF		•		•	
<b>G2</b> G 3/4"		•		•		<b>G8</b> SAE 12 - 1 1/16" - 12 UN		•		•	
<b>G3</b> G 1"		•		•		<b>G9</b> SAE 16 - 1 5/16" - 12 UN		•		•	
<b>G4</b> 1/2" NPT		•		•							
<b>G5</b> 3/4" NPT		•		•							
<b>G6</b> 1" NPT		•		•							
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm											
<b>A06</b> Inorganic microfiber 6 µm											
<b>A10</b> Inorganic microfiber 10 µm											
<b>A16</b> Inorganic microfiber 16 µm											
<b>A25</b> Inorganic microfiber 25 µm											
<b>M25</b> Wire mesh 25 µm											
<b>M60</b> Wire mesh 60 µm											
<b>M90</b> Wire mesh 90 µm											
<b>P10</b> Resin impregnated paper 10 µm											
<b>P25</b> Resin impregnated paper 25 µm											

<b>Element Δp</b>		<b>Filter media</b>			<b>Bypass valve</b>		<b>Execution</b>	
<b>N</b> 10 bar		Axx   Mxx   Pxx			<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
<b>H</b> 10 bar		•   -   -			<b>B</b> 1.75 bar		<b>Pxx</b> Customized	

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>MF100</b>   <b>2</b>   <b>A06</b>   <b>H</b>   <b>B</b>   <b>P01</b>									
<b>MF100</b> Filter element with standard spigot		Configuration example 2: <b>MF100</b>   <b>4</b>   <b>P10</b>   <b>N</b>   <b>B</b>   <b>E</b>   <b>P01</b>									
<b>Element length</b>											
1   2   3   4											
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm											
<b>A06</b> Inorganic microfiber 6 µm											
<b>A10</b> Inorganic microfiber 10 µm											
<b>A16</b> Inorganic microfiber 16 µm											
<b>A25</b> Inorganic microfiber 25 µm											
<b>M25</b> Wire mesh 25 µm											
<b>M60</b> Wire mesh 60 µm											
<b>M90</b> Wire mesh 90 µm											
<b>P10</b> Resin impregnated paper 10 µm											
<b>P25</b> Resin impregnated paper 25 µm											

<b>Element Δp</b>		<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>	
<b>N</b> 10 bar		Axx   Mxx   Pxx			<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
<b>H</b> 10 bar		•   -   -			<b>V</b> FPM		<b>-</b> 1.75 bar		<b>Pxx</b> Customized	

### CLOGGING INDICATORS

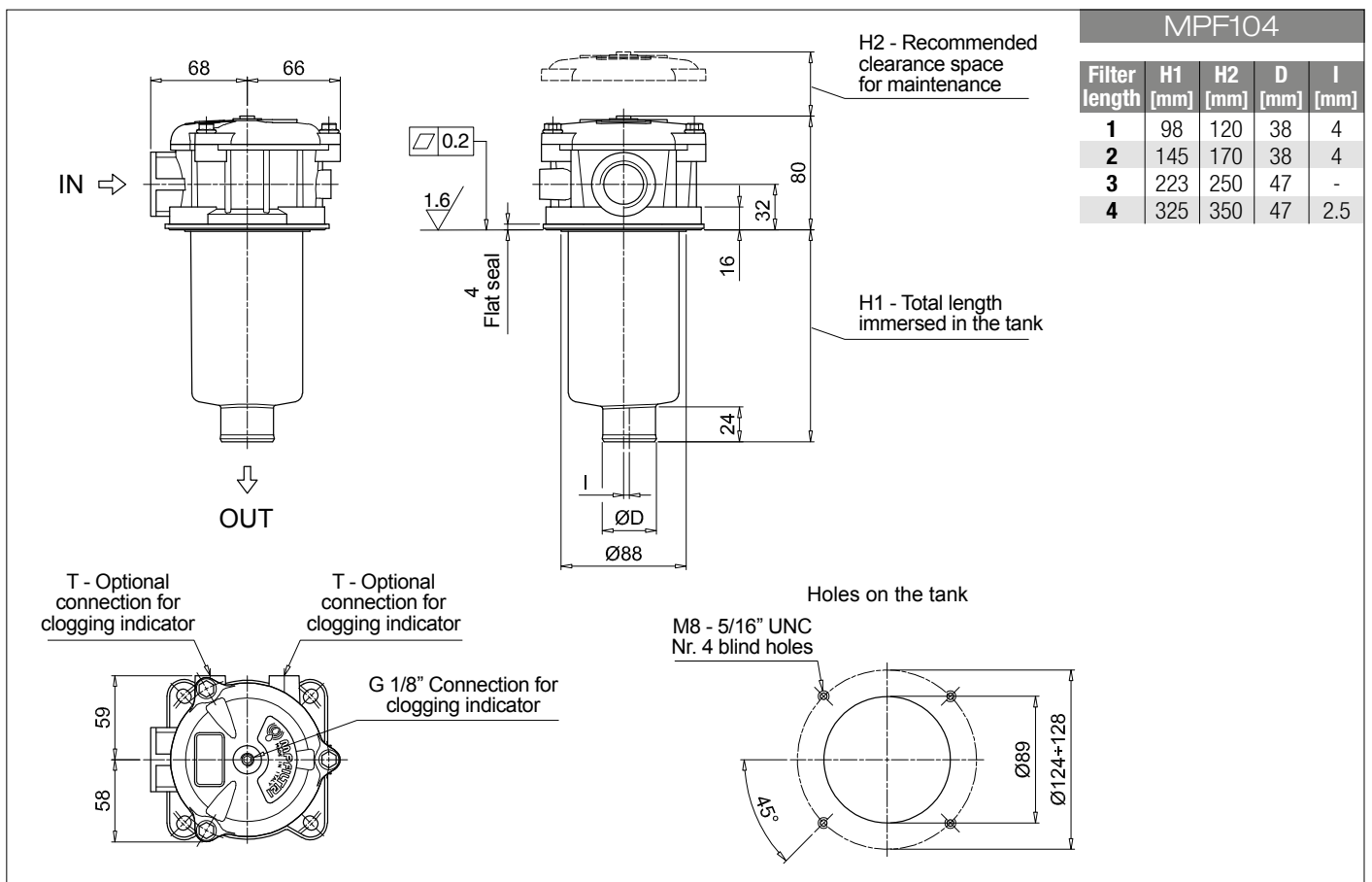
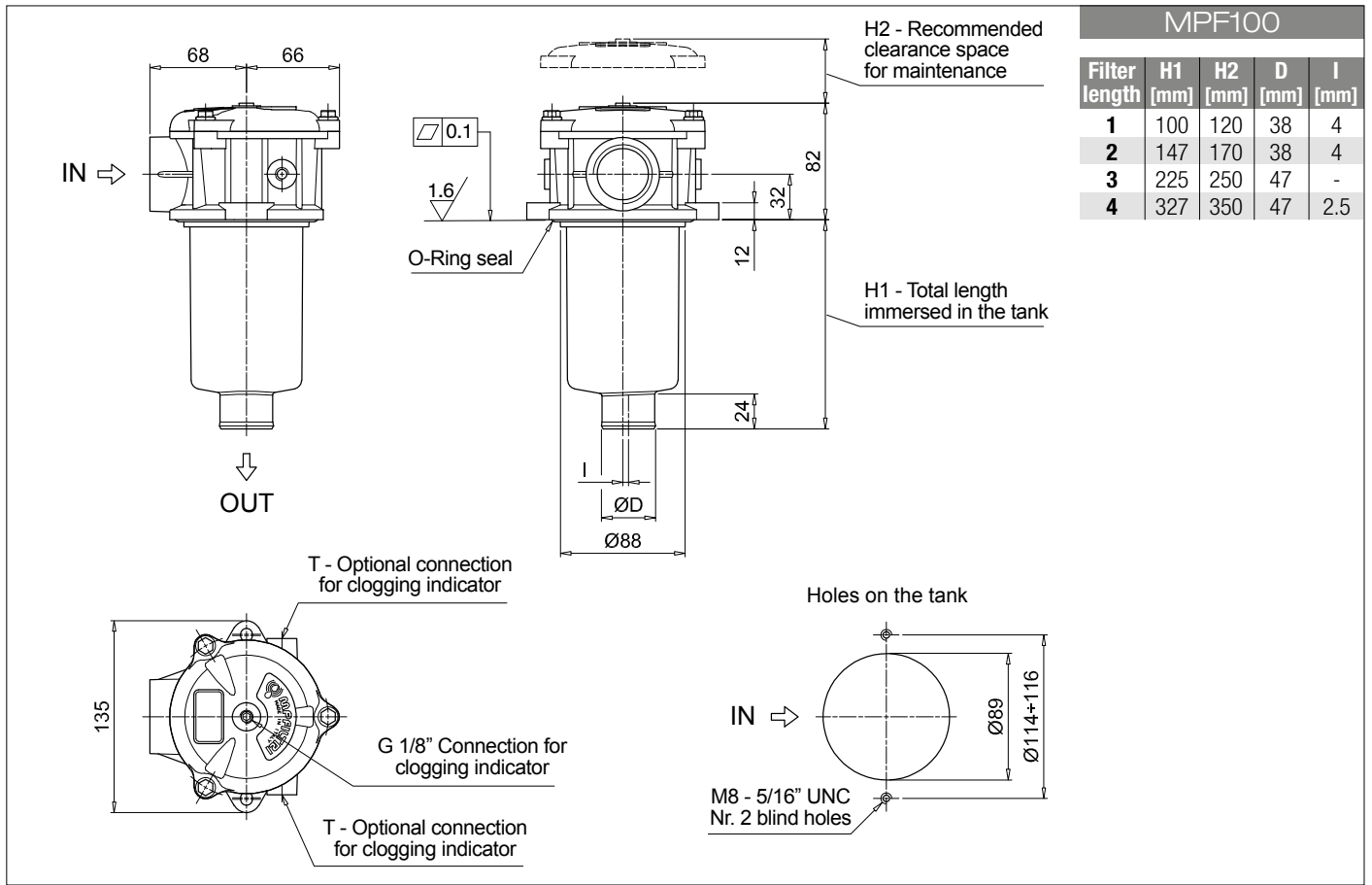
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube	<b>T5</b> Filler plug M30x1.5
<b>DFS</b> Diffuser with fast lock connection	<b>DPT</b> Dipstick



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	MPF110	2	A	G2	1	A16	H	E	P01
<b>MPF110</b> Filter element with standard spigot	Configuration example 2:	MPF110	4	V	G12	1	M60	N	B	P01

<b>Length</b>	1	2	3	4
---------------	---	---	---	---

<b>Seals and treatments</b>	<b>A</b> NBR	<b>W</b> NBR head anodized
	<b>V</b> FPM	<b>Z</b> FPM head anodized

Main Connections	Aux size 1	Aux size 2	Main Connections	Aux size 1	Aux size 2
<b>G1</b> G 1/2"	G 3/8"	G 1/2"	<b>G7</b> SAE 8 - 3/4" - 16 UNF	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
<b>G2</b> G 3/4"			<b>G8</b> SAE 12 - 1 1/16" - 12 UN		
<b>G3</b> G 1"	3/8" NPT	1/2" NPT	<b>G9</b> SAE 16 - 1 5/16" - 12 UN	G 3/8"	G 1/2"
<b>G4</b> 1/2" NPT			<b>G10</b> G 1 1/4"		
<b>G5</b> 3/4" NPT			<b>G11</b> 1 1/4" NPT		
<b>G6</b> 1" NPT			<b>G12</b> SAE 20 - 1 5/8" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF

<b>Aux connection</b> - see previous table	<b>1</b> Aux size 1	<b>2</b> Aux size 2
--	---------------------	---------------------

<b>Filtration rating (filter media)</b>	<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

<b>Element Δp</b>	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

<b>Bypass valve</b>	<b>Execution</b>
<b>E</b> 3 bar	<b>P01</b> MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b> Customized

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1:	MF100	2	A16	H	B	E	P01
<b>MF100</b> Filter element with standard spigot	Configuration example 2:	MF100	4	M60	N	V		P01

<b>Element length</b>	1	2	3	4
-----------------------	---	---	---	---

<b>Filtration rating (filter media)</b>	<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

<b>Element Δp</b>	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

<b>Seals</b>	<b>Bypass valve</b>	<b>Execution</b>
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

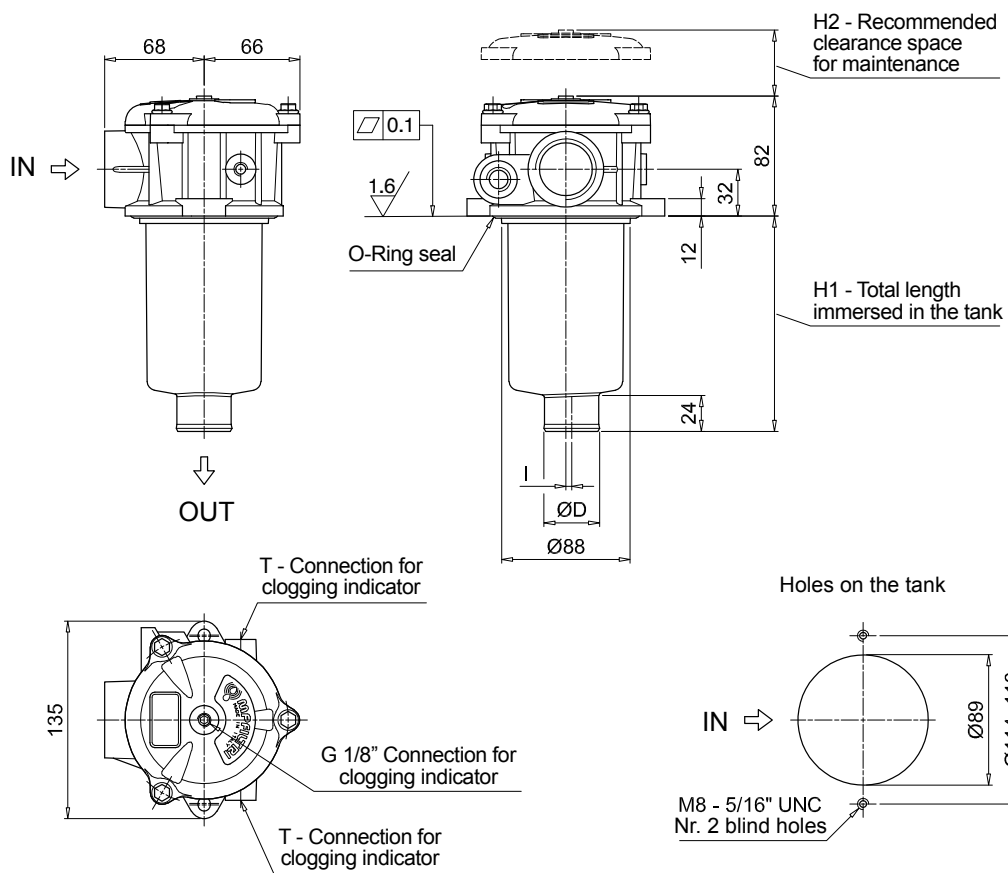
<b>TE</b> Extension tube
<b>DFS</b> Diffuser with fast lock connection

<b>T5</b> Filler plug M30x1.5
<b>DPT</b> Dipstick

MPF110				
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
<b>1</b>	100	120	38	4
<b>2</b>	147	170	38	4
<b>3</b>	225	250	47	-
<b>4</b>	327	350	47	2.5

Connections	T
<b>G1-G2-G3</b>	G 1/8"
<b>G4-G5-G6-G7-G8-G9</b>	1/8" NPT
<b>G10</b>	G 1/8"
<b>G11-G12</b>	1/8" NPT



# MPF MPF181 - MPF191

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1: <b>MPF181</b>   <b>1</b>   <b>A</b>   <b>G1</b>   <b>A25</b>   <b>H</b>   <b>E</b>   <b>P01</b>								
<b>MPF181</b>   <b>MPF191</b> Filter element with standard spigot			Configuration example 2: <b>MPF191</b>   <b>2</b>   <b>V</b>   <b>G2</b>   <b>P10</b>   <b>N</b>   <b>B</b>   <b>P01</b>								
<b>Length</b>		<b>Size 181</b>	<b>Size 191</b>								
<b>1</b>		•	-								
<b>2</b>		•	•								
<b>Seals and treatments</b>											
<b>A</b> NBR	<b>B</b> NBR	flat seal on head									
<b>V</b> FPM	<b>D</b> FPM	flat seal on head									
<b>W</b> NBR head anodized	<b>L</b> NBR	head anodized, flat seal on head									
<b>Z</b> FPM head anodized	<b>M</b> FPM	head anodized, flat seal on head									
<b>Connections</b>											
<b>G1</b> G 1 1/4"	<b>G5</b> 1 1/2" NPT										
<b>G2</b> G 1 1/2"	<b>G7</b> SAE 20 - 1 5/8" - 12 UN										
<b>G4</b> 1 1/4" NPT	<b>G8</b> SAE 24 - 1 7/8" - 12 UN										
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm										
<b>Element Δp</b>			<b>Filter media</b>			<b>Bypass valve</b>			<b>Execution</b>		
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard						
<b>H</b> 10 bar	•	-	-	<b>B</b> 1.75 bar	<b>Pxx</b> Customized						

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1: <b>MF180</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>											
<b>MF180</b>   <b>MF190</b> Filter element with standard spigot			Configuration example 2: <b>MF190</b>   <b>2</b>   <b>P10</b>   <b>N</b>   <b>V</b>   <b>P01</b>											
<b>Element length</b>		<b>Size 180</b>	<b>Size 190</b>											
<b>1</b>		•	-											
<b>2</b>		•	•											
<b>Filtration rating (filter media)</b>														
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm													
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm													
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm													
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm													
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm													
<b>Element Δp</b>			<b>Filter media</b>			<b>Seals</b>			<b>Bypass valve</b>			<b>Execution</b>		
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard								
<b>H</b> 10 bar	•	-	-	<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized								

### CLOGGING INDICATORS

See page 710-711

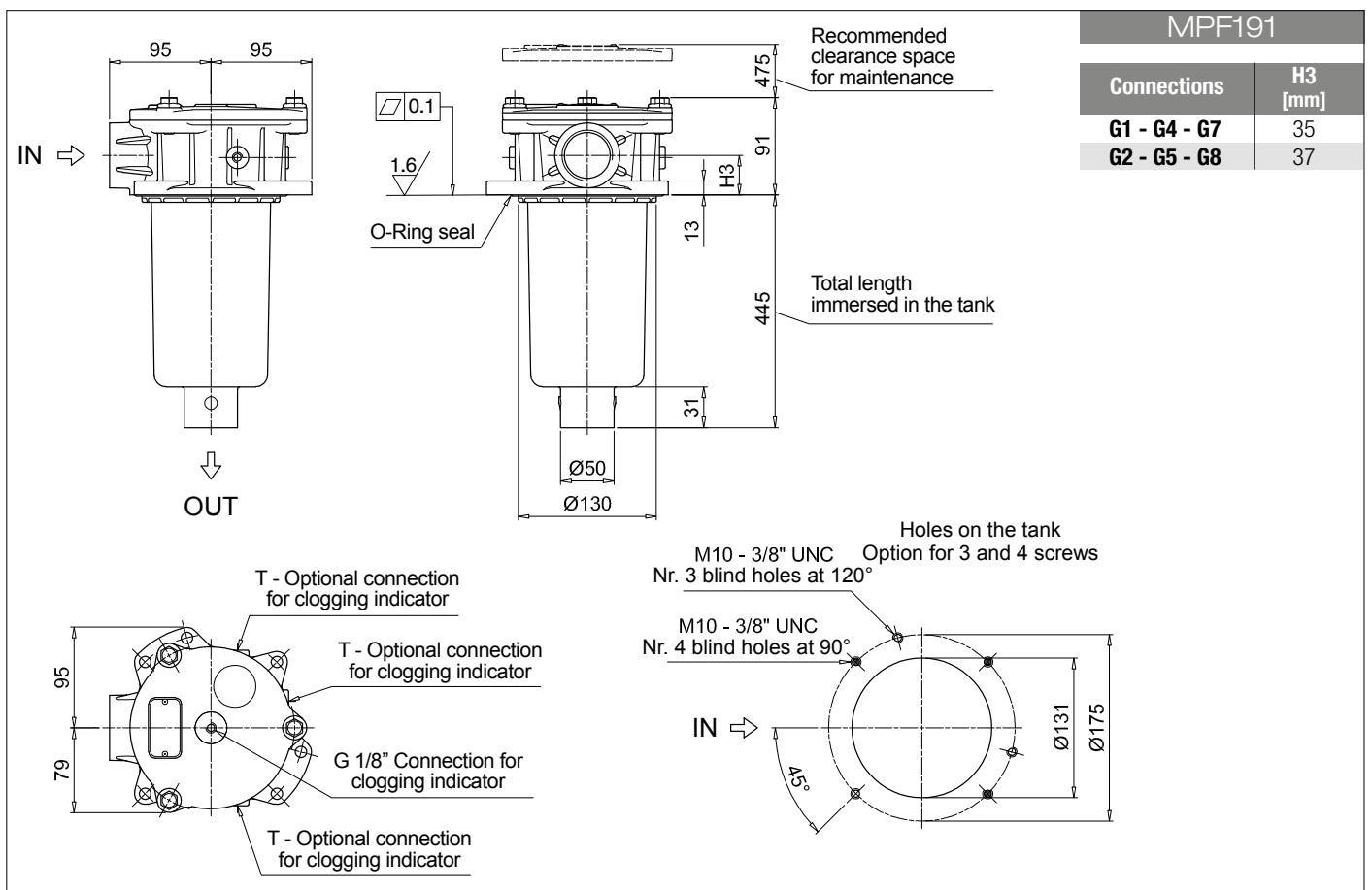
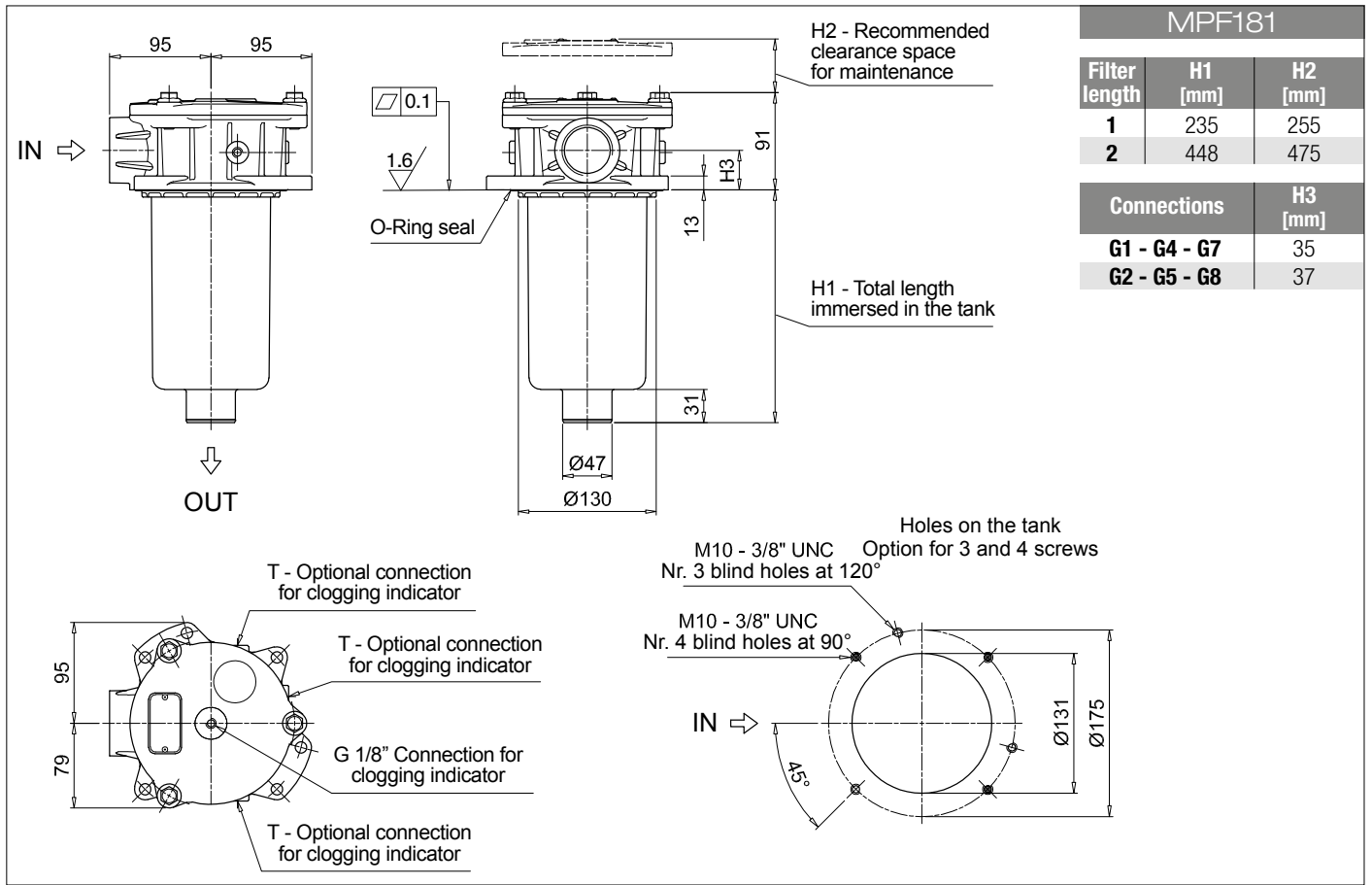
<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube
<b>Sxx</b> Extension tube
<b>T5</b> Filler plug M30x1.5



# MPF MPF182 - MPF192

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1: <b>MPF182</b>   1   A   G1   1   A25   H   E   P01									
<b>MPF182</b>   <b>MPF192</b> Filter element with standard spigot			Configuration example 2: <b>MPF192</b>   2   V   G4   2   P10   N   B   P01									
<b>Length</b>		<b>Size 182</b>	<b>Size 192</b>									
1		•	-									
2		•	•									
<b>Seals and treatments</b>												
<b>A</b> NBR	<b>B</b> NBR flat seal on head											
<b>V</b> FPM	<b>D</b> FPM flat seal on head											
<b>W</b> NBR head anodized	<b>L</b> NBR head anodized, flat seal on head											
<b>Z</b> FPM head anodized	<b>M</b> FPM head anodized, flat seal on head											
<b>Main Connections</b>		<b>Aux size 1</b>	<b>Aux size 2</b>									
<b>G1</b> G 1 1/4"	G 1/2"	G 3/4"										
<b>G4</b> 1 1/4" NPT	1/2" NPT	3/4" NPT										
<b>G7</b> SAE 20 - 1 5/8" - 12 UN	SAE 8 - 3/16" - 16 UNF	SAE 12 - 1 1/16" - 12 UN										
<b>Aux connection</b> - see previous table												
1 Aux size 1		2 Aux size 2										
<b>Filtration rating (filter media)</b>												
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm										
<b>Element Δp</b>				<b>Filter media</b>			<b>Bypass valve</b>		<b>Execution</b>			
<b>N</b> 10 bar				<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>E</b> 3 bar		<b>P01</b> MP Filtri standard			
<b>H</b> 10 bar				•	-	-	<b>B</b> 1.75 bar		<b>Pxx</b> Customized			

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1: <b>MF180</b>   1   A25   H   B   E   P01									
<b>MF180</b>   <b>MF190</b> Filter element with standard spigot			Configuration example 2: <b>MF190</b>   2   P10   N   V   P01									
<b>Element length</b>		<b>Size 180</b>	<b>Size 190</b>									
1		•	-									
2		•	•									
<b>Filtration rating (filter media)</b>												
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm										
<b>Element Δp</b>				<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>	
<b>N</b> 10 bar				<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
<b>H</b> 10 bar				•	-	-	<b>V</b> FPM		<b>-</b> 1.75 bar		<b>Pxx</b> Customized	

### CLOGGING INDICATORS

See page 710-711

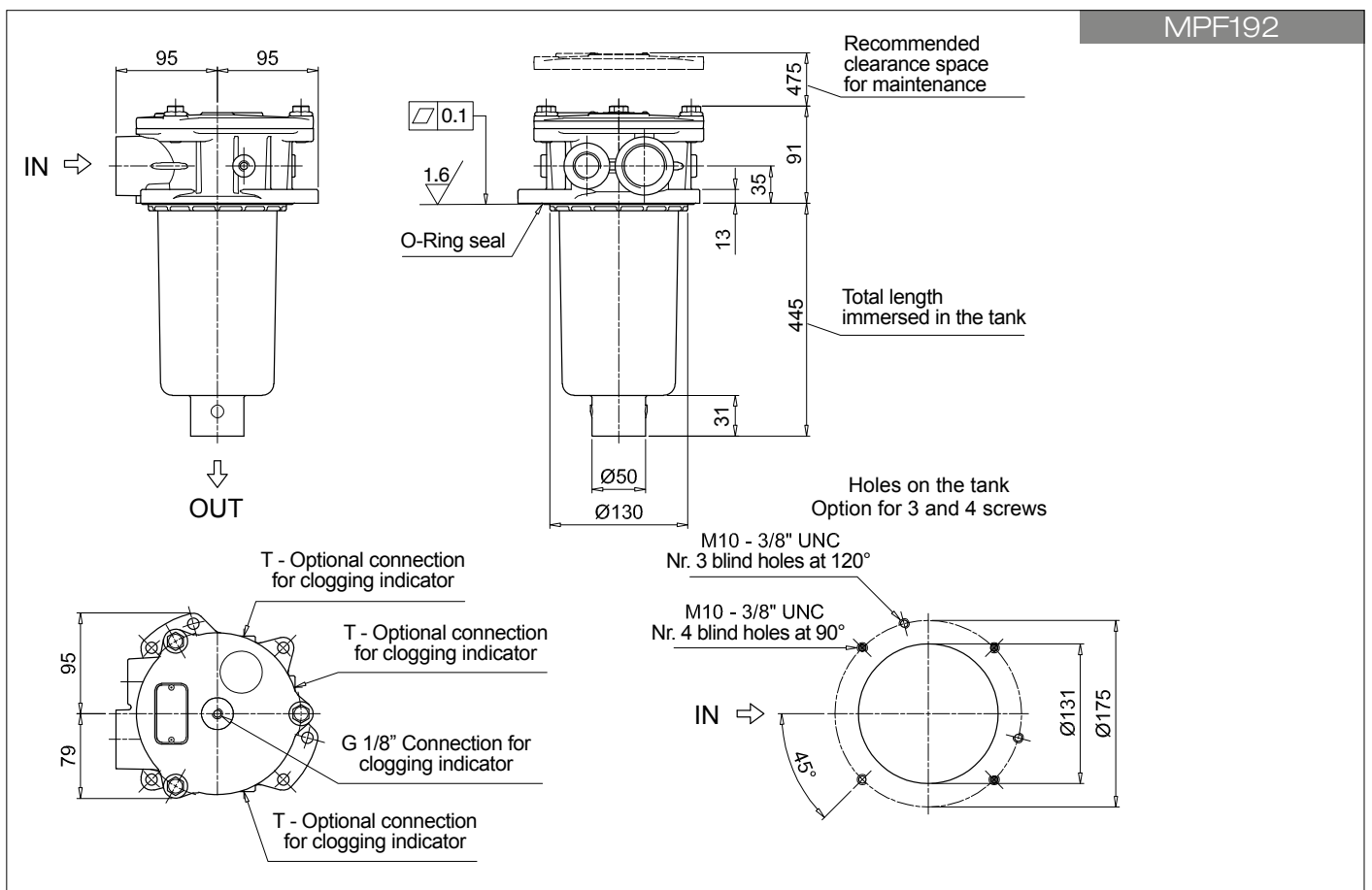
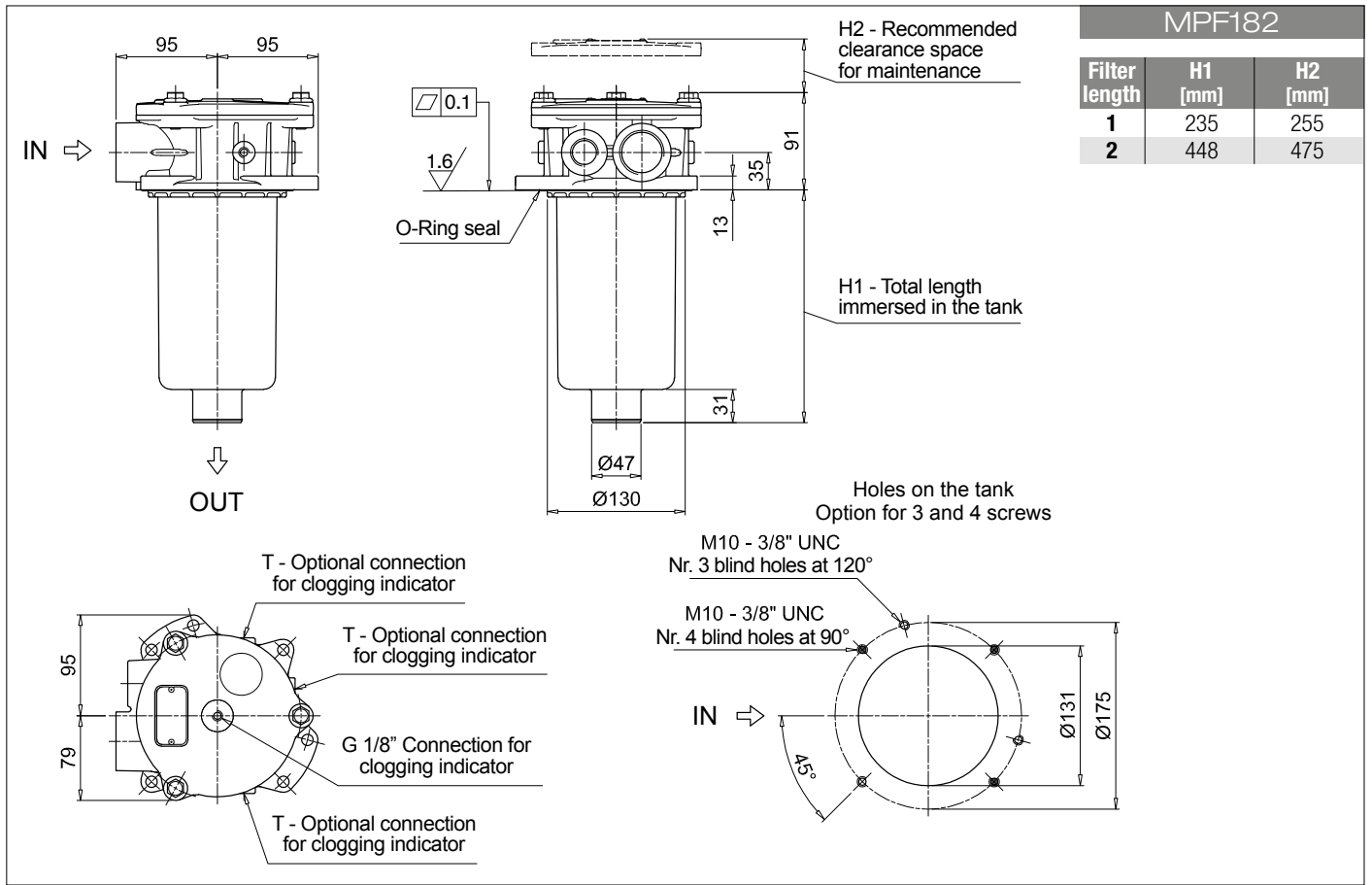
<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

<b>TE</b> Extension tube
<b>Sxx</b> Extension tube
<b>T5</b> Filler plug M30x1.5





# MPF MPF184 - MPF194

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1: <b>MPF184</b>   1   A   G1   A25   H   E   P01							
<b>MPF184</b>   <b>MPF194</b> Filter element with standard spigot			Configuration example 2: <b>MPF194</b>   2   V   F3   P10   N   B   P01							
<b>Length</b>	<b>Size 184</b>	<b>Size 194</b>								
1	•	-								
2	•	•								
<b>Seals and treatments</b>										
<b>A</b> NBR	<b>W</b> NBR	head anodized								
<b>V</b> FPM	<b>Z</b> FPM	head anodized								
<b>Main Connections</b>		<b>Rear connections</b>	<b>Main Connections</b>		<b>Rear connections</b>					
<b>G1</b> G 1 1/4"		-	<b>G13</b> G 1 1/2"		-					
<b>G2</b> G 1 1/4"		G 1 1/4"	<b>G14</b> G 1 1/2"		G 1 1/4"					
<b>G4</b> 1 1/4" NPT		-	<b>G15</b> 1 1/2" NPT		-					
<b>G5</b> 1 1/4" NPT		1 1/4" NPT	<b>G16</b> 1 1/2" NPT		1 1/4" NPT					
<b>G7</b> SAE 20 - 1 5/8" - 12 UN		-	<b>F1</b> 1 1/2" SAE 3000 psi/M		-					
<b>G8</b> SAE 20 - 1 5/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN	<b>F2</b> 1 1/2" SAE 3000 psi/UNC		-					
<b>G10</b> SAE 24 - 1 7/8" - 12 UN		-	<b>F3</b> 1 1/2" SAE 3000 psi/M		1 1/2" SAE 3000 psi/M					
<b>G11</b> SAE 24 - 1 7/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN	<b>F4</b> 1 1/2" SAE 3000 psi/UNC		1 1/2" SAE 3000 psi/UNC					
<b>Filtration rating (filter media)</b>										
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm							

<b>Element Δp</b>		<b>Filter media</b>			<b>Bypass valve</b>		<b>Execution</b>	
<b>N</b> 10 bar		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard		
<b>H</b> 10 bar		•	-	-	<b>B</b> 1.75 bar	<b>Pxx</b> Customized		

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1: <b>MF180</b>   1   A25   H   B   E   P01							
<b>MF180</b>   <b>MF190</b> Filter element with standard spigot			Configuration example 2: <b>MF190</b>   2   P10   N   V   P01							
<b>Element length</b>	<b>Size 180</b>	<b>Size 190</b>								
1	•	-								
2	•	•								
<b>Filtration rating (filter media)</b>										
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm							

<b>Element Δp</b>		<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>	
<b>N</b> 10 bar		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard			
<b>H</b> 10 bar		•	-	-	<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized			

### CLOGGING INDICATORS

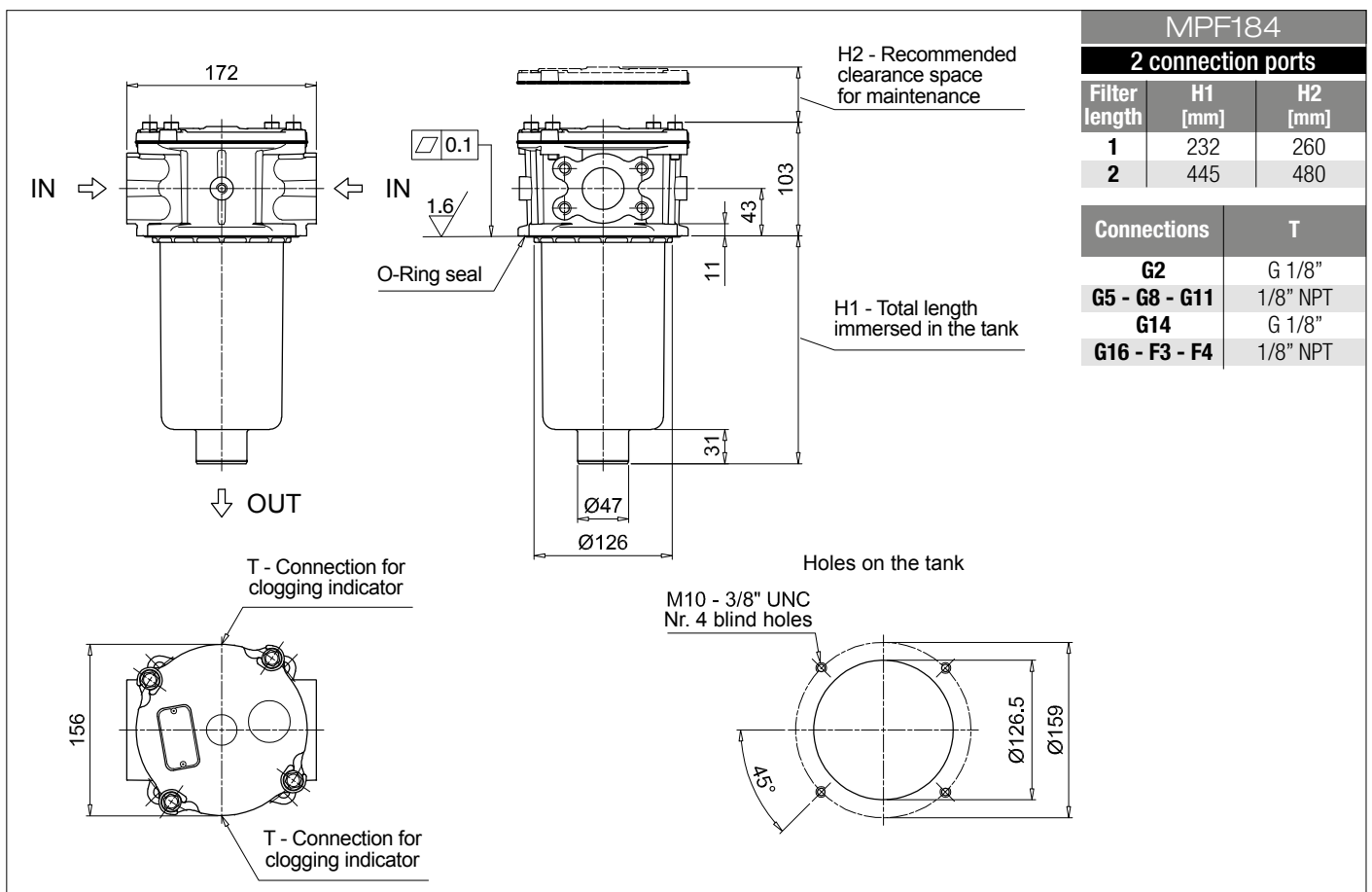
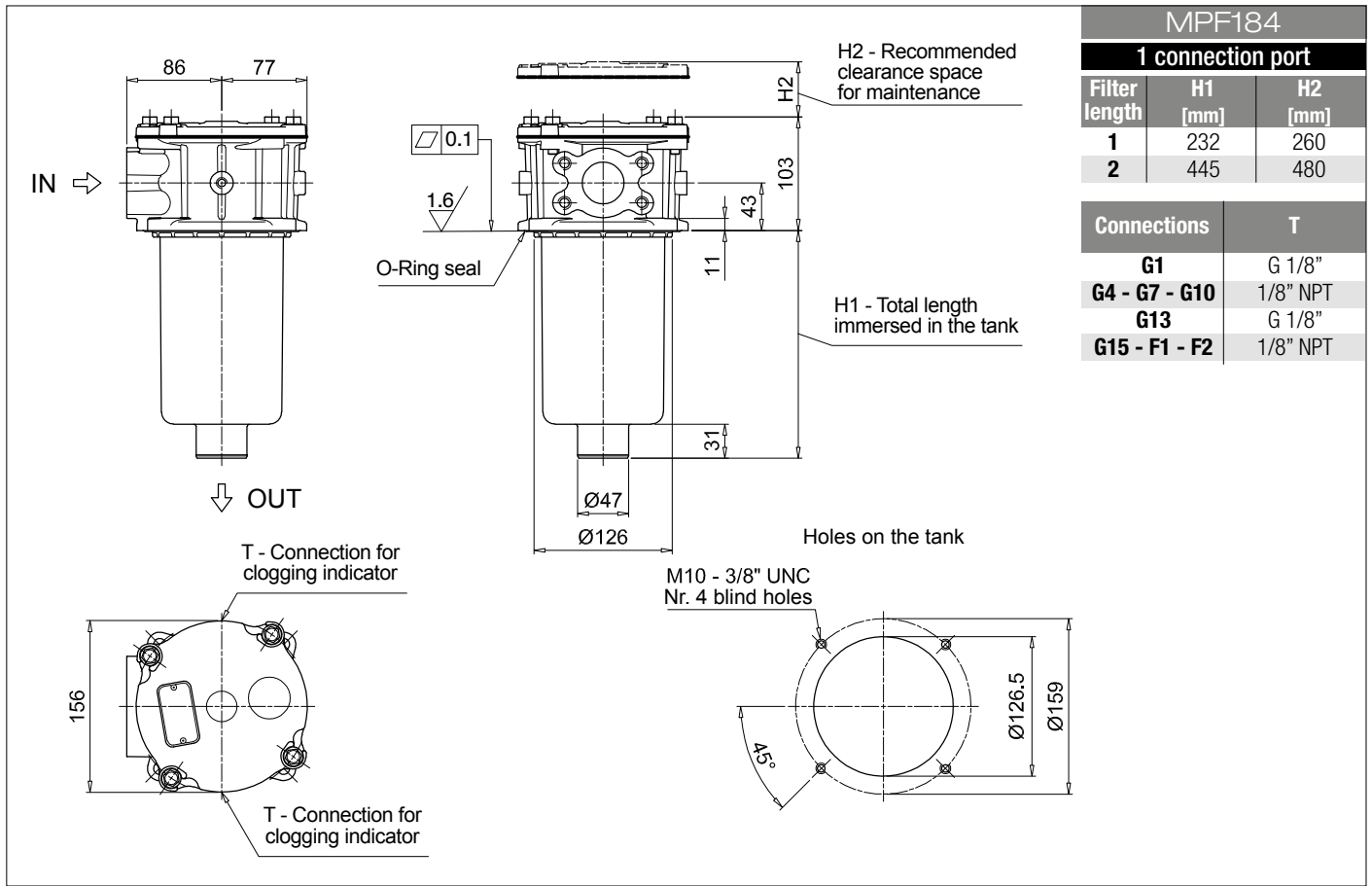
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

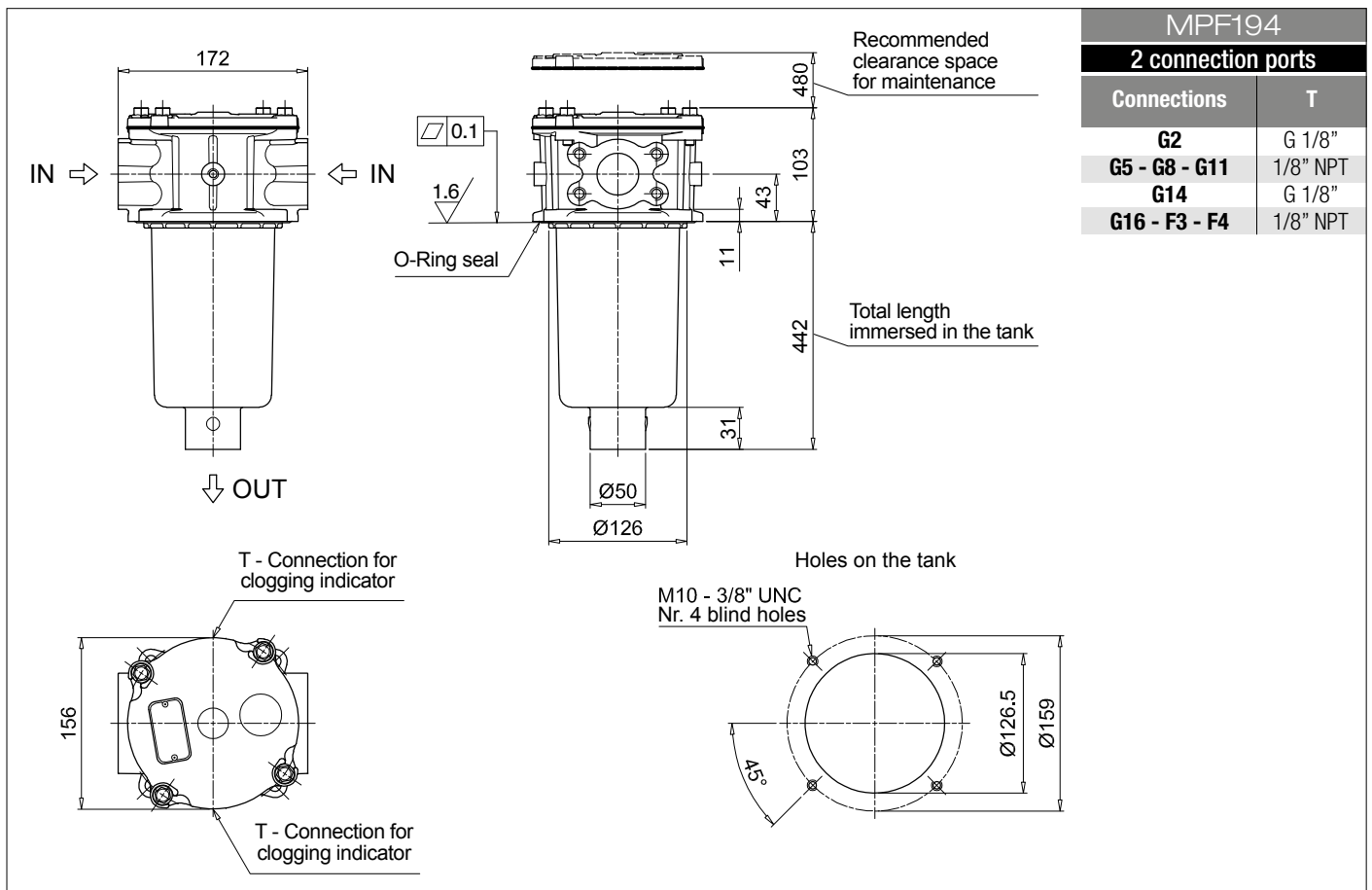
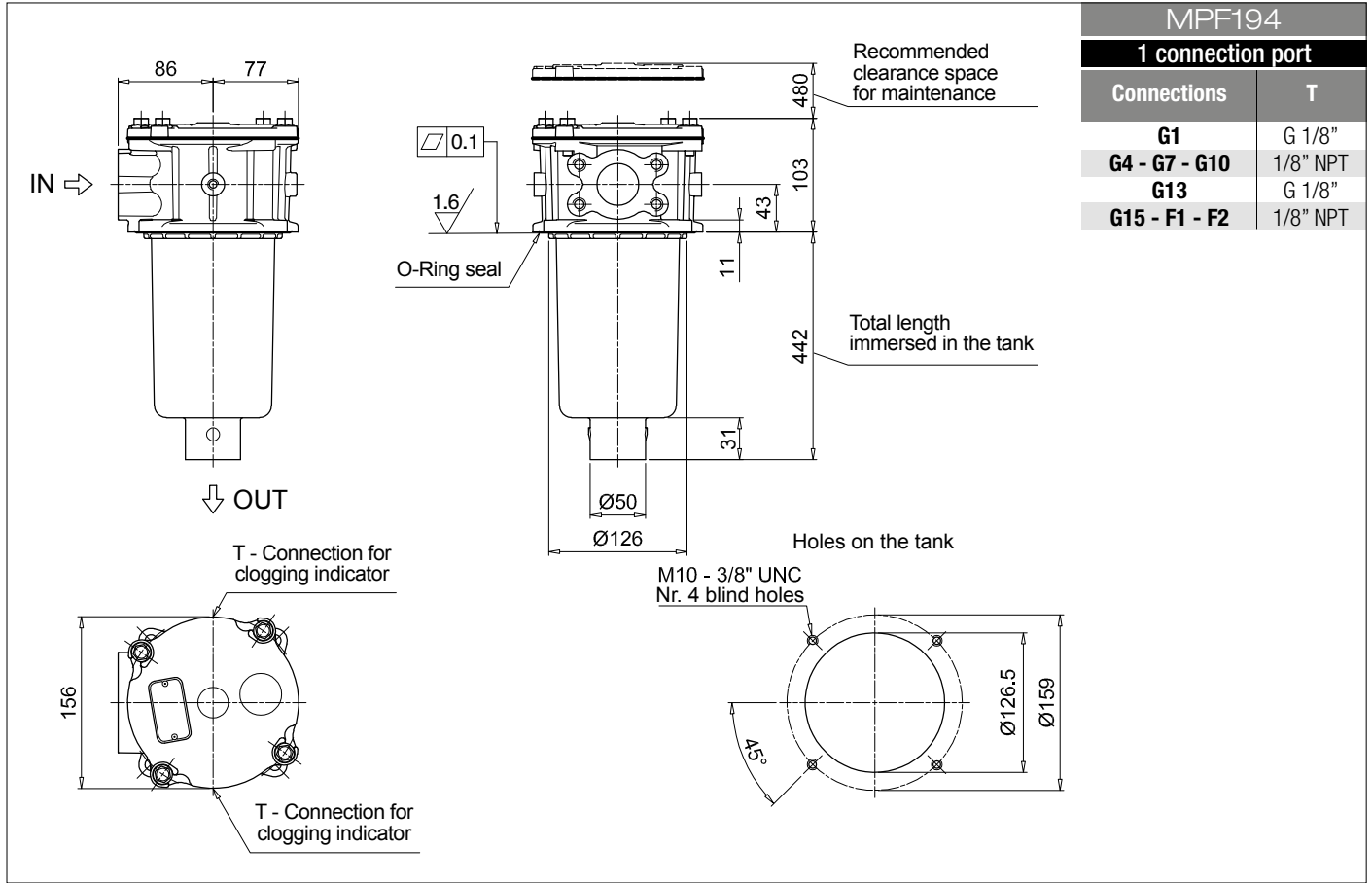
See page 266

<b>TE</b> Extension tube
<b>Sxx</b> Extension tube
<b>T5</b> Filler plug M30x1.5



# MPF MPF184 - MPF194

## Dimensions





## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1:		MPF400	1	A	G9	A25	H	B	P01
<b>MPF400</b> Filter element with standard spigot		Configuration example 2:		MPF400	2	V	G4	P10	N	E	P01
<b>Length</b>											
1   2   3											
<b>Seals and treatments</b>											
A NBR											
V FPM											
W NBR head anodized											
Z FPM head anodized											
<b>Connections</b>											
G1 G 1 1/4"		G6 2" NPT									
G2 G 1 1/2"		G7 SAE 20 - 1 5/8" - 12 UN									
G3 G 2"		G8 SAE 24 - 1 7/8" - 12 UN									
G4 1 1/4" NPT		G9 SAE 32 - 2 1/2" - 12 UN									
G5 1 1/2" NPT											
<b>Filtration rating (filter media)</b>											
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
<b>Element Δp</b>		Filter media			Bypass valve		Execution				
N 10 bar		Axx	Mxx	Pxx	E 3 bar		P01 MP Filtri standard				
H 10 bar		•	-	-	B 1.75 bar		Pxx Customized				

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1:		MF400	1	A25	H	B		P01	
<b>MF400</b> Filter element with standard spigot		Configuration example 2:		MF400	2	P10	N	V	E	P01	
<b>Element length</b>											
1   2   3											
<b>Filtration rating (filter media)</b>											
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
<b>Element Δp</b>		Filter media			Seals		Bypass valve		Execution		
N 10 bar		Axx	Mxx	Pxx	B NBR		E 3 bar		P01 MP Filtri standard		
H 10 bar		•	-	-	V FPM		- 1.75 bar		Pxx Customized		

### CLOGGING INDICATORS

See page 710-711

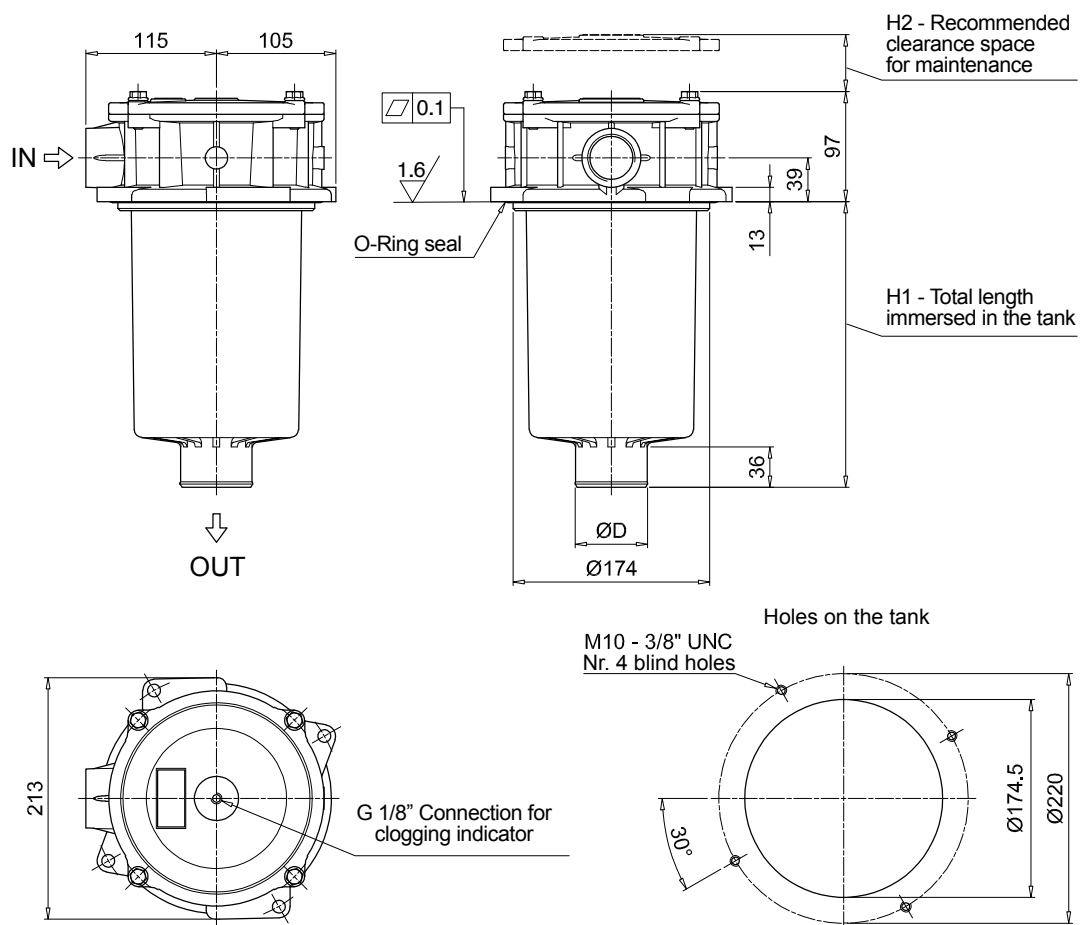
<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

<b>Sxx</b> Extension tube
<b>T5</b> Filler plug M30x1.5

MPF400			
Filter length	H1 [mm]	H2 [mm]	D [mm]
<b>1</b>	180	210	51
<b>2</b>	240	270	64
<b>3</b>	290	315	64



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	MPF410	1	A	G1	1	A25	H	B	P01
<b>MPF410</b> Filter element with standard spigot	Configuration example 2:	MPF410	1	V	G4	1	P10	N	E	P01
<b>Length</b>										
1   2   3										
<b>Seals and treatments</b>										
<b>A</b> NBR										
<b>V</b> FPM										
<b>W</b> NBR head anodized										
<b>Z</b> FPM head anodized										
<b>Main Connections</b>	<b>Aux size 1</b>									
<b>G1</b> G 1 1/4"	G 1"									
<b>G4</b> 1 1/4" NPT	1" NPT									
<b>G7</b> SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN									
<b>Aux connection</b> - see previous table										
<b>1</b> Aux size 1										
<b>Filtration rating (filter media)</b>										
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm									
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm									
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm									
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm									
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm									
<b>Element Δp</b>	<b>Filter media</b>			<b>Bypass valve</b>			<b>Execution</b>			
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard					
<b>H</b> 10 bar	•	-	-	<b>B</b> 1.75 bar	<b>Pxx</b> Customized					

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1:	MF400	1	A25	H	B	P01	
<b>MF400</b> Filter element with standard spigot	Configuration example 2:	MF400	1	P10	N	V	E	P01
<b>Element length</b>								
1   2   3								
<b>Filtration rating (filter media)</b>								
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>	<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard		
<b>H</b> 10 bar	•	-	-	<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized		

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

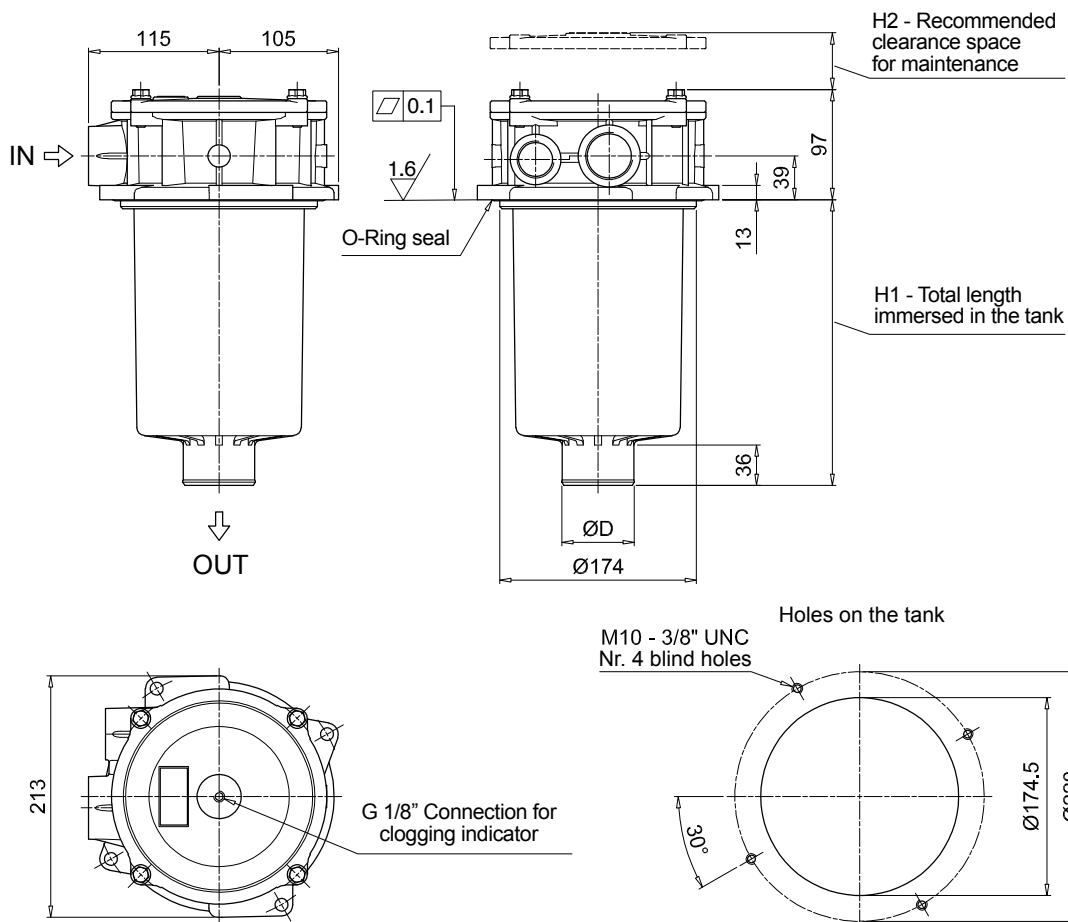
### ADDITIONAL FEATURES

See page 266

<b>Sxx</b> Extension tube
<b>T5</b> Filler plug M30x1.5



MPF410			
Filter length	H1 [mm]	H2 [mm]	D [mm]
<b>1</b>	180	210	51
<b>2</b>	240	270	64
<b>3</b>	290	315	64



# MPF MPF450 - MPF451 - MPF750

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>				Configuration example 1: <b>MPF450</b>   <b>1</b>   <b>A</b>   <b>G1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>P01</b>								
<b>MPF450</b>   <b>MPF451</b>   <b>MPF750</b>	Filter element with standard spigot			Configuration example 2: <b>MPF750</b>   <b>1</b>   <b>V</b>   <b>F2</b>   <b>P10</b>   <b>N</b>   <b>E</b>   <b>P01</b>								
<b>Length</b>				<b>MPF 450</b>	<b>MPF 451</b>	<b>MPF 750</b>						
<b>1</b>		•	•	•								
<b>2</b>		•	•	-								
<b>3</b>		•	•	-								
<b>Seals and treatments</b>												
<b>A</b> NBR	<b>W</b> NBR	head anodized										
<b>V</b> FPM	<b>Z</b> FPM	head anodized										
<b>Connections</b>				<b>Aux (only size 451)</b>								
<b>G1</b> G 2"	G 3/4"											
<b>G4</b> 2" NPT	3/4" NPT											
<b>G7</b> SAE 32 - 2 1/2" - 12 UN	SAE 12 - 1 1/16" - 12 UN											
<b>F1</b> 2" SAE 3000 psi/M	G 3/4"											
<b>F2</b> 2" SAE 3000 psi/UNC	3/4" NPT											
<b>Filtration rating (filter media)</b>												
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm											
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm											
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm											
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm											
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm											
<b>Element Δp</b>				<b>Filter media</b>			<b>Bypass valve</b>		<b>Execution</b>			
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	-	•	•	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard				
<b>H</b> 10 bar	•	-	-	•	-	-	<b>B</b> 1.75 bar	<b>Pxx</b> Customized				

### FILTER ELEMENT

<b>Element series and size</b>				Configuration example 1: <b>MF400</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>P01</b>								
<b>MF400</b>   <b>MF750</b>	Filter element with standard spigot			Configuration example 2: <b>MF750</b>   <b>1</b>   <b>P10</b>   <b>N</b>   <b>V</b>   <b>E</b>   <b>P01</b>								
<b>Element length</b>				<b>MPF 450</b>	<b>MPF 451</b>	<b>MPF 750</b>						
<b>1</b>		•	•	•								
<b>2</b>		•	•	-								
<b>3</b>		•	•	-								
<b>Filtration rating (filter media)</b>												
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm											
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm											
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm											
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm											
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm											
<b>Element Δp</b>				<b>Filter media</b>			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>	
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	-	•	•	<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard			
<b>H</b> 10 bar	•	-	-	•	-	-	<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized			

### CLOGGING INDICATORS

See page 710-711

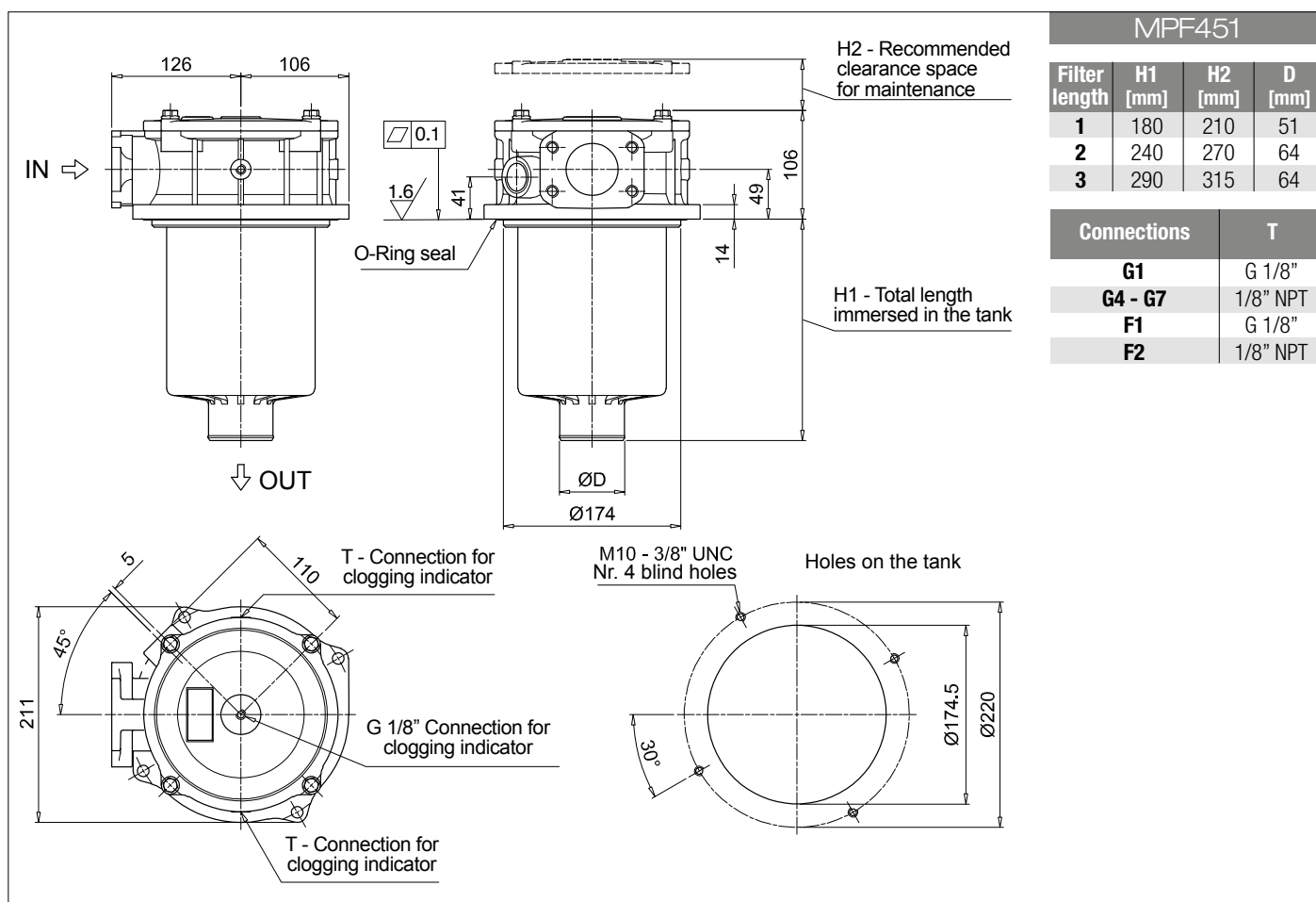
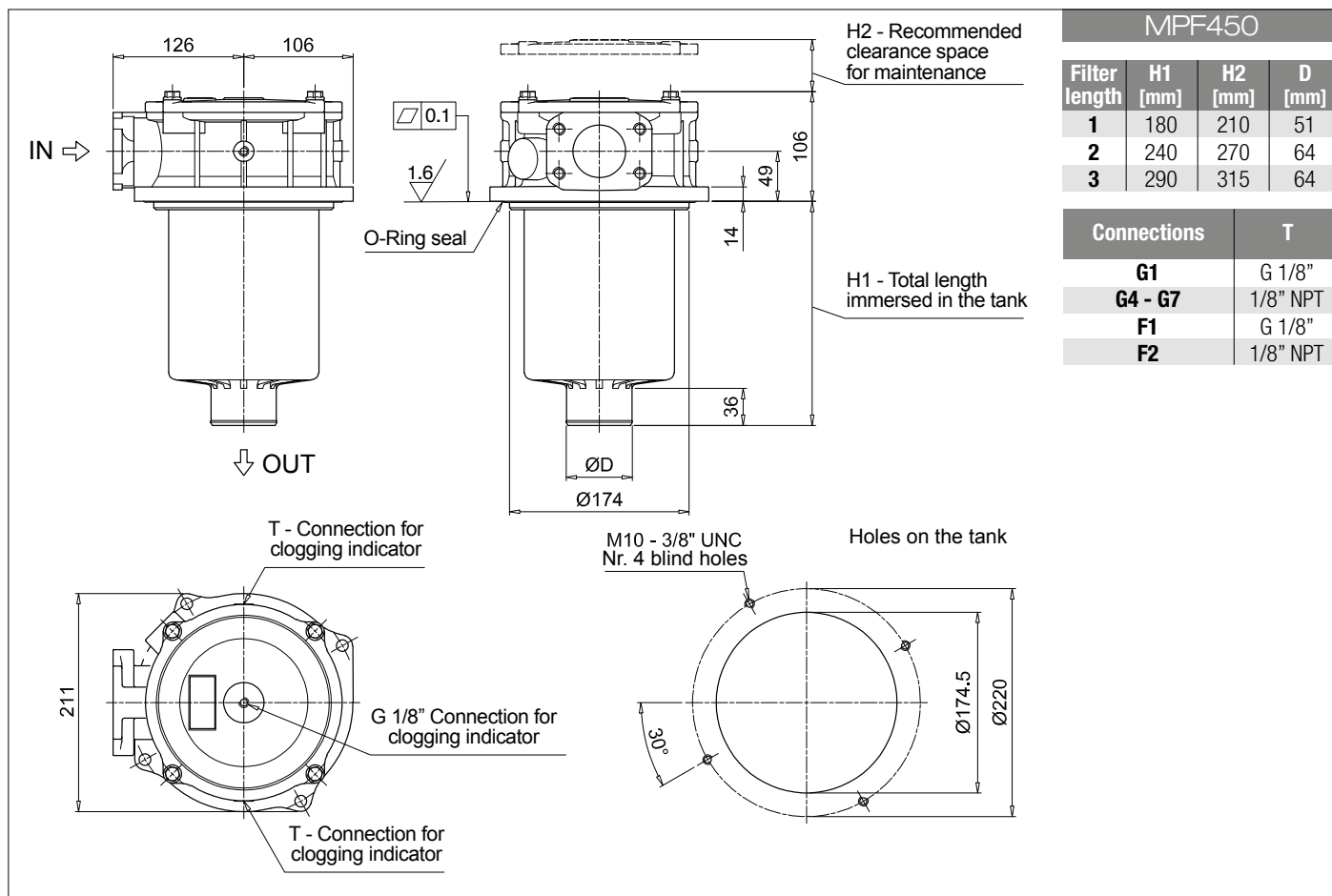
<b>BVA</b> Axial pressure gauge	
<b>BVR</b> Radial pressure gauge	
<b>BVP</b> Visual pressure indicator with automatic reset	
<b>BVQ</b> Visual pressure indicator with manual reset	

<b>BEA</b> Electrical pressure indicator	
<b>BEM</b> Electrical pressure indicator	
<b>BLA</b> Electrical / visual pressure indicator	

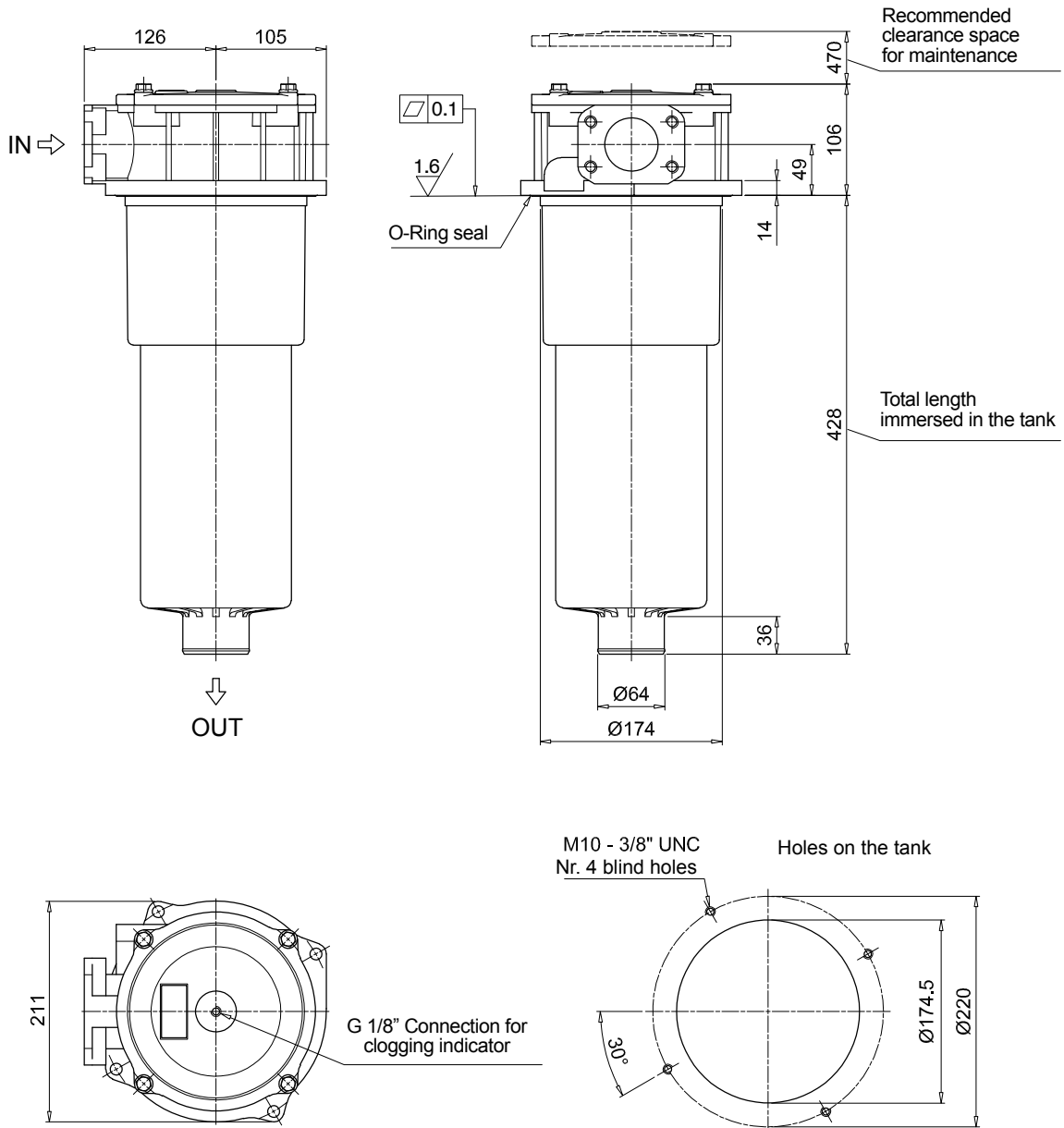
### ADDITIONAL FEATURES

See page 266

<b>Sxx</b> Extension tube	
<b>T5</b> Filler plug M30x1.5	



MPF750



**MPF 100**

**MPF 181**

**O-RING SEAL**

	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)	
Item:		Seal Kit code number NBR	FPM
<b>MPF 030</b>		02050055	02050056
<b>MPF 100-110</b>		02050057	02050058
<b>MPF 181-182</b>		02050059	02050060
<b>MPF 184</b>	See order table	02050455	02050456
<b>MPF 191-192</b>		02050457	02050458
<b>MPF 194</b>		02050459	02050460
<b>MPF 400-410</b>		02050061	02050062
<b>MPF 450-451</b>		02050461	02050462
<b>MPF 750</b>		02050106	02050107

**MPF 104**

**MPF 181**

**FLAT SEAL**

	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)	
Item:		Seal Kit code number NBR	FPM
<b>MPF 020</b>		02050438	02050439
<b>MPF 104</b>		02050350	02050408
<b>MPF 181-182</b>	See order table	02050659	02050660
<b>MPF 191-192</b>		02050661	02050662



# MPT series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 300 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 800 kPa (8 bar)**  
**Flow rate up to 300 l/min**

MPT is a range of return filters with integrated breather filter, for protection of the reservoir against the system contamination.

They are directly fixed to the reservoir, in immersed or semi-immersed position.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 300 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 6 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Screw-in cover with a special shape, to allow the filter element replacement without the use of specific tools
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Integrated breather filter, to clean the air that moves into the reservoir as result of the oil level fluctuation
- Integrated breather filter with pressurization valve, to clean the air that moves into the reservoir as result of the oil level fluctuation and to guarantee the pressurization into the reservoir
- Visual, electrical and electronic clogging indicators

### Common applications:

- Light industrial equipment
- Mobile application

### Filter housing materials

- Head: Aluminium
- Cover: Polyamide
- Bowl: Polyamide

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 300 kPa (3 bar)  $\pm 10\%$

### $\Delta p$ element type

- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPT filters are provided for vertical mounting



## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>MPT 025</b>		0.41	0.45	0.50	-		0.24	0.35	0.42	-
<b>MPT 027</b>		0.44	0.48	0.55	-		0.24	0.35	0.42	-
<b>MPT 110</b>		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
<b>MPT 114</b>		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
<b>MPT 116</b>		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
<b>MPT 120</b>		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74



Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPT 025-027</b>	<b>1</b>	7	10	23	28	42	59	51	54
	<b>2</b>	17	20	45	48	56	72	64	67
	<b>3</b>	21	24	50	55	59	76	74	75
<b>MPT 110-114 116-120</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

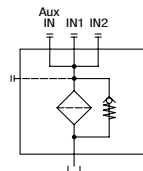
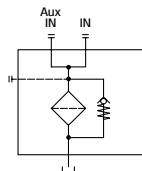
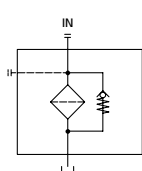
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

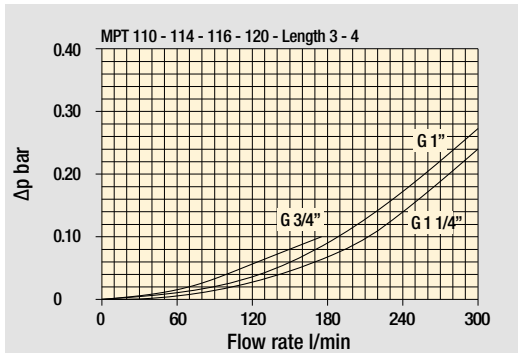
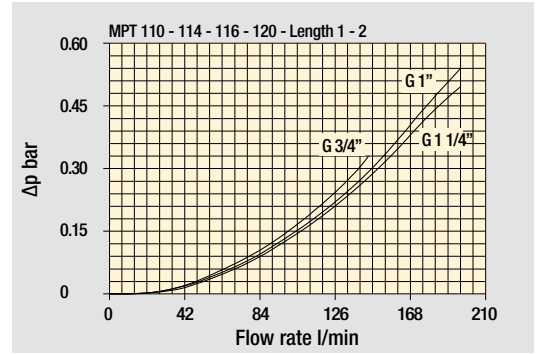
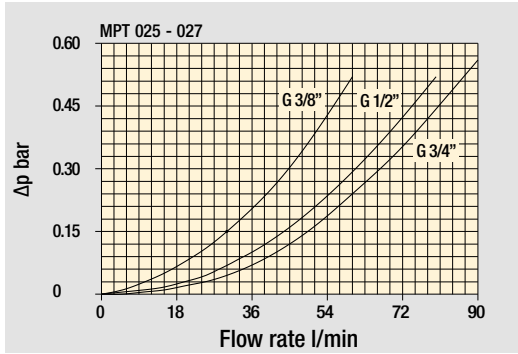
## Hydraulic symbols

Filter series	Style 1 connection	Style 2 connections	Style 3 connections
<b>MPT 025</b>	•	-	-
<b>MPT 027</b>	•	-	-
<b>MPT 110</b>	-	•	-
<b>MPT 114</b>	•	-	-
<b>MPT 116</b>	•	-	-
<b>MPT 120</b>	-	-	•

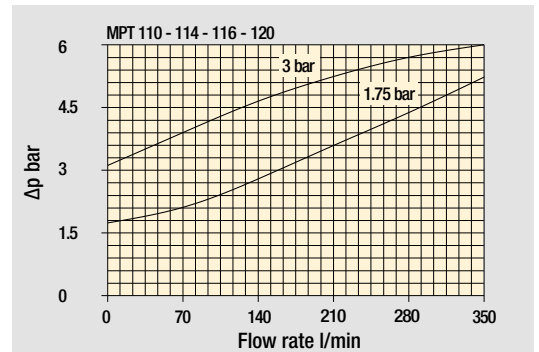
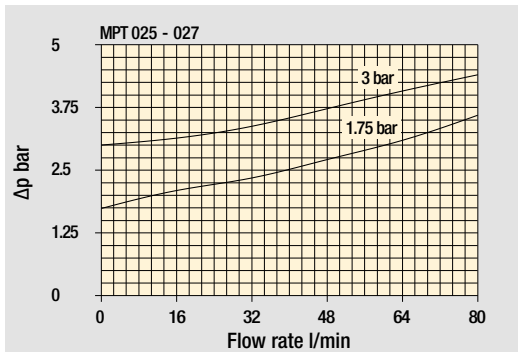


## Pressure drop

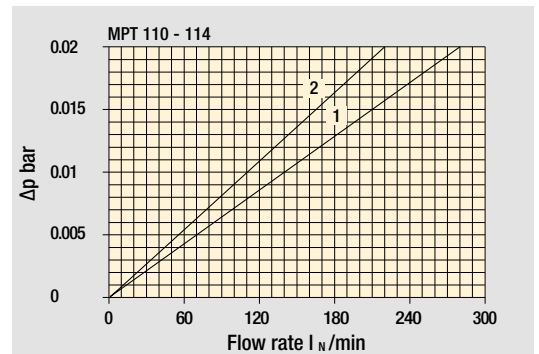
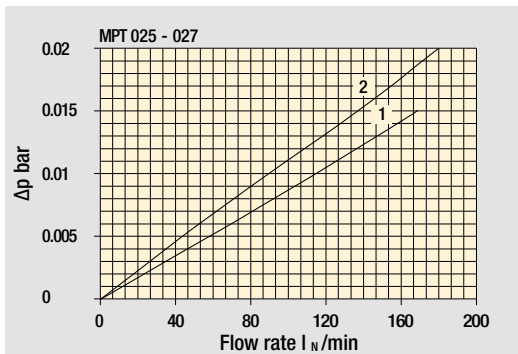
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Air breather pressure drop







- 1  C With air breather 10  $\mu$ m
- 2  D With anti-splash and SAP50 10  $\mu$ m

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.

MPT 025 -027		
Air breather port plugged Indicator port	Air breather standard Indicator port	Anti-splash air breather & pressurized Double indicator port
		

## Multiport - Multifunction

MPT 110	
Standard - Single IN Port	Double IN Port - Double indicator port
	
Double IN Port Option: double drain port	Double IN Port - Indicator port Option: drain port
	

## MPT 120

Triple IN port  
Option: double drain port



# MPT MPT025 - MPT027

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1:		MPT025	1	S	A	G3	A10	E	P01		
<b>MPT025</b>	<b>MPT027</b>	Filter element with standard spigot		Configuration example 2:		MPT027	3	C	W	G6	A03	B	P01
<b>Length</b>													
1		2		3									
<b>Air breather</b>													
<b>S</b>		Without air breather											
<b>C</b>		With air breather 10 µm											
<b>D</b>		With anti-splash and air breather SAP050 10 µm											
<b>P</b>		With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar											
<b>Seals and treatments</b>		Filtration rating											
		Axx		Mxx		Pxx							
<b>A</b>		NBR		•		•		•					
<b>V</b>		FPM		•		•		•					
<b>W</b>		NBR head anodized		•		•		-					
<b>Z</b>		FPM head anodized		•		•		-					
<b>Connections</b>													
<b>G1</b>		G 3/8"		<b>G6</b>		3/4" NPT							
<b>G2</b>		G 1/2"		<b>G7</b>		SAE 6 - 9/16" - 18 UNF							
<b>G3</b>		G 3/4"		<b>G8</b>		SAE 8 - 3/4" - 16 UNF							
<b>G4</b>		3/8" NPT		<b>G9</b>		SAE 12 - 1 1/16" - 12 UN							
<b>G5</b>		1/2" NPT											
<b>Filtration rating (filter media)</b>													
<b>A03</b>		Inorganic microfiber 3 µm		<b>M25</b>		Wire mesh 25 µm							
<b>A06</b>		Inorganic microfiber 6 µm		<b>M60</b>		Wire mesh 60 µm							
<b>A10</b>		Inorganic microfiber 10 µm		<b>M90</b>		Wire mesh 90 µm							
<b>A16</b>		Inorganic microfiber 16 µm		<b>P10</b>		Resin impregnated paper 10 µm							
<b>A25</b>		Inorganic microfiber 25 µm		<b>P25</b>		Resin impregnated paper 25 µm							
										<b>Bypass valve</b>		<b>Execution</b>	
										<b>E</b>		<b>P01</b>	
										3 bar		MP Filtri standard	
										<b>B</b>		<b>Pxx</b>	
										1.75 bar		Customized	

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1:		MF020	1	A10	H	B	E	P01	
<b>MF020</b>	Filter element with standard spigot		Configuration example 2:		MF020	3	A03	N	B	P01	
<b>Element length</b>											
1		2		3							
<b>Filtration rating (filter media)</b>											
<b>A03</b>		Inorganic microfiber 3 µm		<b>M25</b>		Wire mesh 25 µm					
<b>A06</b>		Inorganic microfiber 6 µm		<b>M60</b>		Wire mesh 60 µm					
<b>A10</b>		Inorganic microfiber 10 µm		<b>M90</b>		Wire mesh 90 µm					
<b>A16</b>		Inorganic microfiber 16 µm		<b>P10</b>		Resin impregnated paper 10 µm					
<b>A25</b>		Inorganic microfiber 25 µm		<b>P25</b>		Resin impregnated paper 25 µm					
<b>Element Δp</b>		Filter media									
		Axx		Mxx		Pxx					
<b>N</b>		10 bar		-		•		•			
<b>H</b>		10 bar		•		-		-			
										<b>Seals</b>	
										<b>B</b>	
										NBR	
										<b>V</b>	
										FPM	
										<b>Bypass valve</b>	
										<b>E</b>	
										3 bar	
										<b>Pxx</b>	
										1.75 bar	
										<b>Execution</b>	
										<b>P01</b>	
										MP Filtri standard	
										<b>Pxx</b>	
										Customized	

### CLOGGING INDICATORS

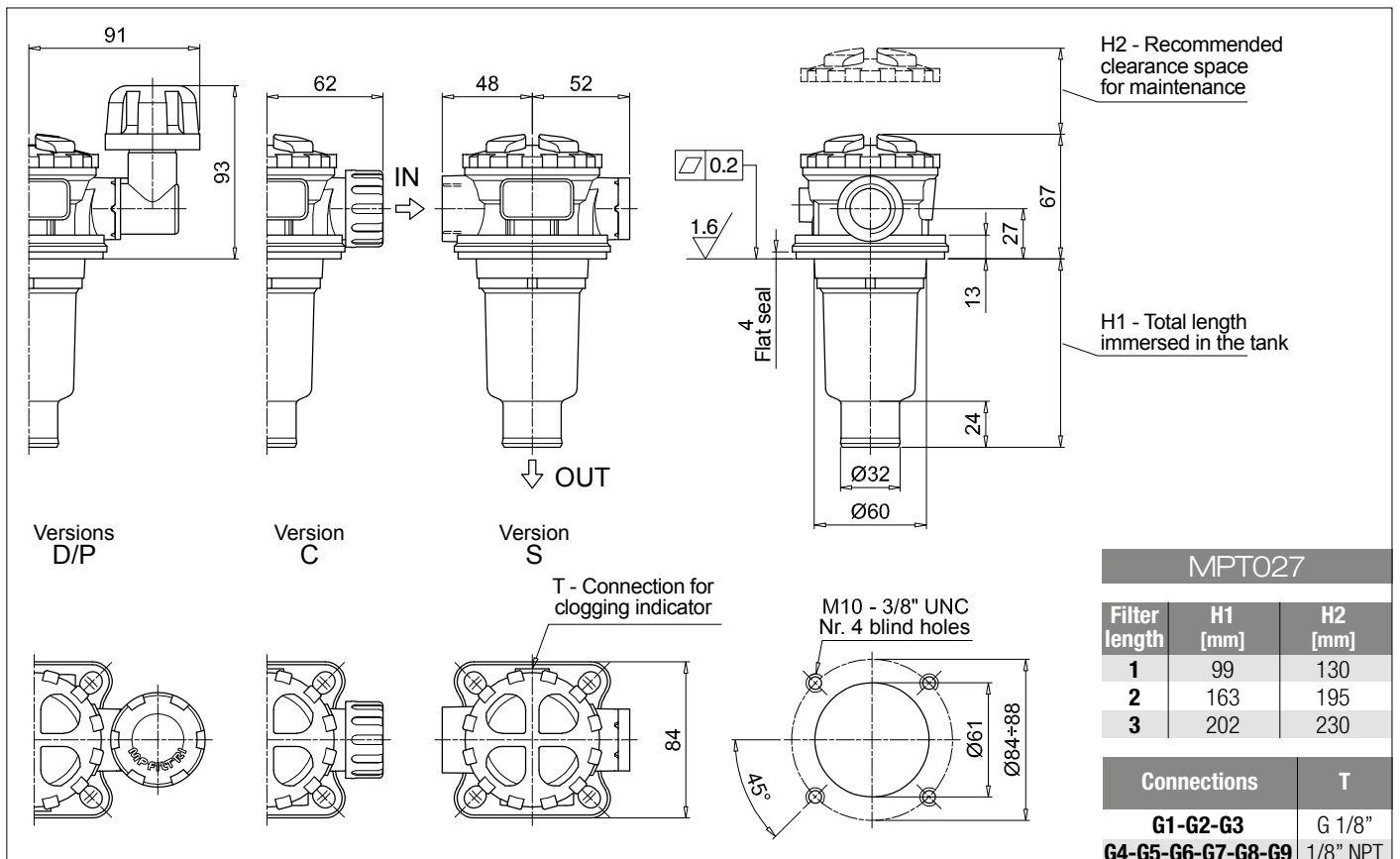
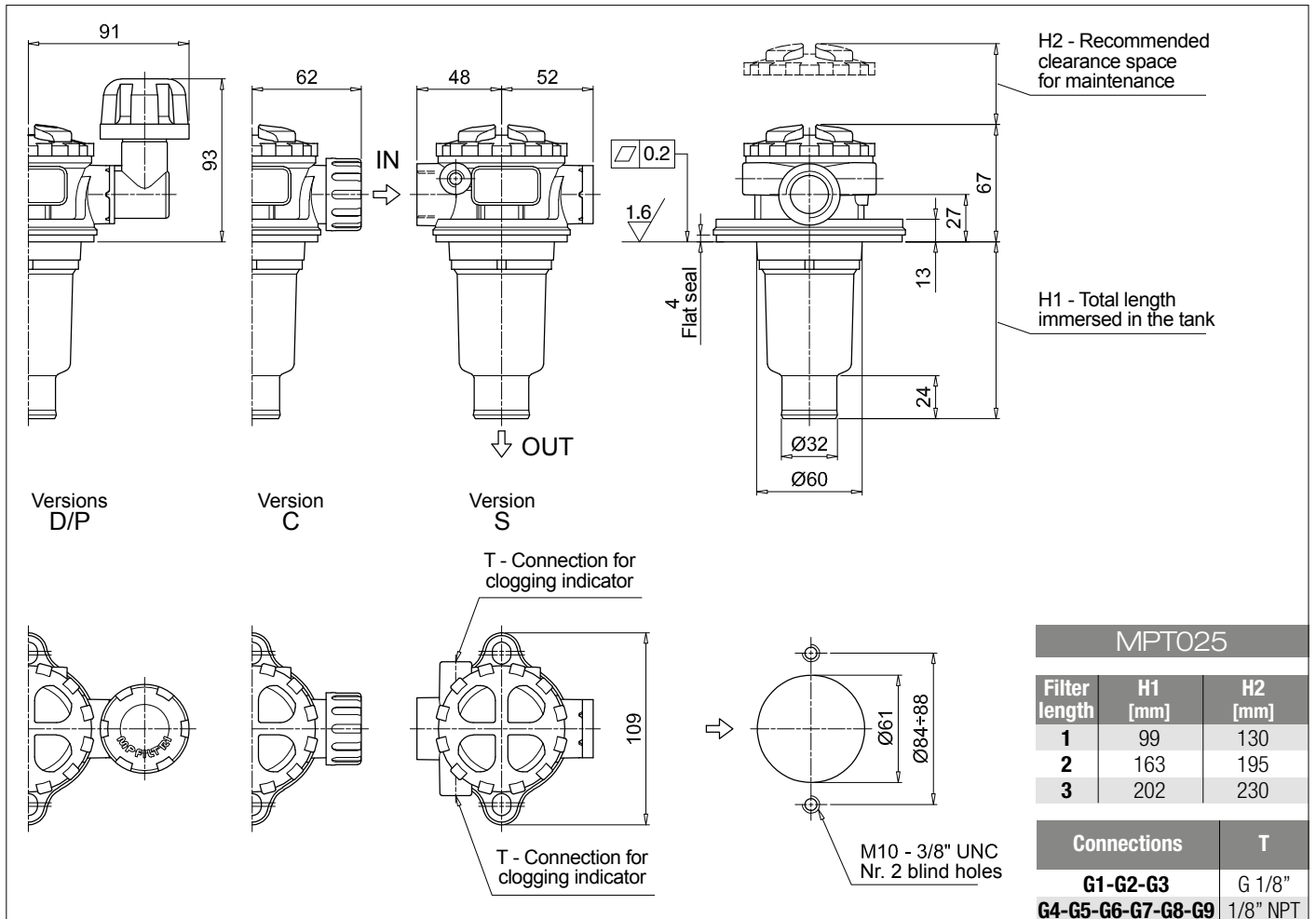
See page 710-711

<b>BVA</b>	Axial pressure gauge	<b>BEA</b>	Electrical pressure indicator
<b>BVR</b>	Radial pressure gauge	<b>BEM</b>	Electrical pressure indicator
<b>BVP</b>	Visual pressure indicator with automatic reset	<b>BLA</b>	Electrical / visual pressure indicator
<b>BVQ</b>	Visual pressure indicator with manual reset		

### ADDITIONAL FEATURES

See page 266

<b>TE</b>	Extension tube
<b>DPT</b>	Dipstick



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example 1: <b>MPT110</b>   <b>1</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>0</b>   <b>A06</b>   <b>E</b>   <b>P01</b>									
<b>MPT110</b> Filter element with standard spigot		Configuration example 2: <b>MPT110</b>   <b>3</b>   <b>P</b>   <b>V</b>   <b>G4</b>   <b>1</b>   <b>M25</b>   <b>B</b>   <b>P01</b>									
<b>Length</b>											
1   2   3   4											
<b>Air breather</b>											
<b>S</b> Without air breather											
<b>C</b> With air breather 10 µm											
<b>D</b> With anti-splash and air breather SAP050 10 µm											
<b>P</b> With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar											
<b>Seals and treatments</b>		Filtration rating									
		Axx	Mxx	Pxx							
<b>A</b> NBR		•	•	•							
<b>V</b> FPM		•	•	•							
<b>W</b> NBR head anodized		•	•	-							
<b>Z</b> FPM head anodized		•	•	-							
<b>Main Connections</b>		<b>Aux size 1</b>		<b>Aux size 2</b>		<b>Main Connections</b>		<b>Aux size 1</b>		<b>Aux size 2</b>	
<b>G1</b> G 3/4"		G 3/8"		G 1/2"		<b>G6</b> 1 1/4" NPT		3/8" NPT		1/2" NPT	
<b>G2</b> G 1"						<b>G7</b> SAE 12 - 1 1/16" - 12 UN		SAE 6 - 9/16" - 18 UNF		SAE 8 - 3/4" - 16 UNF	
<b>G3</b> G 1 1/4"						<b>G8</b> SAE 16 - 1 5/16" - 12 UN					
<b>G4</b> 3/4" NPT		3/8" NPT		1/2" NPT		<b>G9</b> SAE 20 - 1 5/8" - 12 UN					
<b>G5</b> 1" NPT											
<b>Aux connection</b> - see previous table											
<b>0</b> Not machined		<b>1</b> Aux size 1		<b>2</b> Aux size 2							
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm				<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm				<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm				<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm				<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm				<b>P25</b> Resin impregnated paper 25 µm							
						<b>Bypass valve</b>		<b>Execution</b>			
						<b>E</b> 3 bar		<b>P01</b> MP Filtri standard			
						<b>B</b> 1.75 bar		<b>Pxx</b> Customized			

### FILTER ELEMENT

<b>Element series and size</b>		Configuration example 1: <b>MF100</b>   <b>1</b>   <b>A06</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>									
<b>MF100</b> Filter element with standard spigot		Configuration example 2: <b>MF100</b>   <b>3</b>   <b>M25</b>   <b>N</b>   <b>V</b>   <b>P01</b>									
<b>Element length</b>											
1   2   3   4											
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm				<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm				<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm				<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm				<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm				<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		Filter media			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>		
		Axx	Mxx	Pxx							
<b>N</b> 10 bar		-	•	•	<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard		
<b>H</b> 10 bar		•	-	-	<b>V</b> FPM		<b>-</b> 1.75 bar		<b>Pxx</b> Customized		

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

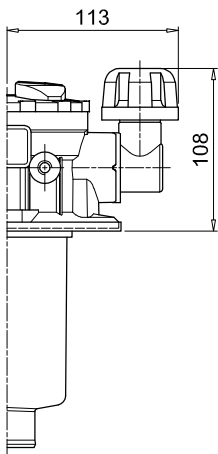
See page 266

<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	

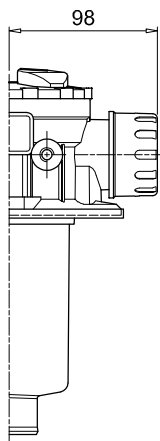
MPT110				
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	97	120	38	4
2	144	170	38	4
3	222	250	47	-
4	324	350	47	2.5

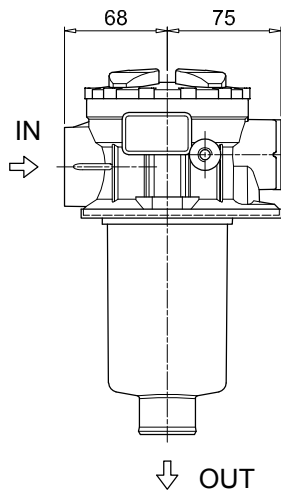
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



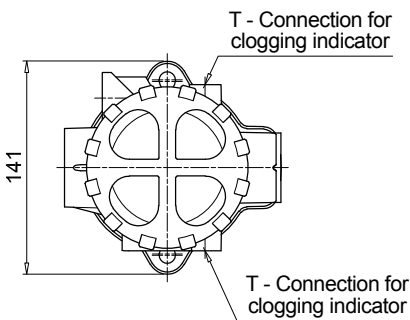
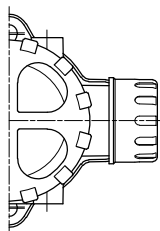
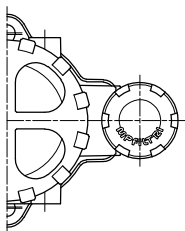
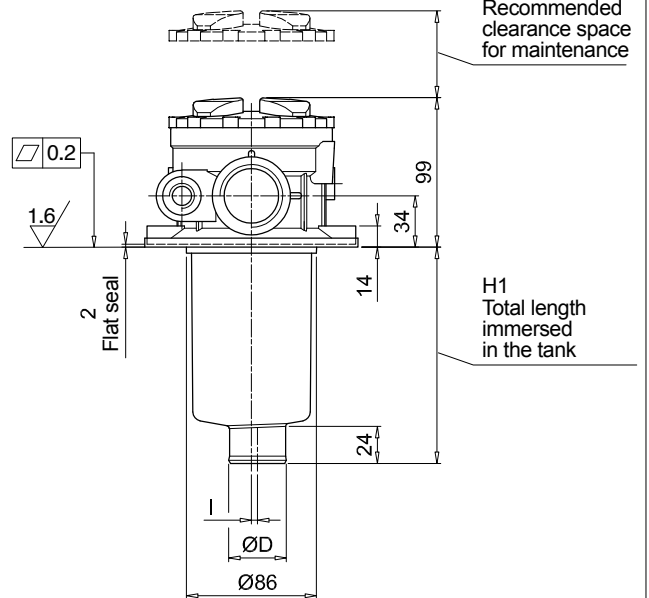
Versions D/P



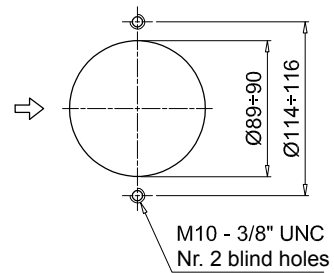
Version C



Version S



Holes on the tank



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	MPT114	4	S	A	G3	A10	E	P01
<b>MPT114</b> Filter element with standard spigot	Configuration example 2:	MPT114	3	C	W	G6	A03	B	P01
<b>Length</b>									
1   2   3   4									
<b>Air breather</b>									
S Without air breather									
C With air breather 10 µm									
D With anti-splash and air breather SAP050 10 µm									
P With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar									
<b>Seals and treatments</b>									
Filtration rating									
Axx   Mxx   Pxx									
A NBR									
V FPM									
W NBR head anodized									
Z FPM head anodized									
<b>Connections</b>									
G1 G 3/4"									
G2 G 1"									
G3 G 1 1/4"									
G4 3/4" NPT									
G5 1" NPT									
G6 1 1/4" NPT									
G7 SAE 12 - 1 1/16" - 12 UN									
G8 SAE 16 - 1 5/16" - 12 UN									
G9 SAE 20 - 1 5/8" - 12 UN									
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm									
A06 Inorganic microfiber 6 µm									
A10 Inorganic microfiber 10 µm									
A16 Inorganic microfiber 16 µm									
A25 Inorganic microfiber 25 µm									
M25 Wire mesh 25 µm									
M60 Wire mesh 60 µm									
M90 Wire mesh 90 µm									
P10 Resin impregnated paper 10 µm									
P25 Resin impregnated paper 25 µm									
<b>Bypass valve</b>									
E 3 bar									
B 1.75 bar									
<b>Execution</b>									
P01 MP Filtri standard									
Pxx Customized									

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 2:	MF100	4	A10	H	B	E	P01
<b>MF100</b> Filter element with standard spigot	Configuration example 1:	MF100	3	A03	N	B		P01
<b>Element length</b>								
1   2   3   4								
<b>Filtration rating (filter media)</b>								
A03 Inorganic microfiber 3 µm								
A06 Inorganic microfiber 6 µm								
A10 Inorganic microfiber 10 µm								
A16 Inorganic microfiber 16 µm								
A25 Inorganic microfiber 25 µm								
M25 Wire mesh 25 µm								
M60 Wire mesh 60 µm								
M90 Wire mesh 90 µm								
P10 Resin impregnated paper 10 µm								
P25 Resin impregnated paper 25 µm								
<b>Element Δp</b>								
Filter media								
Axx   Mxx   Pxx								
N 10 bar								
H 10 bar								
<b>Seals</b>								
B NBR								
V FPM								
<b>Bypass valve</b>								
E 3 bar								
- 1.75 bar								
<b>Execution</b>								
P01 MP Filtri standard								
Pxx Customized								

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

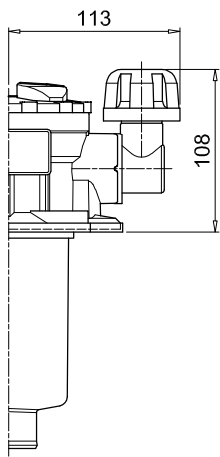
<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	



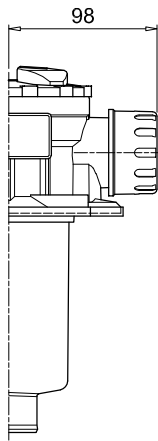
MPT114				
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	97	120	38	4
2	144	170	38	4
3	222	250	47	-
4	324	350	47	2.5

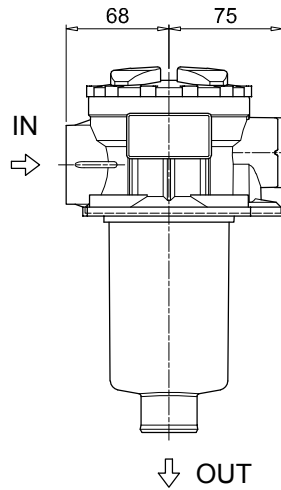
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



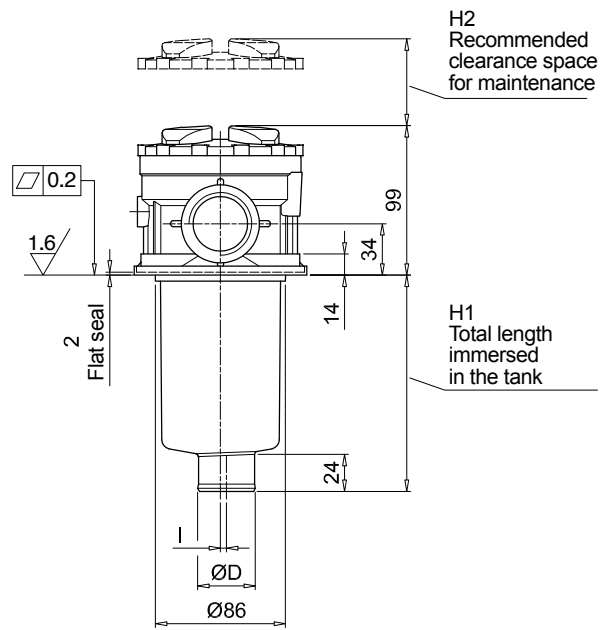
Versions D/P



Version C

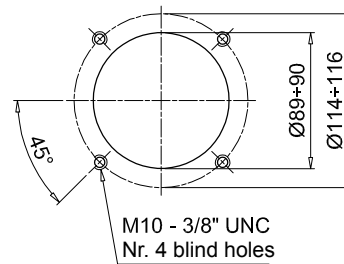
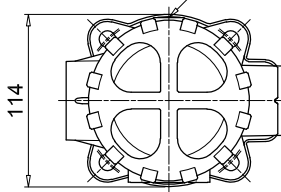
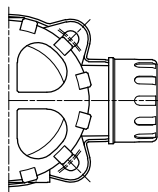
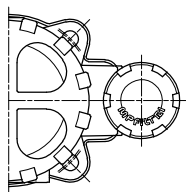


Version S



T - Connection for clogging indicator

Holes on the tank



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	MPT116	1	S	A	G1	M90	E	P01
<b>MPT116</b> Filter element with standard spigot	Configuration example 2:	MPT116	2	S	Z	G9	A03	B	P01

<b>Length</b>	1	2	3	4
---------------	---	---	---	---

<b>Air breather</b>	S Without air breather
---------------------	------------------------

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
A NBR	•	•	•
V FPM	•	•	•
W NBR head anodized	•	•	-
Z FPM head anodized	•	•	-

Flat seal on the head on request

<b>Connections</b>	G1 G 3/4"	G6 1 1/4" NPT
G2 G 1"	G7 SAE 12 - 1 1/16" - 12 UN	
G3 G 1 1/4"	G8 SAE 16 - 1 5/16" - 12 UN	
G4 3/4" NPT	G9 SAE 20 - 1 5/8" - 12 UN	
G5 1" NPT		

<b>Filtration rating (filter media)</b>	A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm	
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm	
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm	
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm	

<b>Bypass valve</b>	<b>Execution</b>
E 3 bar	P01 MP Filtri standard
B 1.75 bar	Pxx Customized

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 2:	MF100	1	M90	N	B	E	P01
<b>MF100</b> Filter element with standard spigot	Configuration example 1:	MF100	2	A03	H	V		P01

<b>Element length</b>	1	2	3	4
-----------------------	---	---	---	---

<b>Filtration rating (filter media)</b>	A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm	
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm	
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm	
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm	

Element Δp	Filter media		
	Axx	Mxx	Pxx
N 10 bar	-	•	•
H 10 bar	•	-	-

<b>Seals</b>	<b>Bypass valve</b>	<b>Execution</b>
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	- 1.75 bar	Pxx Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

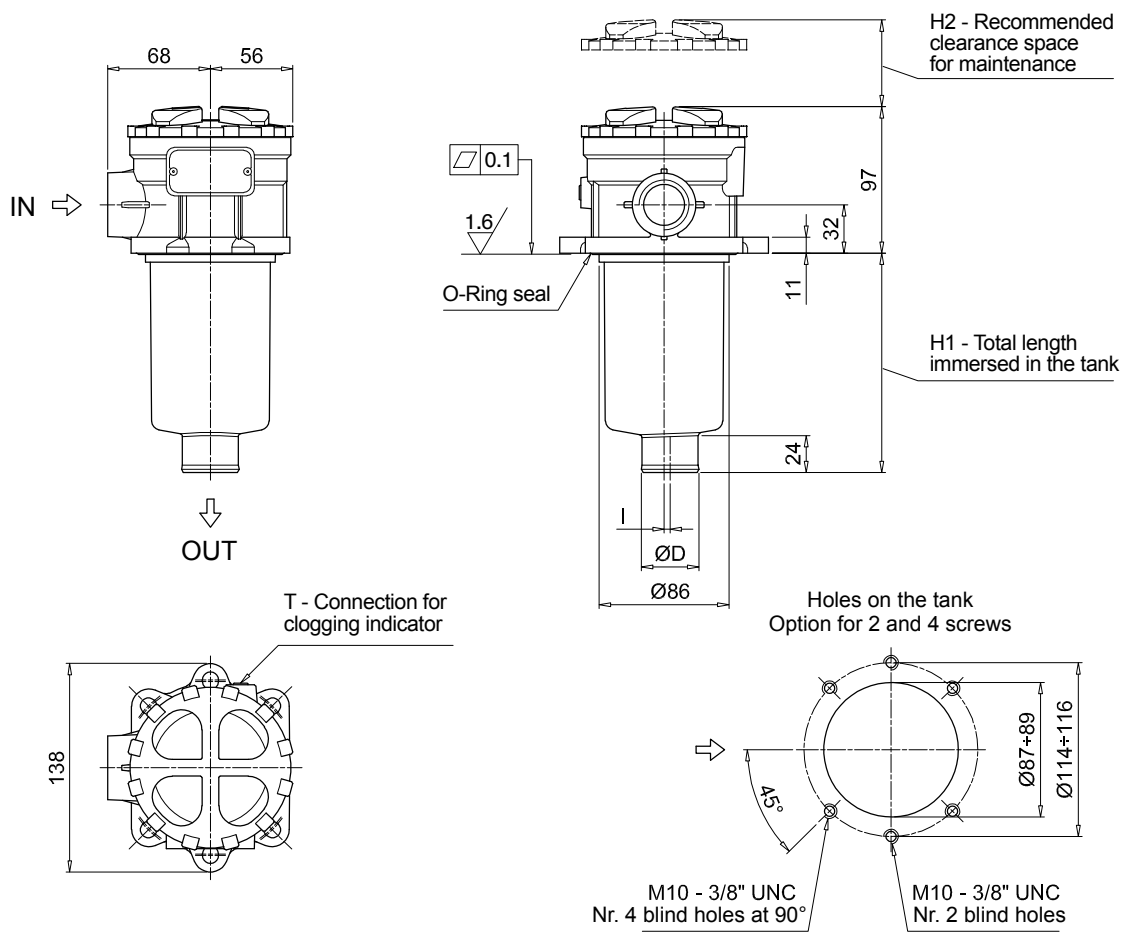
See page 266

<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	

MPT116				
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	99	120	38	4
2	146	170	38	4
3	224	250	47	-
4	326	350	47	2.5

Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1:	MPT120	1	A	G1	0	A06	E	P01
<b>MPT120</b> Filter element with standard spigot	Configuration example 2:	MPT120	3	V	G4	1	M25	B	P01

<b>Length</b>	1	2	3	4
---------------	---	---	---	---

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Main Connections	Rear connections	Aux size 1	Aux size 2
<b>G1</b> G 3/4"	G 3/4"	G 3/8"	G 1/2"
<b>G2</b> G 1"	G 1"		
<b>G3</b> G 1 1/4"	G 3/4"		
<b>G4</b> 3/4" NPT	3/4" NPT	3/8" NPT	1/2" NPT
<b>G5</b> 1" NPT	1" NPT		
<b>G6</b> 1 1/4" NPT	3/4" NPT	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
<b>G7</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN		
<b>G8</b> SAE 16 - 1 5/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN		
<b>G9</b> SAE 20 - 1 5/8" - 12 UN	SAE 12 - 1 1/16" - 12 UN		

<b>Aux connection</b> - see previous table	0 Not machined	1 Aux size 1	2 Aux size 2
--	----------------	--------------	--------------

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Bypass valve	Execution
<b>E</b> 3 bar	<b>P01</b> MP Filtri standard
<b>B</b> 1.75 bar	<b>Pxx</b> Customized

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1:	MF100	1	A06	H	B	E	P01
<b>MF100</b> Filter element with standard spigot	Configuration example 2:	MF100	3	M25	N	V		P01

<b>Element length</b>	1	2	3	4
-----------------------	---	---	---	---

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp	Filter media		
	Axx	Mxx	Pxx
<b>N</b> 10 bar	-	•	•
<b>H</b> 10 bar	•	-	-

Seals	Bypass valve	Execution
<b>B</b> NBR	<b>E</b> 3 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	- 1.75 bar	<b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

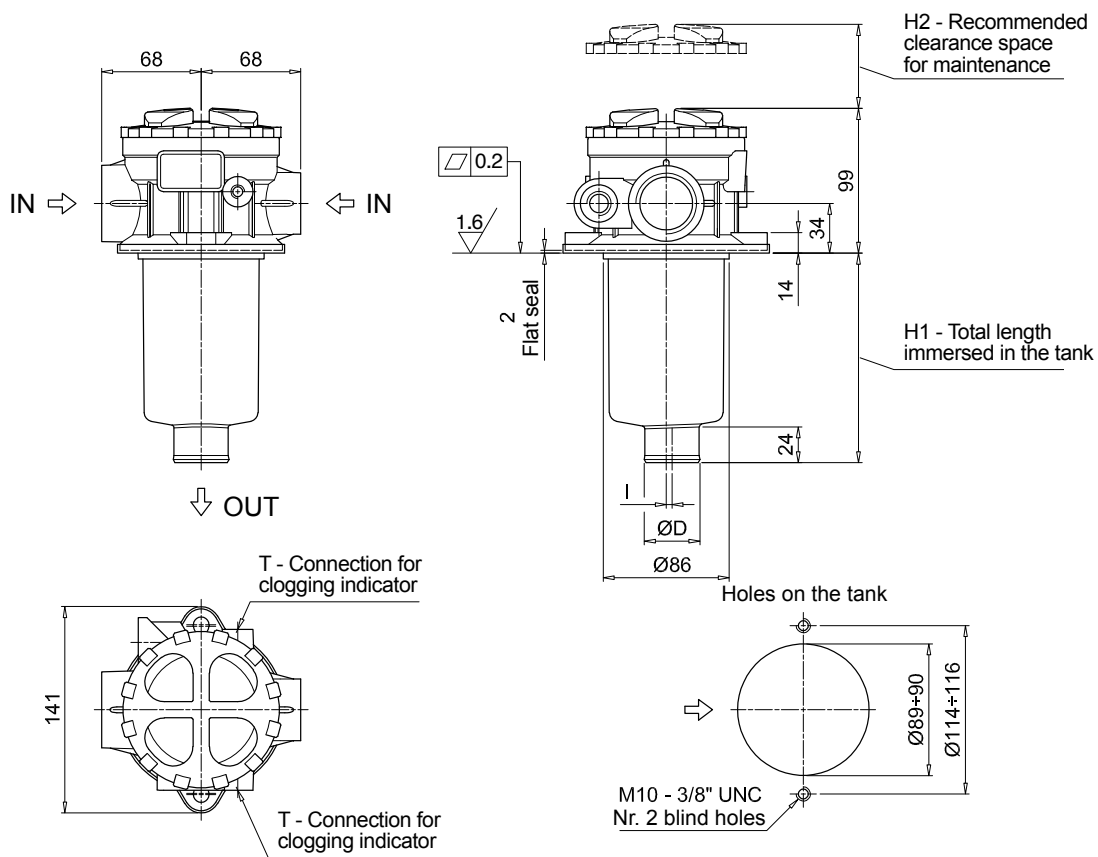
See page 266

<b>TE</b> Extension tube	<b>DPT</b> Dipstick
<b>DFS</b> Diffuser with fast lock connection	

MPT120				
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
<b>1</b>	97	120	38	4
<b>2</b>	147	170	38	4
<b>3</b>	222	250	47	-
<b>4</b>	324	350	47	2.5

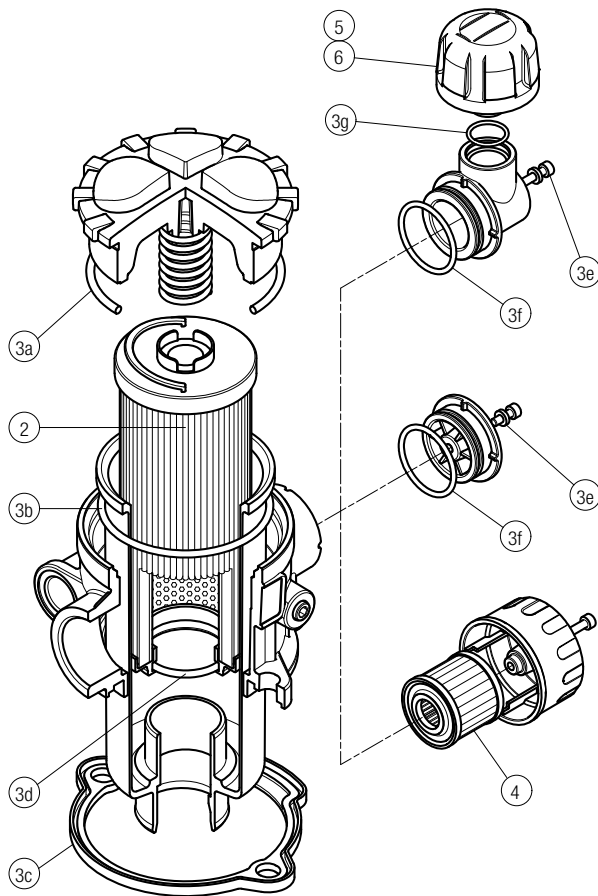
Connections	T
<b>G1-G2-G3</b>	G 1/8"
<b>G4-G5-G6-G7-G8-G9</b>	1/8" NPT



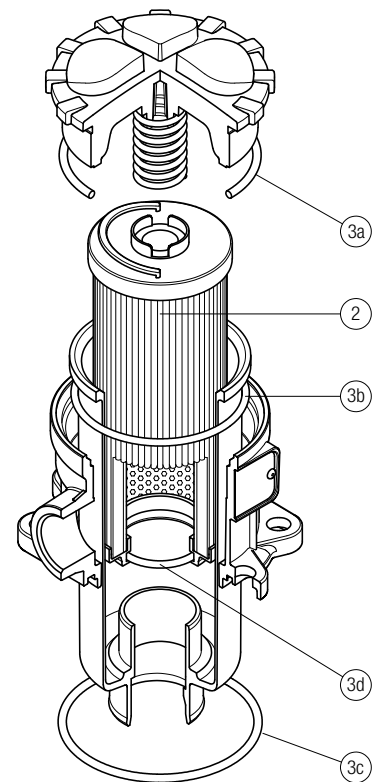
# MPT SPARE PARTS

Order number for spare parts

MPT 025 - 027 - 110



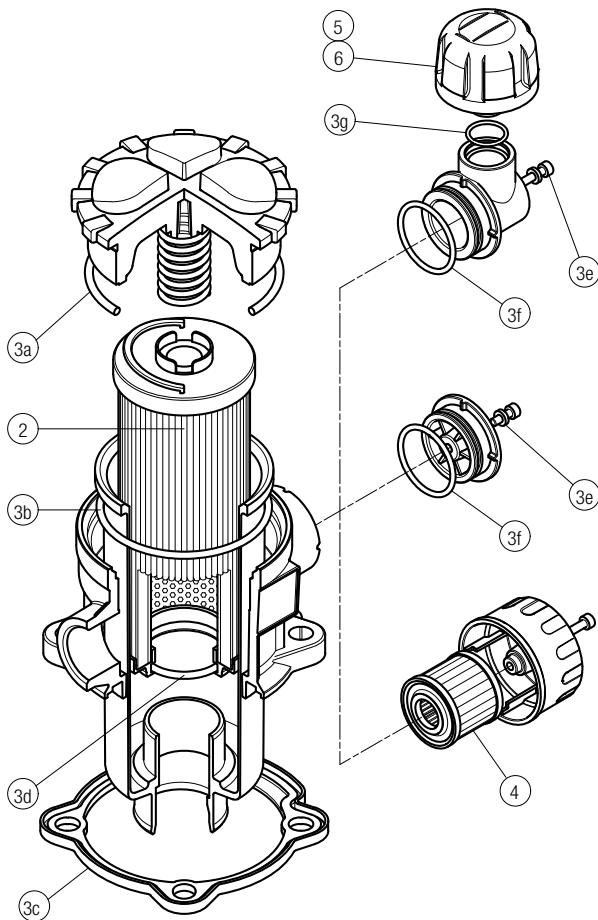
MPT 116



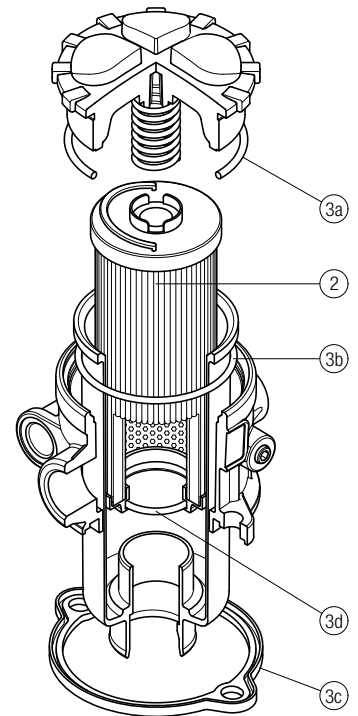
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		C	D	P
		NBR	FPM			
MPT 025	See order table	02050557	02050558	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 027		02050559	02050560	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 110		02050561	02050562	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPT 116	See order table	02050466	02050467

**MPT 114**



**MPT 120**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	Air breather filter element - version:			
		NBR	FPM	C	D	P
<b>MPT 114</b>	See order table	02050580	02050581	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPT 120</b>	See order table	02050563	02050564





# MFB series

BOWL ASSEMBLY

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 700 l/min



## Description

## Technical data

### Return filter Bowl assembly

**Maximum working pressure up to 800 kPa (8 bar)**

**Flow rate up to 700 l/min**

MFB is a range of return filter kits for protection of the reservoir against the system contamination.

They are directly integrated in the moulded reservoir in immersed or semi-immersed position to save space into the tank.

Treaded or flanged covers can be provided.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

#### Available features:

- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)

#### Common applications:

Mobile machines

#### Bowl assembly materials

- Cover  
Polyamide: MFB 020-030-100  
Aluminium: MFB 180-190

- Bowl: Polyamide

#### Filter element materials

- Caps: Polyamide
- Spring: Spring steel

#### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 300 kPa (3 bar)  $\pm 10\%$

#### $\Delta p$ element type

- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

MFB filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>MFB 020</b>		0.25	0.35	0.40	-		0.10	0.15	0.20	-
<b>MFB 030</b>		0.25	-	-	-		0.15	-	-	-
<b>MFB 100</b>		0.50	0.60	0.75	0.95		0.35	0.50	0.80	1.10
<b>MFB 180</b>		1.60	2.40	-	-		1.50	2.90	-	-
<b>MFB 190</b>		-	2.40	-	-		-	3.00	-	-

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MFB 020	1	7	10	23	28	42	59	51	54
	2	17	20	45	48	56	72	64	67
	3	21	24	50	55	59	76	74	75
MFB 030	1	7	10	24	29	47	84	60	66
MFB 100	1	18	20	53	56	65	153	87	96
	2	28	38	65	75	95	158	111	123
	3	48	55	125	135	169	289	224	251
	4	79	89	180	185	198	306	264	289
MFB 180	1	127	148	235	243	278	441	285	299
	2	231	262	358	382	388	472	404	412
MFB 190	2	261	305	489	528	546	696	583	598

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ 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>.

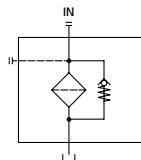
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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 1 connection
MFB 020	•
MFB 030	•
MFB 100	•
MFB 180	•
MFB 190	•



# MFB MFB020 - MFB030 - MFB100 - MFB180 - MFB190

## Designation & Ordering code

### COMPLETE FILTER

Series and size						Configuration example 1: MFB100 1 A 2 A10 H E P01							
MFB020   MFB030   MFB100   MFB180   MFB190						Configuration example 2: MFB180 2 V 1 M25 N B P01							
Filter element with private spigot													
Length	MFB020	MFB030	MFB100	MFB180	MFB190								
1	•	•	•	•	-								
2	•	-	•	•	•								
3	•	-	•	-	-								
4	-	-	•	-	-								
Seals													
A NBR													
V FPM													
Version													
1	Without cover	•	•	•	•								
2	With flanged cover type MPF	-	•	•	•								
3	With threaded cover type MPT	•	-	•	-								
Filtration rating (filter media)													
A03	Inorganic microfiber 3 µm					M25	Wire mesh 25 µm						
A06	Inorganic microfiber 6 µm					M60	Wire mesh 60 µm						
A10	Inorganic microfiber 10 µm					M90	Wire mesh 90 µm						
A16	Inorganic microfiber 16 µm					P10	Resin impregnated paper 10 µm						
A25	Inorganic microfiber 25 µm					P25	Resin impregnated paper 25 µm						
Element Δp						Filter media							
N	10 bar			Axx	Mxx	Pxx							
H	10 bar			•	-	-							
						Bypass valve		Execution					
						E	3 bar	P01	MP Filtri standard				
						B	1.75 bar	Pxx	Customized				

### FILTER ELEMENT

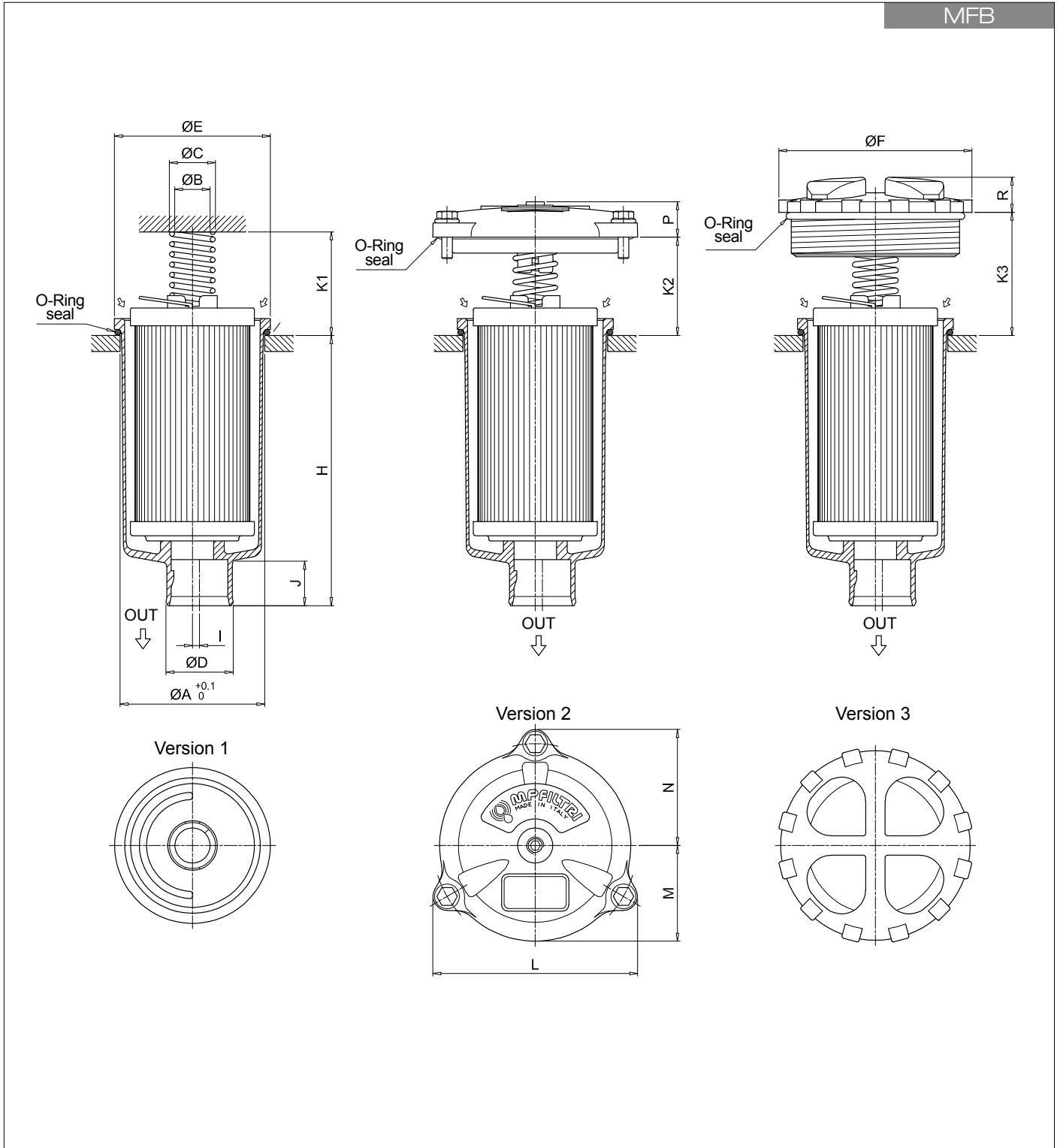
Element series and size						Configuration example 1: MF100 1 A10 H B E P01							
MF020   MF030   MF100   MF180   MF190						Configuration example 2: MF180 2 M25 N V P01							
Filter element with private spigot													
Element length	MF020	MF030	MF100	MF180	MF190								
1	•	•	•	•	-								
2	•	-	•	•	•								
3	•	-	•	-	-								
4	-	-	•	-	-								
Filtration rating (filter media)													
A03	Inorganic microfiber 3 µm					M25	Wire mesh 25 µm						
A06	Inorganic microfiber 6 µm					M60	Wire mesh 60 µm						
A10	Inorganic microfiber 10 µm					M90	Wire mesh 90 µm						
A16	Inorganic microfiber 16 µm					P10	Resin impregnated paper 10 µm						
A25	Inorganic microfiber 25 µm					P25	Resin impregnated paper 25 µm						
Element Δp						Filter media							
N	10 bar			Axx	Mxx	Pxx							
H	10 bar			•	-	-							
						Seals		Bypass valve		Execution			
						B	NBR	E	3 bar	P01	MP Filtri standard		
						V	FPM	-	1.75 bar	Pxx	Customized		

### ADDITIONAL FEATURES

See page 266

	MFB020	MFB030	MFB100	MFB180	MFB190
TE	Extension tube	•	•	•	•
DFS	Diffuser with fast lock connection	-	-	•	-

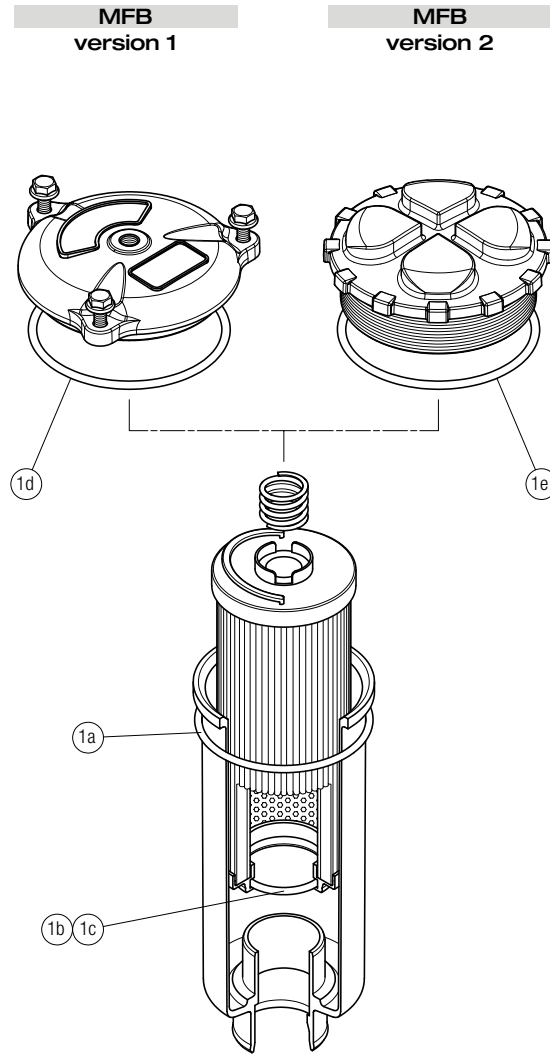
MFB



Filter size	Filter Length	ø A [mm]	ø B [mm]	ø C [mm]	ø D [mm]	ø E [mm]	ø F [mm]	H [mm]	I [mm]	J [mm]	K1 [mm]	K2 [mm]	K3 [mm]	L [mm]	M [mm]	N [mm]	P [mm]	R [mm]
<b>020</b>	1	52	20.5	26	32	56	75	111	0	24	42	-	36	-	-	-	-	18
	2	52	20.5	26	32	56	75	175	0	24	42	-	36	-	-	-	-	18
	3	52	20.5	26	32	56	75	214	0	24	42	-	36	-	-	-	-	18
<b>030</b>	1	60.5	20	25.5	32	68	-	92	3	21	33	35	-	92	42	52	18	-
	1	80.5	20	26	38	88	111	107	4	24	58	55	69	116	54	66	20	20
	2	80.5	20	26	38	88	111	154	4	24	58	55	69	116	54	66	20	20
	3	80.5	20	26	47	88	111	232	0	24	58	55	69	116	54	66	20	20
<b>100</b>	4	80.5	20	26	47	88	111	334	2.5	24	58	55	69	116	54	66	20	20
	1	112.5	26	33.5	47	121	-	234	0	31	58	58	69	159	76	95	21	-
	2	112.5	26	33.5	47	121	-	447	0	31	58	58	69	159	76	95	21	-
	2	112.5	26	33.5	50	121	-	454	0	38	58	58	69	159	76	95	21	-

# MFB SPARE PARTS

Order number for spare parts



Item: <span style="float: right;">Q.ty: 1 pc.</span>		
<b>1</b> (1a ÷ 1e)		
Filter series	Seal Kit code number	
	NBR	FPM
<b>MFB 020</b>	02050572	02050573
<b>MFB 030</b>	02050574	02050575
<b>MFB 100</b>	02050555	02050556
<b>MFB 180</b>	02050576	02050577
<b>MFB 190</b>	02050578	02050579







# MDH series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 500 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 1 MPa (10 bar)**  
**Flow rate up to 500 l/min**

MDH, is a technically advanced filtration product line for efficient and compact, hydraulic reservoir management. Designed to ensure overall system cleanliness, the filters are either installed in a semi immersed or fully immersed position. This new design reduces the volume of the air coming into the tank space and dramatically reduces the velocity of the air through the filter which in turn allows the separation of the air from the fluid. This insures that the system is protected against the effects caused by air contamination such as incorrect system response, cavitation, foaming and fluid degradation. The filtration from inside to outside allows for a cleaner filter element replacement which insures that any contaminated fluid remains within the used filter element.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 500 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Anti-drain membrane, to reduce the volume of air coming to the tank
- Optimized flow path, to reduce the speed of the fluid through the filter
- Diffuser with optimized output, to promote the air separation and to reduce the risk of foaming and noise
- Optional filler plug, to fill cleaned fluid into the tank without an additional plug
- Visual, electrical and electronic clogging indicators and differential pressure clogging indicators

#### Common applications:

Heavy duty industrial equipment  
 Large mobile machines with limited space for the tank

### Filter housing materials

- Head and cover: Aluminium
- Anti-drain membrane: Polyamide
- Diffuser: AISI 430
- Valve: Polyamide / Steel

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 300 kPa (3 bar)  $\pm 10\%$

### $\Delta p$ element type

- Microfibre filter elements - series DH: 10 bar
- 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

MDH filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]		
	Length	2	4	Length	2	4
<b>MDH 250</b>		3.80	4.55		4.65	6.90

Filter series	Length	A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MDH 250</b>	<b>2</b>	134	120	244	255	303	480	326	370
	<b>4</b>	217	256	338	419	487	465	437	694

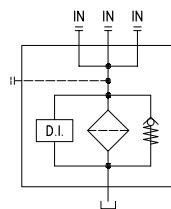
### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

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.

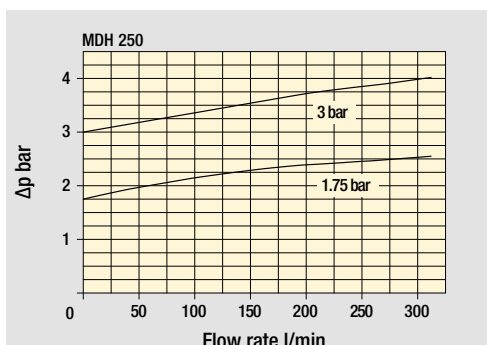
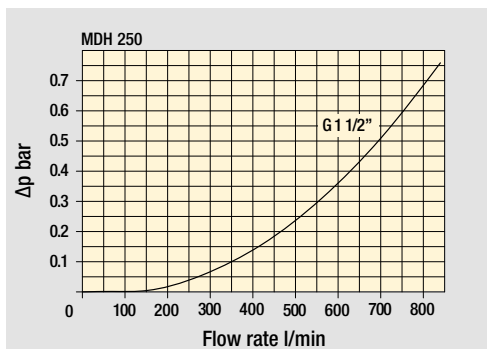
Filter series	Style B
<b>MDH 250</b>	•



Hydraulic symbols

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.

# MDH250

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MDH250** | **2** | **C** | **F** | **S** | **A** | **B** | **2** | **A10** | **P01**

**Series and size**  
MDH250

**Length**  
2 | 4

**Bypass valve**  
C 1.75 bar  
E 3 bar

**Diffuser**  
F With diffuser

**Air breather**  
S Without air breather

	Filtration rating		
	Axx	Mxx	Pxx
A NBR	•	•	•
V FPM	•	•	•
W NBR head anodized	•	•	-
Z FPM head anodized	•	•	-

	Connections		
	Front	Left	Right
A G 1 1/2"	1 1/2" SAE 3000 psi/M + G 1 1/4"	1 1/4" SAE 3000 psi/M + G 1"	
B 1 1/2" NPT	1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT	1 1/4" SAE 3000 psi/UNC + 1" NPT	
C SAE 24 - 1 7/8" - 12 UN	1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" - 12 UN	1 1/4" SAE 3000 psi/UNC + SAE 16 - 1 5/16" - 12 UN	

**Connection indicator**  
1 Without connection  
2 With 2 plugged connections (pressure indicator + diff. pressure indicator)

Filtration rating (filter media)	
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm

**Execution**  
P01 MP Filtri standard  
Pxx Customized

### FILTER ELEMENT

Configuration example: **DH250** | **2** | **A10** | **A** | **P01**

**Element series and size**  
DH250

**Element length**  
2 | 4

Filtration rating (filter media)	
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm

Seals	
A NBR	
V FPM	

**Execution**  
P01 MP Filtri standard  
Pxx Customized

### CLOGGING INDICATORS

See page 710-711

**BVA** Axial pressure gauge  
**BVR** Radial pressure gauge  
**BVP** Visual pressure indicator with automatic reset  
**BVQ** Visual pressure indicator with manual reset

**BEA** Electrical pressure indicator  
**BEM** Electrical pressure indicator  
**BLA** Electrical / visual pressure indicator  
**DES** Electrical differential pressure indicator  
**DVS** Visual differential pressure indicator

### PLUGS

See page 737

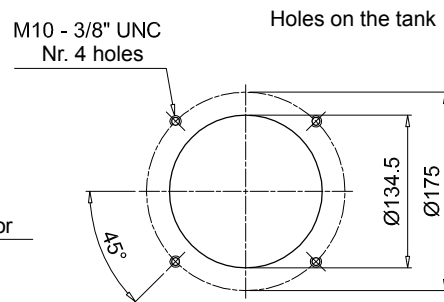
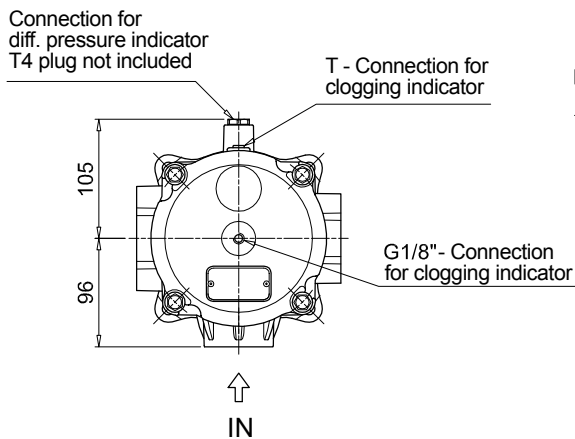
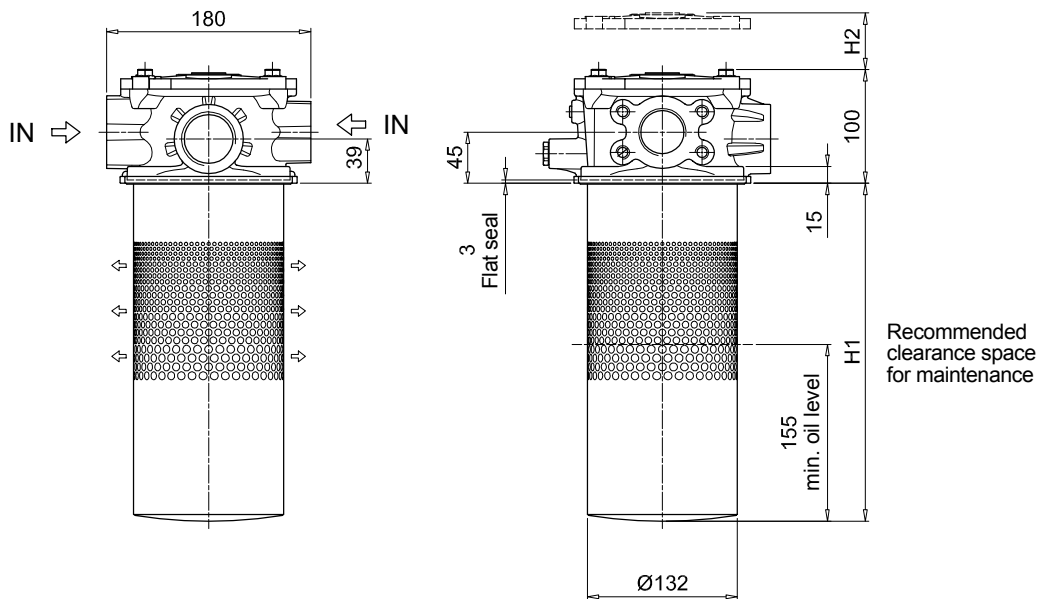
**T4** Plug

# MDH250

## Dimensions

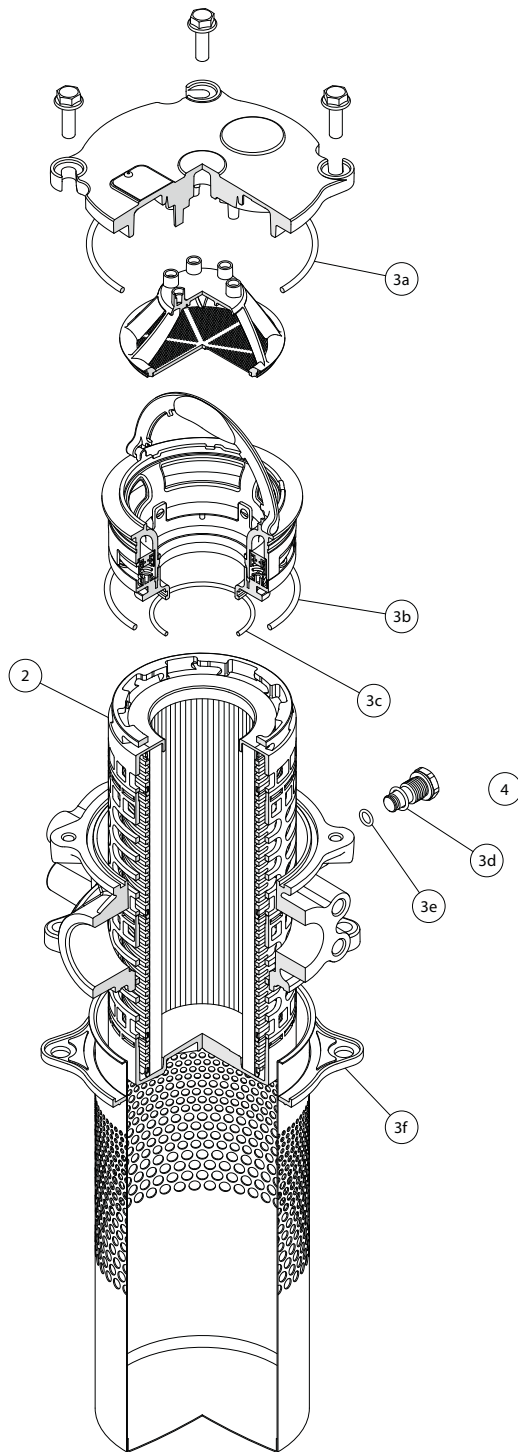
MDH250		
Filter length	H1 [mm]	H2 [mm]
2	300	380
4	485	565

Connections	T
A	G 1/8"
B-C	1/8" NPT



# MDH SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3f)	Q.ty: 1 pc. <b>4</b>
Filter series	Filter element	Seal Kit code number NBR      FPM	Indicator connection plug NBR
<b>MDH 250</b>	See order table	02050850      02050851	T4A







# MPH series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 3500 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 1 MPa (10 bar)**

**Flow rate up to 3500 l/min**

MPH is a range of return filters for protection of the reservoir against the system contamination.

They are directly fixed to the reservoir, in immersed or semi-immersed position.

The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir.

The filtration from inside to outside allows a cleaner filter element replacement, the dirty remains into the filter element.

### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 4", for a maximum flow rate of 3500 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- 2, 3, 4 or 8 fixing holes for installation, to suit a variety of reservoir surfaces
- Flat Seal to suit a variety of reservoir surfaces
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise
- Filler plug, to fill cleaned fluid into the tank without an additional plug
- Integrated breather filter, to clean the air that moves into the reservoir as result of the oil level fluctuation (MPH110/114)
- Integrated breather filter with pressurization valve, to clean the air that moves into the reservoir as result of the oil level fluctuation and to guarantee the pressurization into the reservoir (MPH110/114)
- Visual, electrical and electronic clogging indicators

### Common applications:

Heavy duty industrial equipment

### Filter housing materials

- Head
  - Aluminium: MPH 110-114-116-120-250
  - Anodized Aluminium: MPH 630-850
  - Painted Aluminium: MPH 660
- Cover
  - Polyamide: MPH 110-114-116-120
  - Aluminium: MPH 250
  - Anodized Aluminium: MPH 630
  - Painted Aluminium: MPH 660
  - Steel: MPH 850
- Insert assembly
  - Polyamide: MPH 110-114-116-120
  - Aluminium: MPH 250-630-660-850
- Diffuser: Stainless Steel
- Valve: Phosphatized Steel

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)±10%
- Opening pressure 250 kPa (2.5 bar) ±10%, except for MPH 850

### Δp element type

- Microfibre filter elements - series MR: 10 bar
- 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

MPH filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>MPH 110</b>	1.60	1.70	1.80	2.20	2.60	1.60	1.70	1.80	2.20	2.60		
<b>MPH 114</b>	1.60	1.70	1.80	2.20	2.60	1.60	1.70	1.80	2.20	2.60		
<b>MPH 116</b>	1.60	1.70	1.80	2.20	2.60	1.60	1.70	1.80	2.20	2.60		
<b>MPH 120</b>	1.60	1.70	1.80	2.20	2.60	1.60	1.70	1.80	2.20	2.60		
<b>MPH 250</b>	3.60	3.90	4.20	5.60	-	4.40	4.40	5.40	8.00	-		
<b>MPH 630</b>	6.50	7.00	7.40	8.50	10.50	7.30	9.00	11.00	13.00	19.20		
<b>MPH 660</b>	-	-	-	11.50	14.00	-	-	-	14.60	21.00		
<b>MPH 850</b>	32.00	35.00	38.00	42.00	-	13.00	16.50	21.00	25.00	-		

Filter series	Length	A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPH 110-114 116-120</b>	1	26	29	72	79	107	282	164	190
	2	43	46	112	114	161	318	164	190
	3	64	72	132	156	178	324	219	251
	4	90	99	184	198	216	324	266	302
	5	117	128	201	219	244	324	282	318
<b>MPH 250</b>	1	93	102	210	251	315	1093	339	383
	2	124	151	327	412	421	1122	460	514
	3	189	221	418	445	500	1137	544	616
	4	261	304	592	670	766	1166	832	923
<b>MPH 630</b>	1	160	200	369	423	518	1894	565	632
	2	240	257	571	611	1045	1929	1137	1285
	3	330	374	745	788	1308	1938	1416	1577
	4	374	403	887	1010	1348	1956	1448	1612
	5	625	698	1210	1257	1723	2121	1839	1929
<b>MPH 660</b>	4	370	399	903	1042	1460	2376	1596	1830
	5	624	699	1282	1343	1997	2663	2182	2331
<b>MPH 850</b>	1	775	1041	1246	1568	2242	3311	2371	2625
	2	1176	1522	1682	1747	2449	3378	2684	2886
	3	1490	1914	1995	2014	3035	3405	3144	3220
	4	1668	2088	2305	2363	3169	3517	3272	3378

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ 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.

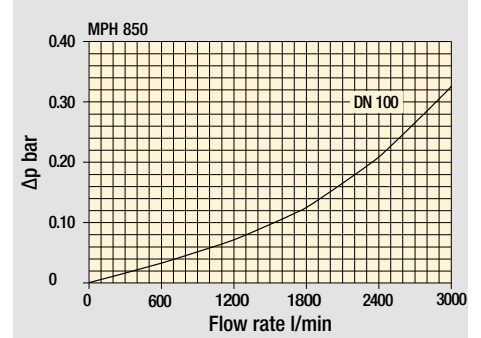
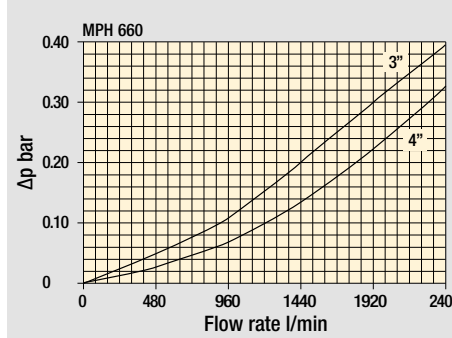
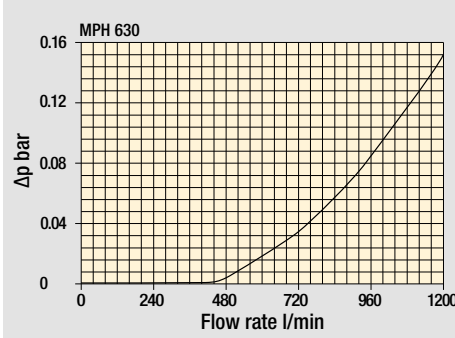
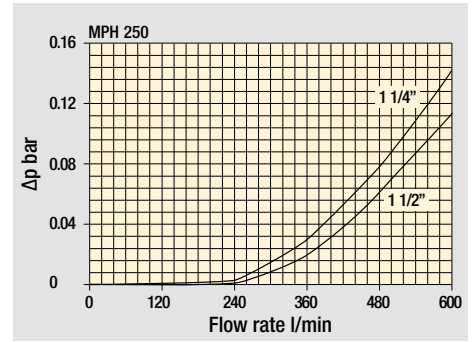
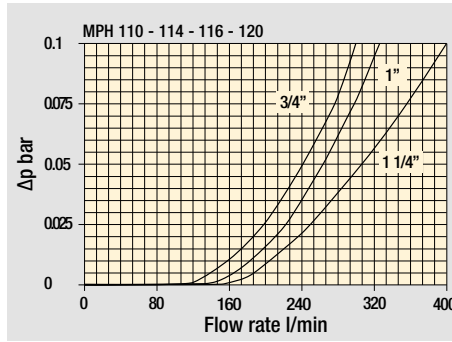
### Hydraulic symbols

Filter series	Style 1 connection	Style 2 connections	Style 3 connections
<b>MPH 110</b>	-	•	-
<b>MPH 114</b>	•	-	-
<b>MPH 116</b>	•	-	-
<b>MPH 120</b>	-	-	•
<b>MPH 250</b>	•	•	-
<b>MPH 630</b>	•	•	-
<b>MPH 660</b>	•	-	-
<b>MPH 850</b>	-	•	-

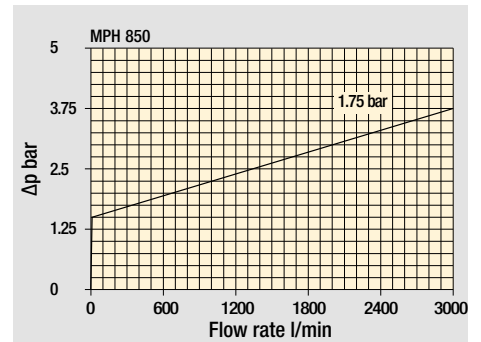
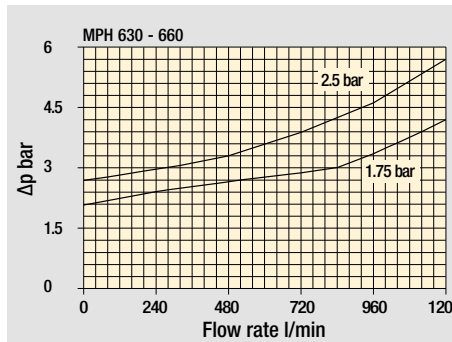
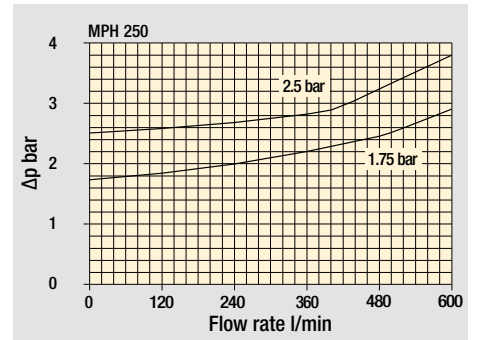
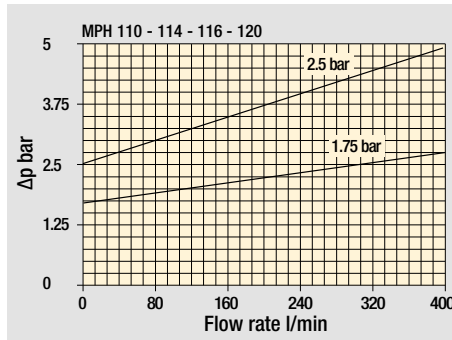
# MPH GENERAL INFORMATION

## Pressure drop

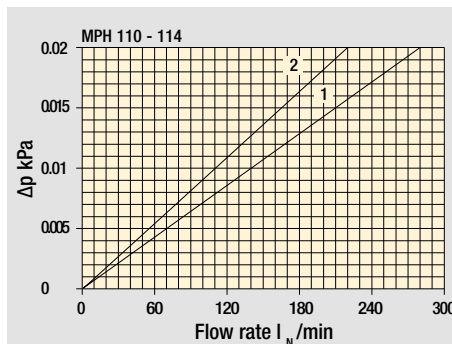
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Air breather pressure drop



- 1  C With air breather 10  $\mu$ m
- 2  D With anti-splash and SAP50 10  $\mu$ m

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

Configuration example: **MPH110** | **1** | **S** | **D** | **S** | **A** | **G1** | **1** | **A10** | **P01**

**Series and size**  
**MPH110**

**Length**  
**1** | **2** | **3** | **4** | **5**

**Bypass valve**  
**S** Without bypass | **C** 1.75 bar | **E** 2.5 bar

**Diffuser and magnetic filter**  
**D** With diffuser, with magnetic filter  
**F** With diffuser, without magnetic filter  
**O** Without diffuser, with magnetic filter  
**E** Without diffuser, without magnetic filter

**Air breather**  
**S** Without air breather  
**C** With air breather 10 µm  
**D** With anti-splash and air breather SAP050 10 µm  
**P** With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Main Connections	Aux size 1	Aux size 2	Main Connections	Aux size 1	Aux size 2		
<b>G1</b> G 3/4"	G 3/8"	G 1/2"	<b>G7</b> SAE 12 - 1 1/16" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF		
<b>G2</b> G 1"			<b>G8</b> SAE 16 - 1 5/16" - 12 UN				
<b>G3</b> G 1 1/4"			<b>G9</b> SAE 20 - 1 5/8" - 12 UN				
<b>G4</b> 3/4" NPT			3/8" NPT	1/2" NPT			
<b>G5</b> 1" NPT							
<b>G6</b> 1 1/4" NPT							

**Aux connection** - see previous table  
**0** Not machined | **1** Aux size 1 | **2** Aux size 2

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **MR100** | **1** | **A10** | **A** | **P01**

**Element series and size**  
**MR100**

**Element length**  
**1** | **2** | **3** | **4** | **5**

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Seals**  
**A** NBR  
**V** FPM

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 710-711

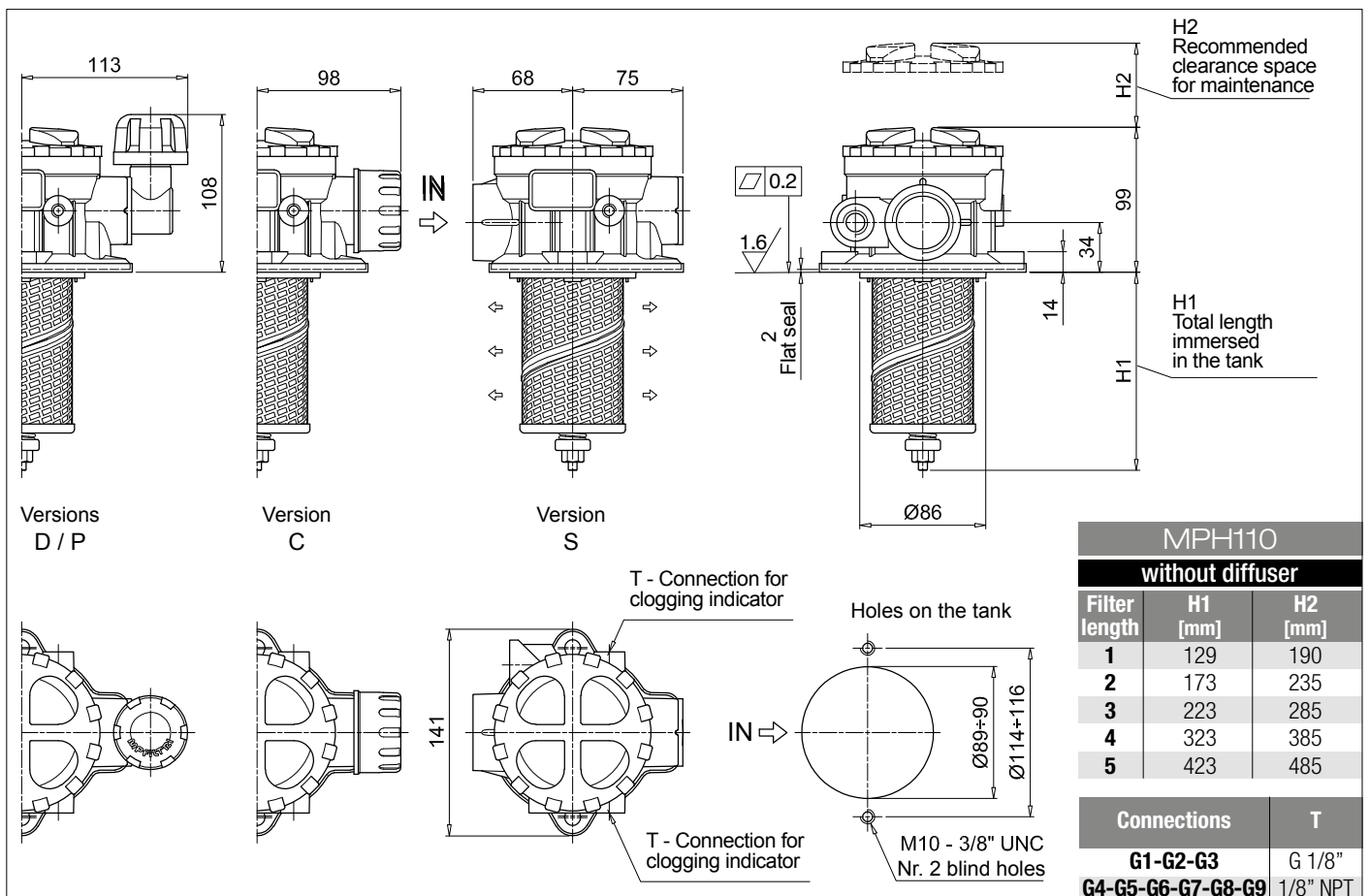
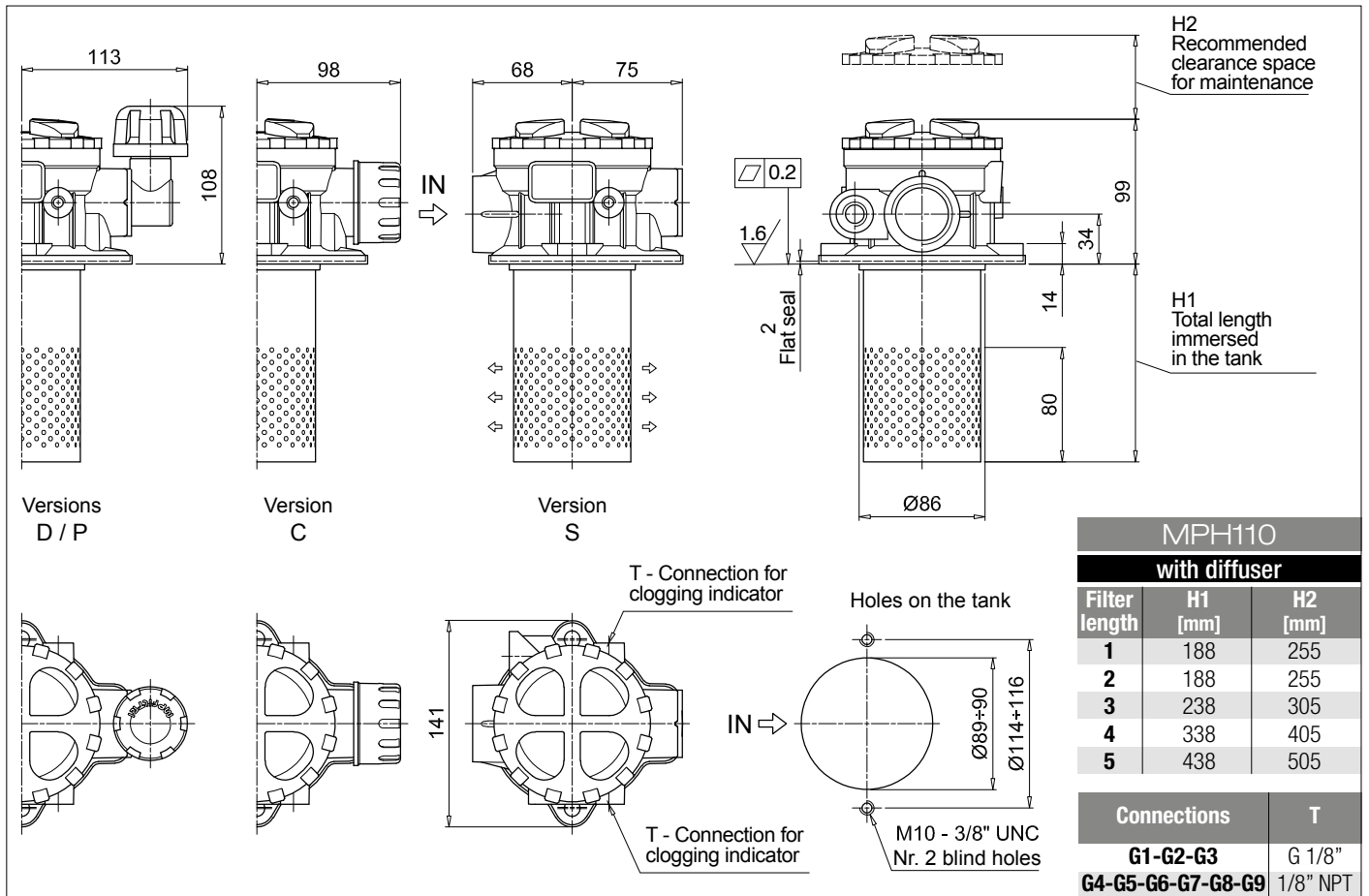
**BVA** Axial pressure gauge  
**BVR** Radial pressure gauge  
**BVP** Visual pressure indicator with automatic reset  
**BVQ** Visual pressure indicator with manual reset

**BEA** Electrical pressure indicator  
**BEM** Electrical pressure indicator  
**BLA** Electrical / visual pressure indicator

### ADDITIONAL FEATURES

See page 266

**DPT** Dipstick



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH114** | **3** | **C** | **E** | **C** | **Z** | **G6** | **M60** | **P01**

**Series and size**  
**MPH114**

**Length**  
**1** | **2** | **3** | **4** | **5** |

**Bypass valve**  
**S** Without bypass | **C** 1.75 bar | **E** 2.5 bar

**Diffuser and magnetic filter**  
**D** With diffuser, with magnetic filter  
**F** With diffuser, without magnetic filter  
**O** Without diffuser, with magnetic filter  
**E** Without diffuser, without magnetic filter

**Air breather**  
**S** Without air breather  
**C** With air breather 10 µm  
**D** With anti-splash and air breather SAP050 10 µm  
**P** With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

**Connections**

<b>G1</b> G 3/4"	<b>G6</b> 1 1/4" NPT
<b>G2</b> G 1"	<b>G7</b> SAE 12 - 1 1/16" - 12 UN
<b>G3</b> G 1 1/4"	<b>G8</b> SAE 16 - 1 5/16" - 12 UN
<b>G4</b> 3/4" NPT	<b>G9</b> SAE 20 - 1 5/8" - 12 UN
<b>G5</b> 1" NPT	

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **MR100** | **3** | **M60** | **V** | **P01**

**Element series and size**  
**MR100**

**Element length**  
**1** | **2** | **3** | **4** | **5** |

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Seals**  
**A** NBR  
**V** FPM

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 710-711

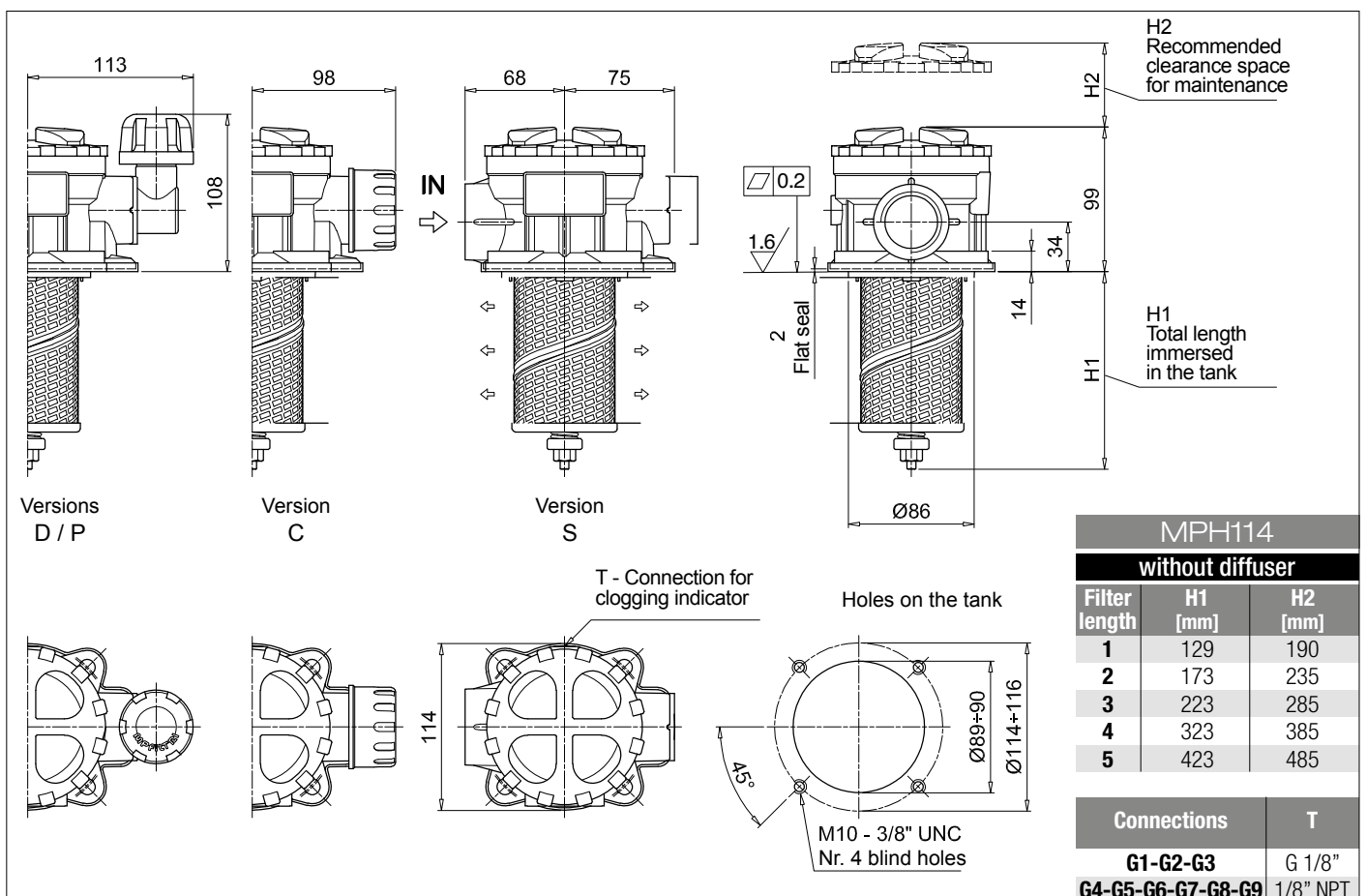
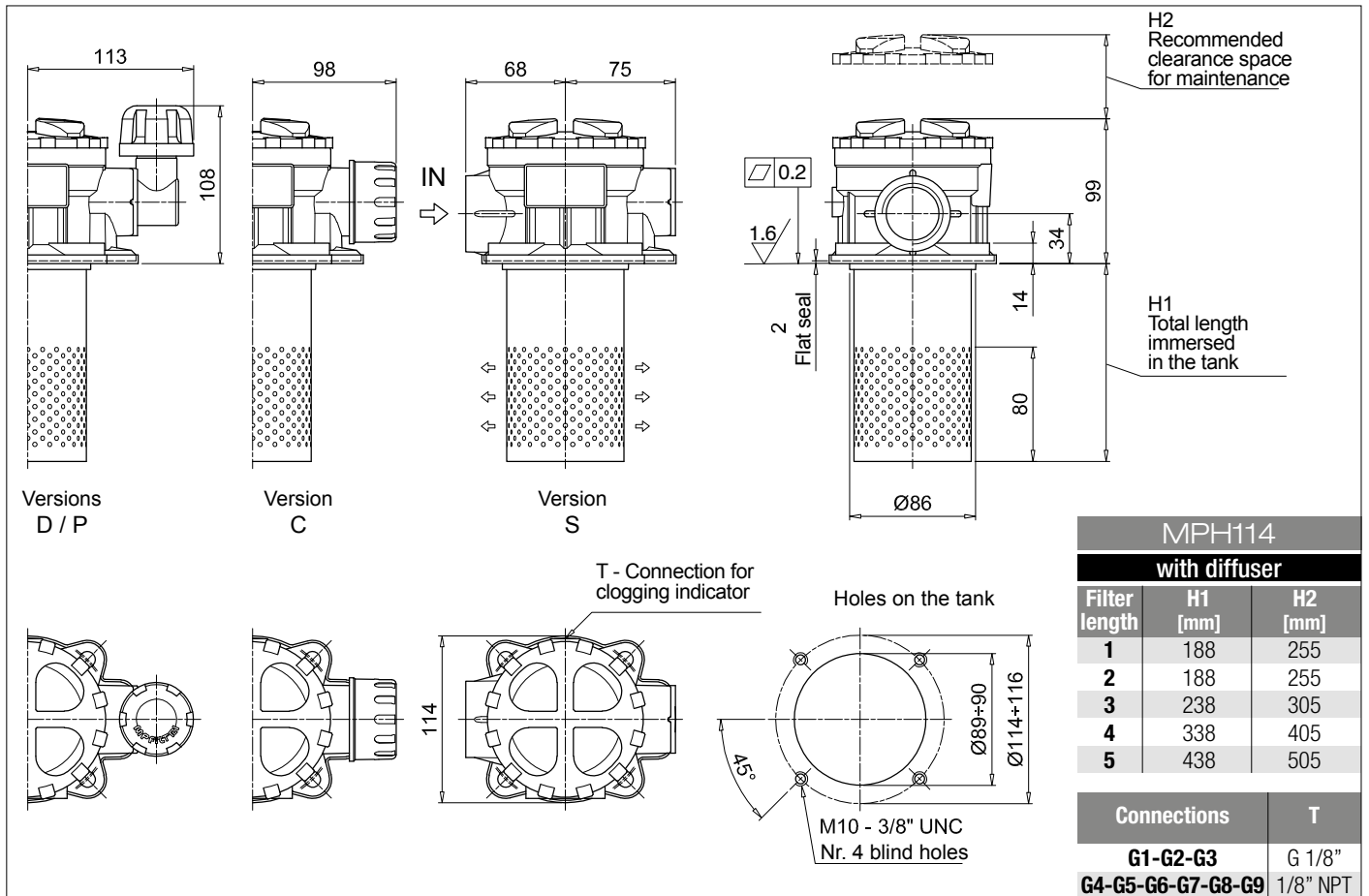
<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

**DPT** Dipstick





## Designation & Ordering code

### COMPLETE FILTER

Series and size **MPH116** Configuration example: **MPH116** | **5** | **S** | **D** | **S** | **A** | **G1** | **A10** | **P01**

**Length**  
**1** | **2** | **3** | **4** | **5** |

**Bypass valve**  
**S** Without bypass | **C** 1.75 bar | **E** 2.5 bar

**Diffuser and magnetic filter**  
**D** With diffuser, with magnetic filter  
**F** With diffuser, without magnetic filter  
**O** Without diffuser, with magnetic filter  
**E** Without diffuser, without magnetic filter

**Air breather**  
**S** Without air breather

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Flat seal on the head on request

Connections	
<b>G1</b> G 3/4"	<b>G6</b> 1 1/4" NPT
<b>G2</b> G 1"	<b>G7</b> SAE 12 - 1 1/16" - 12 UN
<b>G3</b> G 1 1/4"	<b>G8</b> SAE 16 - 1 5/16" - 12 UN
<b>G4</b> 3/4" NPT	<b>G9</b> SAE 20 - 1 5/8" - 12 UN
<b>G5</b> 1" NPT	

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

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

### FILTER ELEMENT

Element series and size **MR100** Configuration example: **MR100** | **5** | **A10** | **A** | **P01**

**Element length**  
**1** | **2** | **3** | **4** | **5** |

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Seals	
<b>A</b>	NBR
<b>V</b>	FPM

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

### CLOGGING INDICATORS

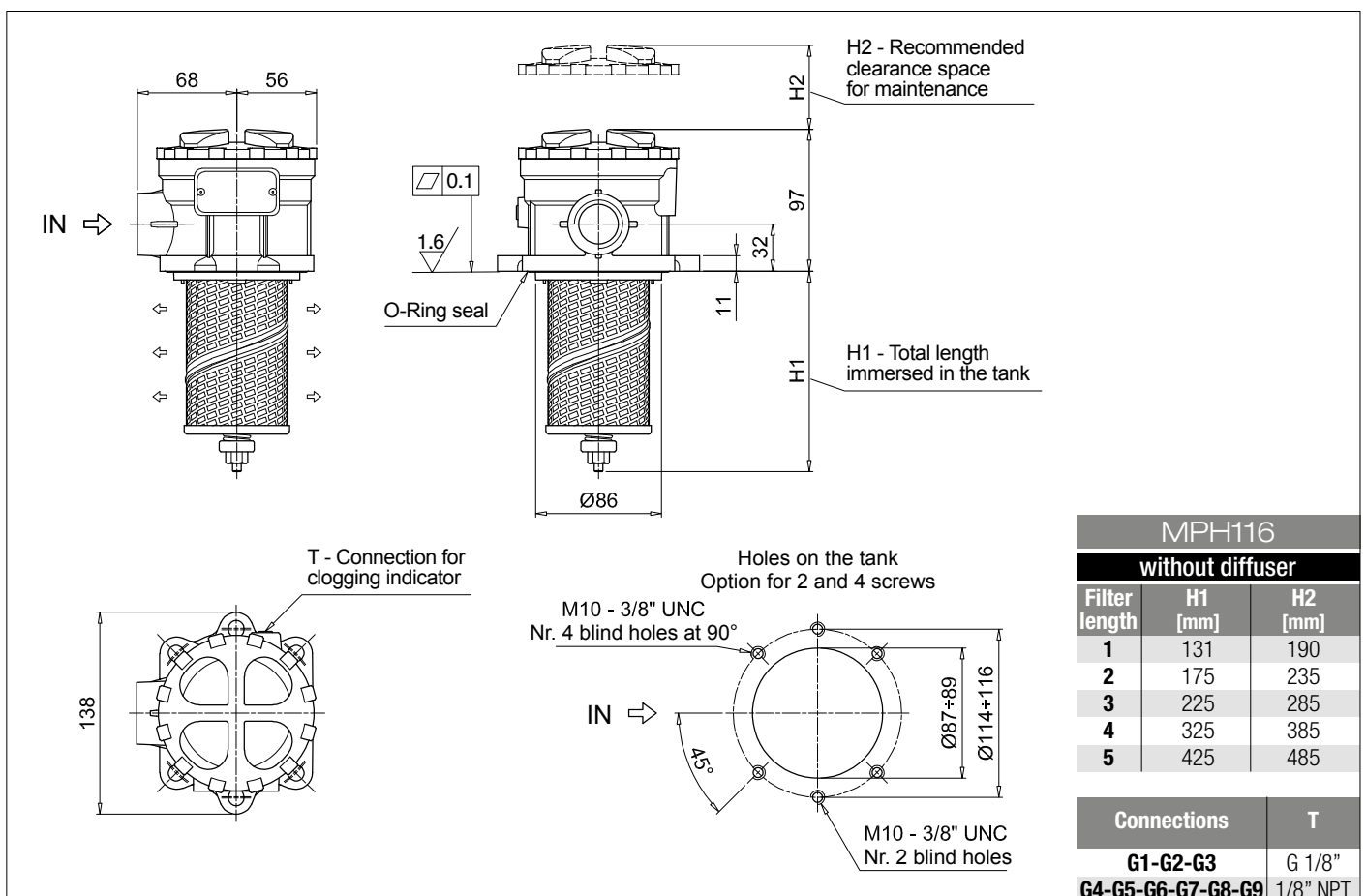
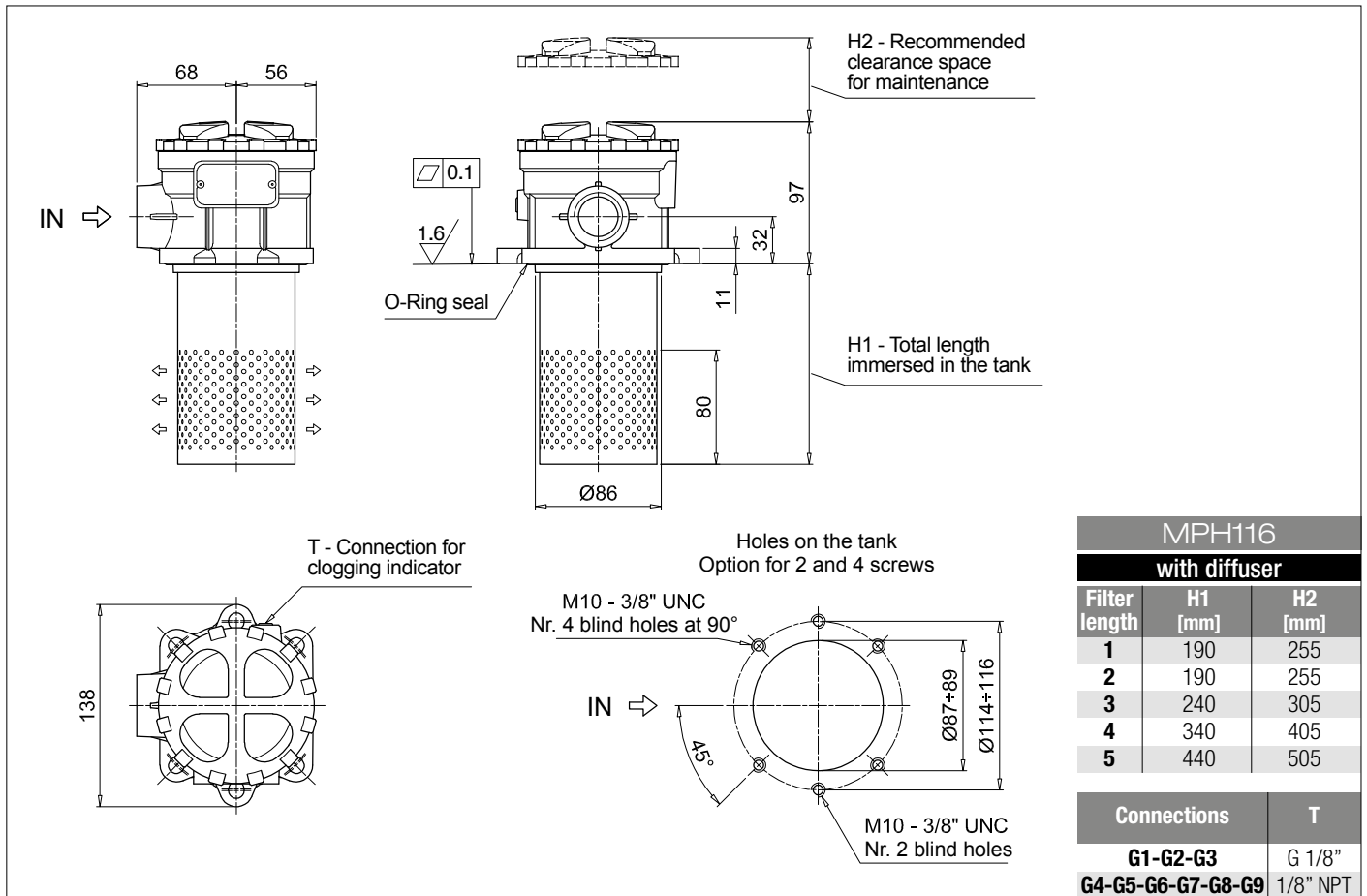
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

**DPT** Dipstick



## Designation & Ordering code

### COMPLETE FILTER

Series and size **MPH120** Configuration example: **MPH120** | **1** | **S** | **D** | **A** | **G1** | **1** | **A10** | **P01**

Length: **1** | **2** | **3** | **4** | **5**

Bypass valve: **S** Without bypass | **C** 1.75 bar | **E** 2.5 bar

Diffuser and magnetic filter: **D** With diffuser, with magnetic filter | **F** With diffuser, without magnetic filter | **O** Without diffuser, with magnetic filter | **E** Without diffuser, without magnetic filter

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Main Connections	Rear connections	Aux size 1	Aux size 2
<b>G1</b> G 3/4"	G 3/4"	G 3/8"	G 1/2"
<b>G2</b> G 1"	G 1"		
<b>G3</b> G 1 1/4"	G 3/4"		
<b>G4</b> 3/4" NPT	3/4" NPT	3/8" NPT	1/2" NPT
<b>G5</b> 1" NPT	1" NPT		
<b>G6</b> 1 1/4" NPT	3/4" NPT		
<b>G7</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
<b>G8</b> SAE 16 - 1 5/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN		
<b>G9</b> SAE 20 - 1 5/8" - 12 UN	SAE 12 - 1 1/16" - 12 UN		

Aux connection - see previous table: **0** Not machined | **1** Aux size 1 | **2** Aux size 2

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Execution: **P01** MP Filtri standard | **Pxx** Customized

### FILTER ELEMENT

Element series and size **MR100** Configuration example: **MR100** | **1** | **A10** | **A** | **P01**

Element length: **1** | **2** | **3** | **4** | **5**

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Seals: **A** NBR | **V** FPM

Execution: **P01** MP Filtri standard | **Pxx** Customized

### CLOGGING INDICATORS

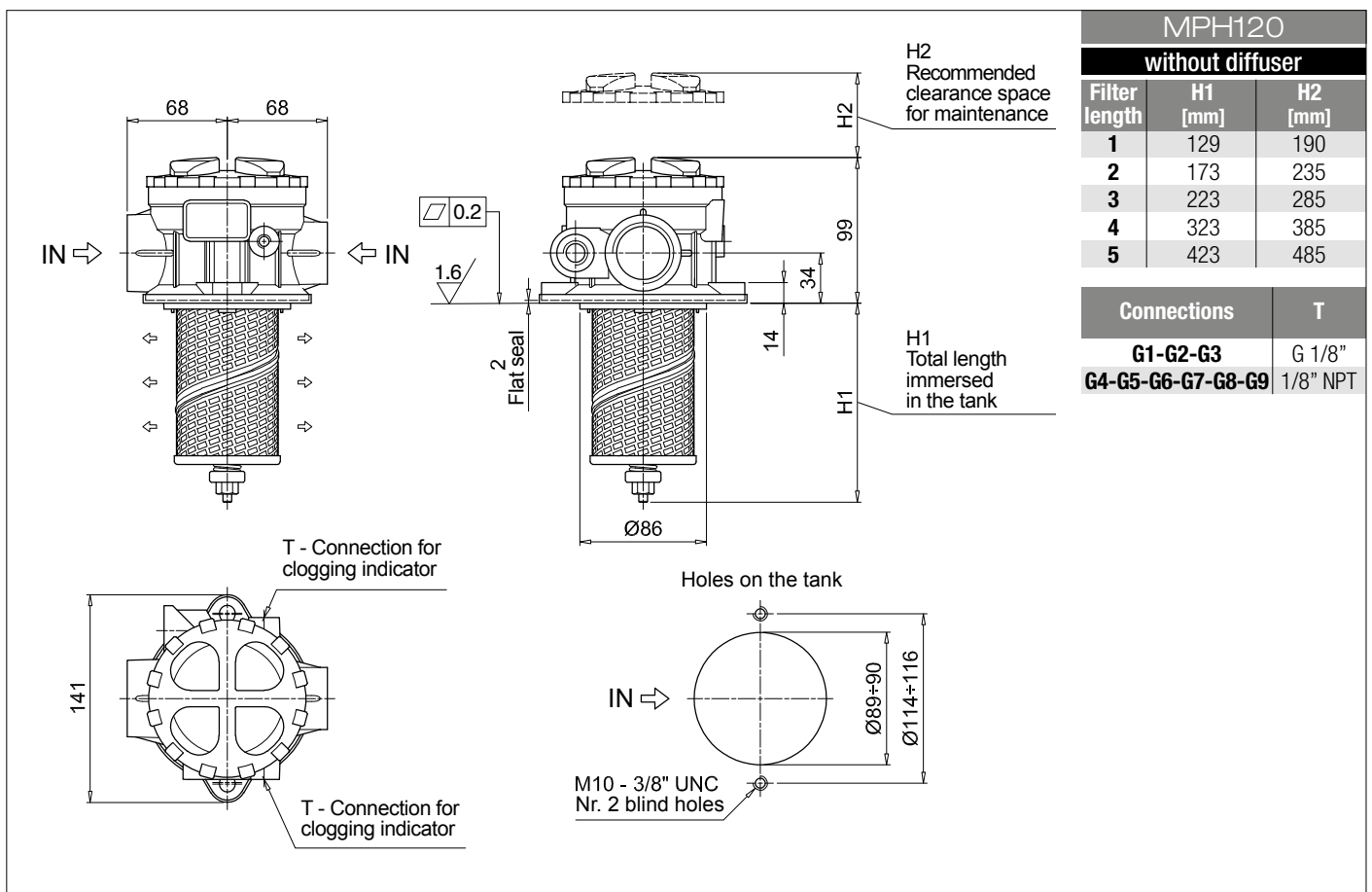
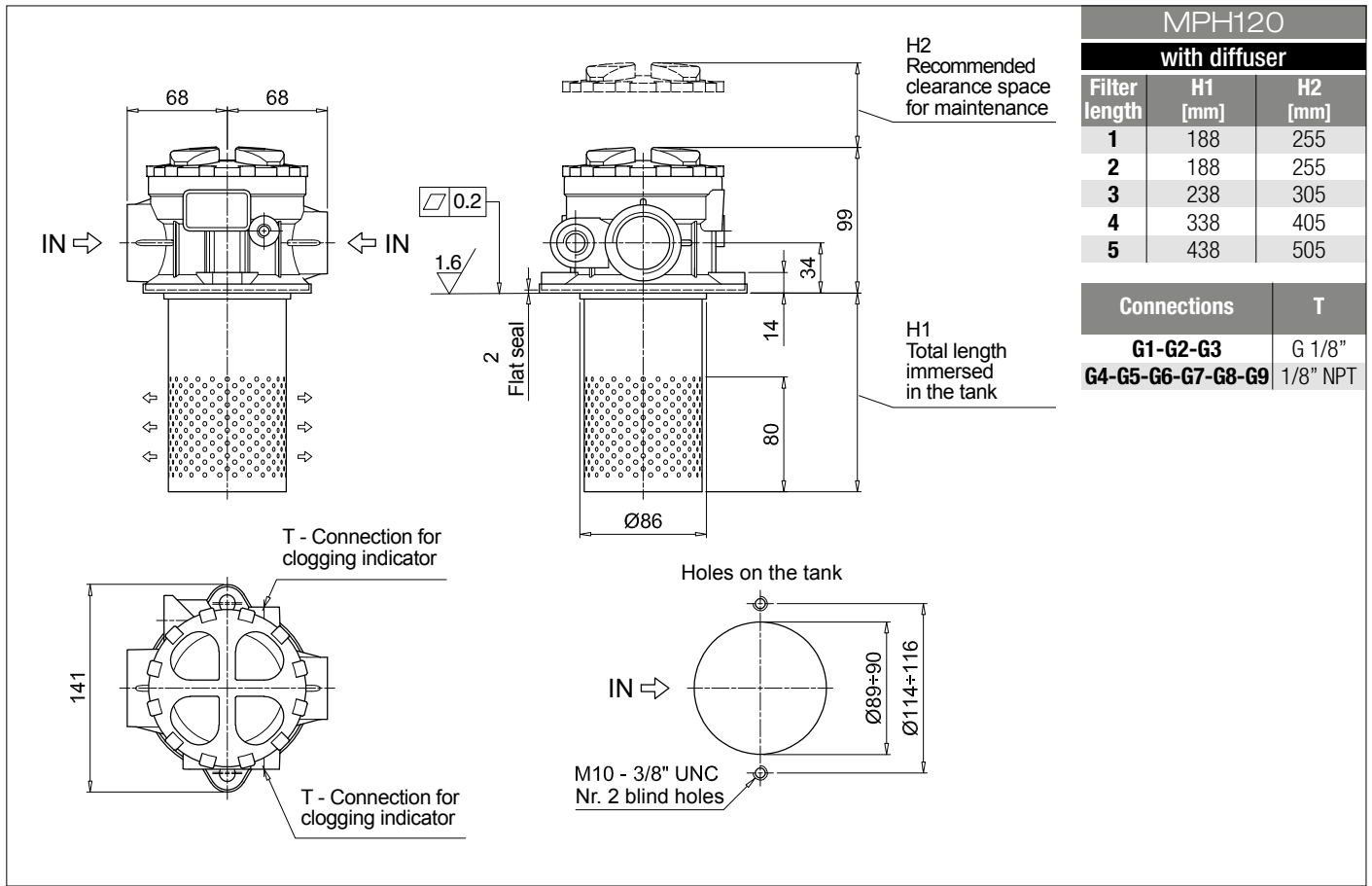
See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

### ADDITIONAL FEATURES

See page 266

**DPT** Dipstick



## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: MPH250									
<b>MPH250</b>		1	C	D	S	A	G1	A10	P01		
Length		1	2	3	4						
Bypass valve		S Without bypass		C 1.75 bar		E 2.5 bar					
Diffuser and magnetic filter		D With diffuser, with magnetic filter		F With diffuser, without magnetic filter		O Without diffuser, with magnetic filter		E Without diffuser, without magnetic filter			
Air breather		S Without air breather									
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
Z FPM head anodized		•	•	-							
Main Connections		Rear connections									
G1 G 1 1/2"		-									
G2 G 1 1/2"		G 1 1/4"									
G4 1 1/2" NPT		-									
G5 1 1/2" NPT		1 1/4" NPT									
G7 SAE 24 - 1 7/8" - 12 UN		-									
G8 SAE 24 - 1 7/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN									
F1 1 1/2" SAE 3000 psi/M		-									
F2 1 1/2" SAE 3000 psi/M		1 1/4" SAE 3000 psi/M									
F3 1 1/2" SAE 3000 psi/UNC		-									
F4 1 1/2" SAE 3000 psi/UNC		1 1/4" SAE 3000 psi/UNC									
Filtration rating (filter media)		M25 Wire mesh 25 µm									
A03 Inorganic microfiber 3 µm		M60 Wire mesh 60 µm									
A06 Inorganic microfiber 6 µm		M90 Wire mesh 90 µm									
A10 Inorganic microfiber 10 µm		P10 Resin impregnated paper 10 µm									
A16 Inorganic microfiber 16 µm		P25 Resin impregnated paper 25 µm									
A25 Inorganic microfiber 25 µm											
				Execution							
				P01 MP Filtri standard							
				Pxx Customized							

### FILTER ELEMENT

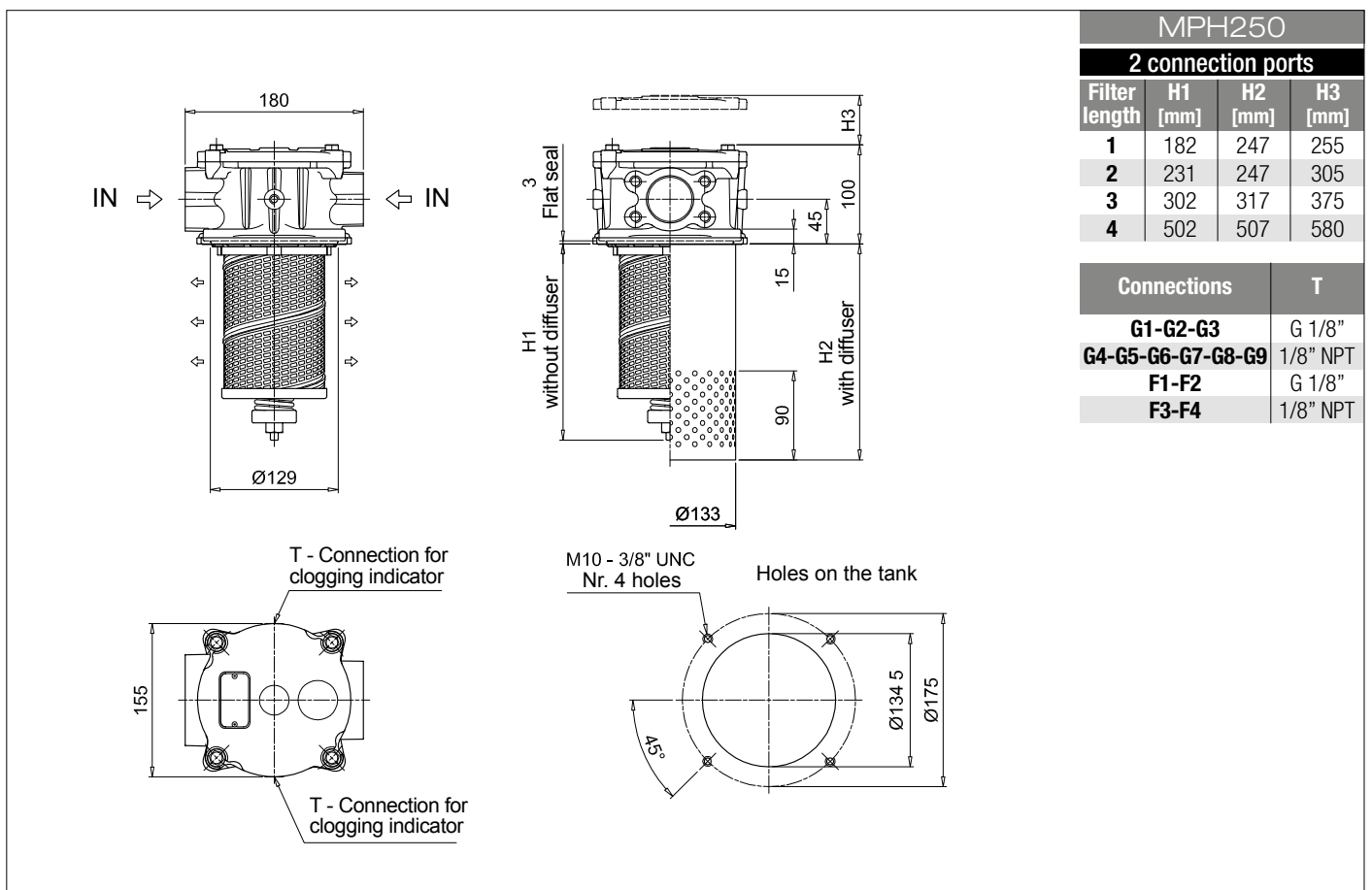
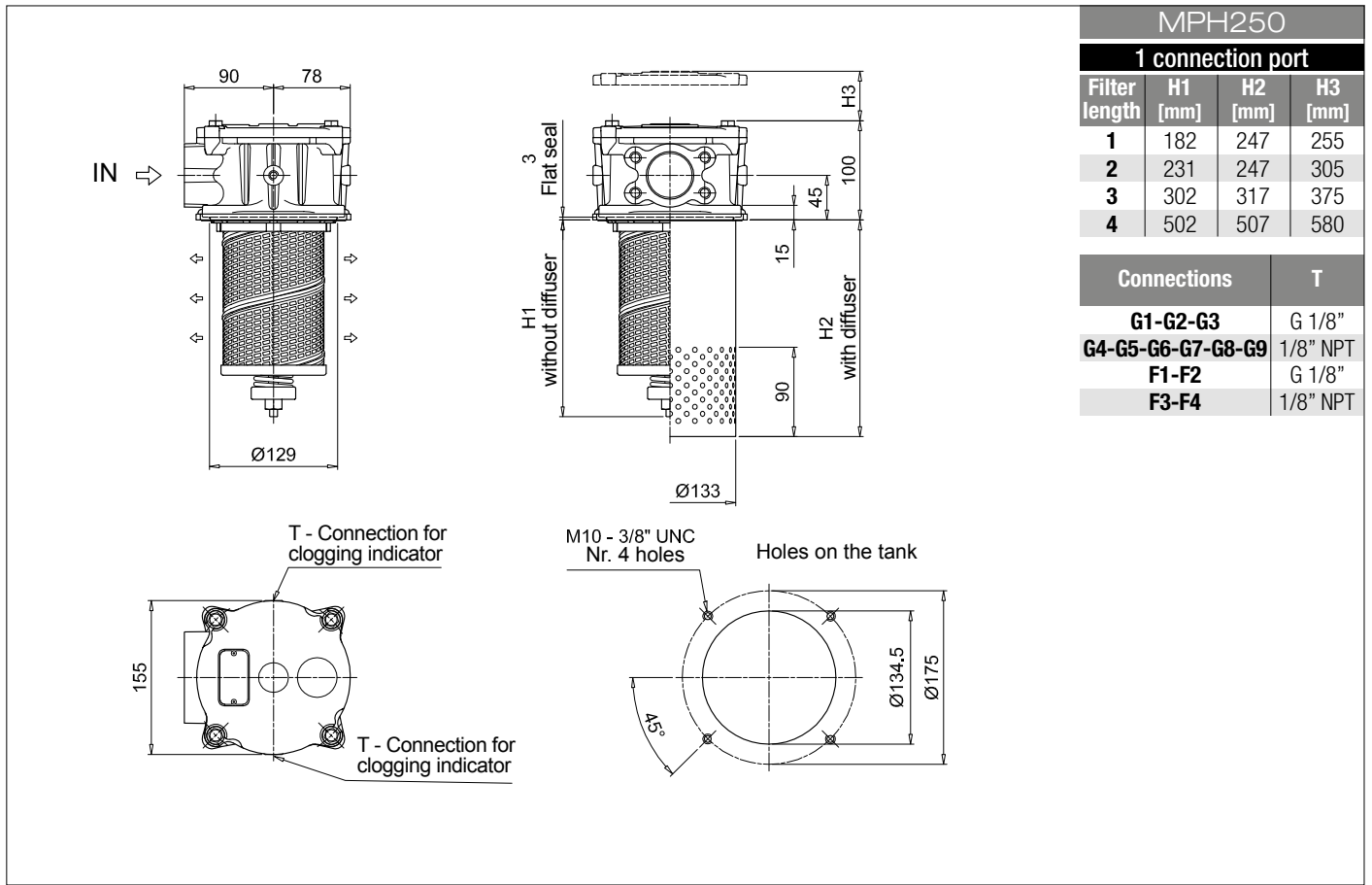
Element series and size		Configuration example: MR250				
<b>MR250</b>		1	A10	A	P01	
Element length		1	2	3	4	
Filtration rating (filter media)		M25 Wire mesh 25 µm				
A03 Inorganic microfiber 3 µm		M60 Wire mesh 60 µm				
A06 Inorganic microfiber 6 µm		M90 Wire mesh 90 µm				
A10 Inorganic microfiber 10 µm		P10 Resin impregnated paper 10 µm				
A16 Inorganic microfiber 16 µm		P25 Resin impregnated paper 25 µm				
A25 Inorganic microfiber 25 µm						
		Seals		Execution		
		A NBR		P01 MP Filtri standard		
		V FPM		Pxx Customized		

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	
<b>BVR</b> Radial pressure gauge	
<b>BVP</b> Visual pressure indicator with automatic reset	
<b>BVQ</b> Visual pressure indicator with manual reset	

<b>BEA</b> Electrical pressure indicator	
<b>BEM</b> Electrical pressure indicator	
<b>BLA</b> Electrical / visual pressure indicator	



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH630** | **1** | **S** | **E** | **S** | **W** | **F1** | **M25** | **P01**

**Series and size**  
**MPH630**

**Length**  
**1** | **2** | **3** | **4** | **5**

**Bypass valve**  
**S** Without bypass | **C** 1.75 bar | **E** 2.5 bar

**Diffuser and magnetic filter**  
**D** With diffuser, with magnetic filter  
**F** With diffuser, without magnetic filter  
**O** Without diffuser, with magnetic filter  
**E** Without diffuser, without magnetic filter

**Air breather**  
**S** Without air breather

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Main Connections	Rear connections
<b>F1</b> 2 1/2" SAE 3000 psi/M	-
<b>F2</b> 2 1/2" SAE 3000 psi/M	2" SAE 3000 psi/M
<b>F3</b> 2 1/2" SAE 3000 psi/UNC	-
<b>F4</b> 2 1/2" SAE 3000 psi/UNC	2" SAE 3000 psi/UNC

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **MR630** | **1** | **M25** | **A** | **P01**

**Element series and size**  
**MR630**

**Element length**  
**1** | **2** | **3** | **4** | **5**

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Seals**  
**A** NBR  
**V** FPM

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

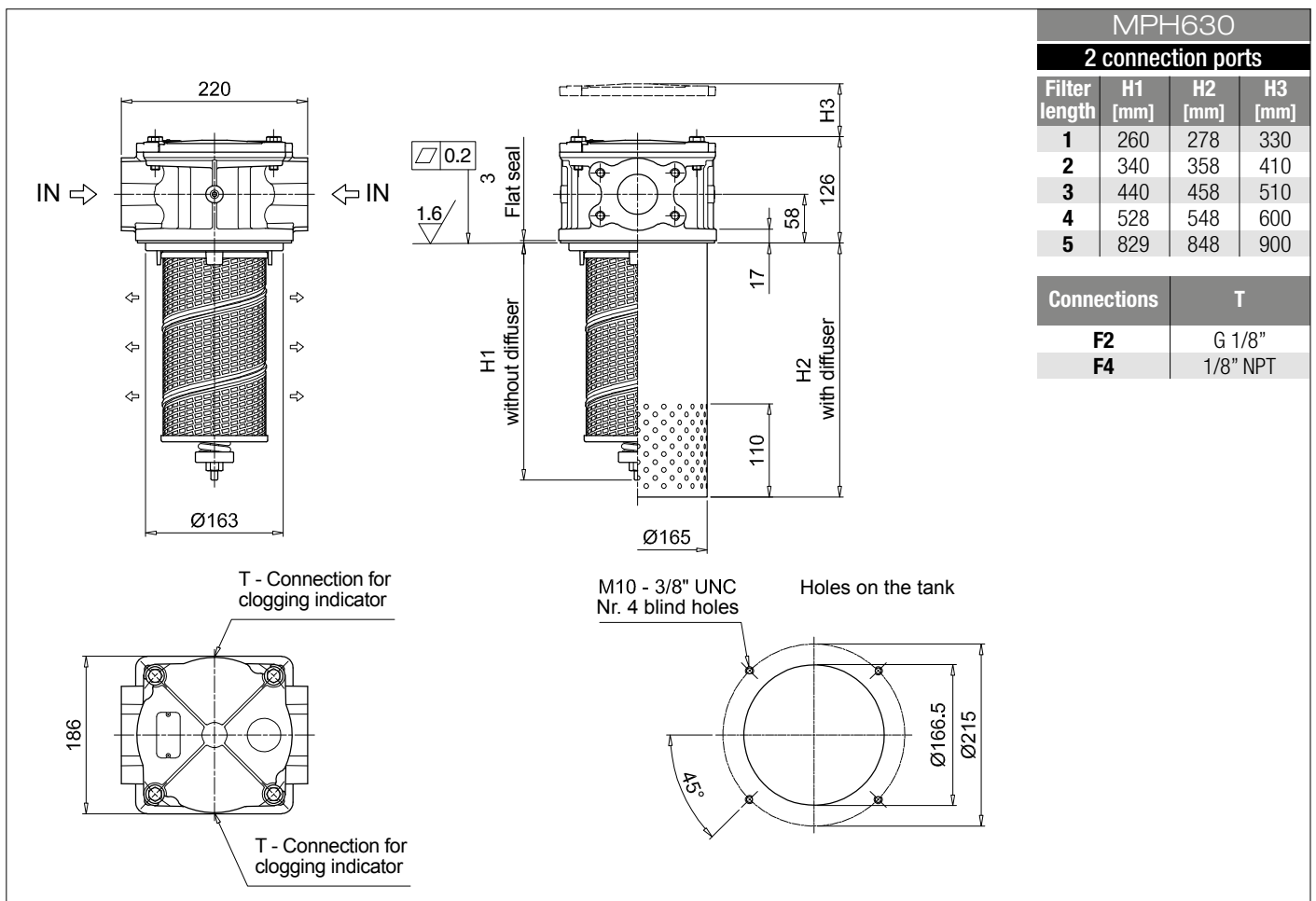
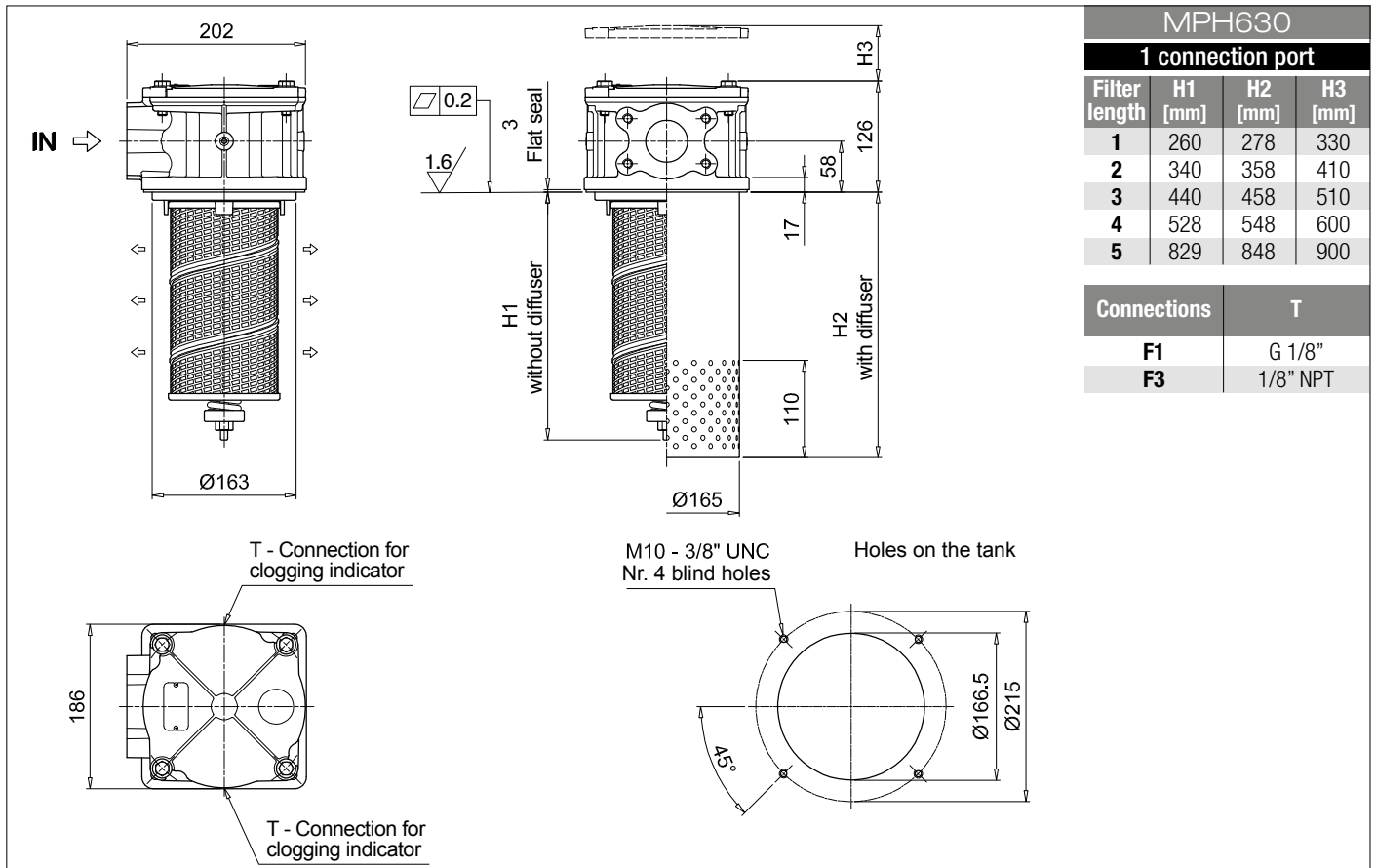
### CLOGGING INDICATORS

See page 710-711

**BVA** Axial pressure gauge  
**BVR** Radial pressure gauge  
**BVP** Visual pressure indicator with automatic reset  
**BVQ** Visual pressure indicator with manual reset

**BEA** Electrical pressure indicator  
**BEM** Electrical pressure indicator  
**BLA** Electrical / visual pressure indicator





## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: MPH660									
<b>MPH660</b>	4	C	D	S	A	F2	A10	P01		
<b>Length</b>										
4   5										
<b>Bypass valve</b>										
S Without bypass	C 1.75 bar	E 2.5 bar								
<b>Diffuser and magnetic filter</b>										
D With diffuser, with magnetic filter										
F With diffuser, without magnetic filter										
O Without diffuser, with magnetic filter										
E Without diffuser, without magnetic filter										
<b>Air breather</b>										
S Without air breather										
<b>Seals and treatments</b>	Filtration rating									
	Axx	Mxx	Pxx							
A NBR	•	•	•							
V FPM	•	•	•							
W NBR head anodized	•	•	-							
Z FPM head anodized	•	•	-							
<b>Main Connections</b>										
F1 3" SAE 3000 psi/M										
F2 4" SAE 3000 psi/M										
<b>Filtration rating (filter media)</b>										
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm									
				<b>Execution</b>						
				P01 MP Filtri standard						
				Pxx Customized						

### FILTER ELEMENT

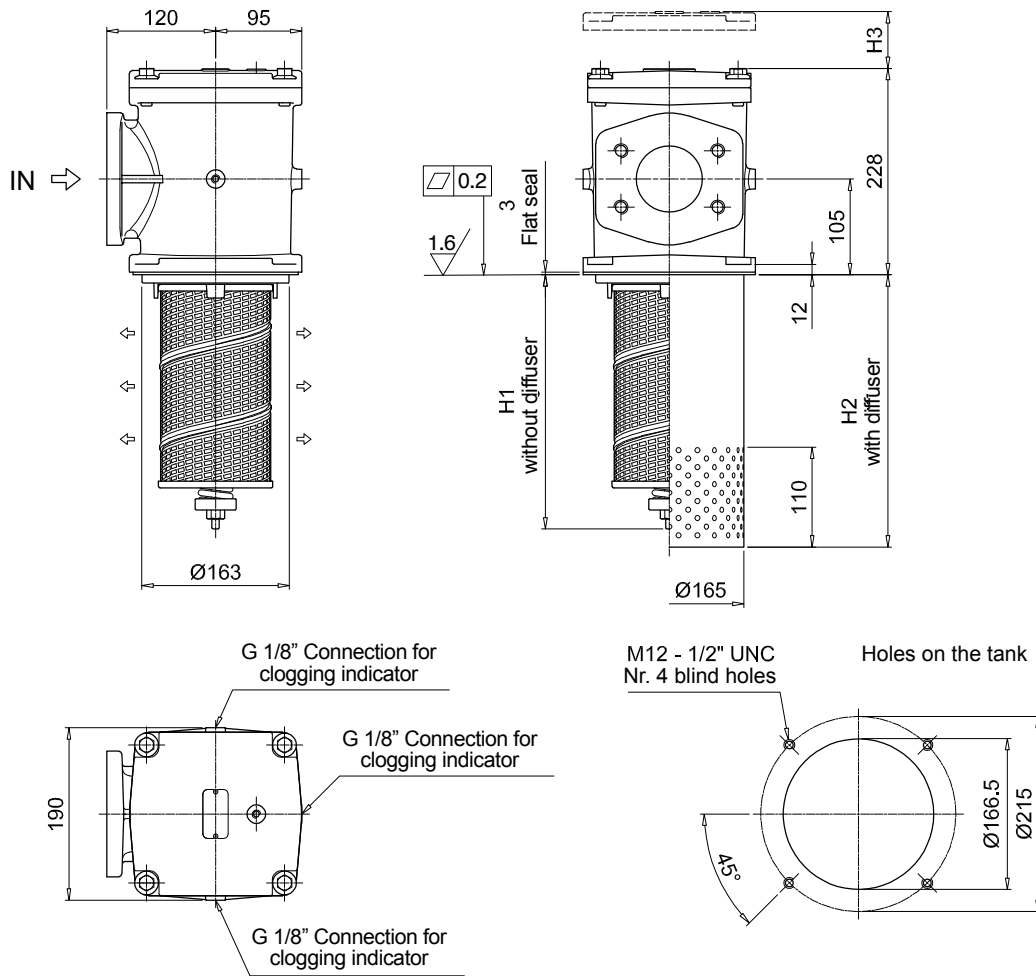
<b>Element series and size</b>	Configuration example: MR630			
<b>MR630</b>	5	M25	A	P01
<b>Element length</b>				
4   5				
<b>Filtration rating (filter media)</b>				
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm			
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm			
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm			
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm			
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm			
	<b>Seals</b>		<b>Execution</b>	
	A NBR		P01 MP Filtri standard	
	V FPM		Pxx Customized	

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	

MPH660			
Filter length	H1 [mm]	H2 [mm]	H3 [mm]
4	538	548	610
5	838	848	910



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH850** | **1** | **C** | **D** | **S** | **A** | **F1** | **A10** | **P01**

**Series and size**  
**MPH850**

**Length**  
**1** | **2** | **3** | **4**

**Bypass valve**  
**S** Without bypass | **C** 1.75 bar

**Diffuser and magnetic filter**  
**D** With diffuser, with magnetic filter  
**F** With diffuser, without magnetic filter  
**O** Without diffuser, with magnetic filter  
**E** Without diffuser, without magnetic filter

**Air breather**  
**S** Without air breather

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized	•	•	-
<b>Z</b> FPM head anodized	•	•	-

Main Connections	Rear connections
<b>F1</b> UNI 2223 DN 100 PN 10/16	3" SAE 3000 psi/M
<b>F2</b> UNI 2223 DN 100 PN 10/16	3" SAE 3000 psi/UNC
<b>F5</b> Not machined	3" SAE 3000 psi/M
<b>F6</b> Not machined	3" SAE 3000 psi/UNC
<b>F7</b> 4" SAE 3000 psi/M	3" SAE 3000 psi/M
<b>F8</b> 4" SAE 3000 psi/UNC	3" SAE 3000 psi/UNC

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

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

### FILTER ELEMENT

Configuration example: **MR850** | **1** | **A10** | **A** | **P01**

**Element series and size**  
**MR850**

**Element length**  
**1** | **2** | **3** | **4**

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

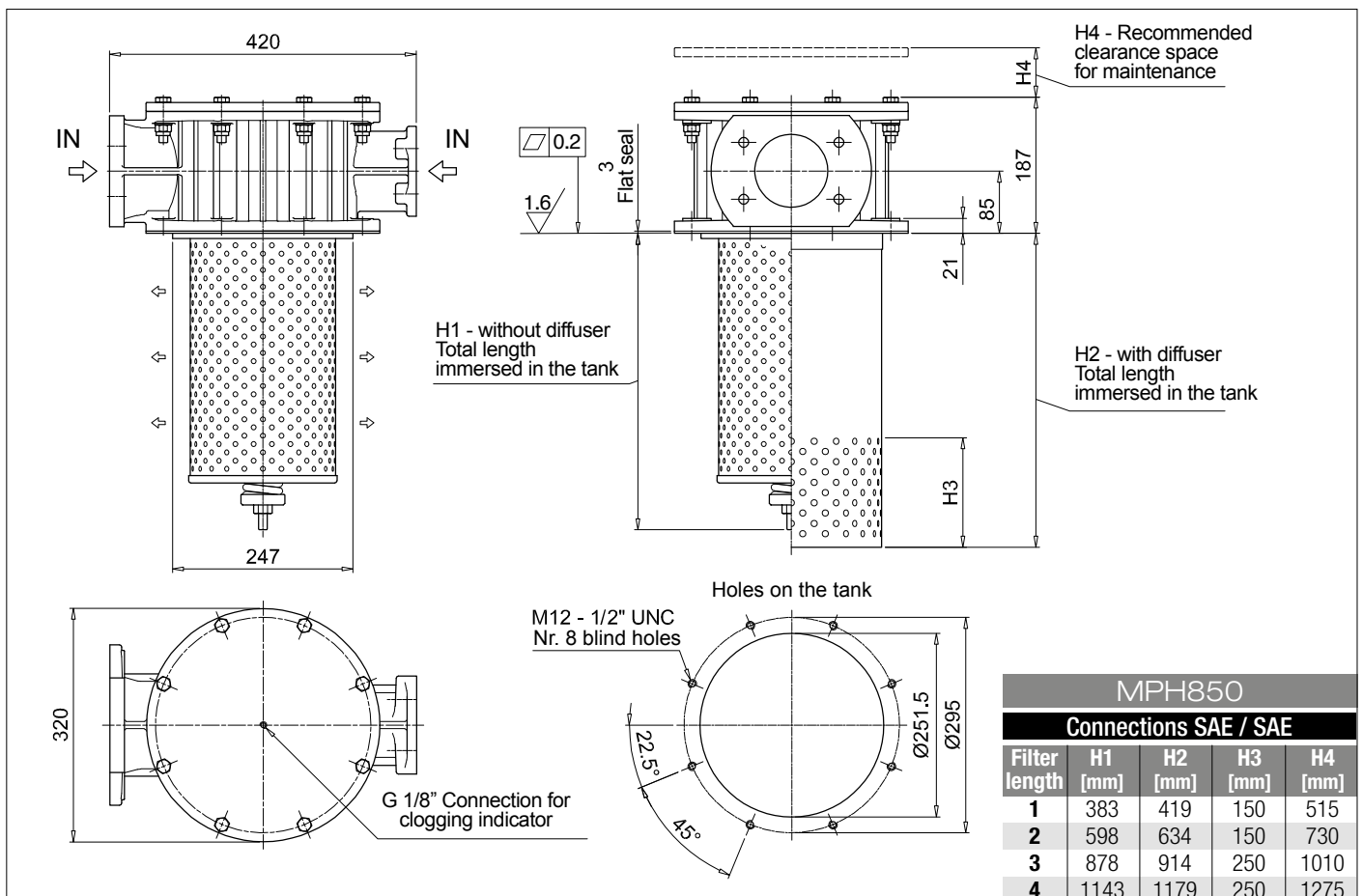
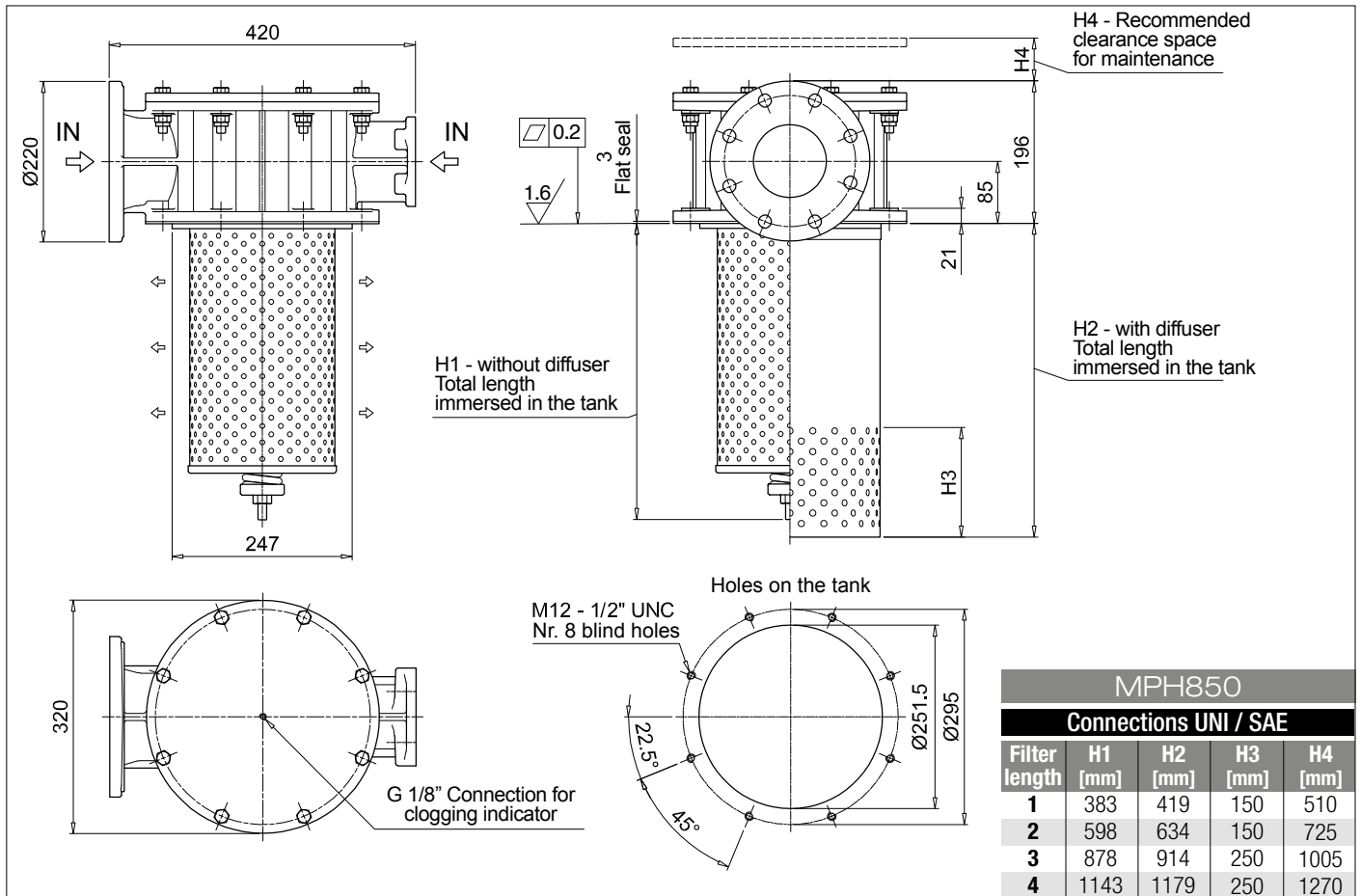
Seals	Execution
<b>A</b> NBR	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 710-711

<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

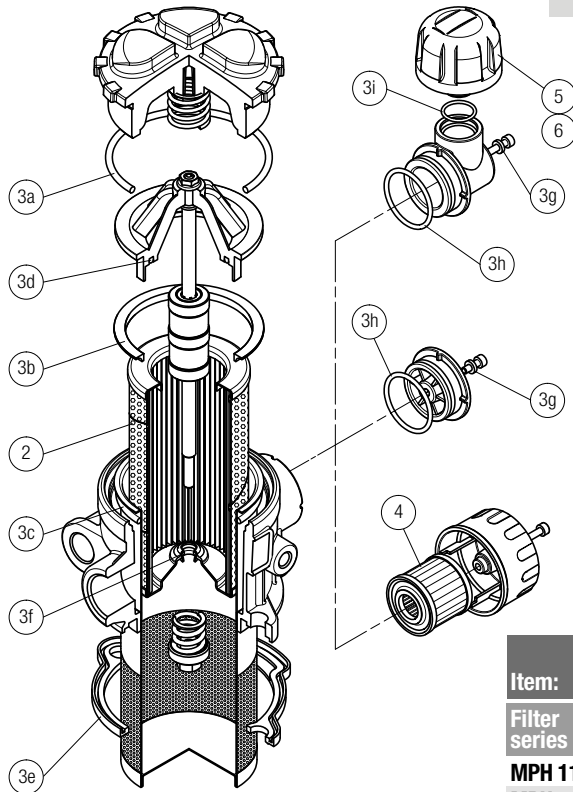
<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator



# MPH SPARE PARTS

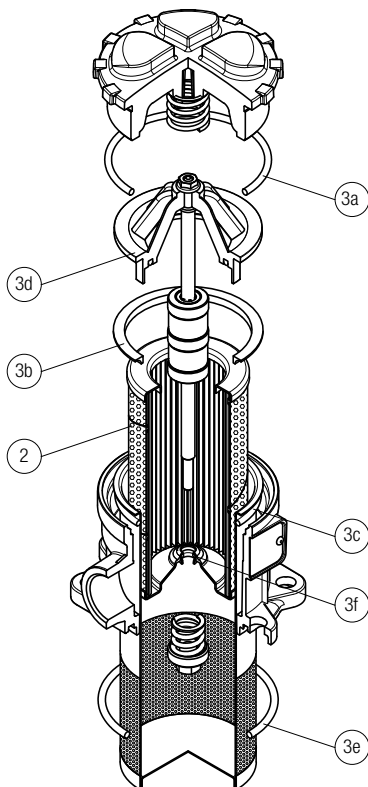
Order number for spare parts

## MPH 110 - 114



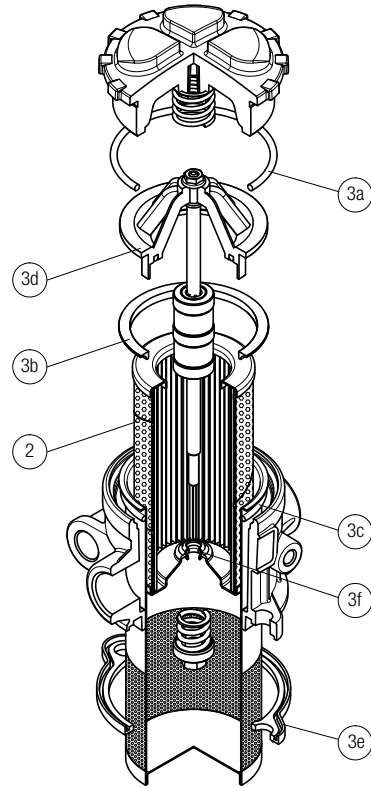
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:			
		NBR	FPM	C	D	P	
<b>MPH 110</b>	See order table	02050565	02050566	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01	
<b>MPH 114</b>	See order table	02050582	02050583				

## MPH 116



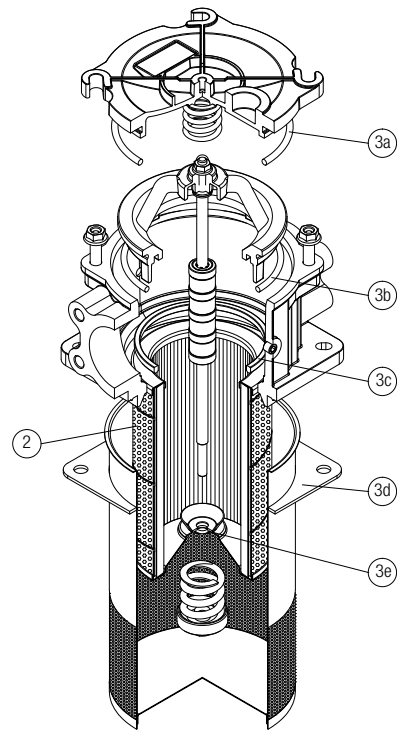
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPH 116</b>	See order table	02050741	02050742

## MPH 120



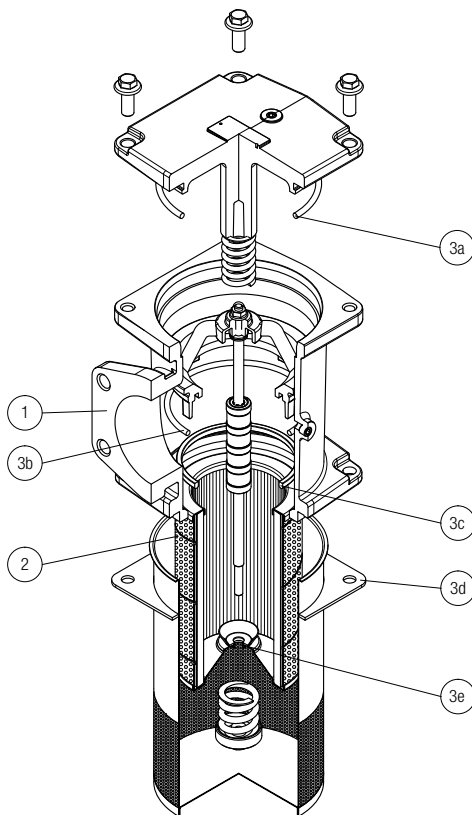
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPH 120</b>	See order table	02050567	02050568

## MPH 250 - 630



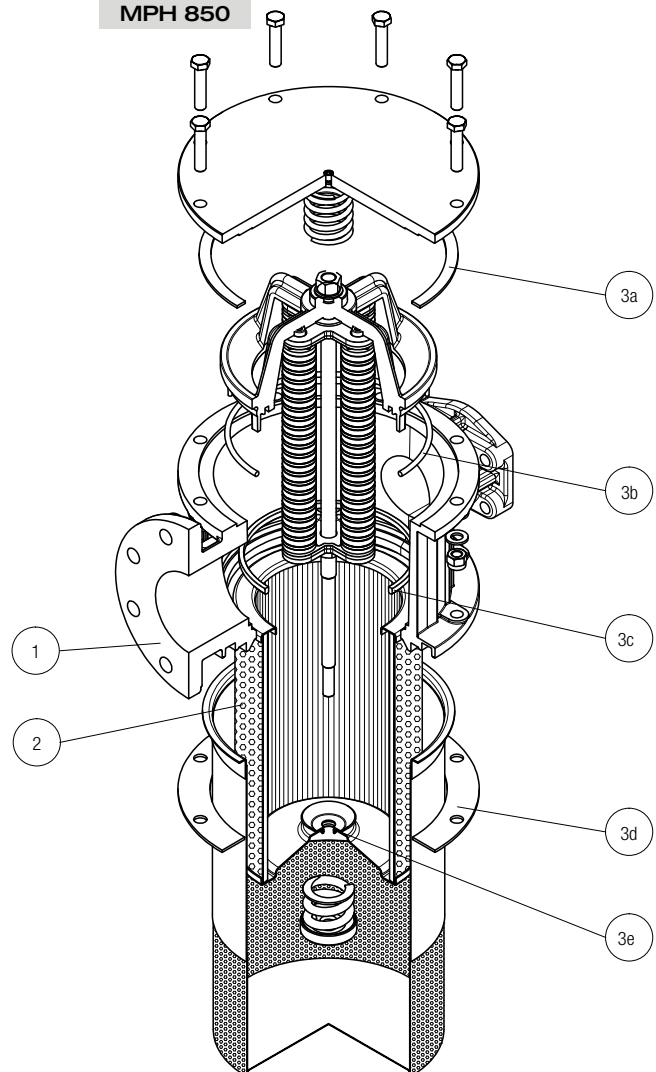
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
MPH 250	MPH 630	NBR	FPM
	2	3 (3a ÷ 3e)	
	See order table	02050151	02050152
	See order table	02050153	02050154

## MPH 660



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
MPH 660	MPH 850	NBR	FPM
	2	3 (3a ÷ 3e)	
	See order table	02050153	02050154
	See order table	02050155	02050156

## MPH 850







# MPI series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 3500 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 1 MPa (10 bar)**

**Flow rate up to 3500 l/min**

MPI is a range of return filter kits for protection of the reservoir against the system contamination.

They are directly integrated in the reservoir in immersed or semi-immersed position to save space into the tank.

The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir.

The filtration from inside to outside allows a cleaner filter element replacement, the dirty remains into the filter element.

#### Available features:

- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise

#### Common applications:

Heavy duty industrial equipment

### Filter housing materials

- Insert assembly  
Polyamide, GF reinforced: MPI 100  
Aluminium: MPI 250-630-850

- Diffuser: Tinned Steel

- Valve: Steel

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 250 kPa (2.5 bar)  $\pm 10\%$ , except for MPI 850

### $\Delta p$ element type

- Microfibre filter elements - series MR: 10 bar
- 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

MPI filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>MPI 100</b>		0.90	1.00	1.20	1.50	1.80		0.90	0.90	1.20	1.60	1.80
<b>MPI 250</b>		2.20	2.50	2.90	4.30	-		3.50	3.50	4.50	7.00	-
<b>MPI 630</b>		3.40	3.90	4.30	5.40	6.60		5.80	7.40	9.50	11.40	13.50
<b>MPI 850</b>		15.20	18.20	21.20	25.20	-		8.80	12.20	16.70	20.80	-

## FILTER ASSEMBLY SIZING Flow rates [l/min]

Filters series	Length	A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPI 100</b>	<b>1</b>	26	29	72	79	107	282	164	190
	<b>2</b>	43	46	112	114	161	318	164	190
	<b>3</b>	64	72	132	156	178	324	219	251
	<b>4</b>	90	99	184	198	216	324	266	302
	<b>5</b>	117	128	201	219	244	324	282	318
<b>MPI 250</b>	<b>1</b>	93	102	210	251	315	1093	339	383
	<b>2</b>	124	151	327	412	421	1122	460	514
	<b>3</b>	189	221	418	445	500	1137	544	616
	<b>4</b>	261	304	592	670	766	1166	832	923
<b>MPI 630</b>	<b>1</b>	160	200	369	423	518	1894	565	632
	<b>2</b>	240	257	571	611	1045	1929	1137	1285
	<b>3</b>	330	374	745	788	1308	1938	1416	1577
	<b>4</b>	374	403	887	1010	1348	1956	1448	1612
	<b>5</b>	625	698	1210	1257	1723	2121	1839	1929
<b>MPI 850</b>	<b>1</b>	775	1041	1246	1568	2242	3311	2371	2625
	<b>2</b>	1176	1522	1682	1747	2449	3378	2684	2886
	<b>3</b>	1490	1914	1995	2014	3035	3405	3144	3220
	<b>4</b>	1668	2088	2305	2363	3169	3517	3272	3378

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ 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>.

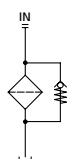
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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 symbol

Filter series	Style 1 connection
<b>MPI 100</b>	•
<b>MPI 250</b>	•
<b>MPI 630</b>	•
<b>MPI 850</b>	•



# MPI MPI100 - MPI250 - MPI630 - MPI850

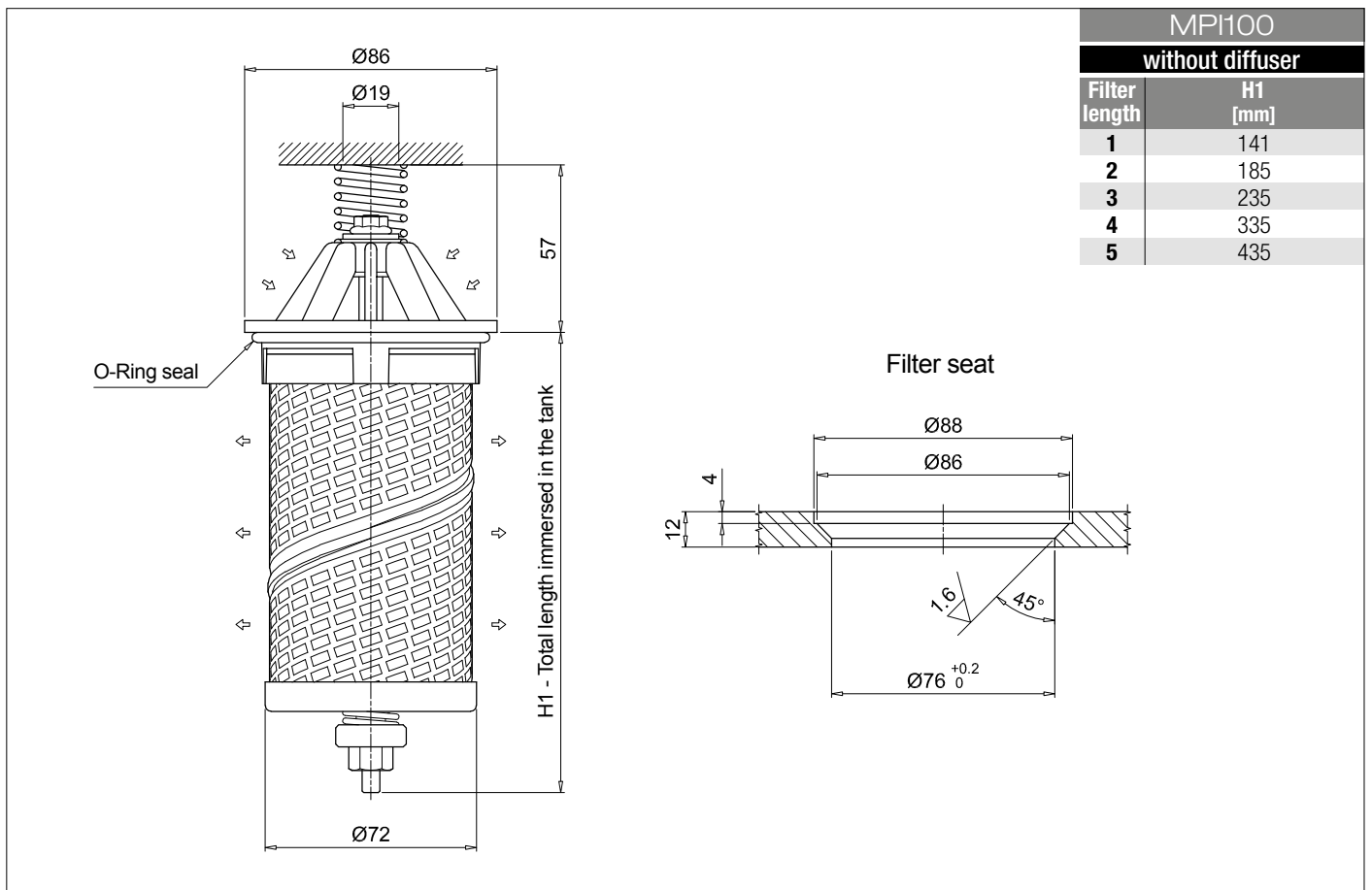
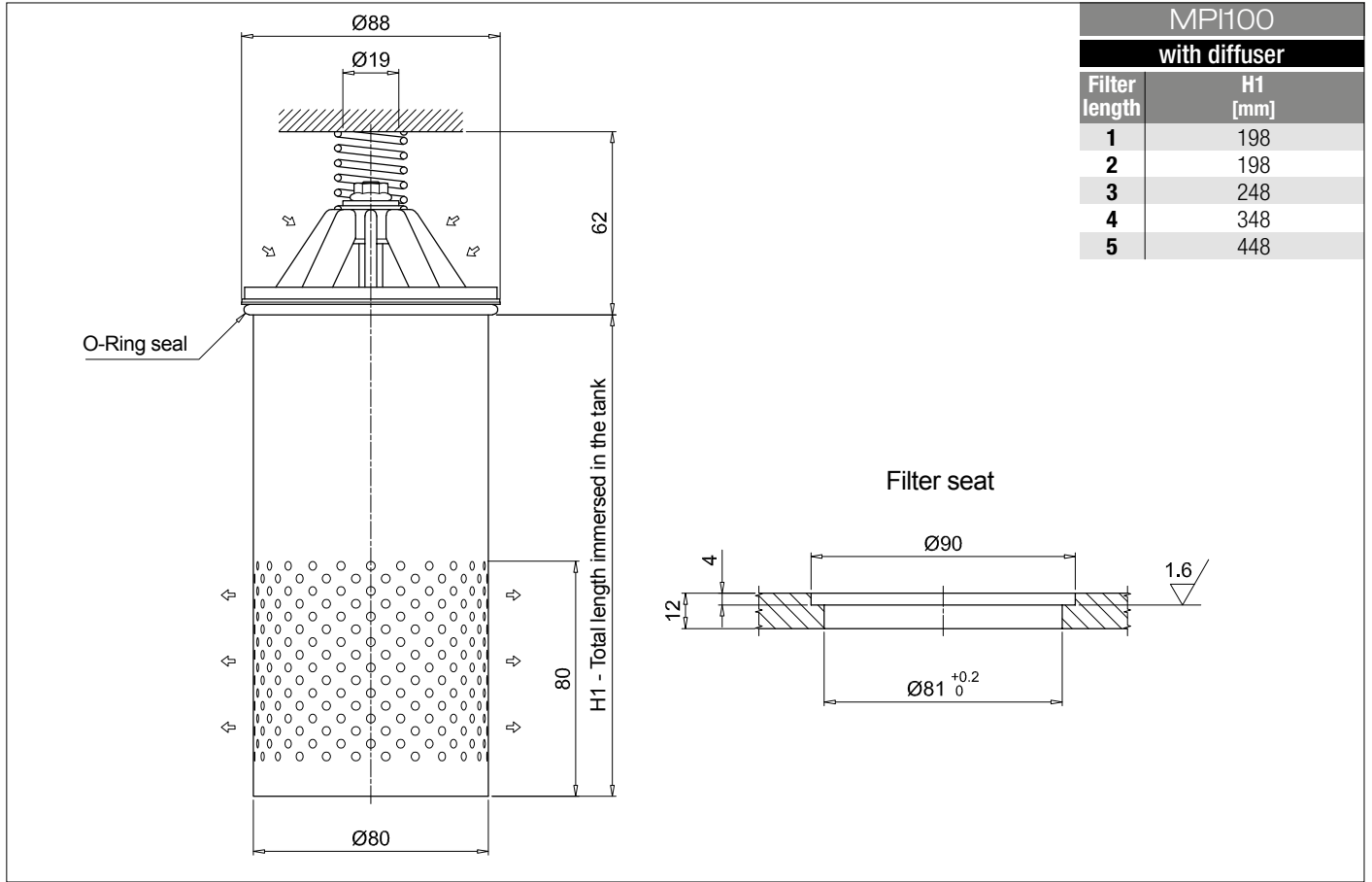
## Designation & Ordering code

### COMPLETE FILTER

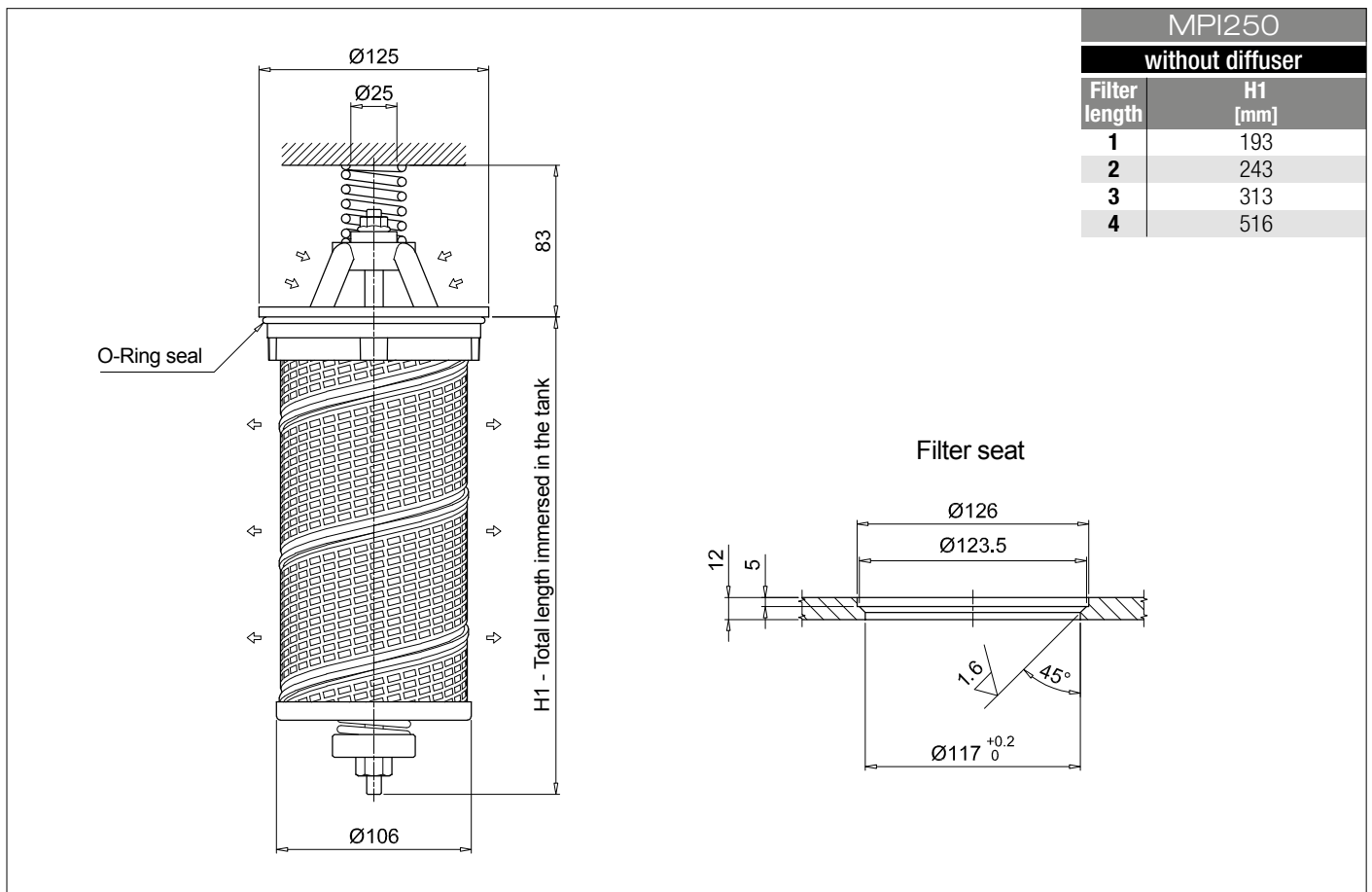
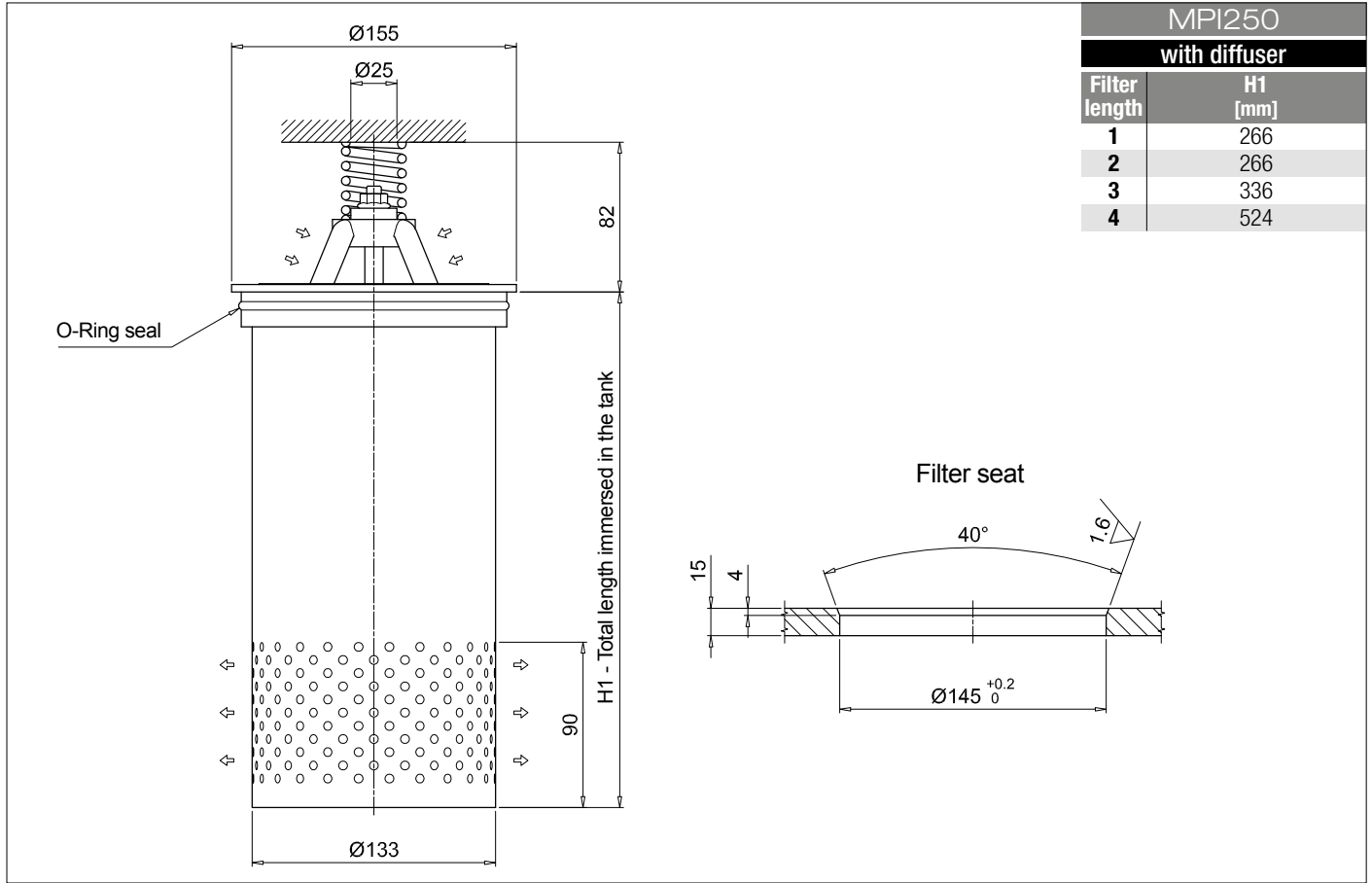
<b>Series and size</b>					Configuration example 1: <b>MPI100</b>   <b>1</b>   <b>C</b>   <b>D</b>   <b>A</b>   <b>A10</b>   <b>P01</b>						
<b>MPI100</b>					Configuration example 2: <b>MPI630</b>   <b>5</b>   <b>E</b>   <b>D</b>   <b>Z</b>   <b>M25</b>   <b>P01</b>						
<b>MPI250</b>											
<b>MPI630</b>											
<b>MPI850</b>											
<b>Length</b>					<b>MPI100</b>	<b>MPI250</b>	<b>MPI630</b>	<b>MPI850</b>			
<b>1</b>		•	•	•	•						
<b>2</b>		•	•	•	•						
<b>3</b>		•	•	•	•						
<b>4</b>		•	•	•	•						
<b>5</b>		•	-	•	-						
<b>Bypass valve</b>					<b>MPI100</b>	<b>MPI250</b>	<b>MPI630</b>	<b>MPI850</b>			
<b>S</b>	Without bypass	•	•	•	•						
<b>C</b>	1.75 bar	•	•	•	•						
<b>E</b>	2.5 bar	•	•	•	-						
<b>Diffuser and magnetic filter</b>											
<b>D</b>	With diffuser, with magnetic filter										
<b>F</b>	With diffuser, without magnetic filter										
<b>O</b>	Without diffuser, with magnetic filter										
<b>E</b>	Without diffuser, without magnetic filter										
					<b>Filtration rating</b>						
<b>Seals and treatments</b>					<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>				
<b>A</b>	NBR				•	•	•				
<b>V</b>	FPM				•	•	•				
<b>W</b>	NBR head anodized				•	•	-				
<b>Z</b>	FPM head anodized				•	•	-				
<b>Filtration rating (filter media)</b>											
<b>A03</b>	Inorganic microfiber	3 µm	<b>M25</b>	Wire mesh	25 µm						
<b>A06</b>	Inorganic microfiber	6 µm	<b>M60</b>	Wire mesh	60 µm						
<b>A10</b>	Inorganic microfiber	10 µm	<b>M90</b>	Wire mesh	90 µm						
<b>A16</b>	Inorganic microfiber	16 µm	<b>P10</b>	Resin impregnated paper	10 µm						
<b>A25</b>	Inorganic microfiber	25 µm	<b>P25</b>	Resin impregnated paper	25 µm						
					<b>Execution</b>						
					<b>P01</b>			MP Filtri standard			
					<b>Pxx</b>			Customized			

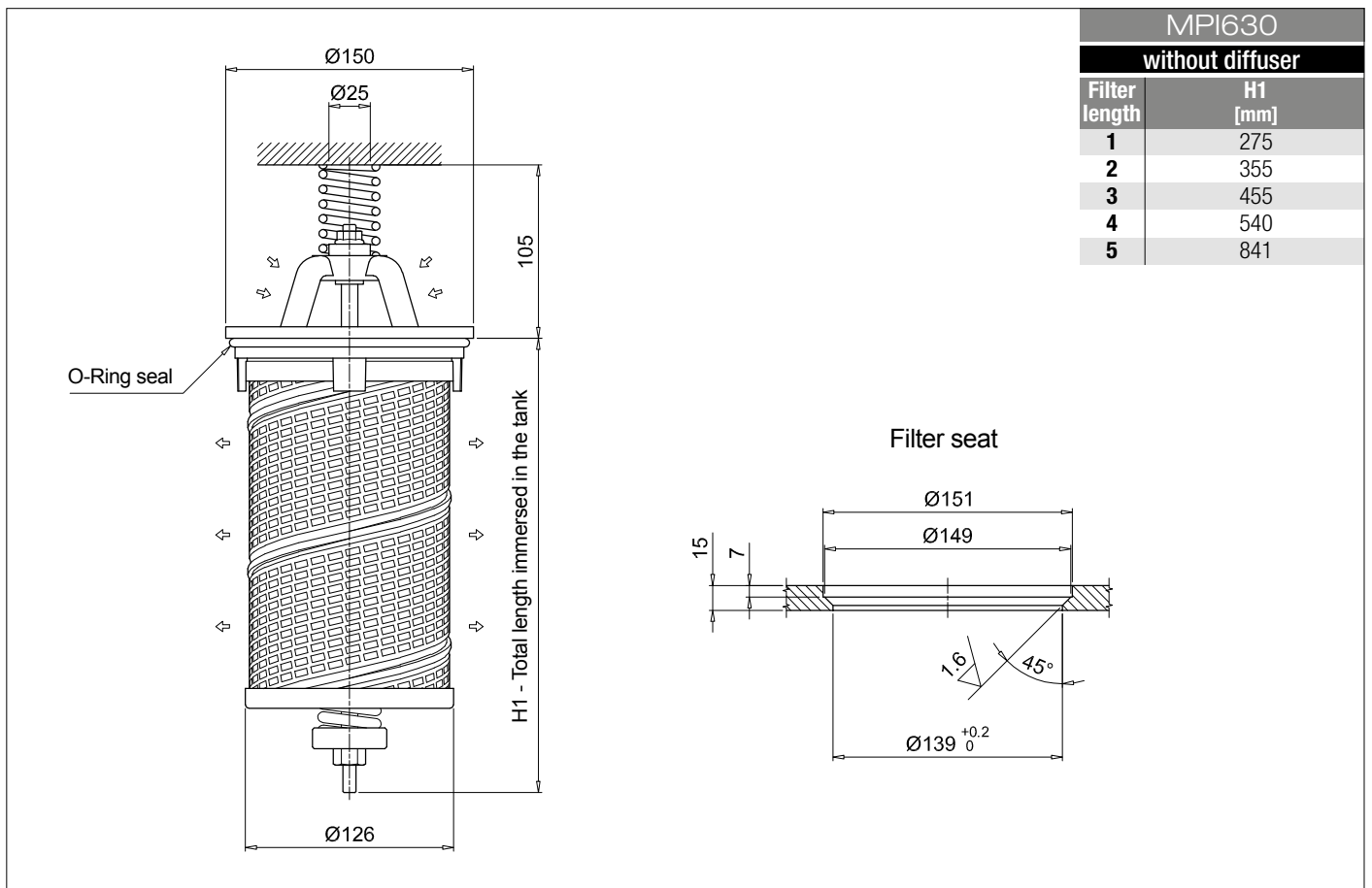
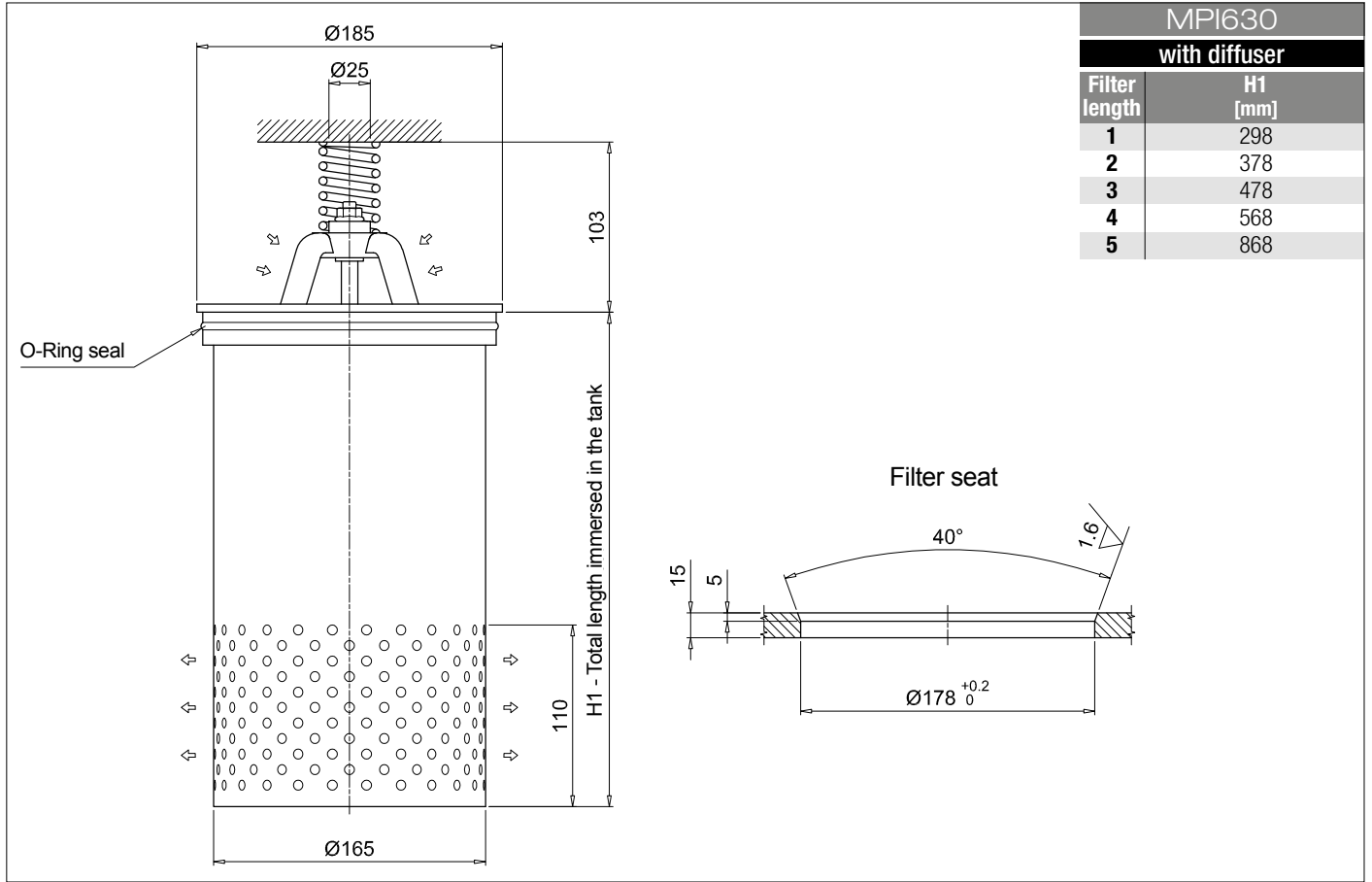
### FILTER ELEMENT

<b>Element series and size</b>					Configuration example 1: <b>MR100</b>   <b>1</b>   <b>A10</b>   <b>A</b>   <b>P01</b>						
<b>MR100</b>					Configuration example 2: <b>MR630</b>   <b>5</b>   <b>M25</b>   <b>V</b>   <b>P01</b>						
<b>MR250</b>											
<b>MR630</b>											
<b>MR850</b>											
<b>Element length</b>					<b>Size 100</b>	<b>Size 250</b>	<b>Size 630</b>	<b>Size 850</b>			
<b>1</b>		•	•	•	•						
<b>2</b>		•	•	•	•						
<b>3</b>		•	•	•	•						
<b>4</b>		•	•	•	•						
<b>5</b>		•	-	•	-						
<b>Filtration rating (filter media)</b>											
<b>A03</b>	Inorganic microfiber	3 µm	<b>M25</b>	Wire mesh	25 µm						
<b>A06</b>	Inorganic microfiber	6 µm	<b>M60</b>	Wire mesh	60 µm						
<b>A10</b>	Inorganic microfiber	10 µm	<b>M90</b>	Wire mesh	90 µm						
<b>A16</b>	Inorganic microfiber	16 µm	<b>P10</b>	Resin impregnated paper	10 µm						
<b>A25</b>	Inorganic microfiber	25 µm	<b>P25</b>	Resin impregnated paper	25 µm						
					<b>Seals</b>			<b>Execution</b>			
					<b>A</b>			<b>P01</b>			
					<b>V</b>			MP Filtri standard			
					<b>Pxx</b>			Customized			



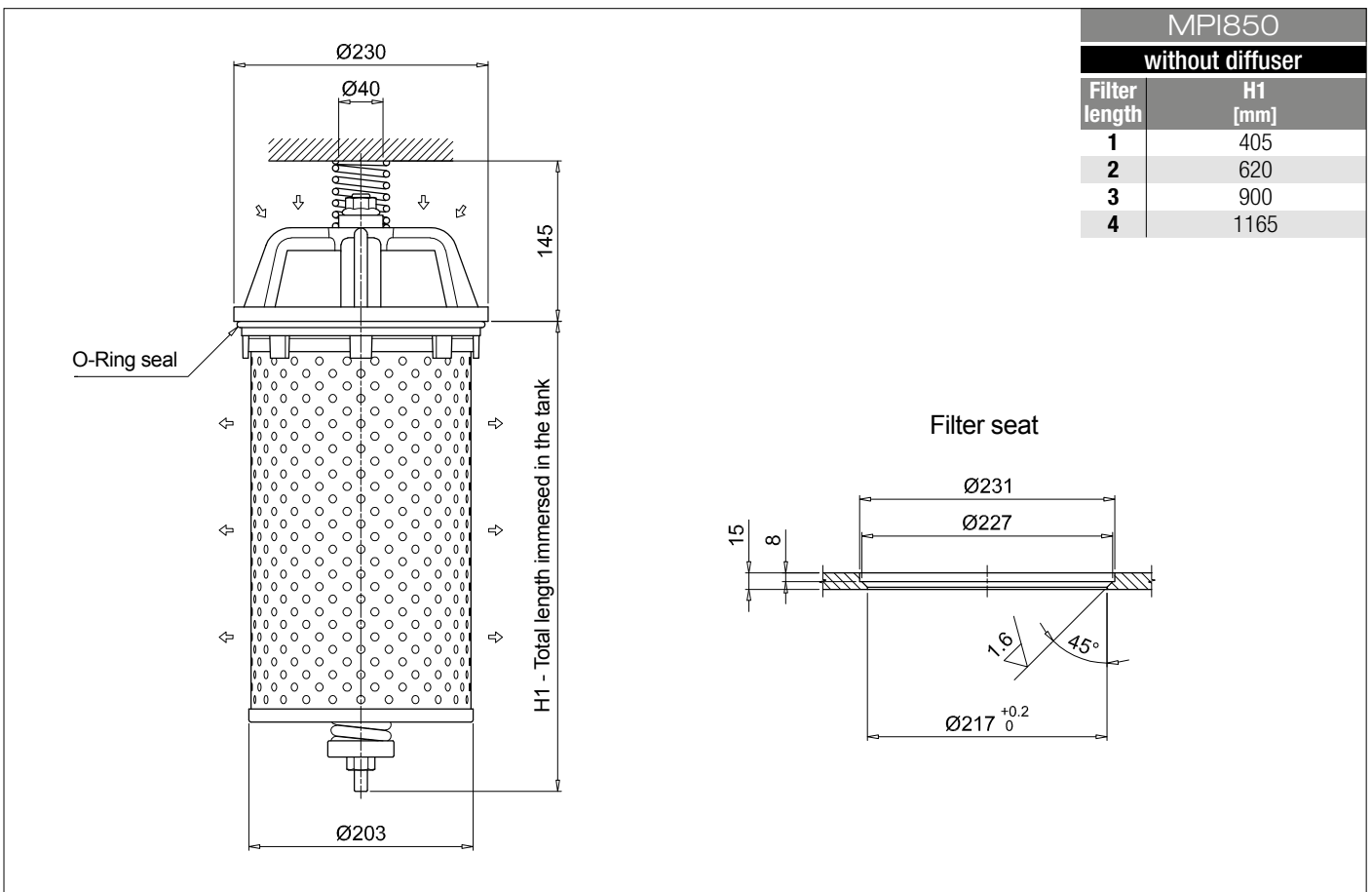
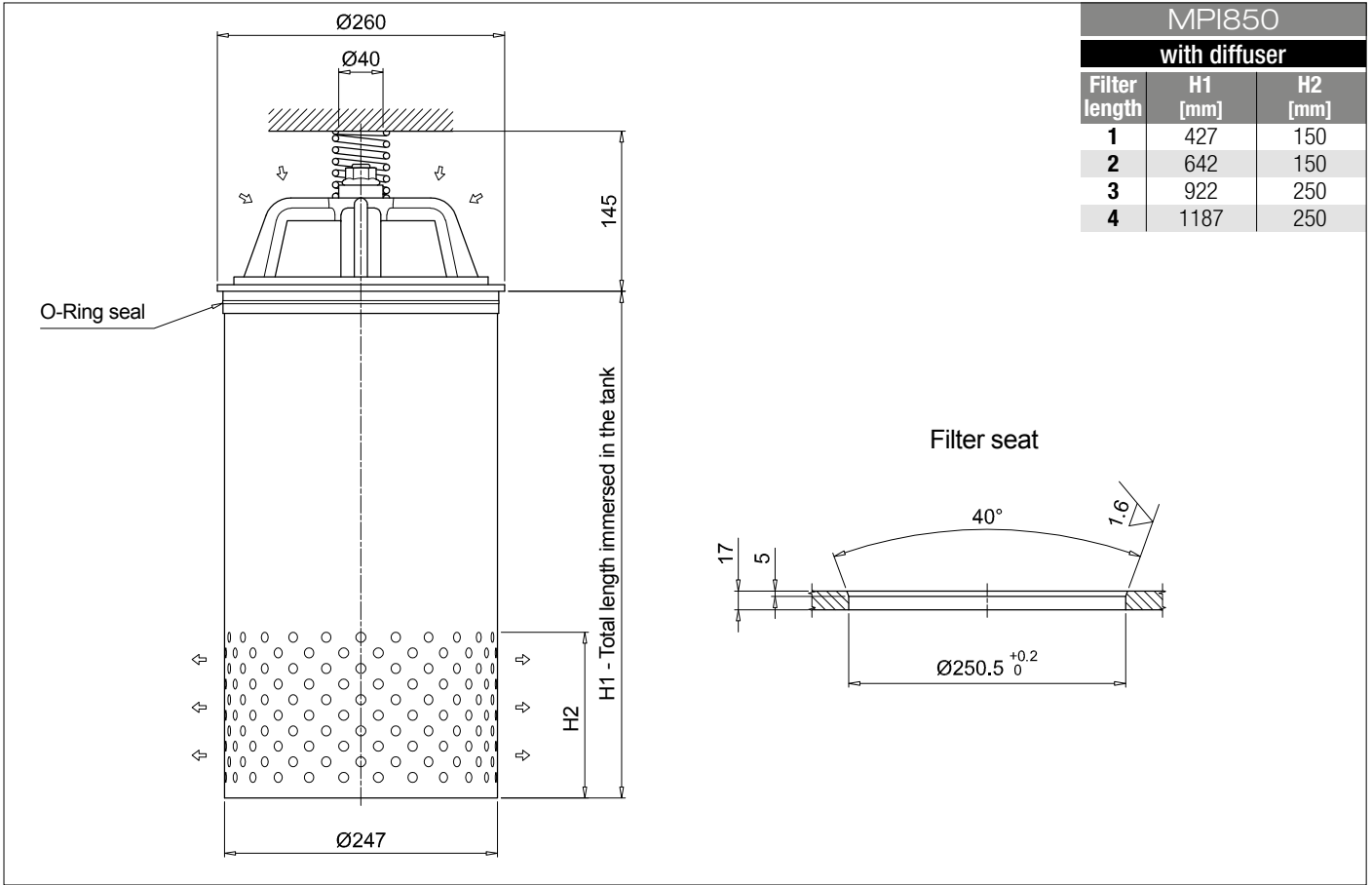
## Dimensions





# MPI MPI100 - MPI250 - MPI630 - MPI850

## Dimensions



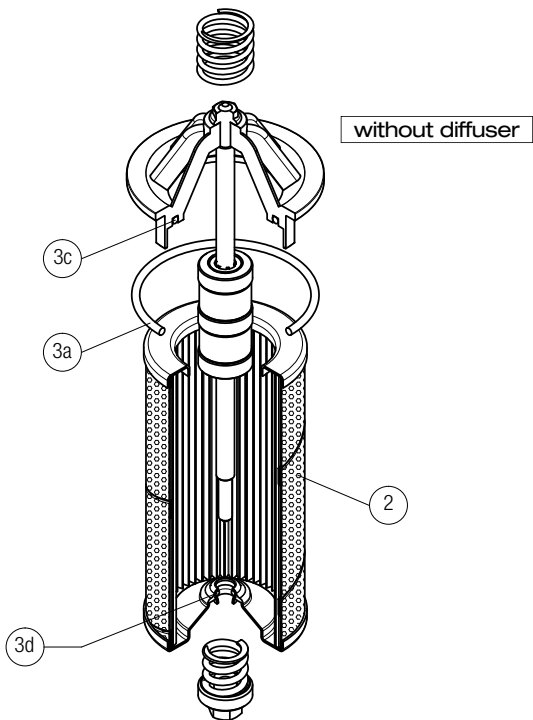
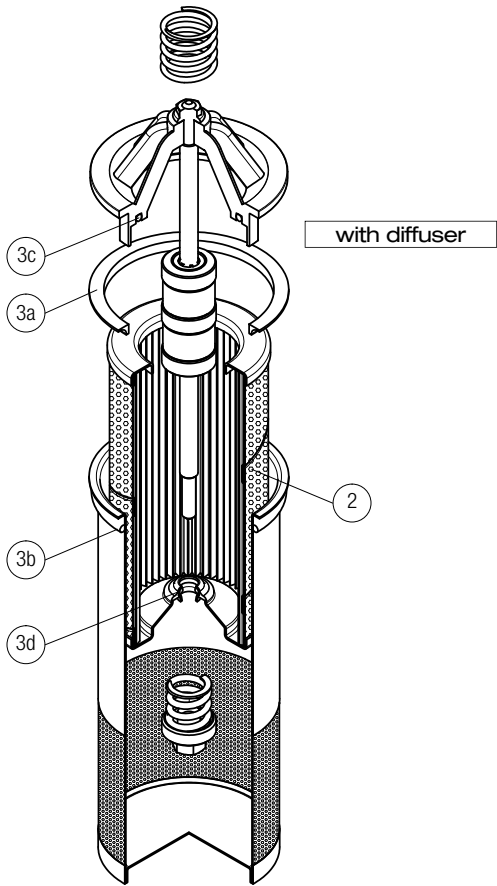




# MPI SPARE PARTS

Order number for spare parts

## MPI 100



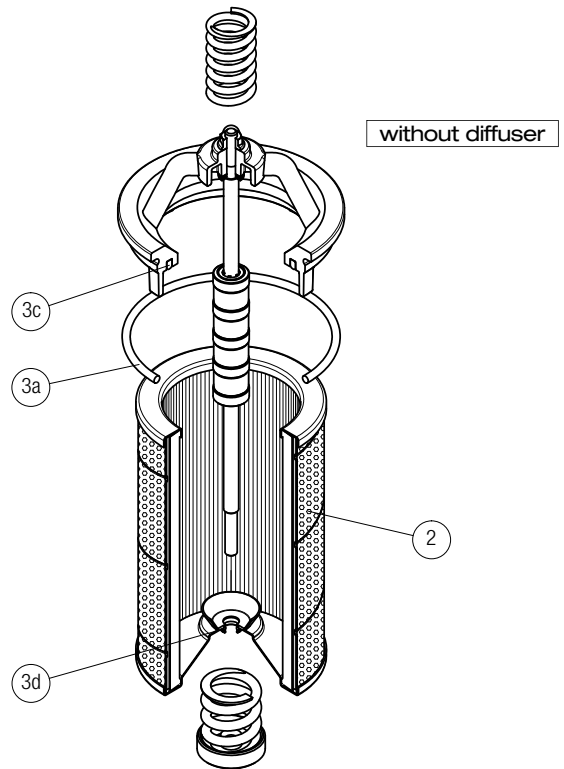
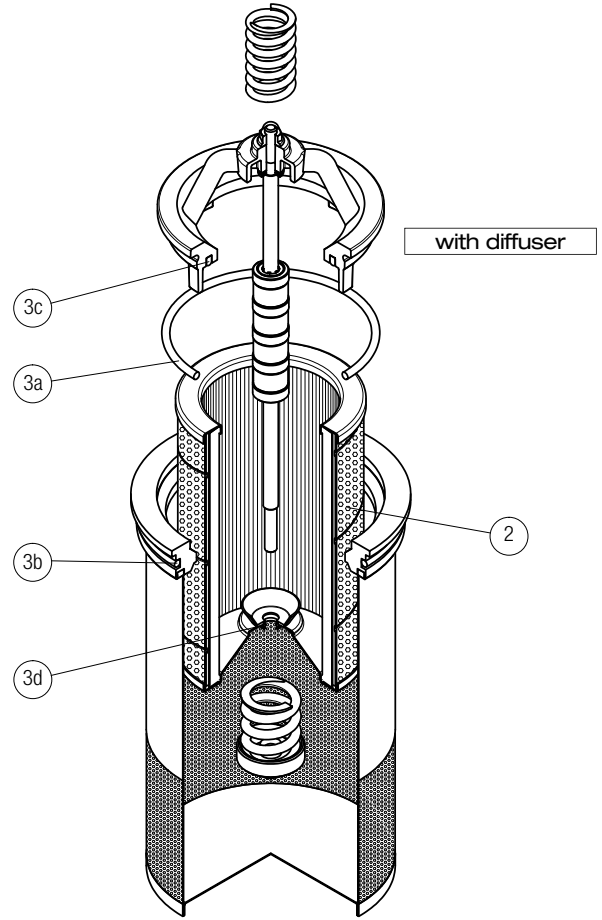
Q.ty: 1 pc.

Q.ty: 1 pc.

Item: **2** **3** (3a ÷ 3d)

Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPI 100</b>	See order table	02050145	02050146

## MPI 250 - 630



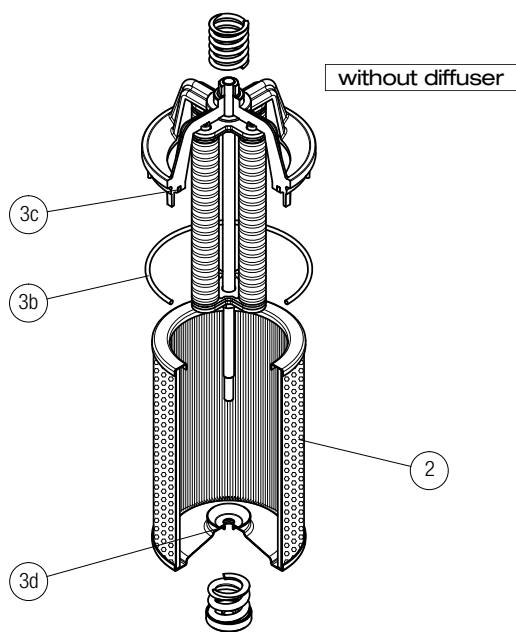
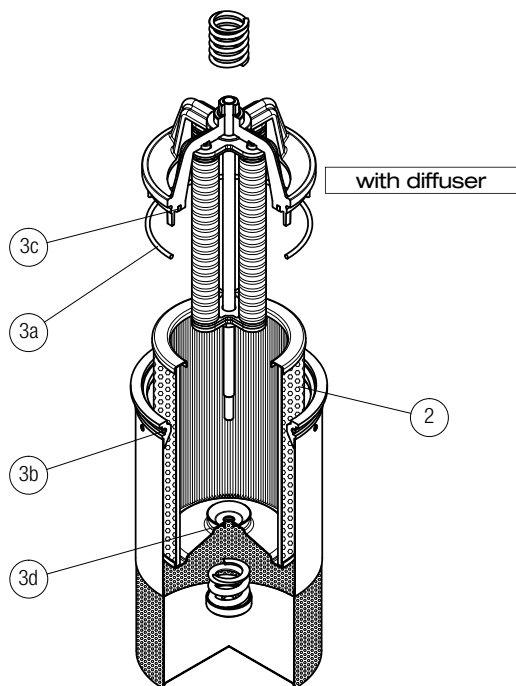
Q.ty: 1 pc.

Q.ty: 1 pc.

Item: **2** **3** (3a ÷ 3d)

Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPI 250</b>	See order table	02050147	02050148
<b>MPI 630</b>		02050112	02050113

MPI 850



Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)
Filter series	Filter element	Seal Kit code number NBR FPM
MPI 850	See order table	02050114 02050115



# FRI series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 2500 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 2 MPa (20 bar)**  
**Flow rate up to 2500 l/min**

FRI is a range of return filters for protection of the reservoir against the system contamination.

They could be directly fixed to the reservoir in immersed or semi-immersed position or connected to the lines of the system through the hydraulic fittings.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

#### Available features:

- Female threaded connections up to 2 1/2" and flanged connections up to 3 1/2", for a maximum flow rate of 2500 l/min
- Double input connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Heavy duty industrial equipment

### Filter housing materials

- Filter body
  - Aluminium: FRI 255
  - Anodized Aluminium: FRI 025-040-100-250-630
  - Phosphatized Steel: FRI 850
- Cover
  - Polyamide, GF reinforced: FRI 255
  - Anodized Aluminium: FRI 025-040-100-250-630-850
- Valve: Polyamide, GF reinforced - Steel

### Bypass valve

Opening pressure 240 kPa (2.4 bar) ±10%

### Δp element type

- Microfibre filter elements - series N: 10 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

FRI filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	1	Length	1
<b>FRI 025</b>		1.0		0.28
<b>FRI 040</b>		2.0		0.70
<b>FRI 100</b>		3.8		1.09
<b>FRI 250</b>		6.3		2.60
<b>FRI 255</b>		4.2		3.20
<b>FRI 630</b>		13.8		7.05
<b>FRI 850</b>		48.0		21.50

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>FRI 025</b>	<b>1</b>	6	10	17	19	43	122	43	47
<b>FRI 040</b>	<b>1</b>	19	23	43	45	94	155	94	102
<b>FRI 100</b>	<b>1</b>	32	34	89	92	187	260	187	206
<b>FRI 250</b>	<b>1</b>	144	179	271	300	448	645	448	490
<b>FRI 255</b>	<b>1</b>	144	179	271	300	448	645	448	490
<b>FRI 630</b>	<b>1</b>	242	279	508	577	834	1446	834	911
<b>FRI 850</b>	<b>1</b>	440	541	971	1143	1705	2528	1705	1880

**Maximum flow rate for a complete return filter with a pressure drop  $\Delta p = 0.5$  bar.**

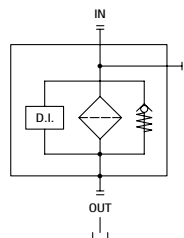
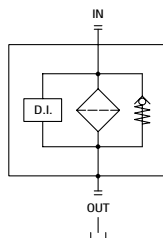
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

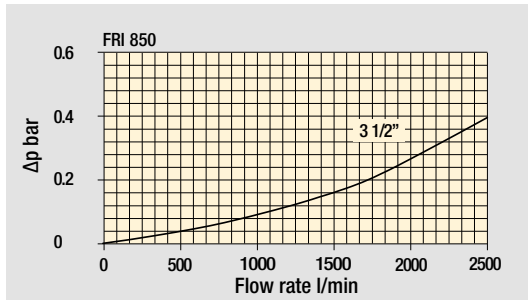
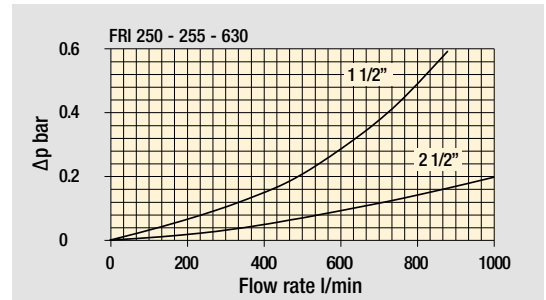
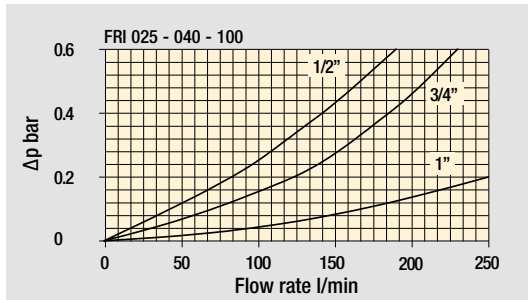
### Hydraulic symbols

Filter series	Style 1 connection + Diff. indic.	Style 2 connections + Diff. indic.
<b>FRI 025</b>		•
<b>FRI 040</b>		•
<b>FRI 100</b>		•
<b>FRI 250</b>		•
<b>FRI 255</b>	•	
<b>FRI 630</b>		•
<b>FRI 850</b>	•	

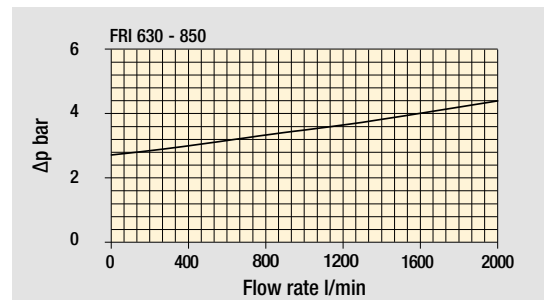
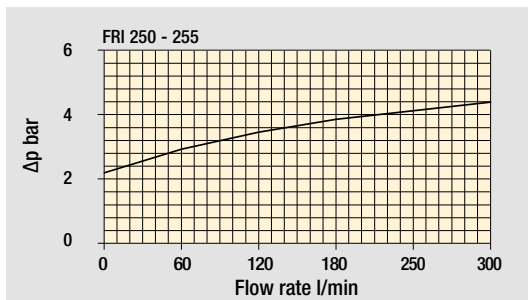
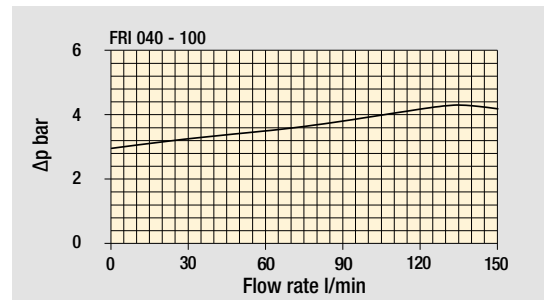
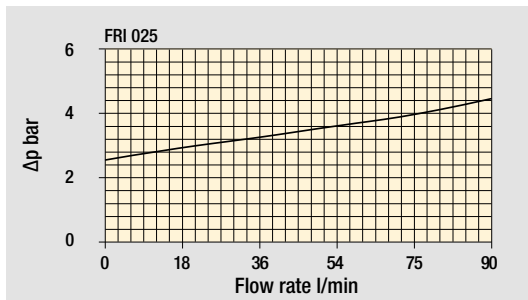


## Pressure drop

### 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.





## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>FRI025</b> <b>B</b> <b>A</b> <b>G1</b> <b>A25</b> <b>N</b> <b>P01</b>						
<b>FRI025</b>	Configuration example 2: <b>FRI040</b> <b>S</b> <b>V</b> <b>G2</b> <b>M25</b> <b>N</b> <b>P01</b>						
<b>FRI040</b>							
<b>Bypass valve</b>							
<b>B</b> With bypass 2.4 bar							
<b>S</b> Without bypass							
<b>Seals and treatments</b>							
<b>A</b> NBR							
<b>V</b> FPM							
<b>Connections for FRI025</b>	<b>Connections for FRI040</b>						
<b>G1</b> G 1/2"	<b>G 3/4"</b>						
<b>G2</b> 1/2" NPT	<b>3/4" NPT</b>						
<b>G3</b> SAE 8 - 3/4" - 16 UNF	<b>SAE 12 - 1 1/16" - 12 UN</b>						
<b>Filtration rating (filter media)</b>							
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm						
	<b>Element Δp</b>			<b>Execution</b>			
	<b>N</b> 10 bar			<b>P01</b> MP Filtri standard			
				<b>Pxx</b> Customized			

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1: <b>CU025</b> <b>A25</b> <b>N</b> <b>P01</b>			
<b>CU025</b>	Configuration example 2: <b>CU040</b> <b>M25</b> <b>V</b> <b>P01</b>			
<b>CU040</b>				
<b>Filtration rating (filter media)</b>				
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm			
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm			
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm			
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm			
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm			
<b>Seals and treatments</b>				
<b>N</b> NBR				
<b>V</b> FPM				
	<b>Execution</b>			
	<b>P01</b> MP Filtri standard			
	<b>Pxx</b> Customized			

### CLOGGING INDICATORS

See page 710-711

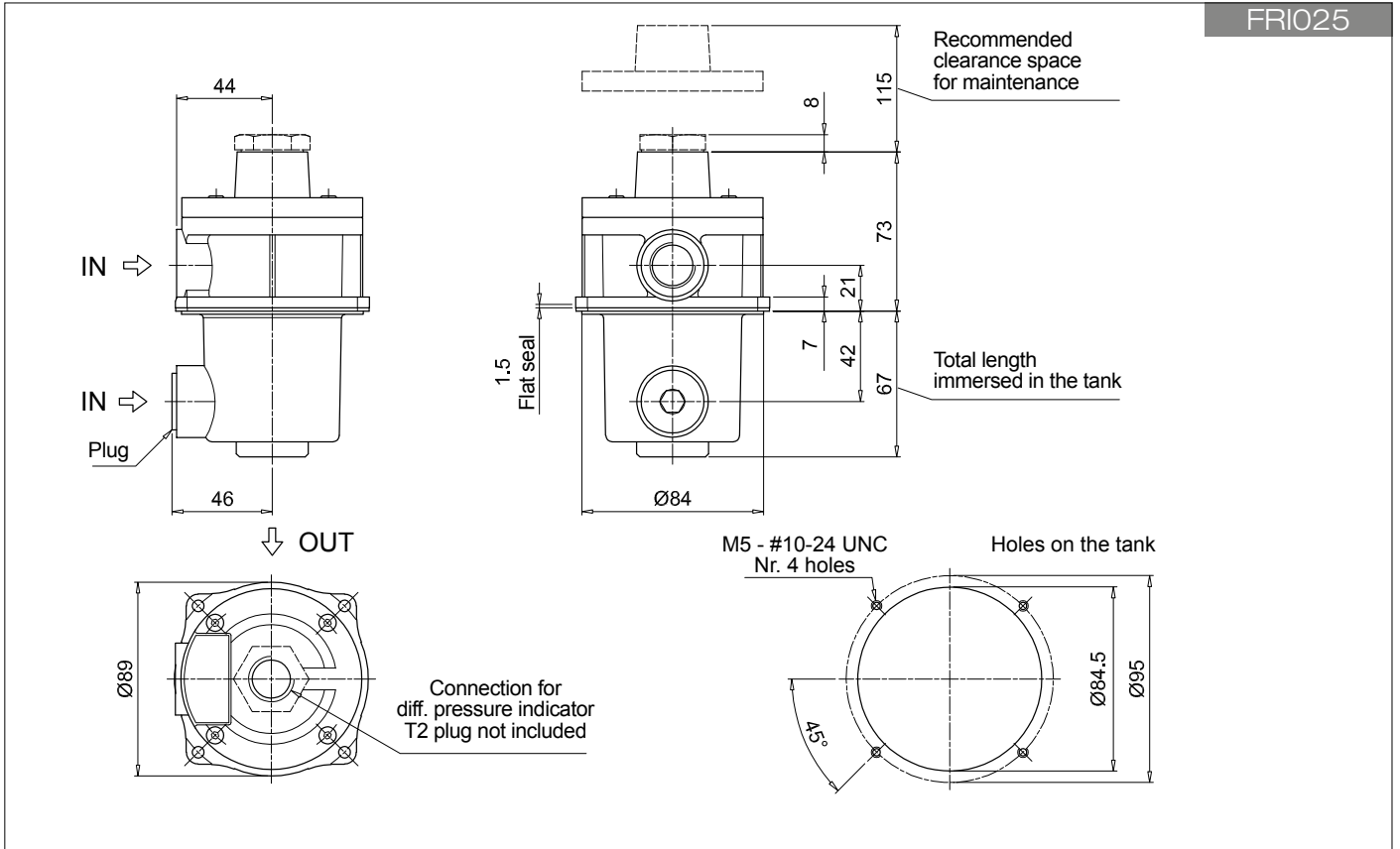
<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

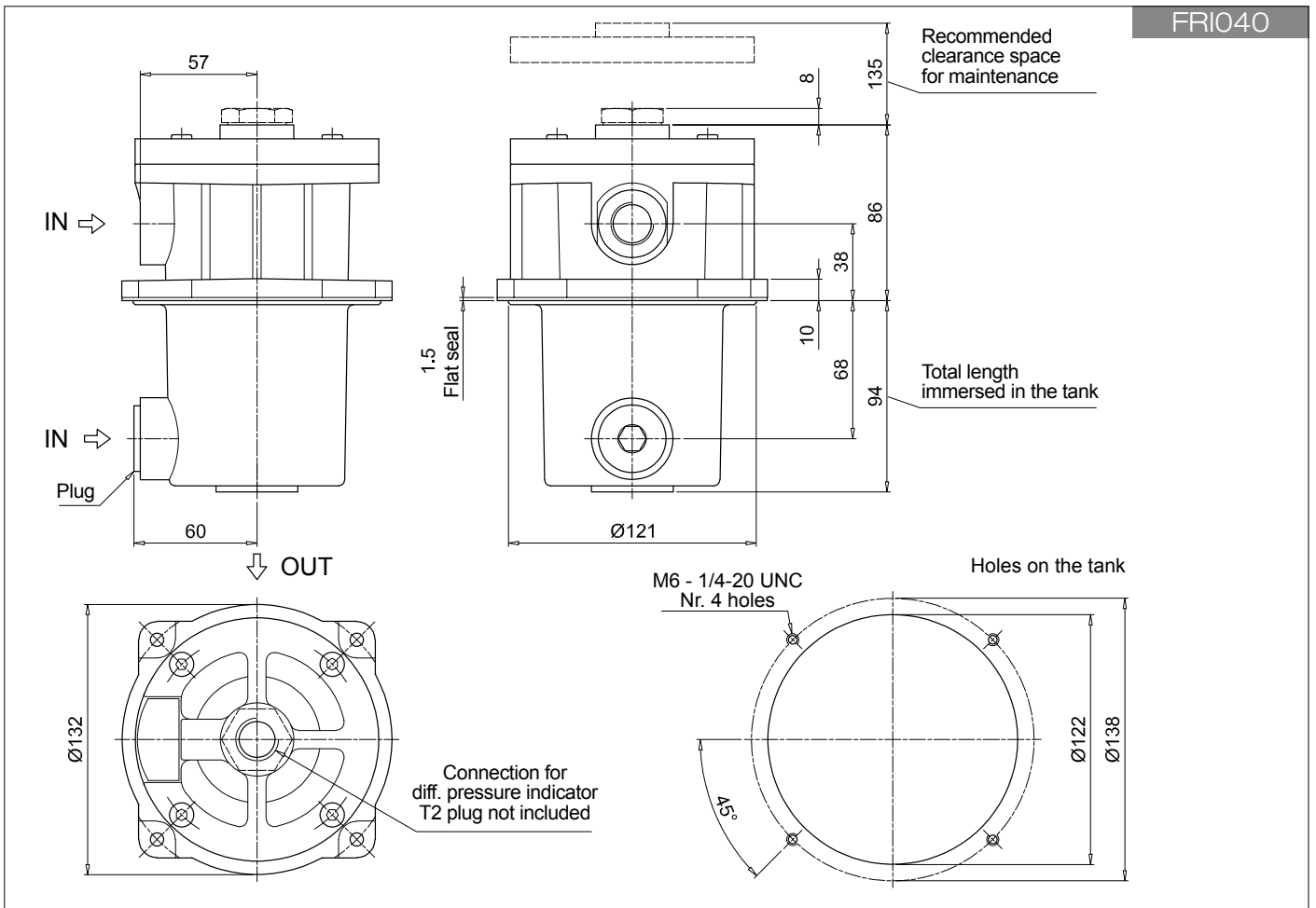
See page 737

<b>T2</b> Plug (not included)
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FRI025



FRI040



## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>FRI100</b> <b>B</b> <b>A</b> <b>G1</b> <b>A25</b> <b>N</b> <b>P01</b>						
<b>FRI100</b>	Configuration example 2: <b>FRI630</b> <b>S</b> <b>V</b> <b>F2</b> <b>M25</b> <b>N</b> <b>P01</b>						
<b>FRI250</b>							
<b>FRI630</b>							
<b>Bypass valve</b>							
<b>B</b> With bypass 2.4 bar							
<b>S</b> Without bypass							
<b>Seals and treatments</b>							
<b>A</b> NBR							
<b>V</b> FPM							
<b>Connections for FRI100</b>	<b>Connections for FRI250</b>	<b>Connections for FRI630</b>					
<b>G1</b> G 1"	<b>G 1 1/2"</b>	<b>G 2 1/2"</b>					
<b>G2</b> 1" NPT	<b>1 1/2" NPT</b>	<b>2 1/2" NPT</b>					
<b>G3</b> SAE 16 - 1 5/16" - 12 UN	<b>SAE 24 - 1 7/8" - 12 UN</b>	<b>SAE 32 - 2 1/2" - 12 UN</b>					
<b>F1</b> 1" SAE 3000 psi/M	<b>1 1/2" SAE 3000 psi/M</b>	<b>2 1/2" SAE 3000 psi/M</b>					
<b>F2</b> 1" SAE 3000 psi/UNC	<b>1 1/2" SAE 3000 psi/UNC</b>	<b>2 1/2" SAE 3000 psi/UNC</b>					
<b>Filtration rating (filter media)</b>							
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm						
		<b>Element Δp</b>		<b>Execution</b>			
		<b>N</b> 10 bar		<b>P01</b> MP Filtri standard			
				<b>Pxx</b> Customized			

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1: <b>CU100</b> <b>A25</b> <b>N</b> <b>P01</b>			
<b>CU100</b>	Configuration example 2: <b>CU630</b> <b>M25</b> <b>V</b> <b>P01</b>			
<b>CU250</b>				
<b>CU630</b>				
<b>Filtration rating (filter media)</b>				
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm			
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm			
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm			
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm			
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm			
<b>Seals and treatments</b>				
<b>N</b> NBR				
<b>V</b> FPM				
	<b>Execution</b>			
	<b>P01</b> MP Filtri standard			
	<b>Pxx</b> Customized			

### CLOGGING INDICATORS

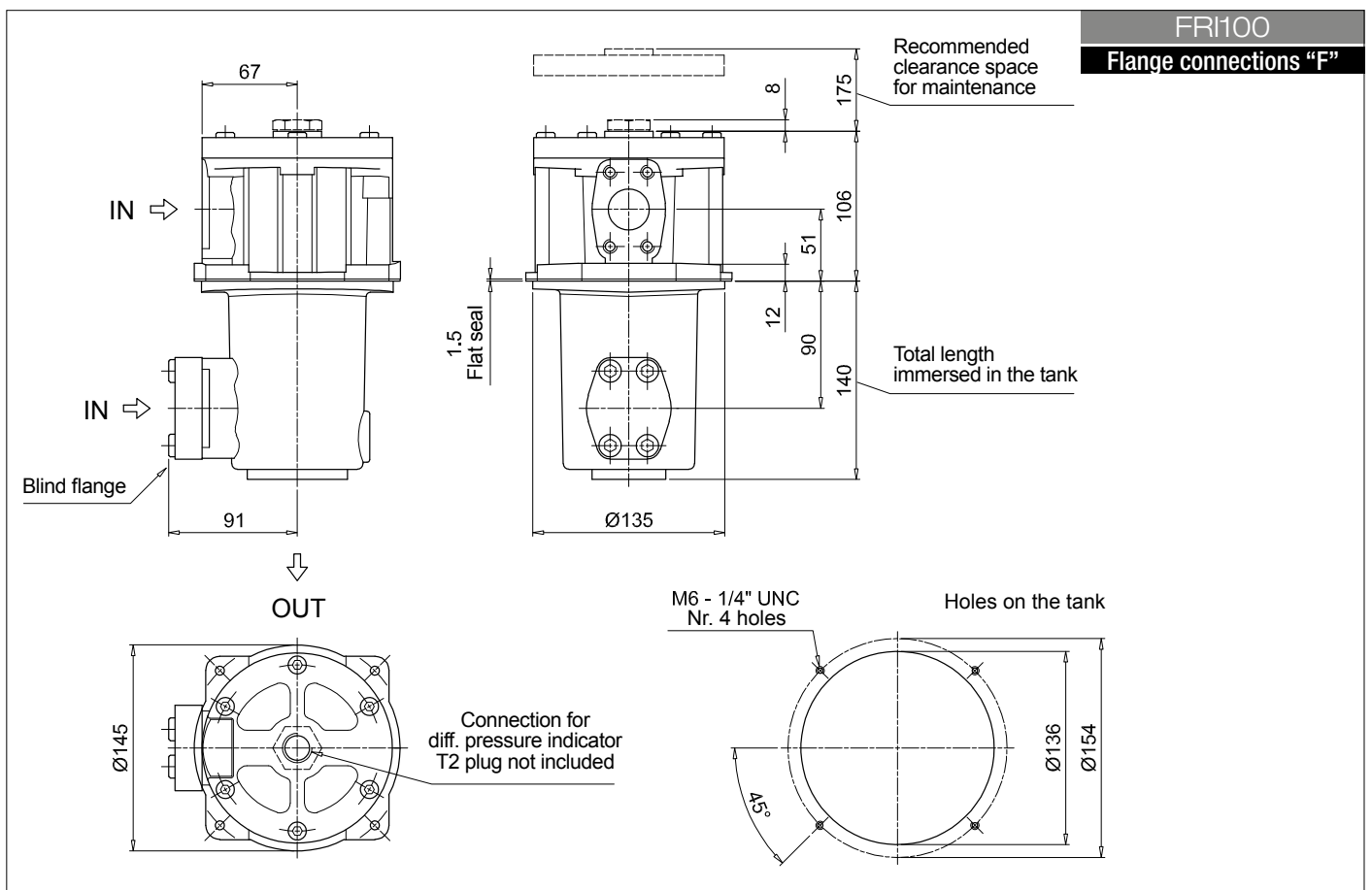
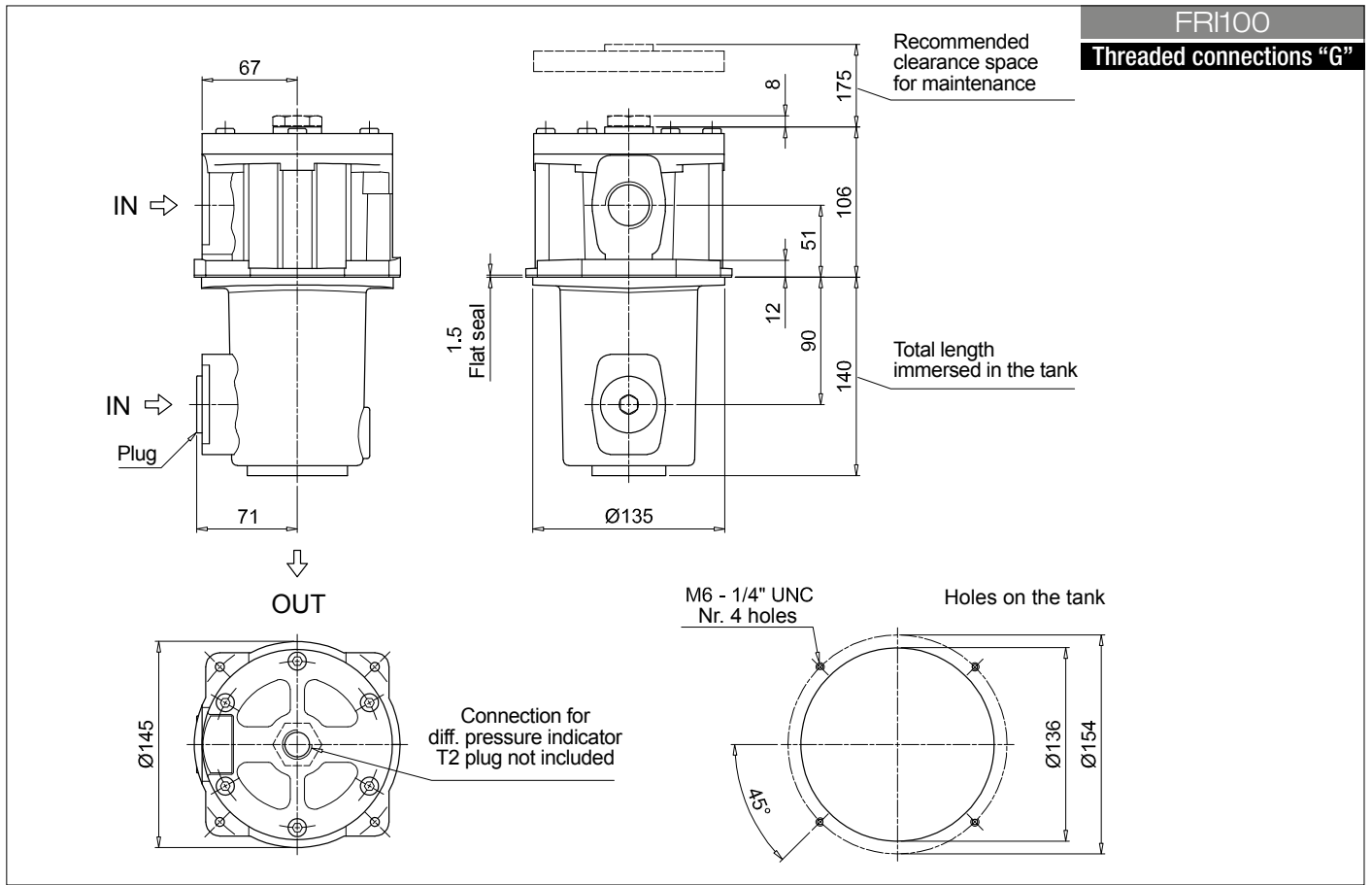
See page 710-711

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

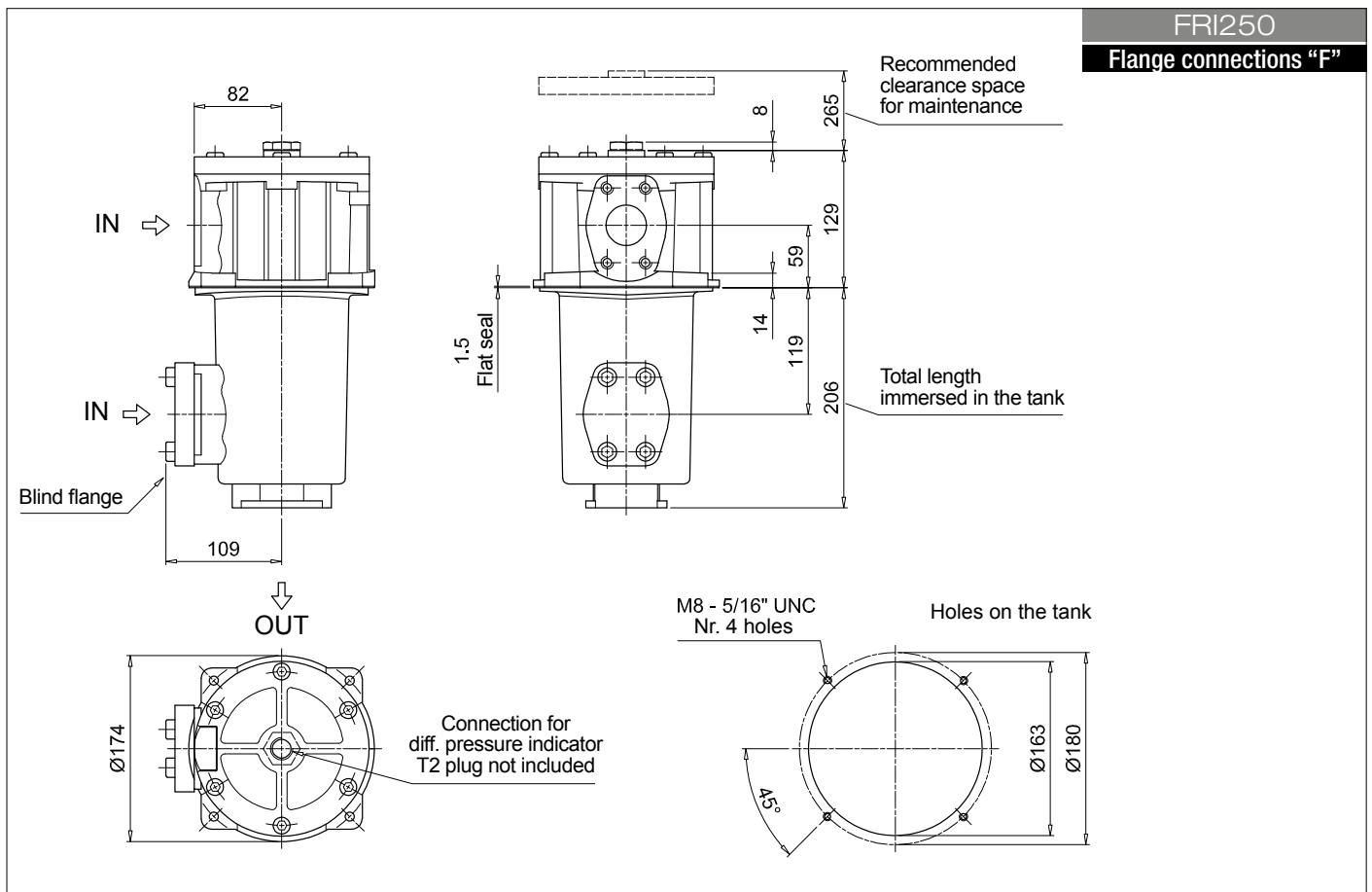
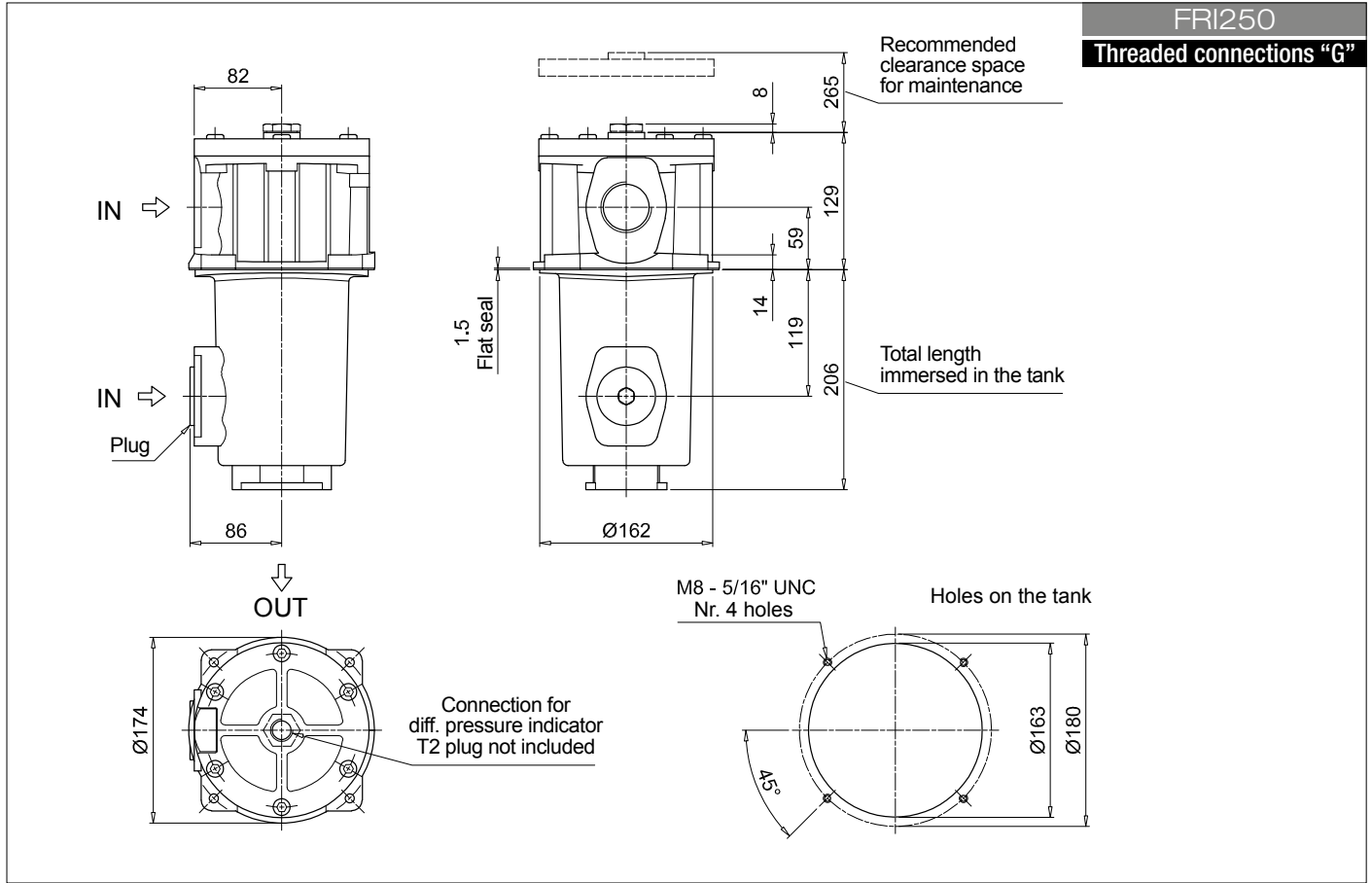
### PLUGS

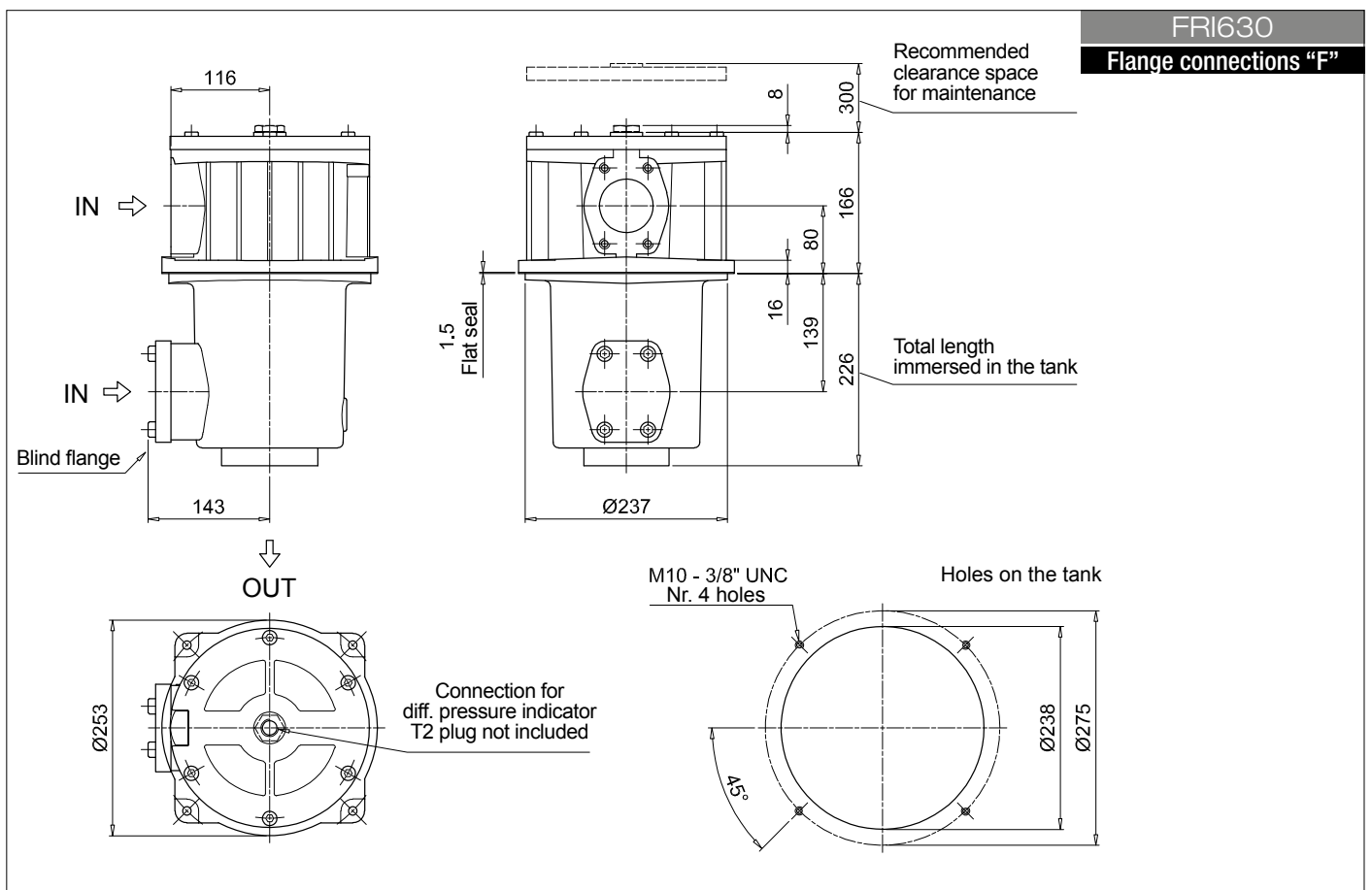
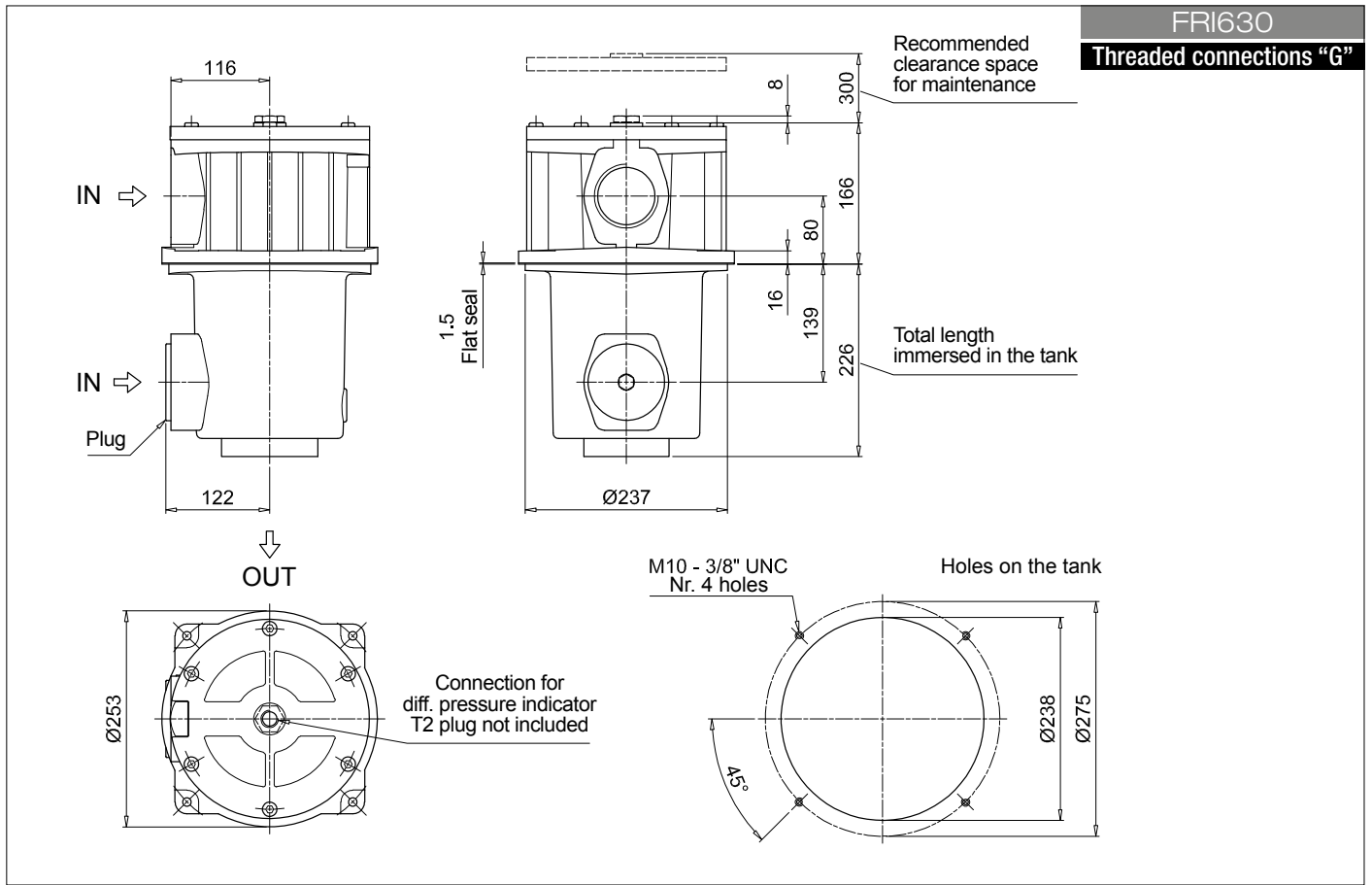
See page 737

<b>T2</b> Plug (not included)
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## Dimensions





## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>			Configuration example 1:							
FRI255			FRI255	S	V	F2	M25	N	P01	
FRI850			Configuration example 2:							
FRI850			FRI850	B	A	F1	A25	V	P01	
<b>Bypass valve</b>										
B With bypass 2.4 bar										
S Without bypass										
<b>Seals for FRI255</b>			<b>Seals and treatments for FRI850</b>			<b>Filtration rating</b>				
A NBR			A NBR			Axx	Mxx	Pxx		
V FPM			V FPM			•	•	•		
			W NBR head anodized			•	•	-		
			Z FPM head anodized			•	•	-		
<b>Connections for FRI255</b>			<b>Connections for FRI850</b>							
G1 G 1 1/2"			F1 3 1/2" SAE 3000 psi/M							
G2 1 1/2" NPT			F2 3 1/2" SAE 3000 psi/UNC							
G3 SAE 24 - 1 7/8" - 12 UN										
G4 G 1 1/4"										
G5 1 1/4" NPT										
G6 SAE 20 - 1 5/8" - 12 UN										
F1 1 1/2" SAE 3000 psi/M										
F2 1 1/2" SAE 3000 psi/UNC										
<b>Filtration rating (filter media)</b>										
A03 Inorganic microfiber 3 µm			M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm			M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm			M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm			P10 Resin impregnated paper 10 µm							
A25 Inorganic microfiber 25 µm			P25 Resin impregnated paper 25 µm							
						<b>Element Δp</b>		<b>Execution</b>		
						N 10 bar		P01 MP Filtri standard		
								Pxx Customized		

### FILTER ELEMENT

<b>Element series and size</b>			Configuration example 1:							
CU250			CU250	M25	V	P01				
CU850			Configuration example 2:							
CU850			CU850	A25	N	P01				
<b>Filtration rating (filter media)</b>										
A03 Inorganic microfiber 3 µm			M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm			M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm			M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm			P10 Resin impregnated paper 10 µm							
A25 Inorganic microfiber 25 µm			P25 Resin impregnated paper 25 µm							
<b>Seals for FRI255</b>			<b>Seals and treatments for FRI850</b>			<b>Filtration rating</b>				
N NBR			N NBR			Axx	Mxx	Pxx		
V FPM			V FPM			•	•	•		
			W NBR head anodized			•	•	-		
			Z FPM head anodized			•	•	-		
								<b>Execution</b>		
								P01 MP Filtri standard		
								Pxx Customized		

### FRI255 CLOGGING INDICATORS

See page 710-711

BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator

### FRI850 CLOGGING INDICATORS

See page 710-711

DEA Electrical differential pressure indicator
DEM Electrical differential pressure indicator
DLA Electrical / visual differential pressure indicator
DLE Electrical / visual differential pressure indicator

DTA Electrical differential pressure indicator
DVA Visual differential pressure indicator
DVM Visual differential pressure indicator

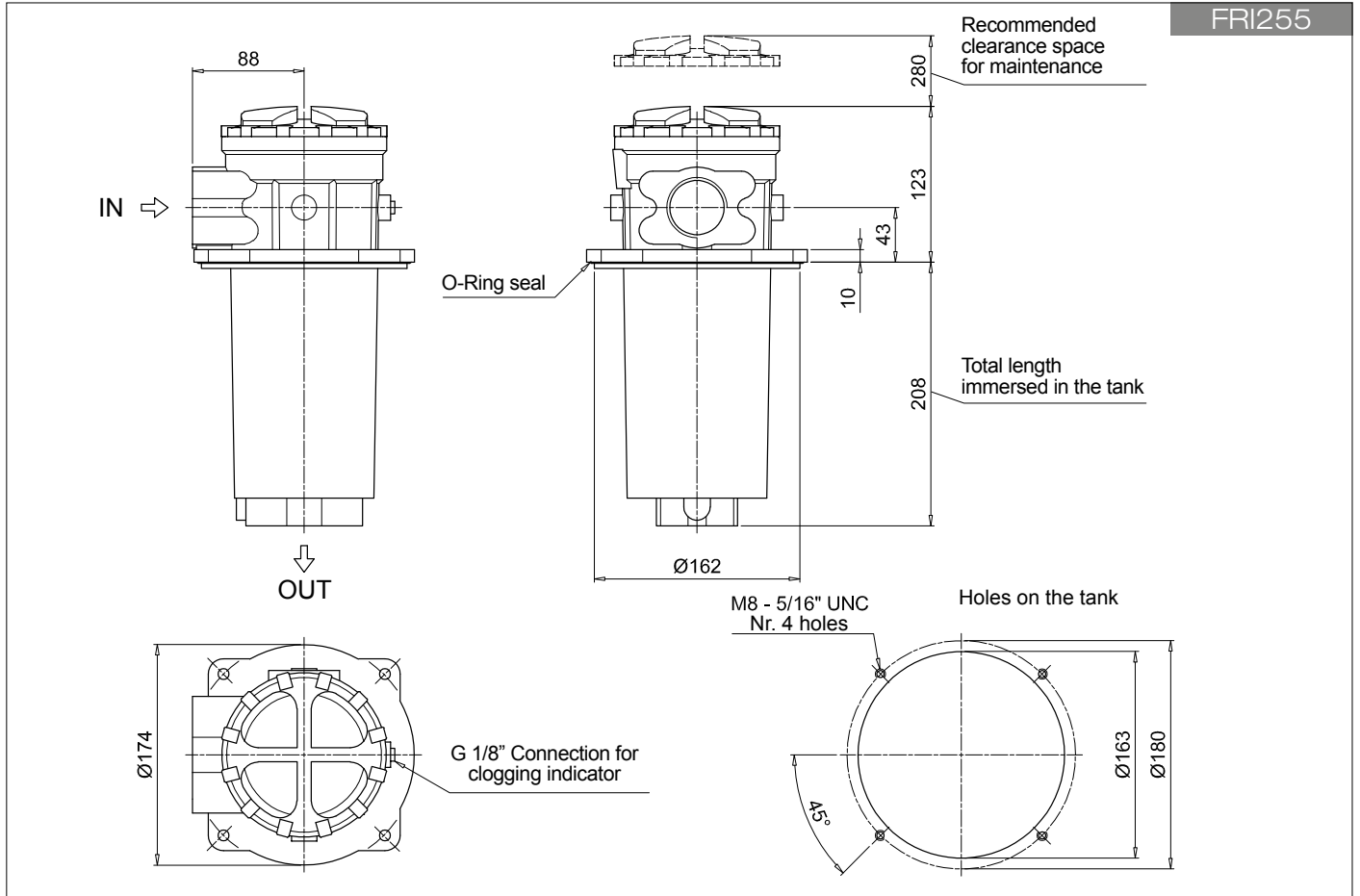
### PLUGS

See page 737

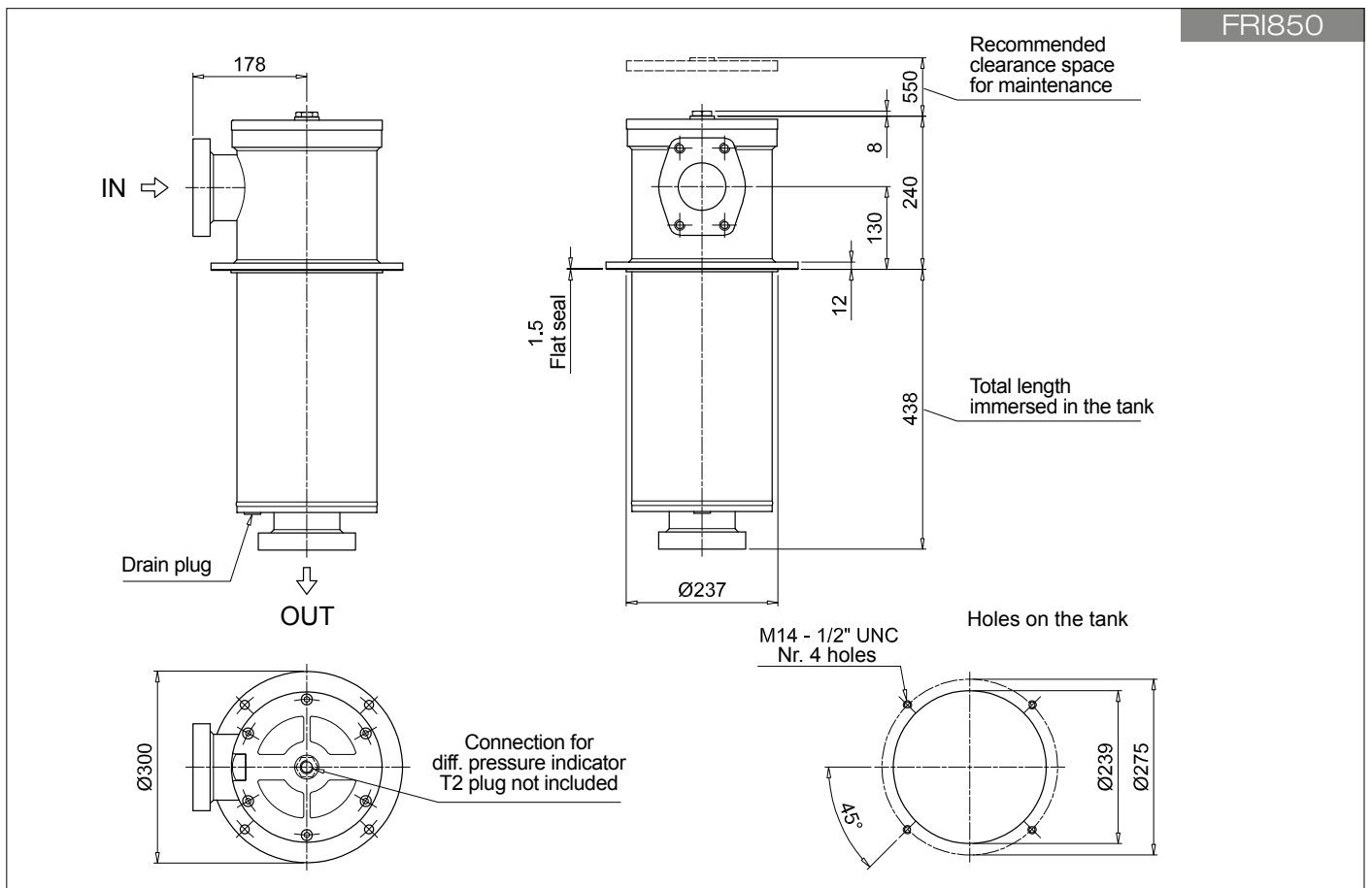
T2 Plug (not included)
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FRI255



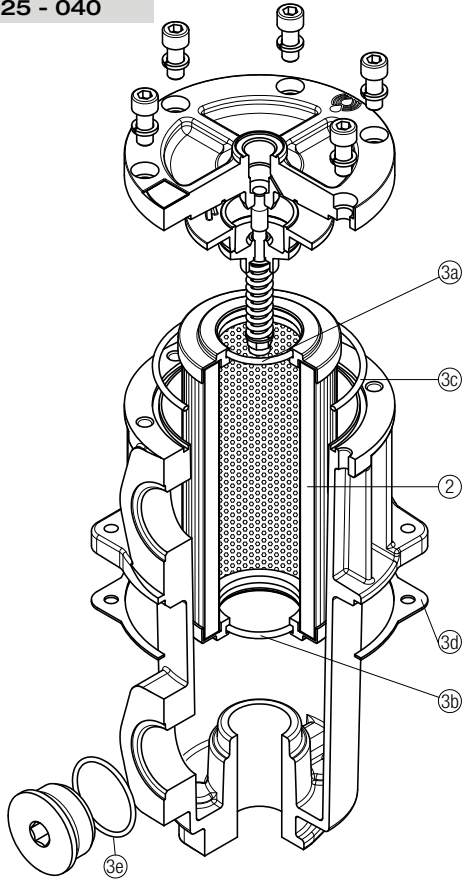
FRI850



# FRI SPARE PARTS

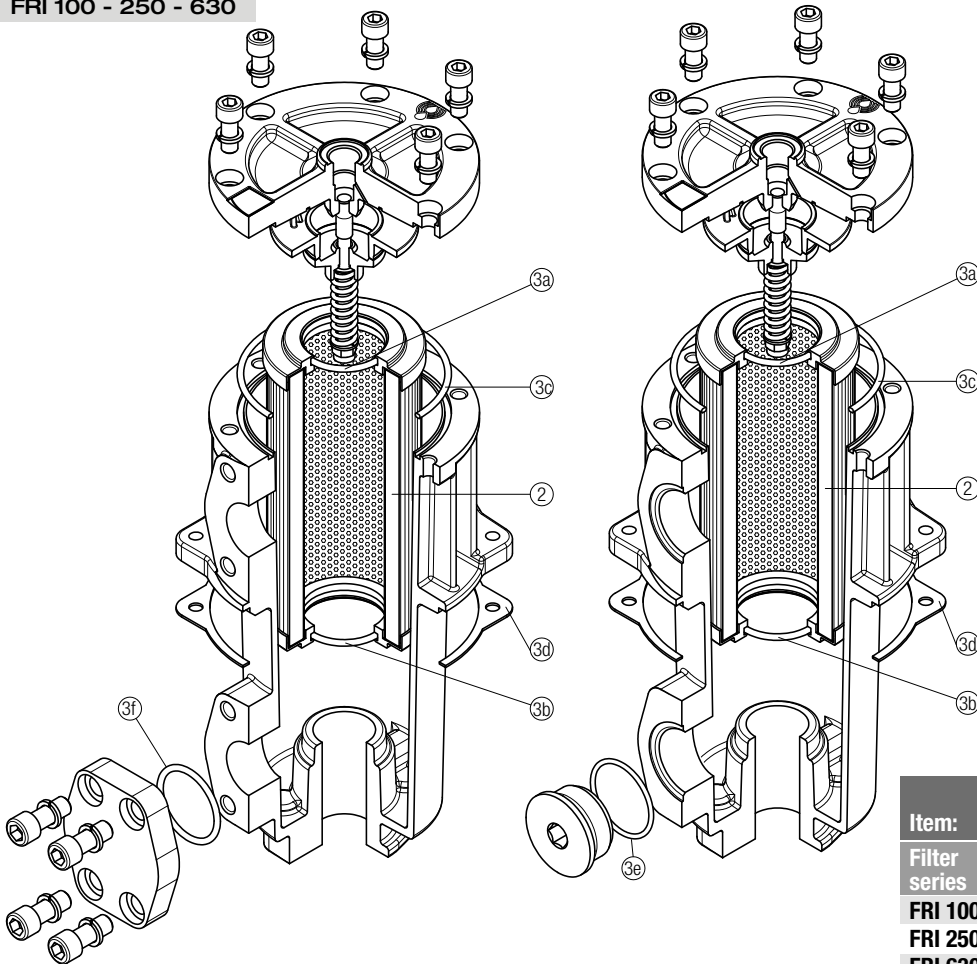
Order number for spare parts

## FRI 025 - 040



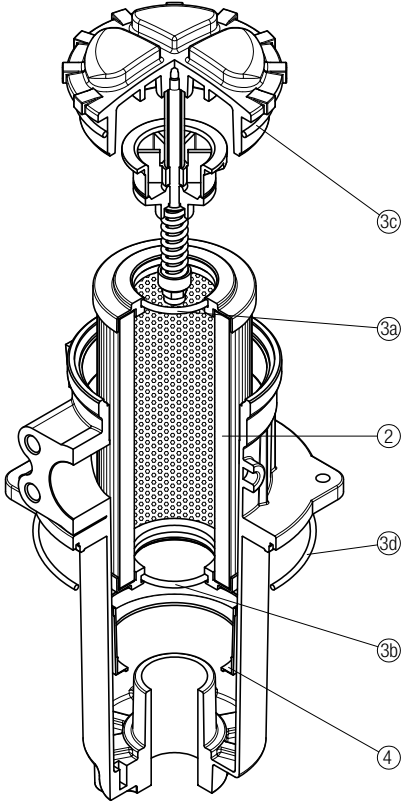
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
	<b>2</b>	<b>3</b> (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FRI 025</b>	See order table	02050213	02050220
<b>FRI 040</b>		02050214	02050221

## FRI 100 - 250 - 630



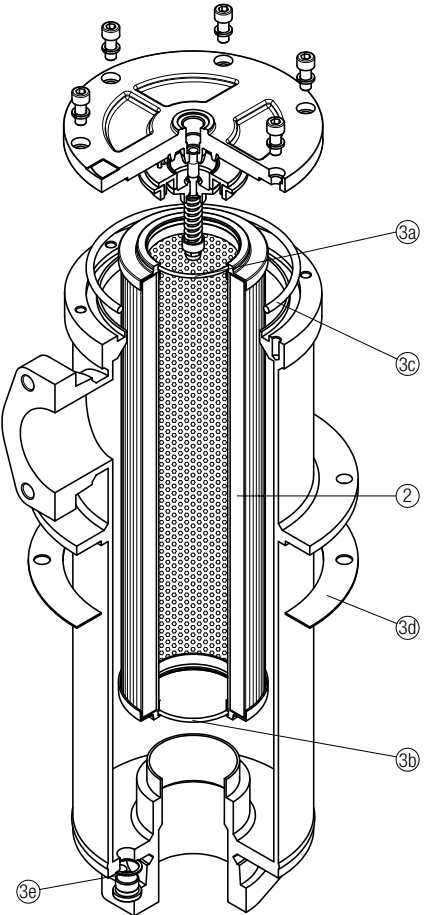
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
	<b>2</b>	<b>3</b> (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FRI 100</b>	See order table	02050215	02050222
<b>FRI 250</b>		02050216	02050223
<b>FRI 630</b>		02050217	02050224

FRI 255



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	<b>2</b>	<b>3</b> (3a ÷ 3d)	<b>4</b>
Filter series	Filter element	Seal Kit code number	
	See order table	NBR	FPM
<b>FRI 255</b>		02050013	02050014
			Contamination retainer binder
			01060301

FRI 850



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.
	<b>2</b>	<b>3</b> (3a ÷ 3e)
Filter series	Filter element	Seal Kit code number
	See order table	NBR
<b>FRI 850</b>		02050218
		FPM
		02050225



# RF2 series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 615 l/min



## Description

## Technical data

### Return filter

**Maximum working pressure up to 2 MPa (20 bar)**  
**Flow rate up to 615 l/min**

RF2250 and RF2350 are ranges of return filters for side tank mounting with integrated shut-off valve for protection of the reservoir against the system contamination.

They are placed below the minimum oil level, directly connected to the return line of the system.

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 615 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Visual, electrical and electronic clogging indicators

#### Common applications:

- Compact mobile machines
- Compact 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 175 kPa (1.75 bar) ±10%

### Δp element type

- Microfibre filter elements - series CU: 10 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

RF2 250-350 filters mounting, see the drawings on page 263 and following

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	1	Length	1
<b>RF2 250</b>		2.6		2.0
<b>RF2 350</b>		2.8		2.0

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>RF2 250</b>	<b>1</b>	148	184	278	307	447	615	447	485
<b>RF2 350</b>	<b>1</b>	148	184	278	307	447	615	447	485

### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

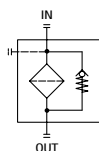
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

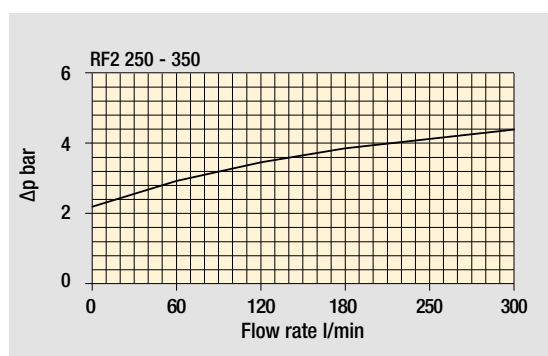
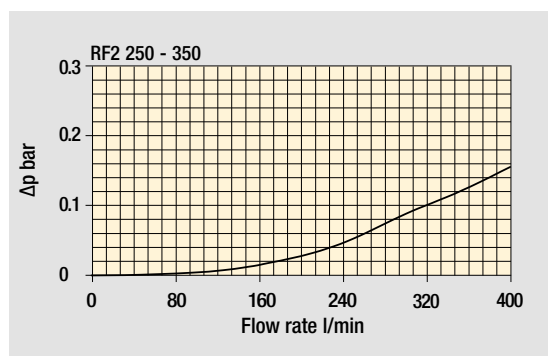
Filter series	Style B - E
<b>RF2 250</b>	•
<b>RF2 350</b>	•

Hydraulic symbols



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.

# RF2 RF2250 - RF2350

## Designation & Ordering code

### COMPLETE FILTER

#### Series and size

**RF2250**  
**RF2350**

Configuration example 1: **RF2250** **V** **F2** **E** **M25** **P01**

Configuration example 2: **RF2350** **A** **G1** **B** **A25** **P01**

#### Seals and treatments

**A** NBR  
**V** FPM

Connections	Aux (only RF2350)	Mxx	Pxx
<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	-	•	-

#### Bypass valve

**B** With bypass 1.75 bar  
**E** With bypass 3 bar

#### Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

#### Element series and size

**CU250**

Configuration example 1: **CU250** **M25** **N** **P01**

Configuration example 2: **CU250** **A25** **V** **P01**

#### Filtration rating (filter media)

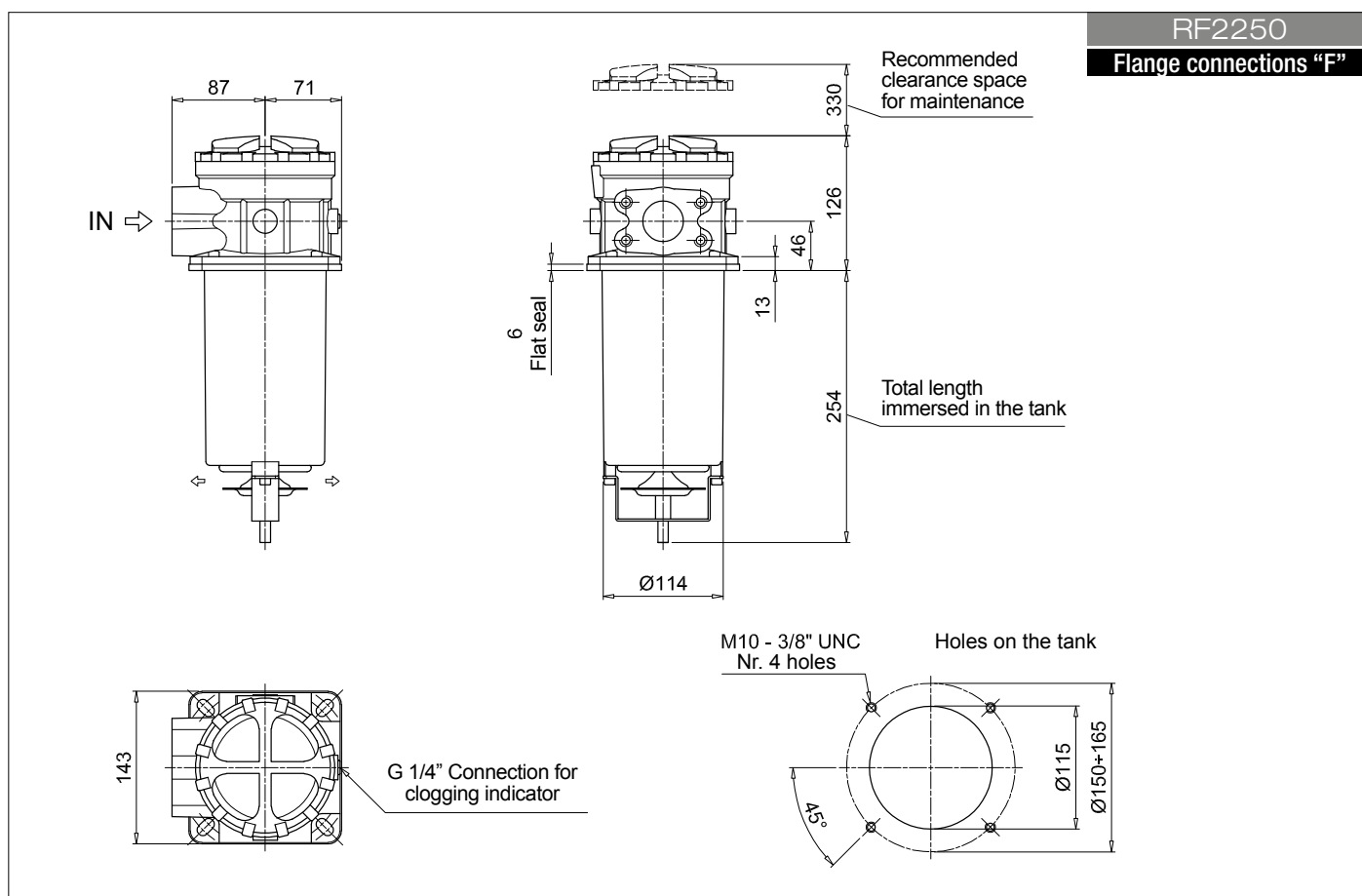
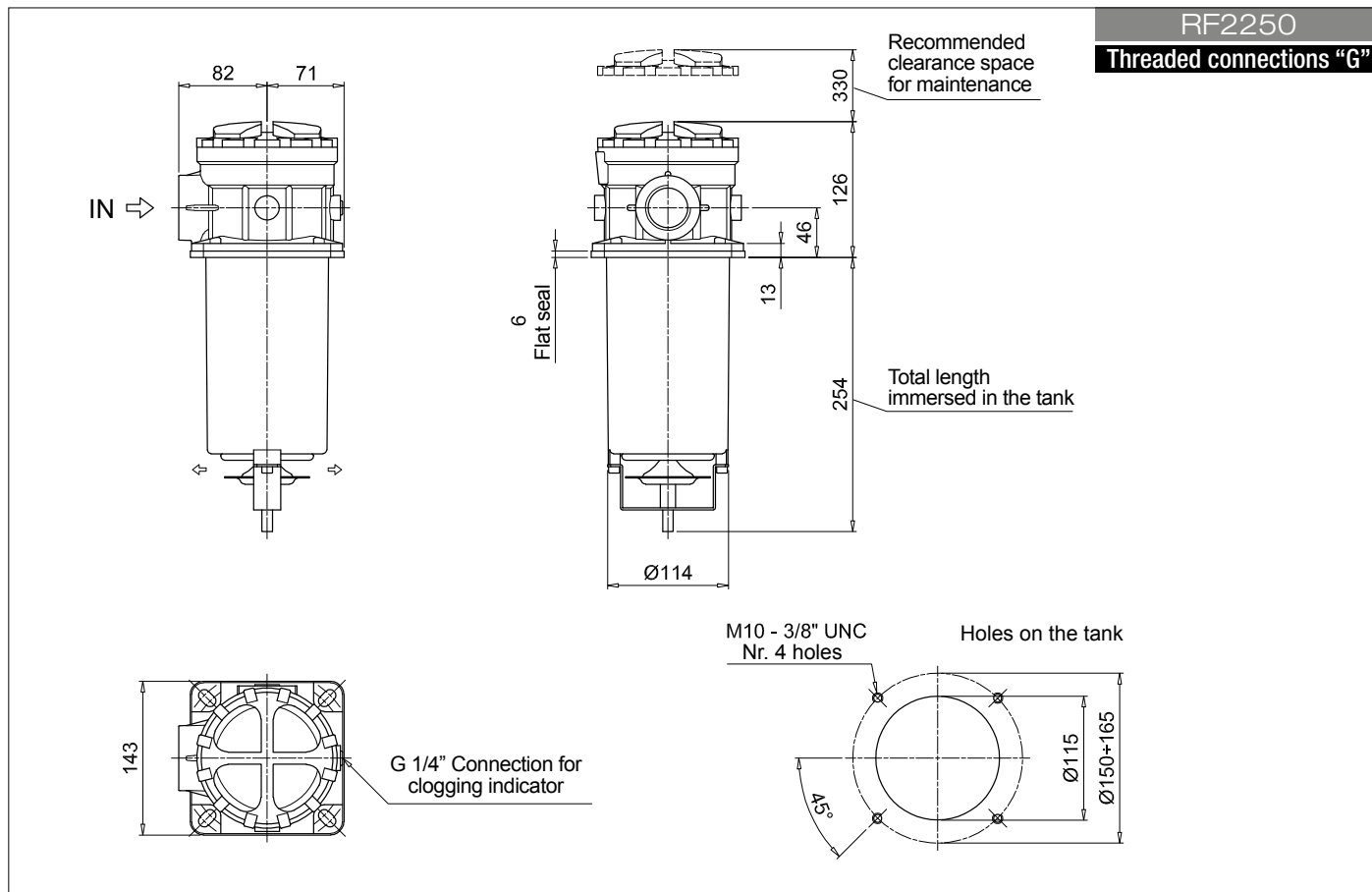
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

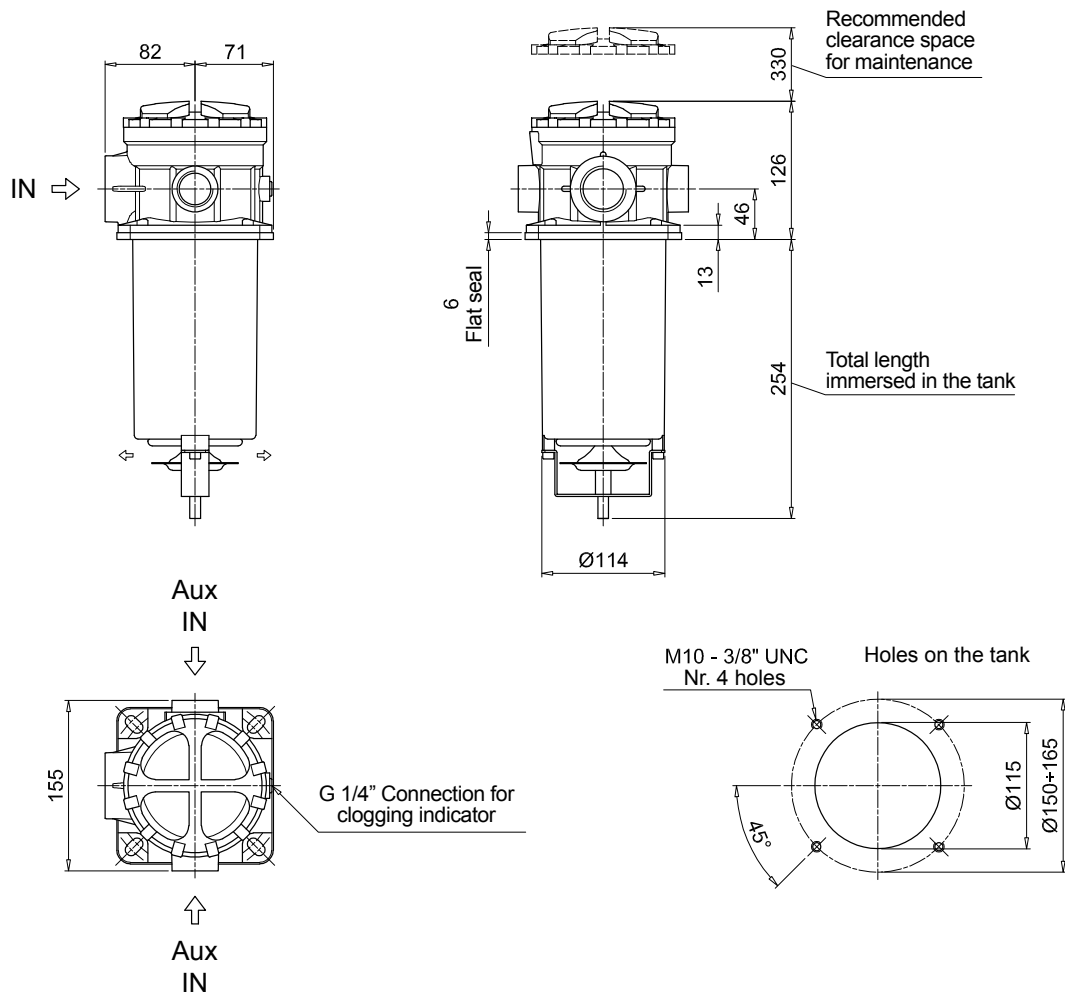
#### Seals and treatments

**N** NBR  
**V** FPM

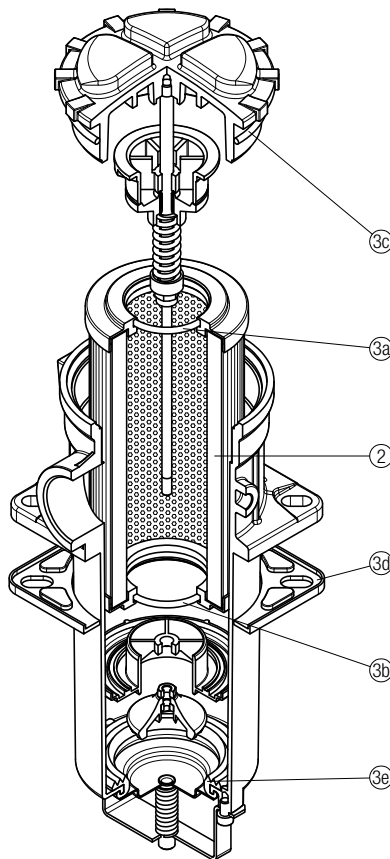
**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized







**RF2 250 - 350**



Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3e)
Filter series	Filter element	Seal Kit code number NBR FPM
<b>RF2 250</b>	See order table	02050586 02050587
<b>RF2 350</b>	See order table	02050586 02050587

# Accessories

## POLYAMIDE EXTENSION TUBE

H1 - Total length immersed in the tank

Configuration example: **TE** **40** **A** **250**

Series	Size	Material	Length	H [mm]
<b>TE</b>			<b>200</b>	200
			<b>250</b>	250
			<b>300</b>	300
			<b>350</b>	350
			<b>400</b>	400
			<b>450</b>	450
			<b>500</b>	500

Filter series		Filter size		Filter length	Tube length										
					TE25	TE32	TE40	200	250	300	350	400	450	500	
MPF - MPFX		30		1	•	-	-	266	316	366	416	466	516	566	
MPF	100	104	110	1	-	•	-	275	325	375	425	475	525	575	
				2	-	-	-	322	372	422	472	522	572	622	
				3	-	-	•	400	450	500	550	600	650	700	
				4	-	-	-	502	552	602	652	702	752	802	
MPFX	100	104	110	1	-	-	•	277	327	377	427	477	527	577	
				2	-	-	•	322	372	422	472	522	572	622	
				3	-	-	•	400	450	500	550	600	650	700	
				4	-	-	-	502	552	602	652	702	752	802	
MPF MPFX	181	182	184	1	-	-	•	410	460	510	560	610	660	710	
				2	-	-	•	623	673	723	773	823	873	923	
MPT MPTX	025	027		1	•	-	-	278	328	378	428	478	528	578	
				2	-	-	-	342	392	442	492	542	592	642	
				3	-	-	-	380	430	480	530	580	630	680	
MPT	110	114	116	120	1	-	•	-	273	323	373	423	473	523	573
					2	-	-	•	320	370	420	470	520	570	620
					3	-	-	-	396	446	496	546	596	646	696
					4	-	-	•	498	548	598	648	698	748	798
MPTX	110	114	116	120	1	-	-	•	273	323	373	423	473	523	573
					2	-	-	•	318	368	418	468	518	568	618
					3	-	-	-	396	446	496	546	596	646	696
					4	-	-	-	498	548	598	648	698	748	798

## STEEL EXTENSION TUBE

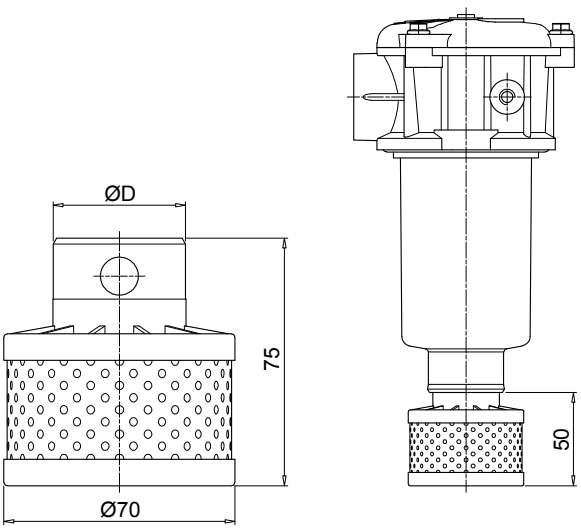
H1 - Total length immersed in the tank

Configuration example: **MPF191** **2** **A** **F1** **A10** **H** **B** **S60**

Series	Size	Material	Length	H1 [mm]
<b>S30</b>			<b>300</b>	300
<b>S35</b>			<b>350</b>	350
<b>S40</b>			<b>400</b>	400
<b>S45</b>			<b>450</b>	450
<b>S50</b>			<b>500</b>	500
<b>S60</b>			<b>600</b>	600
<b>S70</b>			<b>700</b>	700
<b>S80</b>			<b>800</b>	800
<b>S90</b>			<b>900</b>	900

Filter series		Filter size		Filter length	Ø D [mm]		
					52	65	
MPF	400	410	450	451	2	•	-
					1	•	-
					2	-	•
					3	-	•
					1	-	•

## DIFFUSER WITH FAST LOCK CONNECTION

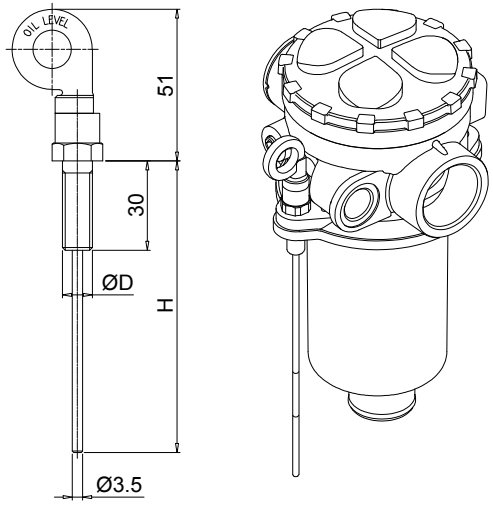


Configuration example: **DFS 32 A 075**

Series		<b>DFS</b>
Size	ø D [mm]	
<b>32</b>	32	
<b>40</b>	40	
Version		<b>A</b> Standard
Length		<b>075</b> Standard

COMPATIBILITY TABLE							
Filter series	Filter size			Filter Length	DFS32	DFS40	
MPF	100	104	110	1	•	-	
				2	-	-	
				3	-	•	
				4	-	-	
MPFX	100	104	110	1	-	•	
				2	-	•	
				3	-	-	
				4	-	-	
MPT	110	114	116	120	1	•	-
					2	-	-
					3	-	•
					4	-	-
MPTX	110	114	116	120	1	-	•
					2	-	•
					3	-	-
					4	-	-

## DIPSTICK



Configuration example: **DPT 20 M10 A P01**

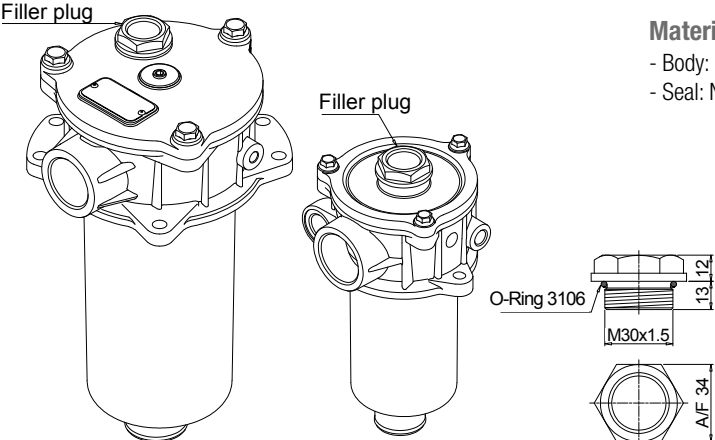
Series		<b>DPT</b>
Length	H [mm]	
<b>15</b>	134	
<b>20</b>	184	
<b>25</b>	234	
<b>30</b>	284	
<b>35</b>	334	

Materials  
 - Screw: phosphatized steel  
 - Stick: phosphatized steel  
 - Handle: Polyamide

Technical data  
 Working temperature: from -25 °C to +110 °C

Fastening		<b>M8</b> Fastening with screws ø D = M8
		<b>M10</b> Fastening with screws ø D = M10
Seals		<b>A</b> NBR
		<b>V</b> FPM
Execution		<b>P01</b> MP Filtri standard
		<b>Pxx</b> Customized

## FILLER PLUG



Materials  
 - Body: Polyamide  
 - Seal: NBR

Technical data  
 Tightening torque: 15 N·m

For any further information, please, contact our commercial dept.

**Hydraulic combined filters for installation on the return and suction lines of hydrostatic transmissions (HSTs) for commercial vehicles, construction machinery, agricultural vehicles, and mobile work equipment with hydrostatic drive.**

**Advantage for the installation:**

- **Space-saving assembly**
- **Reduced assembly time**
- **Fewer connections to the tank**
- **Protection from the pollution of the tank**

**Advantages for the operativity:**

- **Absolute filtration of the oil for the hydrostatic drive**
- **Fulfilment of the purity requirements according to ISO 4406, as specified by the manufacturer of the driving drives.**
- **Protection against damages from cavitation even under adverse conditions, i.e. cold start**
- **Less formation of free air in the system**
- **Easier maintenance operations (one spare filter element instead of two)**

## FILTER SIZING

For the proper corrective factor Y see chapter at page 24

# Return / Suction filters



MRSX	page 270
LMP 124 MULTIPORT	285
INDICATORS	712



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

## MRSX series

with MYCLEAN RSX Filter Element



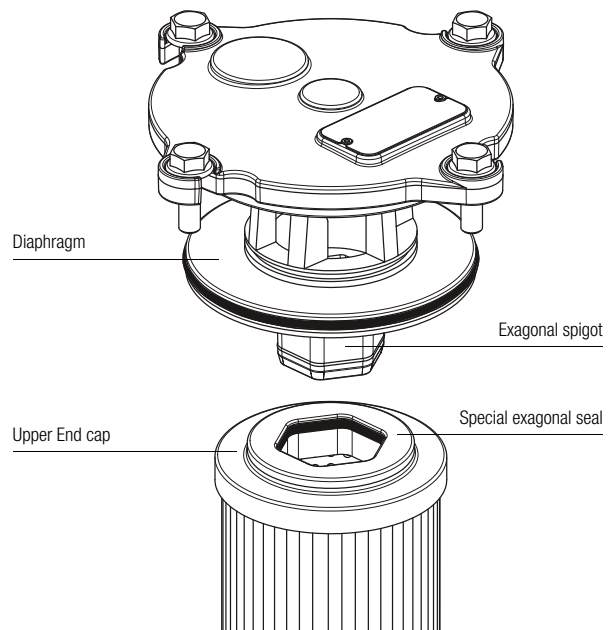
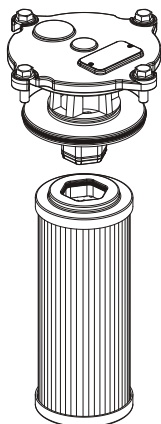
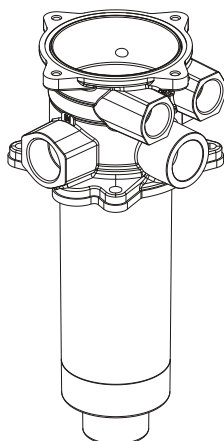
- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as MRSX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1





# MRSX series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 250 l/min



## Description

## Technical data

Return / Suction filter

Tank mounted

**Maximum working pressure up to 1 MPa (10 bar)**  
**Flow rate up to 250 l/min**

MRSX is a range of suction/return filters for hydraulic systems with two or more circuits (both open and closed loops). They are able to provide pressurized oil cleaned by fine filtration to the feed pump of the hydrostatic systems.

They are directly fixed to the reservoir, in immersed or semi-immersed position.

The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

### Available features:

- Female threaded return connections up to 1 1/4", for a maximum return flow rate of 250 l/min
- Multiple connections, to connect several return and suction lines
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve to the tank, to relieve excessive pressure drop across the filter media when the return flow is enough higher than the suction flow
- Bypass valve to the suction line with additional suction filter element, to relieve excessive pressure drop across the filter media when the return flow is not enough higher than the suction flow
- De-pressurization valve, to reduce the pressure inside the filter during the maintenance operations
- Anti-cavitation valve with additional suction filter element, to ensure fluid to the feed pump of the hydrostatic systems during cold starts or initial filling
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Reservoir side mounting, to save space in the machines
- Visual, electrical and electronic clogging indicators
- MYclean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

### Common applications:

Mobile machines with hydrostatic systems on board  
 (i.e. skid steer loaders, telehandlers, dumpers, road sweepers)

### Filter housing materials

- Head: Aluminium
- Cover  
 Polyamide: MRSX 116  
 Aluminium: MRSX 165-166
- Bowl: Polyamide

### Δp element type

- RSX: 10 bar
- Oil flow from exterior to interior.

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

## FILTER ASSEMBLY SIZING

Flow rates [l/min]

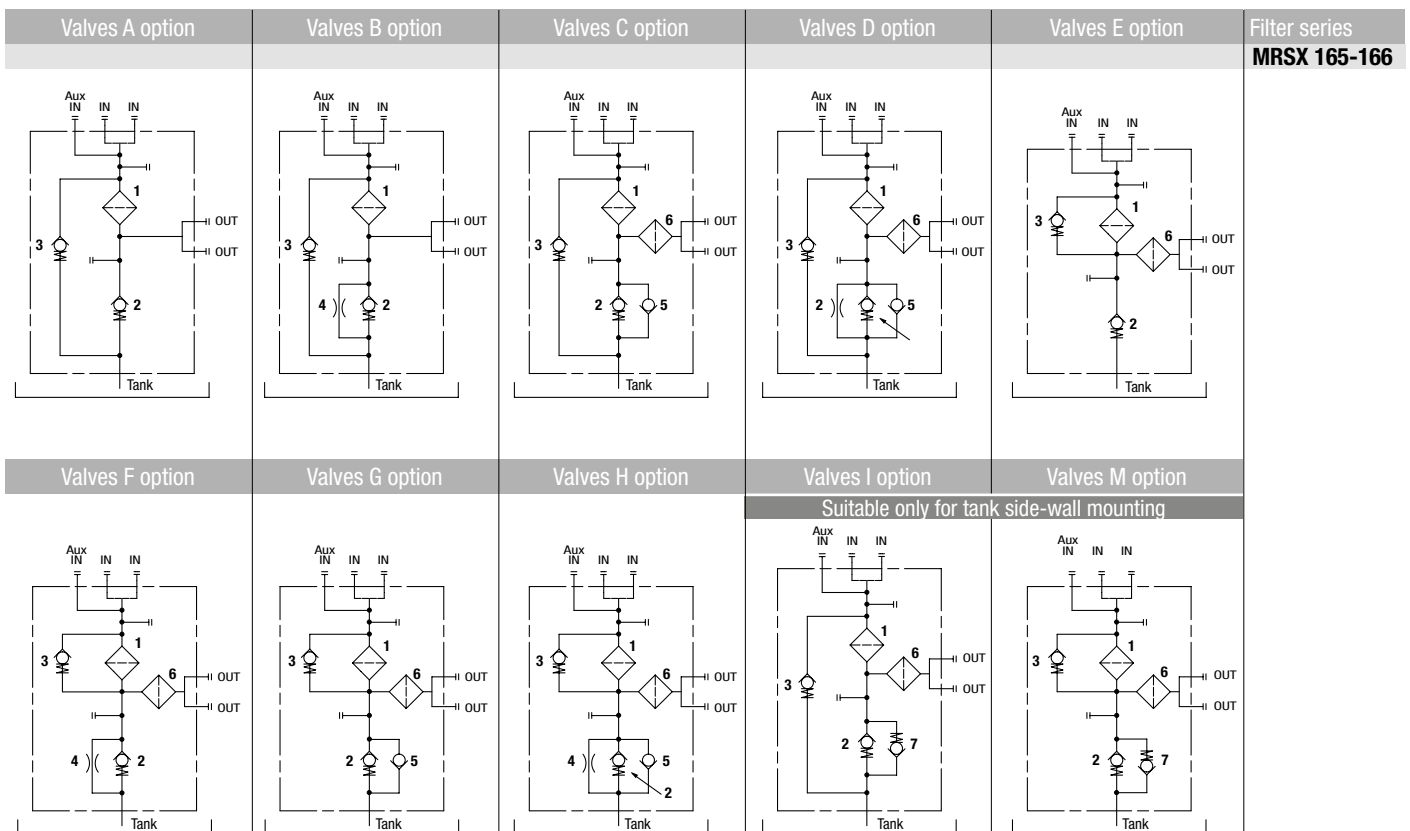
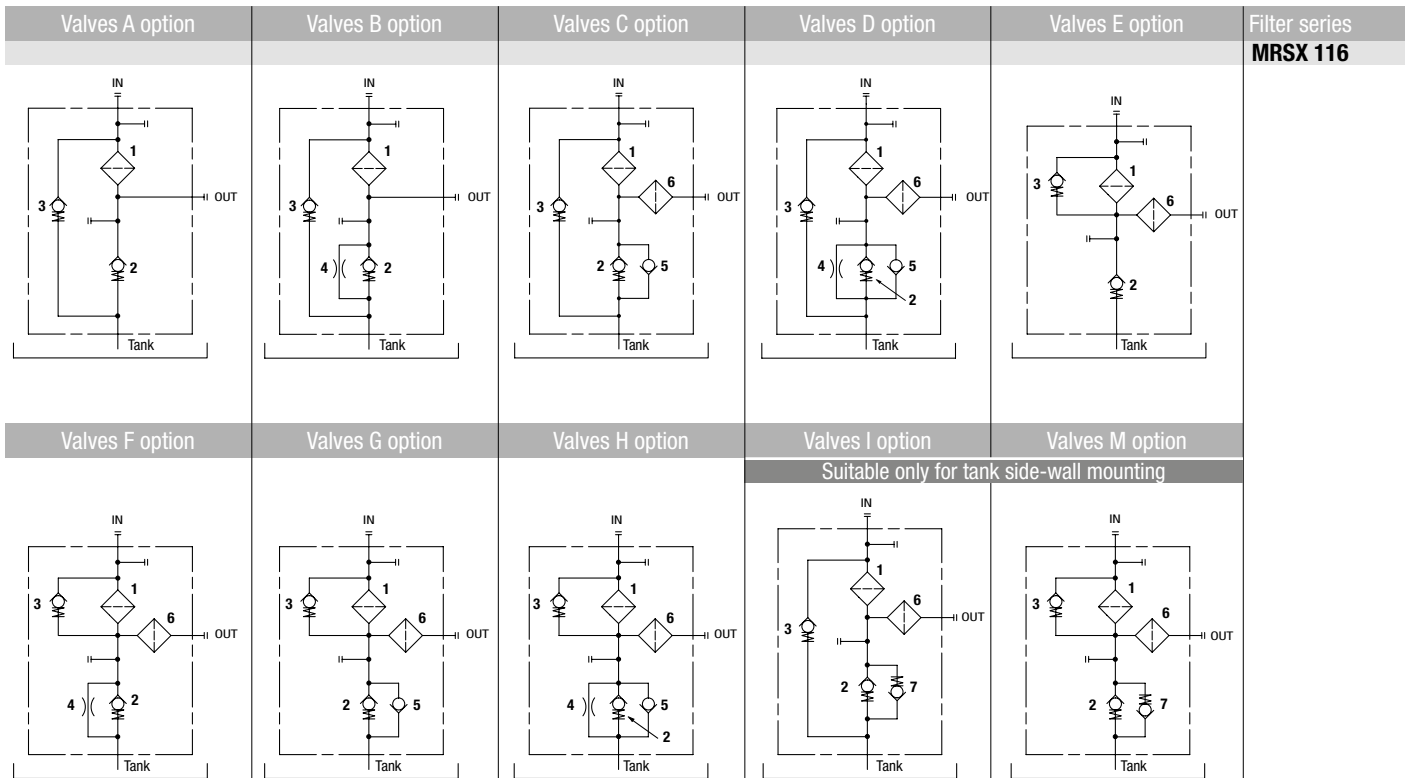
Filter series	Length	A10	A16	A25
MRSX 116	1	74	82	87
	2	108	113	124
MRSX 165 - 166	1	155	166	178
	2	187	196	200
	3	201	205	217

### Maximum flow rate for a complete return/suction filter with a pressure drop Δp = 1 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.mpfiltr.com](http://www.mpfiltr.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.



### LEGEND

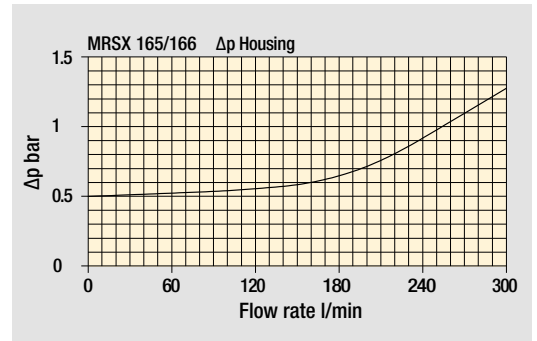
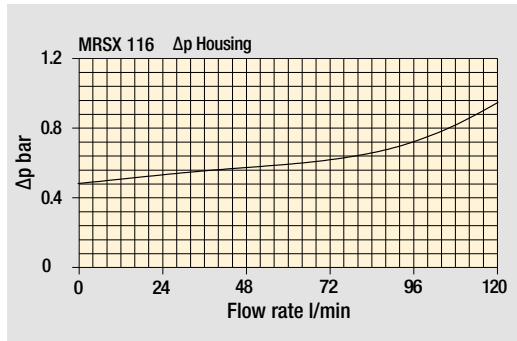
- 1 - Filter element
- 2 - Back-Pressure valve: opening pressure 0.5 bar  $\pm$ 10%
- 3 - Bypass valve: opening pressure 2.5 bar  $\pm$ 10%
- 4 - Depressurization valve

- 5 - Anti-Cavitation valve
- 6 - Safety filter element (wire mesh 60  $\mu$ m)
- 7 - Anti-Cavitation valve / Anti-Emptying valve

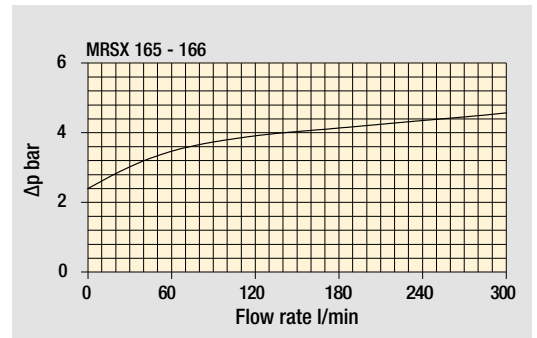
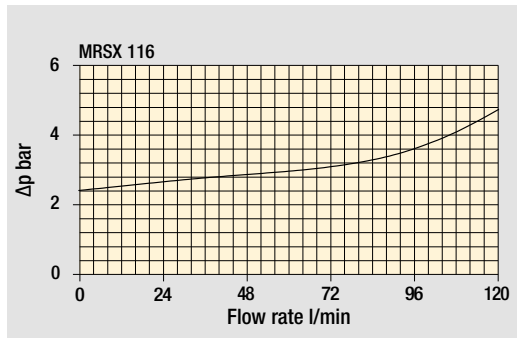
# MRSX GENERAL INFORMATION

## 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.

### Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	Length	1	2	3
<b>MRSX 116</b>		1.30	1.40	-		0.80	1.00	-
<b>MRSX 165</b>		3.40	3.80	4.10		2.00	2.60	3.00
<b>MRSX 166</b>		3.40	3.80	4.10		2.00	2.60	3.00



## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **MRSX116** | **1** | **B** | **A** | **G1** | **0** | **A16** | **B** | **P01**

**MRSX116** Filter featuring **MY CLEAN** Filter Element

Length  
**1** | **2**

Hydraulic diagram configuration - see page 274

				Bypass valve to tank		Bypass valve to OUT	
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	•	-	-	-
<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	-	-	•	-
<b>I</b>				•	-	-	-
<b>M</b>				-	-	•	-

Seals and treatments

<b>A</b> NBR, O-Ring on head	<b>B</b> NBR, flat seal on head
<b>V</b> FPM, O-Ring on head	<b>D</b> FPM, flat seal on head

Connections IN

Connections IN	Connections OUT
<b>G1</b> G 3/4"	G 3/4"
<b>G2</b> G 1"	G 1"
<b>G3</b> 3/4" NPT	3/4" NPT
<b>G4</b> 1" NPT	1" NPT
<b>G5</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
<b>G6</b> SAE 16 - 1 5/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN
<b>D1</b> G 1"	G 3/4"
<b>D2</b> 1" NPT	3/4" NPT
<b>D3</b> SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN

Aux IN connection

**0** Without aux IN connection

Filtration rating (filter media)

<b>A10</b> Inorganic microfiber 10 µm
<b>A16</b> Inorganic microfiber 16 µm
<b>A25</b> Inorganic microfiber 25 µm

Valves configuration

Mounting position	A	B	C	D	E	F	G	H	I	M
<b>S</b> Standard	•	•	•	•	•	•	•	•	-	-
<b>B</b> Tank side-wall mounting	•	•	-	-	•	•	-	-	•	•

Execution

**P01** MP Filtri standard

**Pxx** Customized

### FILTER ELEMENT

Element series and size

**RSX116** Filter Element with **MY CLEAN** feature

Configuration example: **RSX116** | **1** | **A16** | **A** | **P01**

Element length

**1** | **2**

Filtration rating (filter media)

<b>A10</b> Inorganic microfiber 10 µm
<b>A16</b> Inorganic microfiber 16 µm
<b>A25</b> Inorganic microfiber 25 µm

Seals

**A** NBR

**V** FPM

Execution

**P01** MP Filtri standard

**Pxx** Customized

### CLOGGING INDICATORS

See page 712-713

Indicators on Return Line

<b>BVA</b> Axial pressure gauge
<b>BVR</b> Radial pressure gauge
<b>BVP</b> Visual pressure indicator with automatic reset
<b>BVQ</b> Visual pressure indicator with manual reset

<b>BEA</b> Electrical pressure indicator
<b>BEM</b> Electrical pressure indicator
<b>BET</b> Electrical pressure indicator
<b>BLA</b> Electrical / visual pressure indicator

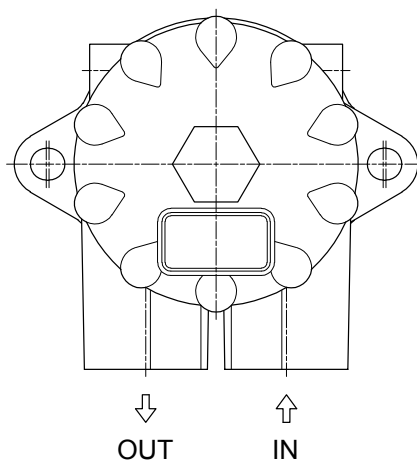
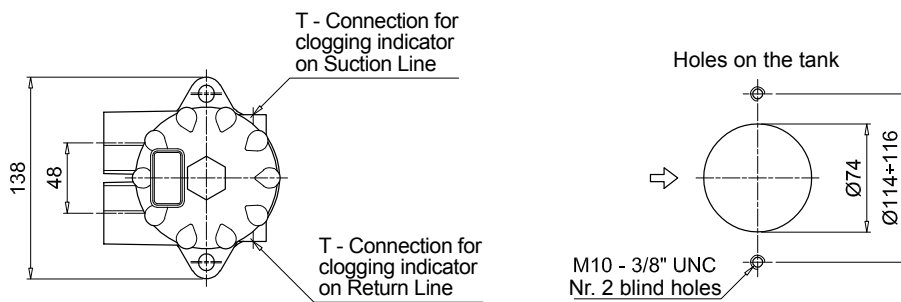
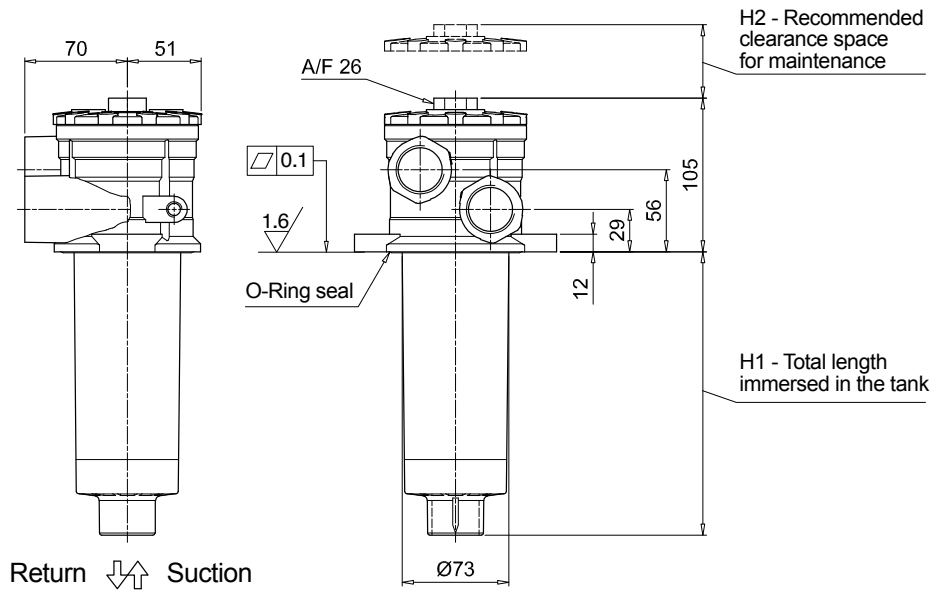
Indicators on Suction Line

<b>VVB</b> Axial vacuum gauge
<b>VVS</b> Radial vacuum gauge

<b>VEB</b> Electrical vacuum indicator
<b>VLB</b> Electrical / visual vacuum indicator

MRSX116		
Filter length	H1 [mm]	H2 [mm]
<b>1</b>	203	240
<b>2</b>	263	300

Connections	T
<b>G1 - G2</b>	G 1/8"
<b>G3 - G4</b>	1/8" NPT
<b>G5 - G6</b>	1/8" NPT
<b>D1</b>	G 1/8"
<b>D2 - D3</b>	1/8" NPT



# MRSX MRSX165 - MRSX166

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **MRSX166** **2** **C** **V** **G3** **1** **A10** **S** **P01**

**MRSX165** | **MRSX166** Filter featuring **MYCLEAN** Filter Element

Length **1** | **2** | **3**

Hydraulic diagram configuration - see page 274

				Bypass valve to tank		Bypass valve to OUT	
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	•	-	-	-
<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	-	-	•	-
<b>I</b>				•	-	-	-
<b>M</b>				-	-	•	-

Seals and treatments

<b>A</b>	NBR, O-Ring on head	<b>B</b>	NBR, flat seal on head
<b>V</b>	FPM, O-Ring on head	<b>D</b>	FPM, flat seal on head

Connections

	IN (size 165)	IN (size 166)	Aux IN	OUT
<b>G1</b>	G 1 1/4"	G 1"	G 1 1/4"	G 1"
<b>G2</b>	1 1/4" NPT	1" NPT	1 1/4" NPT	1" NPT
<b>G3</b>	SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN

Aux IN connection

	MRSX 165	MRSX 166	
<b>0</b>	Without aux IN connection	•	-
<b>1</b>	With aux IN connection - see previous table	•	•

Filtration rating (filter media)

**A10** Inorganic microfiber 10 µm

**A16** Inorganic microfiber 16 µm

**A25** Inorganic microfiber 25 µm

Valves configuration

Mounting position	A	B	C	D	E	F	G	H	I	M
<b>S</b> Standard	•	•	•	•	•	•	•	•	-	-
<b>B</b> Tank side-wall mounting	•	•	-	-	•	•	-	-	•	•

Execution

**P01** MP Filtri standard

**Pxx** Customized

### FILTER ELEMENT

Element series and size Configuration example: **RSX165** **2** **A10** **V** **P01**

**RSX165** Filter Element with **MYCLEAN** feature

Element length **1** | **2** | **3**

Filtration rating (filter media)

**A10** Inorganic microfiber 10 µm

**A16** Inorganic microfiber 16 µm

**A25** Inorganic microfiber 25 µm

Seals

<b>A</b>	NBR
<b>V</b>	FPM

Execution

**P01** MP Filtri standard

**Pxx** Customized

### CLOGGING INDICATORS

See page 712-713

#### Indicators on Return Line

<b>BVA</b>	Axial pressure gauge
<b>BVR</b>	Radial pressure gauge
<b>BVP</b>	Visual pressure indicator with automatic reset
<b>BVQ</b>	Visual pressure indicator with manual reset

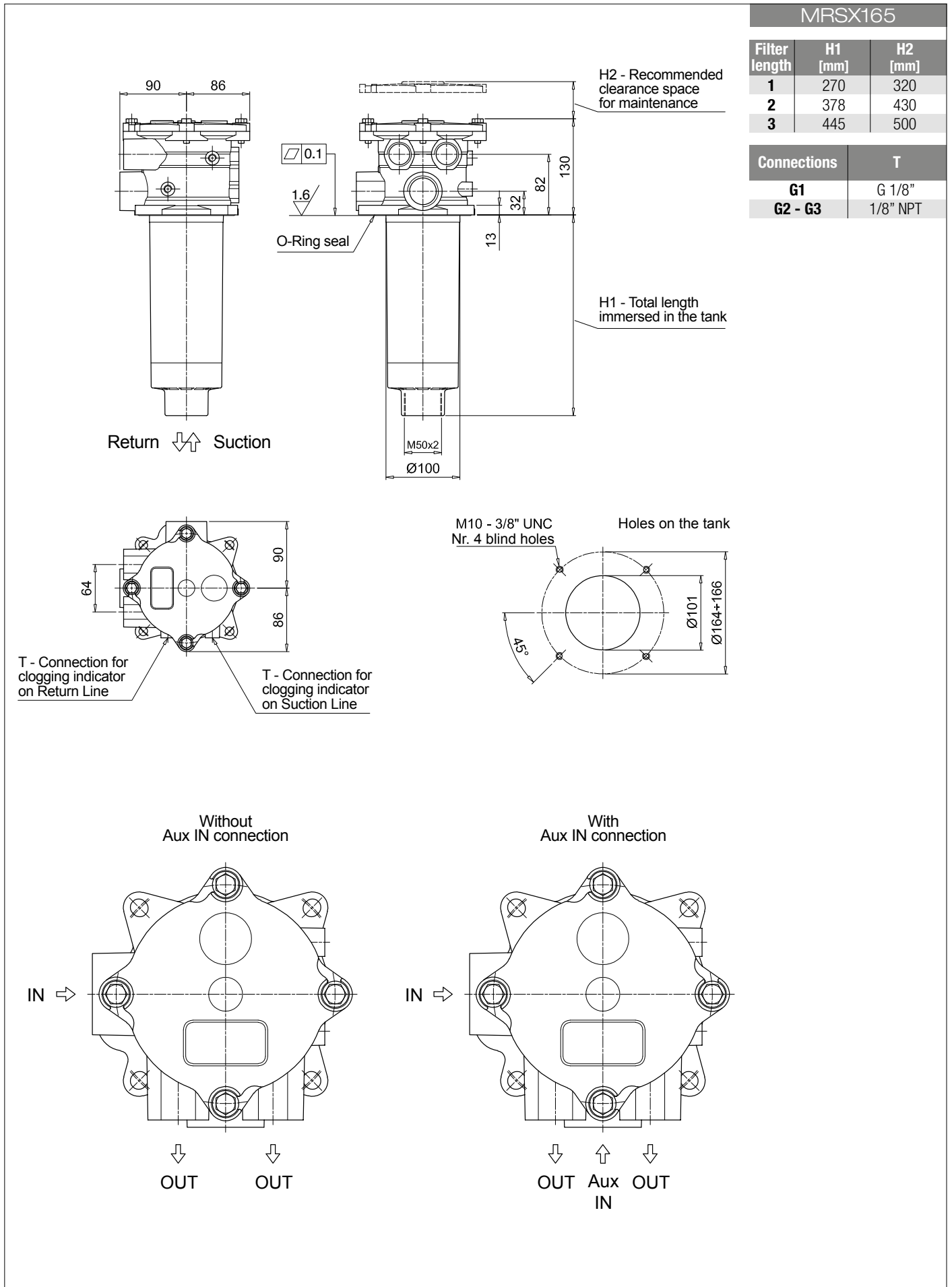
<b>BEA</b>	Electrical pressure indicator
<b>BEM</b>	Electrical pressure indicator
<b>BET</b>	Electrical pressure indicator
<b>BLA</b>	Electrical / visual pressure indicator

#### Indicators on Suction Line

<b>VVB</b>	Axial vacuum gauge
<b>VVS</b>	Radial vacuum gauge

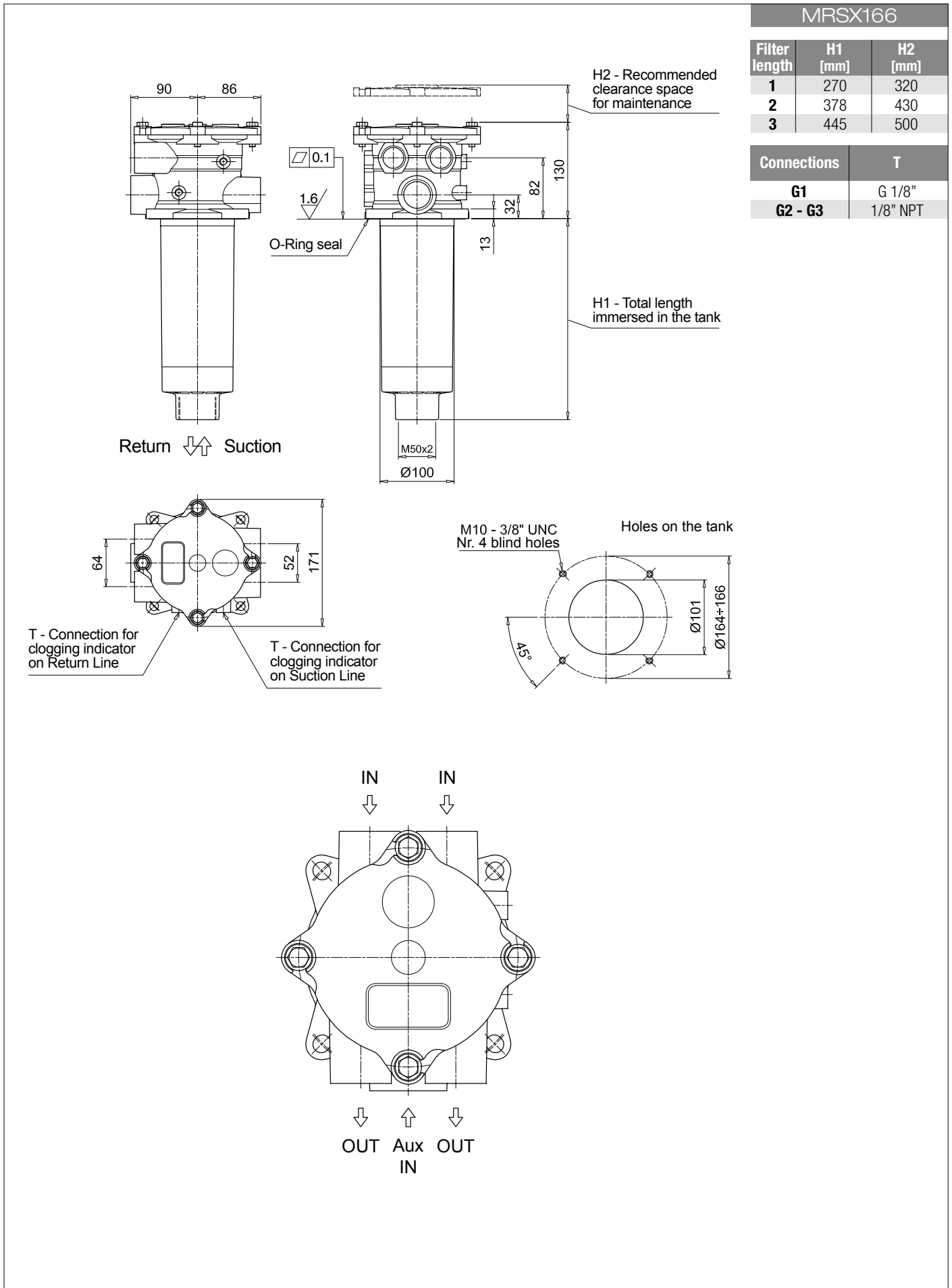
<b>VEB</b>	Electrical vacuum indicator
<b>VLB</b>	Electrical / visual vacuum indicator





# MRSX MRSX165 - MRSX166

## Dimensions

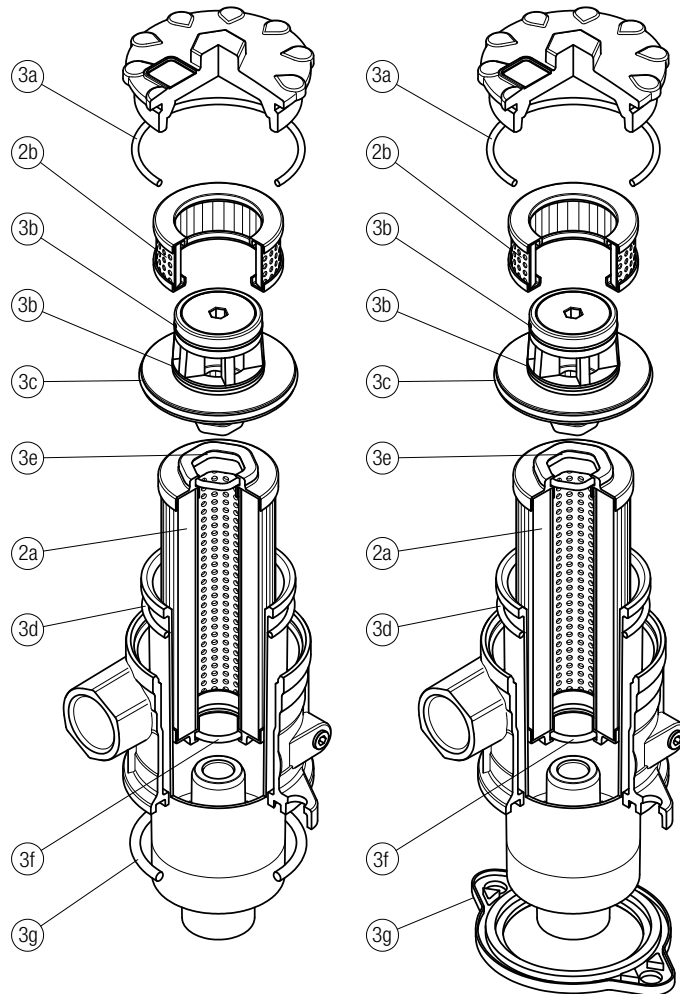




# MRSX SPARE PARTS

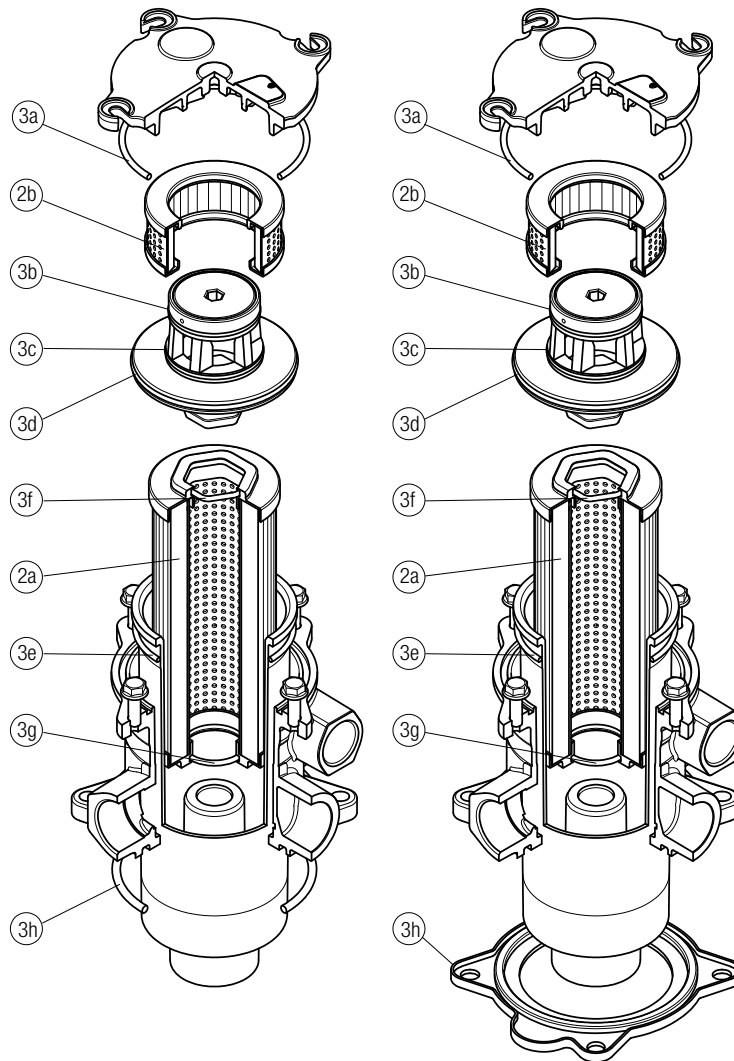
Order number for spare parts

## MRSX 116



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	O-RING SEAL		FLAT SEAL	
	<b>2a</b>	<b>2b</b>	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Filter series	Filter element	Safety filter element	Seal Kit code number		Seal Kit code number	
			NBR	FPM	NBR	FPM
<b>MRSX 116</b>	See order table	S116M60P01	02050617	02050619	02050618	02050620

## MRSX 165 - 166



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	O-RING SEAL		FLAT SEAL	
	<b>2a</b>	<b>2b</b>	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Safety filter element	Q.ty: 1 pc.		Q.ty: 1 pc.	
			<b>3</b> (3a ÷ 3h)		<b>3</b> (3a ÷ 3h)	
			Seal Kit code number	Seal Kit code number	Seal Kit code number	Seal Kit code number
			NBR	FPM	NBR	FPM
<b>MRSX 165</b>	See order table	S165M60P01	02050627	02050630	02050628	02050631
<b>MRSX 166</b>			02050627	02050630	02050629	02050632



# LMP 124 series

MULTIPOINT

Maximum working pressure up to 8 MPa (80 bar) - Flow rate up to 120 l/min



## Description

## Technical data

Return / Suction filter

In-line

**Maximum working pressure up to 8 MPa (80 bar)**  
**Flow rate up to 120 l/min**

LMP124 is a range of return/suction filters for hydraulic systems with two or more circuits (both open and closed loops). They are able to provide pressurized oil cleaned by fine filtration to the feed pump of the hydrostatic systems.

They are directly connected to the lines of the system through the hydraulic fittings.

### Available features:

- Female threaded connections up to 1", for a maximum return flow rate of 120 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve to the tank, to relieve excessive pressure drop across the filter media when the return flow is enough higher than the suction flow
- Bypass valve to the suction line with additional suction filter element, to relieve excessive pressure drop across the filter media when the return flow is not enough higher than the suction flow
- De-pressurization valve, to reduce the pressure inside the filter during the maintenance operations
- Visual, electrical and electronic differential clogging indicators

### Common applications:

Mobile machines with hydrostatic systems on board.  
 (i.e. skid steer loaders, telehandlers, dumpers, road sweepers)

### Filter housing materials

- Head: Aluminium
- Housing: Cathaphoresis - Painted steel
- Bypass valve: Brass - Aluminium

### Pressure

- Test pressure: 12MPa (120 bar)
- Burst pressure: 38 MPa (380 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 80 bar (8 MPa)

### Bypass valve

- Opening pressure 250 kPa (2.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN.

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

LMP124 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>LMP 124</b>		1.70	1.90	2.20	2.70		0.75	0.81	1.11	1.53



Filter series	Length	Filter element design - N series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LMP 124</b>	<b>1</b>	39	41	58	60	69	99	84	85
	<b>2</b>	47	53	68	69	77	99	90	91
	<b>3</b>	59	61	73	77	86	99	92	93
	<b>4</b>	70	78	84	86	93	100	94	95


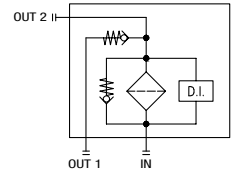
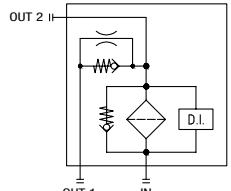
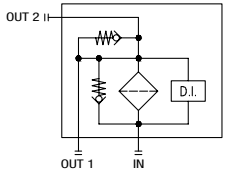
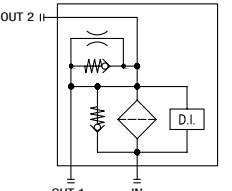

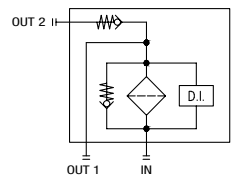
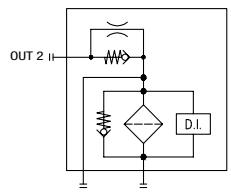
**Maximum flow rate for a complete return/suction filter with a pressure drop  $\Delta p = 1.2$  bar.**

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>.

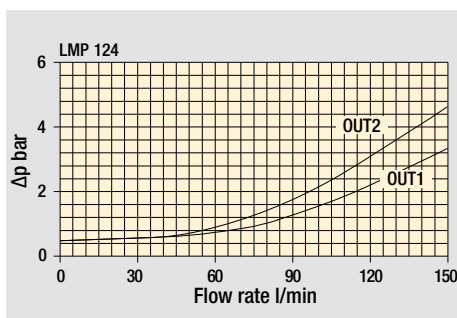
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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 - Valves option

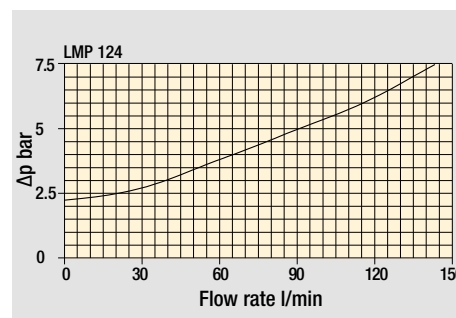
Multiport	Valves C option	Valves D option	Valves E option	Valves F option
 <p><b>IN</b> - Return <b>OUT 1</b> - Tank <b>OUT 2</b> - Pump</p>				
 <p><b>IN</b> - Return <b>OUT 1</b> - Pump <b>OUT 2</b> - Tank</p>				

Filter housings  $\Delta p$  pressure drop



OUT 1: Valves option G/H  
OUT 2: Valves option C/D/E/F

Bypass valve pressure drop



### Pressure drop

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>LMP124</b>   <b>4</b>   <b>C</b>   <b>A</b>   <b>F</b>   <b>1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>																			
<b>LMP124</b>																				
<b>Filter length</b>	1   2   3   4																			
<b>Hydraulic diagram configuration</b> - see page 287	C   D   E   F   G   H																			
<b>Seals and treatments</b>	A NBR V FPM																			
<b>Connections</b>	B G 1" F SAE 16 - 1 5/16" - 12 UN																			
<b>Connection for indicator</b>	1 Without 2 With connection G 1/8" for clogging indicator 3 With connection G 1/4" for clogging indicator 4 With connection for differential pressure indicator																			
<b>Filtration rating (filter media)</b>	<table border="0"> <tr> <td><b>A03</b> Inorganic microfiber 3 µm</td> <td><b>M25</b> Wire mesh 25 µm</td> </tr> <tr> <td><b>A06</b> Inorganic microfiber 6 µm</td> <td><b>M60</b> Wire mesh 60 µm</td> </tr> <tr> <td><b>A10</b> Inorganic microfiber 10 µm</td> <td><b>M90</b> Wire mesh 90 µm</td> </tr> <tr> <td><b>A16</b> Inorganic microfiber 16 µm</td> <td><b>P10</b> Resin impregnated paper 10 µm</td> </tr> <tr> <td><b>A25</b> Inorganic microfiber 25 µm</td> <td><b>P25</b> Resin impregnated paper 25 µm</td> </tr> </table>										<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
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<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm																			
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm																			
	<b>Element Δp</b> N 20 bar					<b>Execution</b> P01 MP Filtri standard Pxx Customized														

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example: <b>CU110</b>   <b>4</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>																
<b>CU110</b>																	
<b>Element length</b>	1   2   3   4																
<b>Filtration rating (filter media)</b>	<table border="0"> <tr> <td><b>A03</b> Inorganic microfiber 3 µm</td> <td><b>M25</b> Wire mesh 25 µm</td> </tr> <tr> <td><b>A06</b> Inorganic microfiber 6 µm</td> <td><b>M60</b> Wire mesh 60 µm</td> </tr> <tr> <td><b>A10</b> Inorganic microfiber 10 µm</td> <td><b>M90</b> Wire mesh 90 µm</td> </tr> <tr> <td><b>A16</b> Inorganic microfiber 16 µm</td> <td><b>P10</b> Resin impregnated paper 10 µm</td> </tr> <tr> <td><b>A25</b> Inorganic microfiber 25 µm</td> <td><b>P25</b> Resin impregnated paper 25 µm</td> </tr> </table>							<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm																
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<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm																
	<b>Seals</b> A NBR V FPM		<b>Element Δp</b> N 20 bar			<b>Execution</b> P01 MP Filtri standard Pxx Customized											

### CLOGGING INDICATORS

See page 712-713

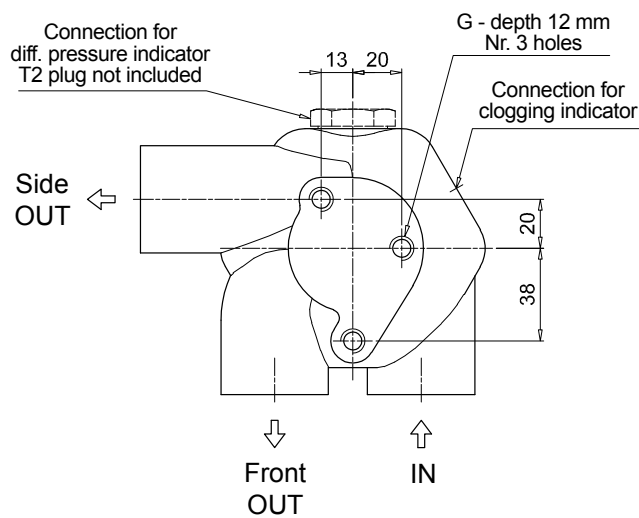
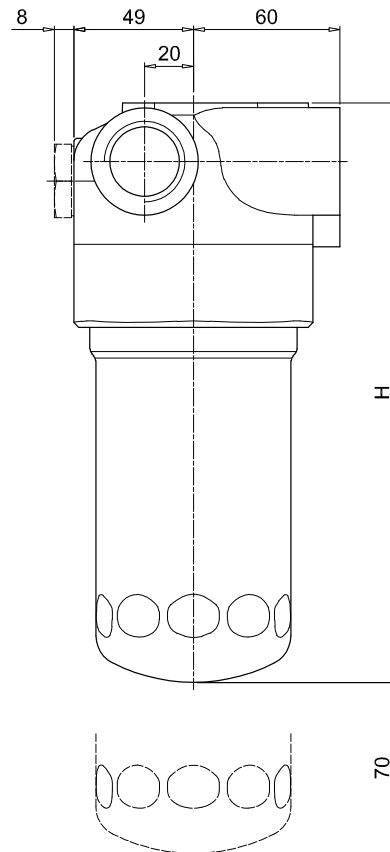
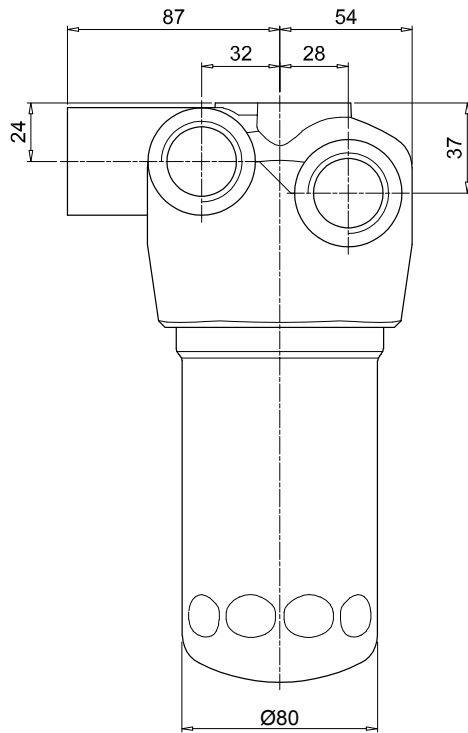
<b>Indicators on Return Line</b>	
<b>BVA</b> Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b> Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b> Visual pressure indicator with automatic reset	<b>BET</b> Electrical pressure indicator
<b>BVQ</b> Visual pressure indicator with manual reset	<b>BLA</b> Electrical / visual pressure indicator
<b>Differential pressure indicators</b>	
<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b> Plug (not included)
-------------------------------

LMP 124	
MULTIPORT	
Filter length	H [mm]
1	182
2	215
3	265
4	365
Connections	R
B	M10
F	3/8" UNC

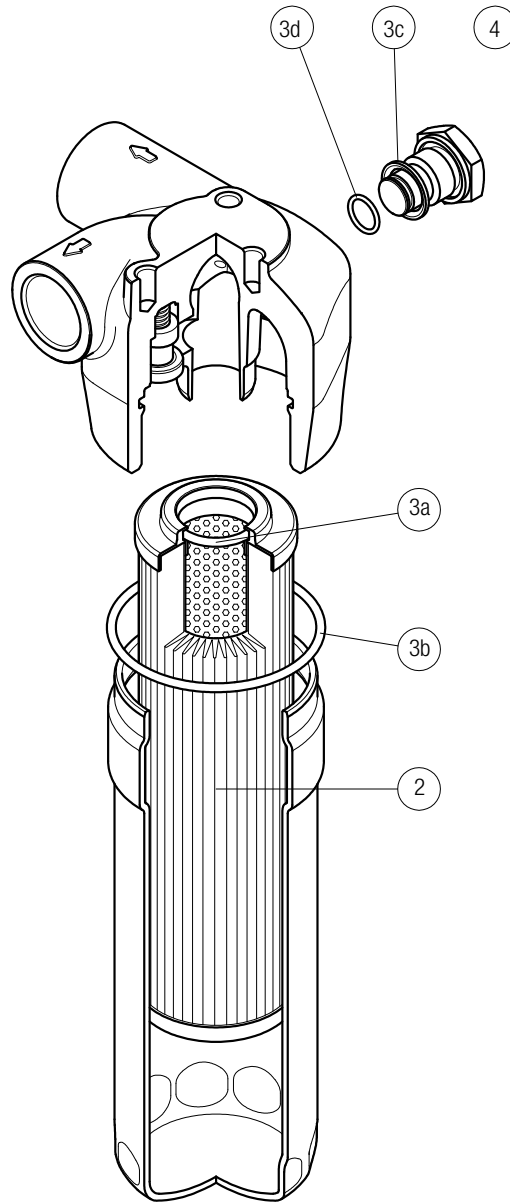


# LMP 124 MULTIPOINT

MULTIPOINT

Order number for spare parts

## LMP 124 MULTIPOINT



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
LMP 124 MULTIPOINT	See order table	NBR	FPM	NBR	FPM
	<b>2</b>	<b>3</b> (3a ÷ 3d)		<b>4</b>	
		02050478	02050479	T2H	T2V



**Spin-On filters are used as process and safety filters to protect individual pumps, valves or the entire hydraulic circuit from contamination as per ISO 4406.**

**In-line Spin-On filters can be used for the following purposes:**

- **Suction filters**
- **On the return circuit, for mounting on the line or on the tank cover**
- **In-line for low and medium pressure applications**

**Spin-On filters are available in 4 configurations:**

- **Single cartridge in-line**
- **In-line with two parallel cartridges on the same axis**
- **In-line with two parallel cartridges mounted side by side**

**All versions may be equipped with visual and/or electrical blockage indicators.**

# Spin-on filters



MPS	page 295
MSH	311
INDICATORS	714





# MPS series

Maximum working pressure up to 1.2 MPa (12 bar) - Flow rate up to 365 l/min



## Description

## Technical data

### Spin-on filters

**Maximum working pressure up to 1.2 MPa (12 bar)**

**Flow rate up to 365 l/min**

MPS is a range of spin-on filters suitable to be used in suction, return and low pressure lines.

They offer a good balance between performances, dimensions and prices. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 365 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Water removal elements (CW), to remove the free water from the hydraulic fluid
- Double connection for the cans, to fit both European and American standard elements
- Double cans fitting, to increase the life time of the filter
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic clogging indicators for suction and return applications
- Visual, electrical and electronic differential clogging indicators for low pressure applications

#### Common applications:

- Suction lines, Return lines, Delivery lines, in economic industrial equipment or mobile machines.
- Off-line filtration tank in economic industrial equipment or mobile machines

### Filter housing materials

- Head: Aluminium
- Bypass valve: Polyamide - Steel
- Element: Zinc-Plated Steel - Painted steel

### Bypass valve

- Inline / Return filter opening pressure: 175 kPa (1.75 bar)  $\pm$ 10%
- Inline / Suction filter opening pressure: 30 kPa (0.3 bar)  $\pm$ 10%

### $\Delta p$ element type

- $\Delta p$ : 5 bar
- Fluid flow through the filter element from OUT to IN

### Seals

Standard NBR - series A

### Temperature

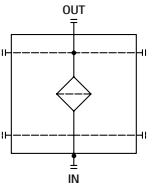
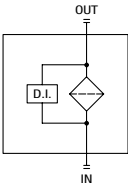
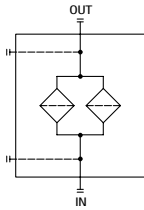
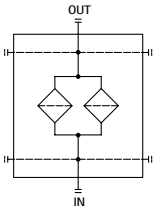
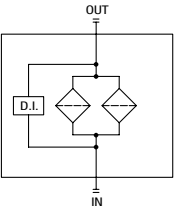
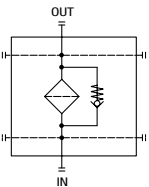
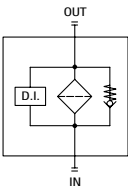
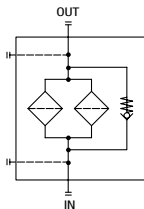
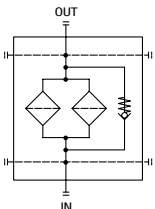
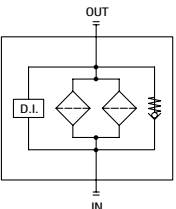
From -20 °C to +110 °C

### Note

MPS filters are provided for vertical mounting

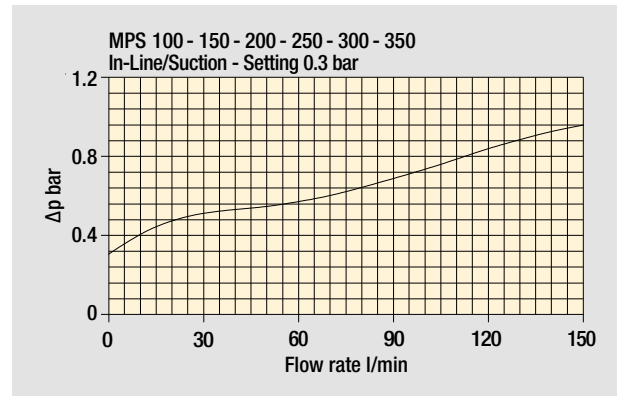
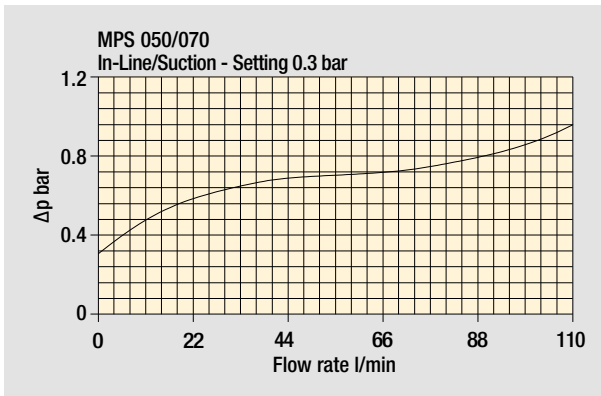
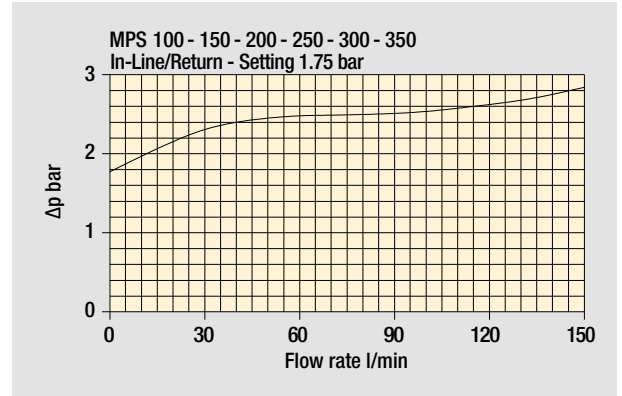
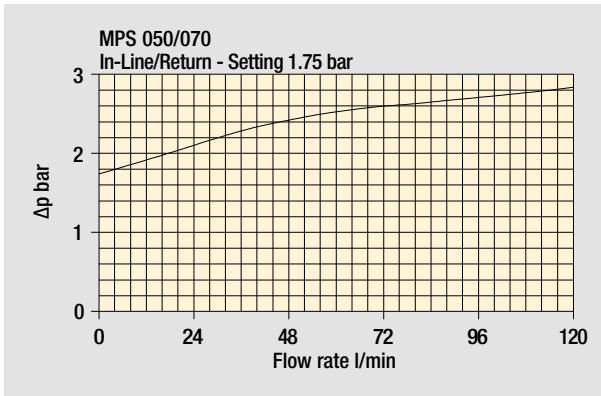
## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>MPS 050</b>	1.00	0.70
<b>MPS 051</b>	1.05	0.70
<b>MPS 070</b>	1.20	0.95
<b>MPS 071</b>	1.25	0.95
<b>MPS 100</b>	2.10	1.65
<b>MPS 101</b>	2.20	1.65
<b>MPS 150</b>	2.40	2.00
<b>MPS 151</b>	2.50	2.00
<b>MPS 200</b>	3.90	3.00
<b>MPS 250</b>	4.60	3.70
<b>MPS 300-301</b>	5.30	3.40
<b>MPS 350-351</b>	6.00	4.10

Filter series					
MPS 050	•	-	-	-	-
MPS 051	-	•	-	-	-
MPS 070	•	-	-	-	-
MPS 071	-	•	-	-	-
MPS 100	•	-	-	-	-
MPS 101	-	•	-	-	-
MPS 150	•	-	-	-	-
MPS 151	-	•	-	-	-
MPS 200	-	-	•	-	-
MPS 250	-	-	•	-	-
MPS 300	-	-	-	•	-
MPS 301	-	-	-	-	•
MPS 350	-	-	-	•	-
MPS 351	-	-	-	-	•
	Style U/P	Style U/P	Style U	Style U/P	Style U/P
					
	Style R/S	Style R/S	Style R/S	Style R/S	Style R/S
					

## 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.

**CS** 050 - 070 - 100 - 150

**CG - CW** 050 - 070



**CG - CW** 100 - 150



**CW**

This series of cartridge removes water from oil while filtering the oil at the same time.

Water absorbent polymers up to 800 times their own weight provide this major feature.

Water holding capacities:

CW 050= 240 ml

Ordering code: **CW050P10AP01**

CW 150= 788 ml

Ordering code: **CW150P10AP01**

### Thread connections

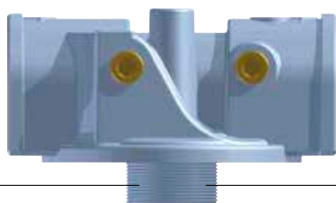
Element	Connection
CS 050 - 070	G 3/4"
CS 100 - 150	G 1 1/4"
CG / CW 050 - 070	1" - 12 UNF
CG / CW 100 - 150	1 1/2" - 16 UN

### Water holding capacities CW

	good	poor
<b>Viscosity</b>	30/46 mm <sup>2</sup> /s (cSt)	> 46 mm <sup>2</sup> /s (cSt)
<b>H<sub>2</sub>O p.p.m.</b>	600/800 p.p.m.	> 800 p.p.m.
<b>Flow rate</b>	CW050 7/15 l/min CW150 20/40 l/min	CW050 > 20 l/min CW150 > 50 l/min
<b>Temperature</b>	40/60 °C	< 30 °C

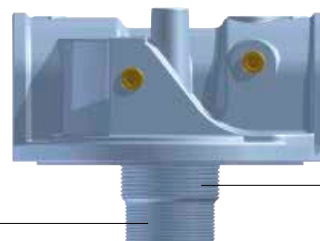
## Heads

**CG / CW**  
1" - 12 UNF



**CS**  
G 3/4"

**CG / CW**  
1 1/2" - 16 UN



**CS**  
G 1 1/4"

# MPS MPS050 - MPS070 MPS051 - MPS071

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>MPS050</b> <b>R</b> <b>G1</b> <b>A10</b> <b>A</b> <b>P01</b>				
<b>MPS050</b>   <b>MPS070</b>	With connections for clogging indicators					
<b>MPS051</b>   <b>MPS071</b>	With connections for differential pressure indicators					
Bypass valve		MPS 050 - 070	MPS 051 - 071			
<b>R</b>	Inline / Return: with bypass 1.75 bar	•	•			
<b>S</b>	Inline / Suction: with bypass 0.3 bar	•	-			
<b>U</b>	Without bypass	•	-			
<b>P</b>	Without bypass	-	•			
Connections						
<b>G1</b>	G 3/4"					
<b>G2</b>	3/4" NPT					
<b>G3</b>	SAE 12 - 1 1/16" - 12 UN					
Filtration rating (filter media)						
<b>A03</b>	Inorganic microfiber 3 µm					
<b>A06</b>	Inorganic microfiber 6 µm					
<b>A10</b>	Inorganic microfiber 10 µm					
<b>A25</b>	Inorganic microfiber 25 µm					
	<b>M25</b> Wire mesh 25 µm					
	<b>M60</b> Wire mesh 60 µm					
	<b>M90</b> Wire mesh 90 µm					
	<b>P10</b> Resin impregnated paper 10 µm					
	<b>P25</b> Resin impregnated paper 25 µm					
				<b>Seal</b>		<b>Execution</b>
				<b>A</b> NBR		<b>P01</b> MP Filtri standard

### CARTRIDGE

Cartridge series and size		Configuration example: <b>CS050</b> <b>A10</b> <b>A</b> <b>P01</b>			
<b>CS050</b>   <b>CS070</b>					
Filtration rating (filter media)					
<b>A03</b>	Inorganic microfiber 3 µm				
<b>A06</b>	Inorganic microfiber 6 µm				
<b>A10</b>	Inorganic microfiber 10 µm				
<b>A25</b>	Inorganic microfiber 25 µm				
	<b>M25</b> Wire mesh 25 µm				
	<b>M60</b> Wire mesh 60 µm				
	<b>M90</b> Wire mesh 90 µm				
	<b>P10</b> Resin impregnated paper 10 µm				
	<b>P25</b> Resin impregnated paper 25 µm				
				<b>Seals</b>	<b>Execution</b>
				<b>A</b> NBR	<b>P01</b> MP Filtri standard <b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 714-715

#### Clogging indicators on RETURN line

<b>BVA</b>	Axial pressure gauge
<b>BVR</b>	Radial pressure gauge
<b>BVP</b>	Visual pressure indicator with automatic reset
<b>BVQ</b>	Visual pressure indicator with manual reset

<b>BEA</b>	Electrical pressure indicator
<b>BEM</b>	Electrical pressure indicator
<b>BLA</b>	Electrical / visual pressure indicator

#### Clogging indicators on SUCTION line

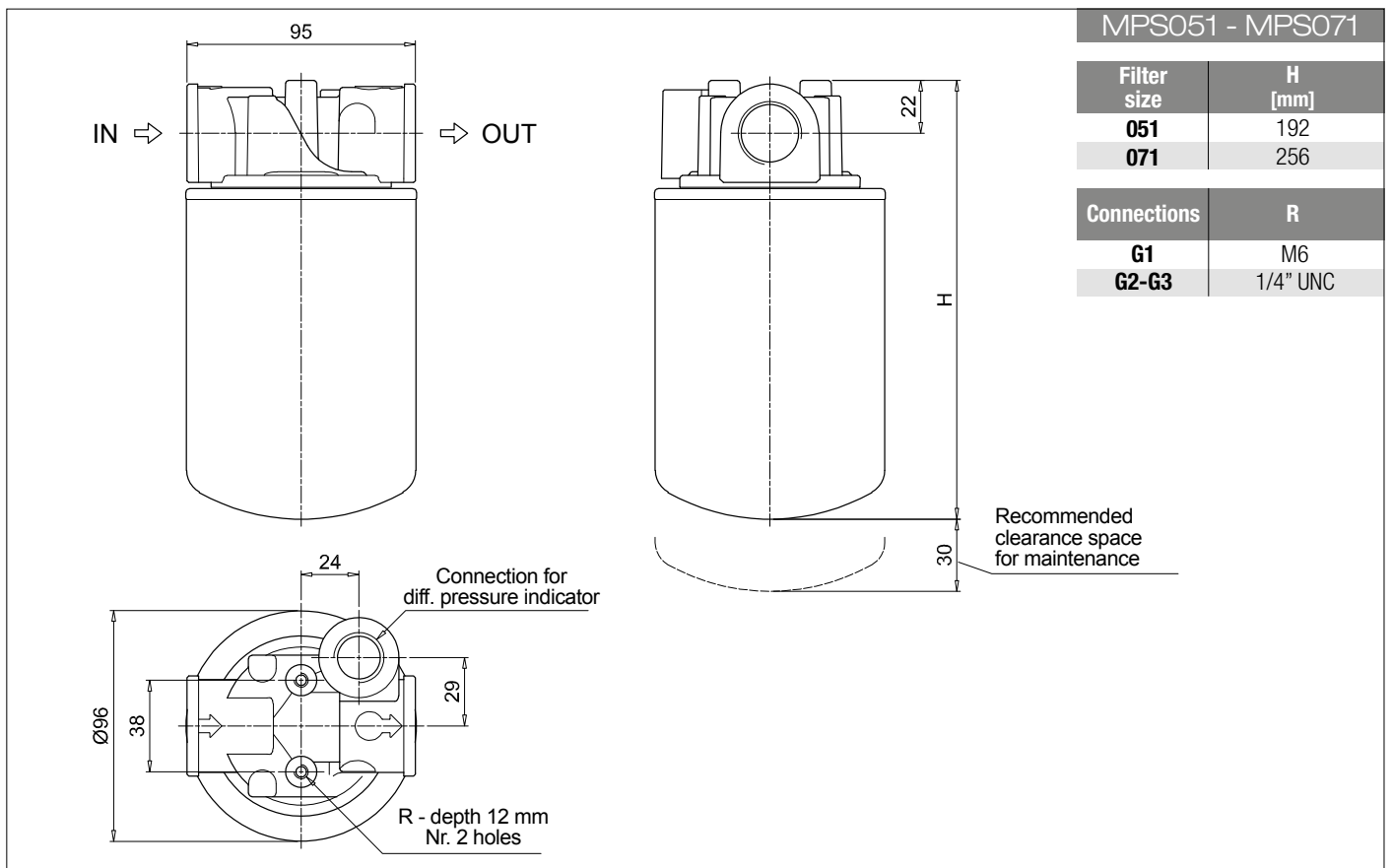
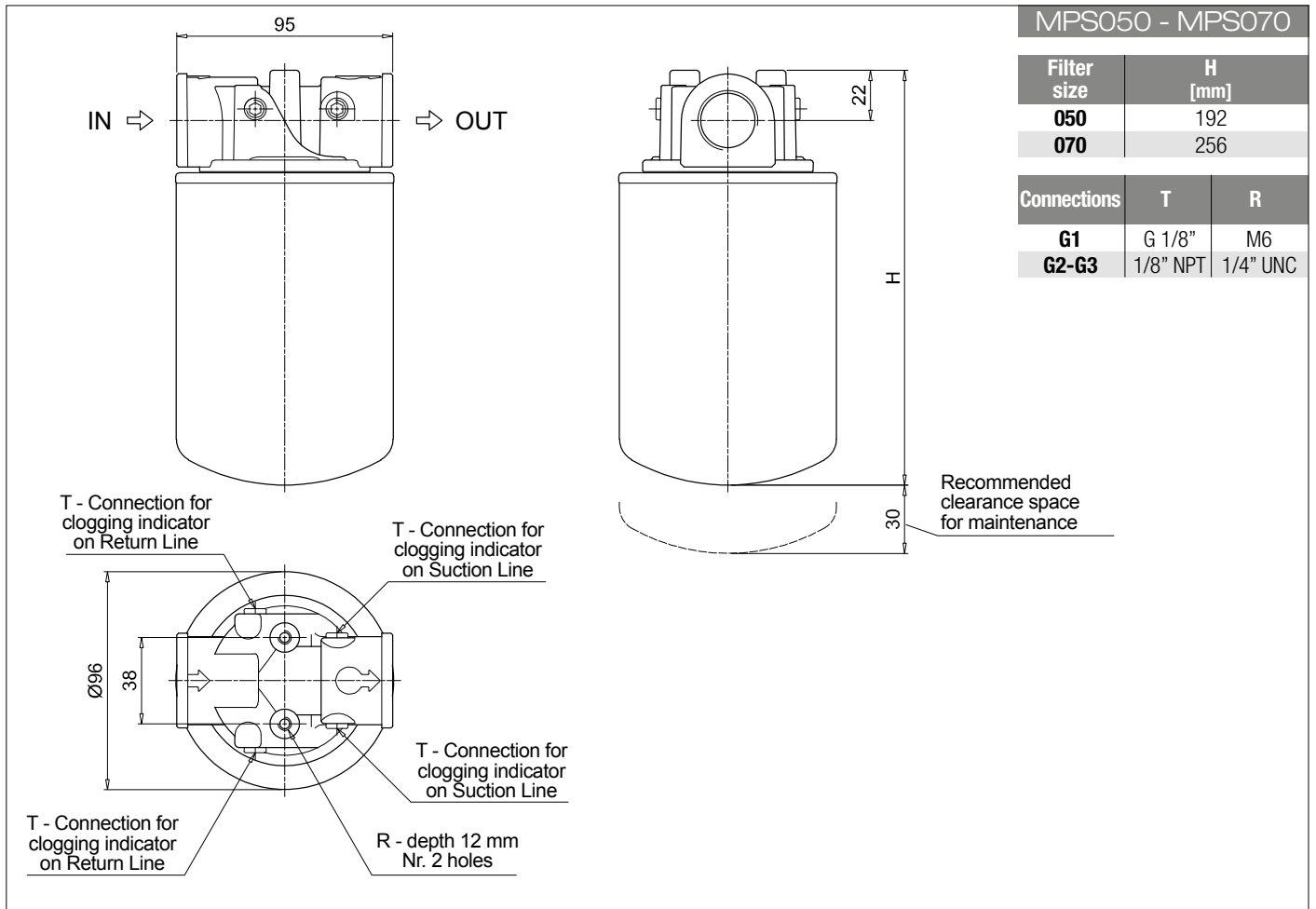
<b>VVB</b>	Axial pressure gauge
<b>VVS</b>	Radial pressure gauge

<b>VEB</b>	Electrical vacuum indicator
<b>VLB</b>	Electrical / visual vacuum indicator

#### Differential pressure indicators

<b>DEA</b>	Electrical differential pressure indicator
<b>DEM</b>	Electrical differential pressure indicator
<b>DEU</b>	Electrical differential pressure indicator
<b>DLA</b>	Electrical / visual differential pressure indicator

<b>DLE</b>	Electrical / visual differential pressure indicator
<b>DTA</b>	Electronic differential pressure indicator
<b>DVA</b>	Visual differential pressure indicator
<b>DVM</b>	Visual differential pressure indicator



# MPS MPS100 - MPS150 MPS101 - MPS151

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example: <b>MPS100</b> <b>R</b> <b>G1</b> <b>A10</b> <b>A</b> <b>P01</b>				
<b>MPS100</b>   <b>MPS150</b>	With connections for clogging indicators					
<b>MPS101</b>   <b>MPS151</b>	With connections for differential pressure indicators					
<b>Bypass valve</b>		<b>MPS 100 - 150</b>	<b>MPS 101 - 151</b>			
<b>R</b>	Inline / Return: with bypass 1.75 bar	•	•			
<b>S</b>	Inline / Suction: with bypass 0.3 bar	•	-			
<b>U</b>	Without bypass	•	-			
<b>P</b>	Without bypass	-	•			
<b>Connections</b>						
<b>G1</b>	G 1 1/4"					
<b>G2</b>	1 1/4" NPT					
<b>G3</b>	SAE 20 - 1 5/8" - 12 UN					
<b>Filtration rating (filter media)</b>						
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm			
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm			
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm			
<b>A25</b>	Inorganic microfiber 25 µm	<b>P10</b>	Resin impregnated paper 10 µm			
		<b>P25</b>	Resin impregnated paper 25 µm			
		<b>Seal</b>		<b>Execution</b>		
		<b>A</b> NBR		<b>P01</b> MP Filtri standard		

### CARTRIDGE

<b>Cartridge series and size</b>		Configuration example: <b>CS100</b> <b>A10</b> <b>A</b> <b>P01</b>			
<b>CS100</b>   <b>CS150</b>					
<b>Filtration rating (filter media)</b>					
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm		
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm		
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm		
<b>A25</b>	Inorganic microfiber 25 µm	<b>P10</b>	Resin impregnated paper 10 µm		
		<b>P25</b>	Resin impregnated paper 25 µm		
		<b>Seals</b>		<b>Execution</b>	
		<b>A</b> NBR		<b>P01</b> MP Filtri standard <b>Pxx</b> Customized	

### CLOGGING INDICATORS

See page 714-715

#### Clogging indicators on RETURN line

<b>BVA</b>	Axial pressure gauge
<b>BVR</b>	Radial pressure gauge
<b>BVP</b>	Visual pressure indicator with automatic reset
<b>BVQ</b>	Visual pressure indicator with manual reset

<b>BEA</b>	Electrical pressure indicator
<b>BEM</b>	Electrical pressure indicator
<b>BLA</b>	Electrical / visual pressure indicator

#### Clogging indicators on SUCTION line

<b>VVB</b>	Axial pressure gauge
<b>VVS</b>	Radial pressure gauge

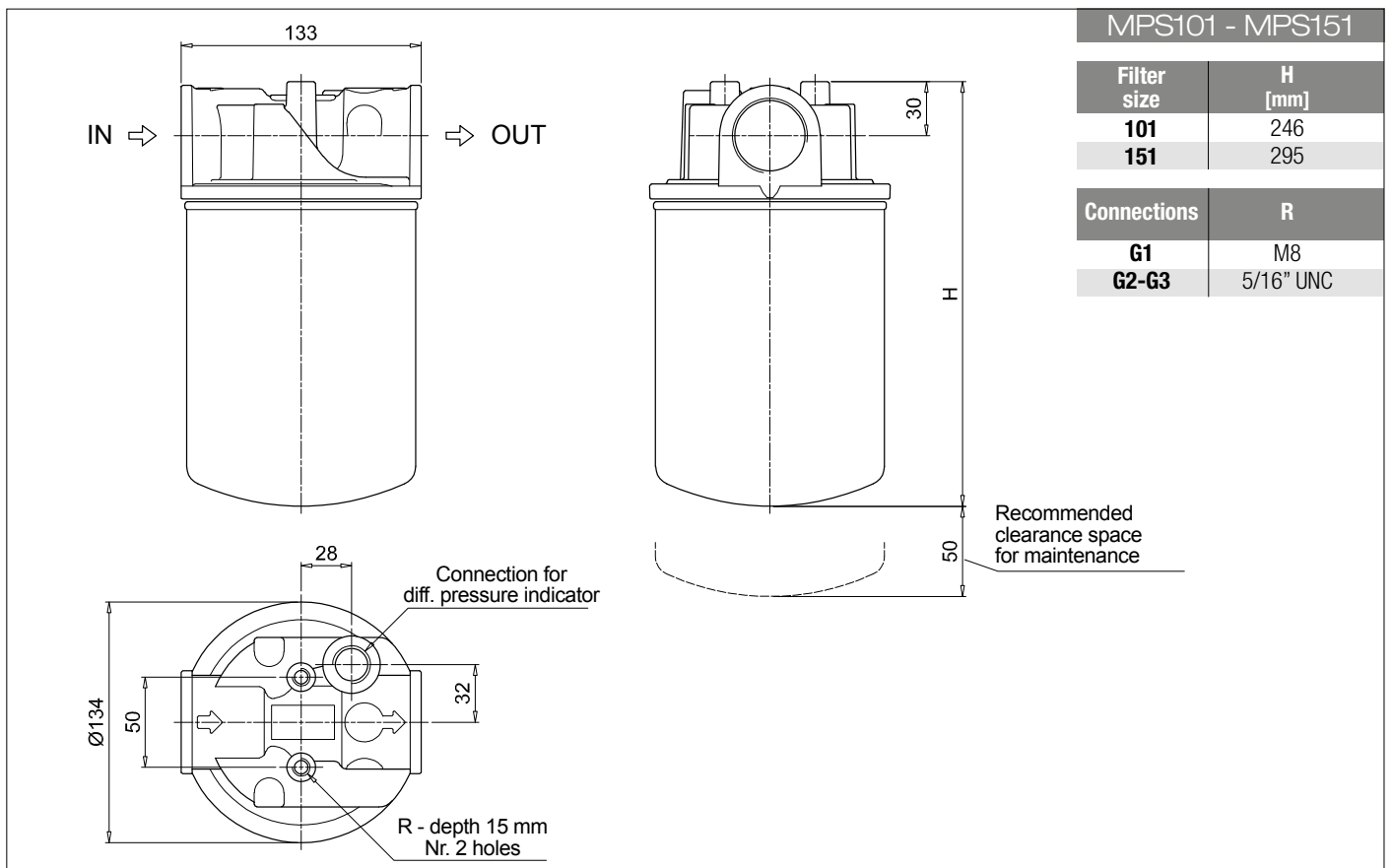
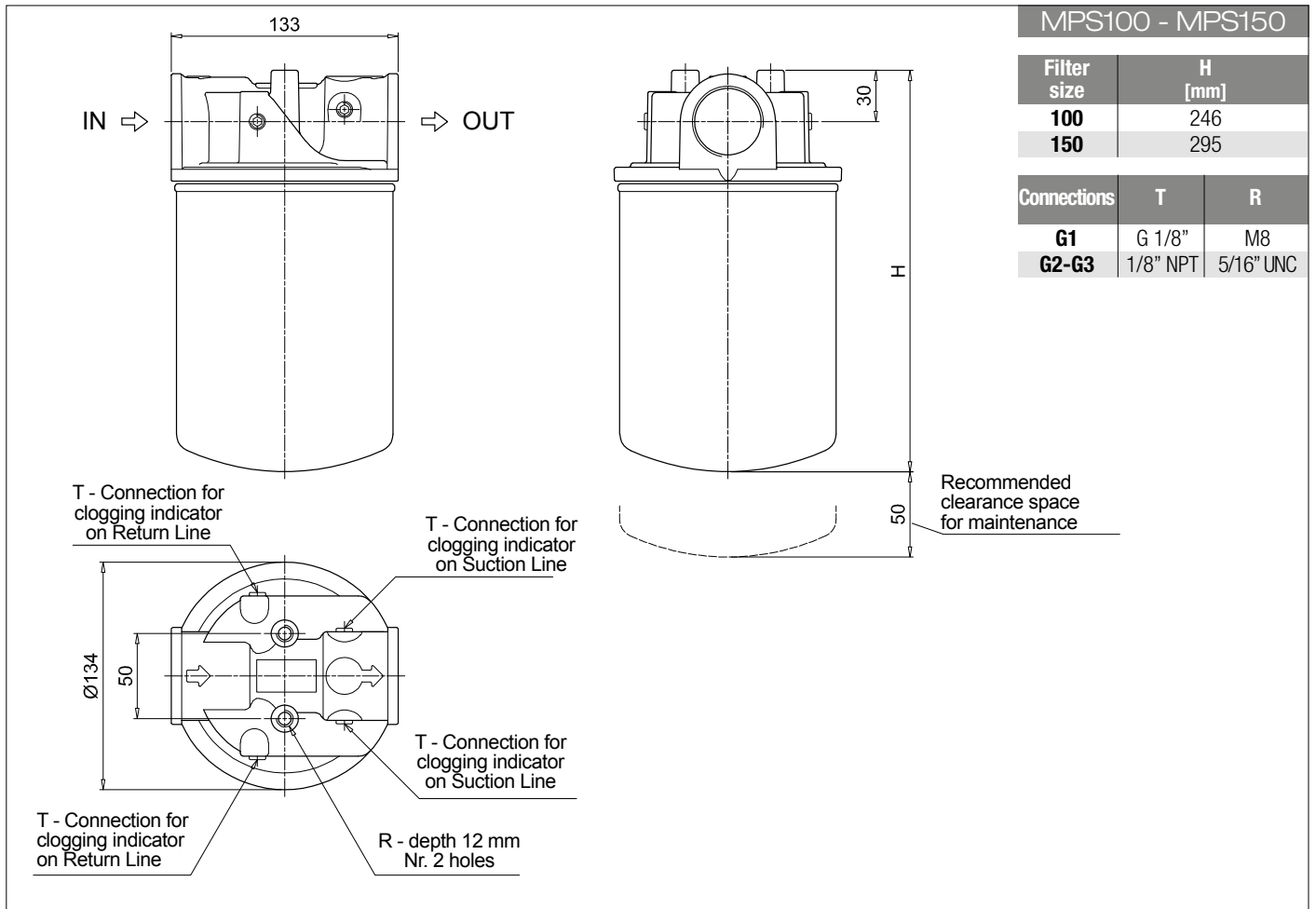
<b>VEB</b>	Electrical vacuum indicator
<b>VLB</b>	Electrical / visual vacuum indicator

#### Differential pressure indicators

<b>DEA</b>	Electrical differential pressure indicator
<b>DEM</b>	Electrical differential pressure indicator
<b>DEU</b>	Electrical differential pressure indicator
<b>DLA</b>	Electrical / visual differential pressure indicator

<b>DLE</b>	Electrical / visual differential pressure indicator
<b>DTA</b>	Electronic differential pressure indicator
<b>DVA</b>	Visual differential pressure indicator
<b>DVM</b>	Visual differential pressure indicator





# MPS MPS200 - MPS250

## Designation & Ordering code

### COMPLETE FILTER

#### Series and size

**MPS200** | **MPS250**

Configuration example: **MPS200** **R** **G1** **A10** **A** **P01**

#### Bypass valve

**R** Inline / Return: with bypass 1.75 bar

**S** Inline / Suction: with bypass 0.3 bar

**U** Without bypass

#### Connections

**G1** G 1 1/2"

**G2** 1 1/2" NPT

**G3** SAE 24 - 1 7/8" - 12 UN

#### Filtration rating (filter media)

**A03** Inorganic microfiber 3 µm

**A06** Inorganic microfiber 6 µm

**A10** Inorganic microfiber 10 µm

**A25** Inorganic microfiber 25 µm

**M25** Wire mesh 25 µm

**M60** Wire mesh 60 µm

**M90** Wire mesh 90 µm

**P10** Resin impregnated paper 10 µm

**P25** Resin impregnated paper 25 µm

#### Seal

**A** NBR

#### Execution

**P01** MP Filtri standard

### CARTRIDGE

#### Cartridge series and size

**CS100** | **CS150**

Configuration example: **CS100** **A10** **A** **P01**

#### Filtration rating (filter media)

**A03** Inorganic microfiber 3 µm

**A06** Inorganic microfiber 6 µm

**A10** Inorganic microfiber 10 µm

**A25** Inorganic microfiber 25 µm

**M25** Wire mesh 25 µm

**M60** Wire mesh 60 µm

**M90** Wire mesh 90 µm

**P10** Resin impregnated paper 10 µm

**P25** Resin impregnated paper 25 µm

#### Seals

**A** NBR

#### Execution

**P01** MP Filtri standard

**Pxx** Customized

### CLOGGING INDICATORS

See page 714-715

#### Clogging indicators on RETURN line

**BVA** Axial pressure gauge

**BVR** Radial pressure gauge

**BVP** Visual pressure indicator with automatic reset

**BVQ** Visual pressure indicator with manual reset

**BEA** Electrical pressure indicator

**BEM** Electrical pressure indicator

**BLA** Electrical / visual pressure indicator

#### Clogging indicators on SUCTION line

**VVB** Axial pressure gauge

**VVS** Radial pressure gauge

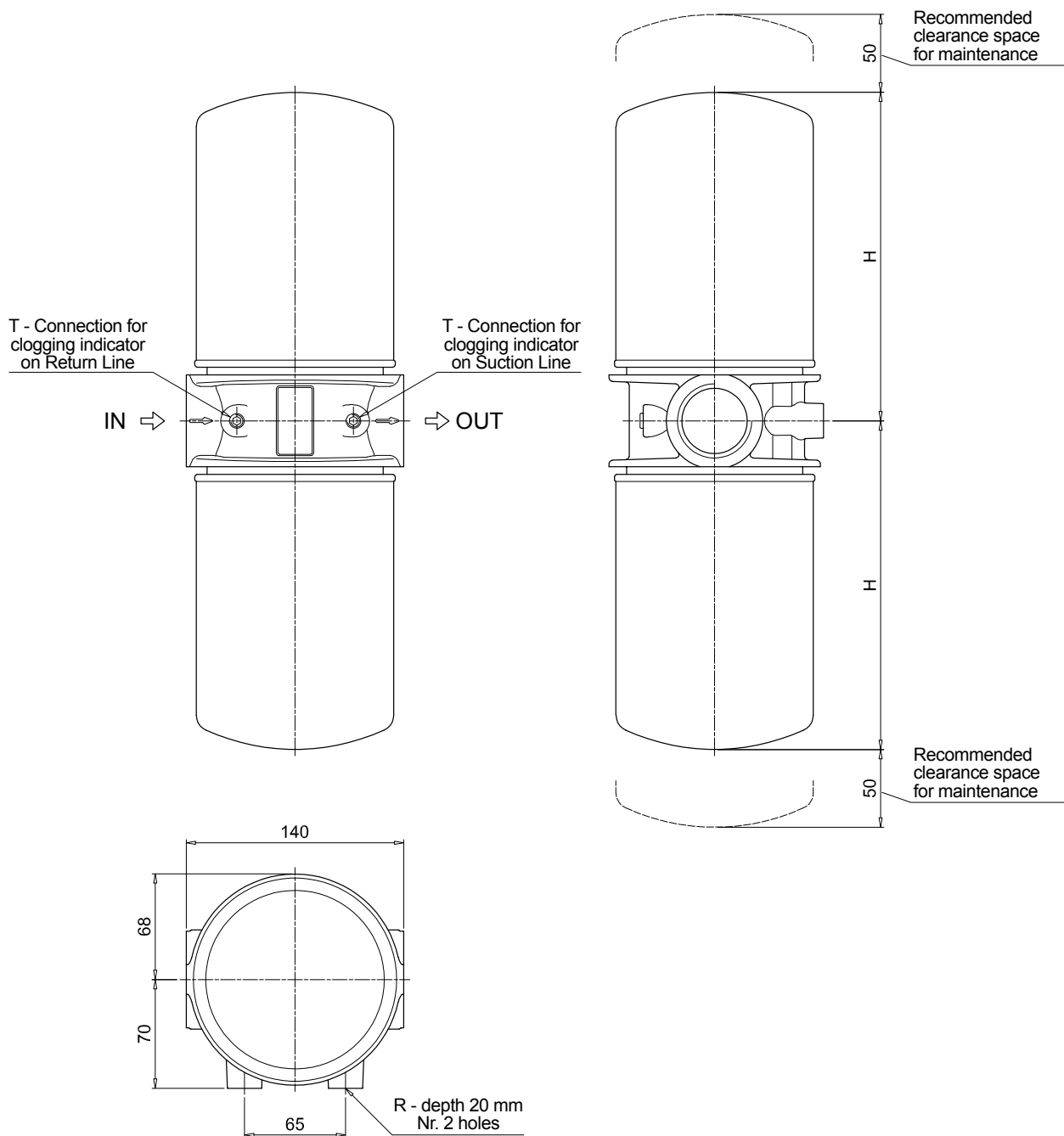
**VEB** Electrical vacuum indicator

**VLB** Electrical / visual vacuum indicator

### MPS200 - MPS250

Filter size	H [mm]
<b>200</b>	213
<b>250</b>	262

Connections	T	R
<b>G1</b>	G 1/8"	M10
<b>G2-G3</b>	1/8" NPT	7/16" UNC



# MPS MPS300 - MPS350 MPS301 - MPS351

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>MPS300</b> <b>R</b> <b>F1</b> <b>A10</b> <b>A</b> <b>P01</b>				
<b>MPS300</b>   <b>MPS350</b>	With connections for clogging indicators					
<b>MPS301</b>   <b>MPS351</b>	With connections for differential pressure indicators					
Bypass valve		MPS 300 - 350	MPS 301 - 351			
<b>R</b>	Inline / Return: with bypass 1.75 bar	•	•			
<b>S</b>	Inline / Suction: with bypass 0.3 bar	•	-			
<b>U</b>	Without bypass	•	-			
<b>P</b>	Without bypass	-	•			
Connections						
<b>G1</b>	G 1 1/2"					
<b>G2</b>	1 1/2" NPT					
<b>G3</b>	SAE 24 - 1 7/8" - 12 UN					
<b>F1</b>	1 1/2" SAE 3000 psi/M					
<b>F2</b>	1 1/2" SAE 3000 psi/UNC					
Filtration rating (filter media)						
<b>A03</b>	Inorganic microfiber 3 µm					
<b>A06</b>	Inorganic microfiber 6 µm					
<b>A10</b>	Inorganic microfiber 10 µm					
<b>A25</b>	Inorganic microfiber 25 µm					
		<b>M25</b>	Wire mesh 25 µm			
		<b>M60</b>	Wire mesh 60 µm			
		<b>M90</b>	Wire mesh 90 µm			
		<b>P10</b>	Resin impregnated paper 10 µm			
		<b>P25</b>	Resin impregnated paper 25 µm			
		<b>Seal</b>		<b>Execution</b>		
		<b>A</b>	NBR	<b>P01</b>	MP Filtri standard	

### CARTRIDGE

Cartridge series and size		Configuration example: <b>CS100</b> <b>A10</b> <b>A</b> <b>P01</b>			
<b>CS100</b>   <b>CS150</b>					
Filtration rating (filter media)					
<b>A03</b>	Inorganic microfiber 3 µm				
<b>A06</b>	Inorganic microfiber 6 µm				
<b>A10</b>	Inorganic microfiber 10 µm				
<b>A25</b>	Inorganic microfiber 25 µm				
		<b>M25</b>	Wire mesh 25 µm		
		<b>M60</b>	Wire mesh 60 µm		
		<b>M90</b>	Wire mesh 90 µm		
		<b>P10</b>	Resin impregnated paper 10 µm		
		<b>P25</b>	Resin impregnated paper 25 µm		
		<b>Seals</b>		<b>Execution</b>	
		<b>A</b>	NBR	<b>P01</b>	MP Filtri standard
				<b>Pxx</b>	Customized

### CLOGGING INDICATORS

See page 714-715

Clogging indicators on RETURN line		
<b>BVA</b>	Axial pressure gauge	<b>BEA</b> Electrical pressure indicator
<b>BVR</b>	Radial pressure gauge	<b>BEM</b> Electrical pressure indicator
<b>BVP</b>	Visual pressure indicator with automatic reset	<b>BLA</b> Electrical / visual pressure indicator
<b>BVQ</b>	Visual pressure indicator with manual reset	
Clogging indicators on SUCTION line		
<b>VVB</b>	Axial pressure gauge	<b>VEB</b> Electrical vacuum indicator
<b>VVS</b>	Radial pressure gauge	<b>VLB</b> Electrical / visual vacuum indicator
Differential indicators		
<b>DEA</b>	Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b>	Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b>	Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b>	Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

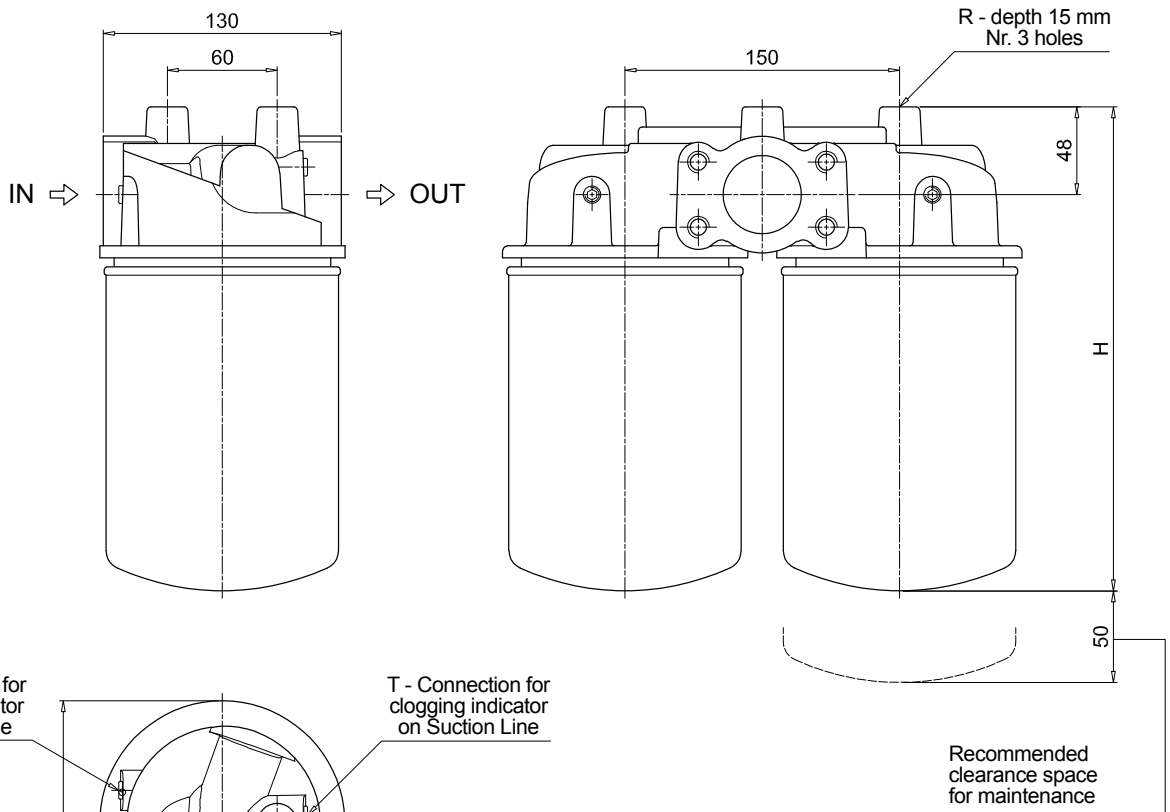
See page 737

<b>T2</b>	Plug (not included)
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### MPS300 - MPS350

Filter size	H [mm]
<b>300</b>	266
<b>350</b>	315

Connections	T	R
<b>G1</b>	G 1/8"	M10
<b>G2-G3</b>	1/8" NPT	7/16" UNC
<b>F1</b>	G 1/8"	M10
<b>F2</b>	1/8" NPT	7/16" UNC



# MPS MPS300 - MPS350 MPS301 - MPS351

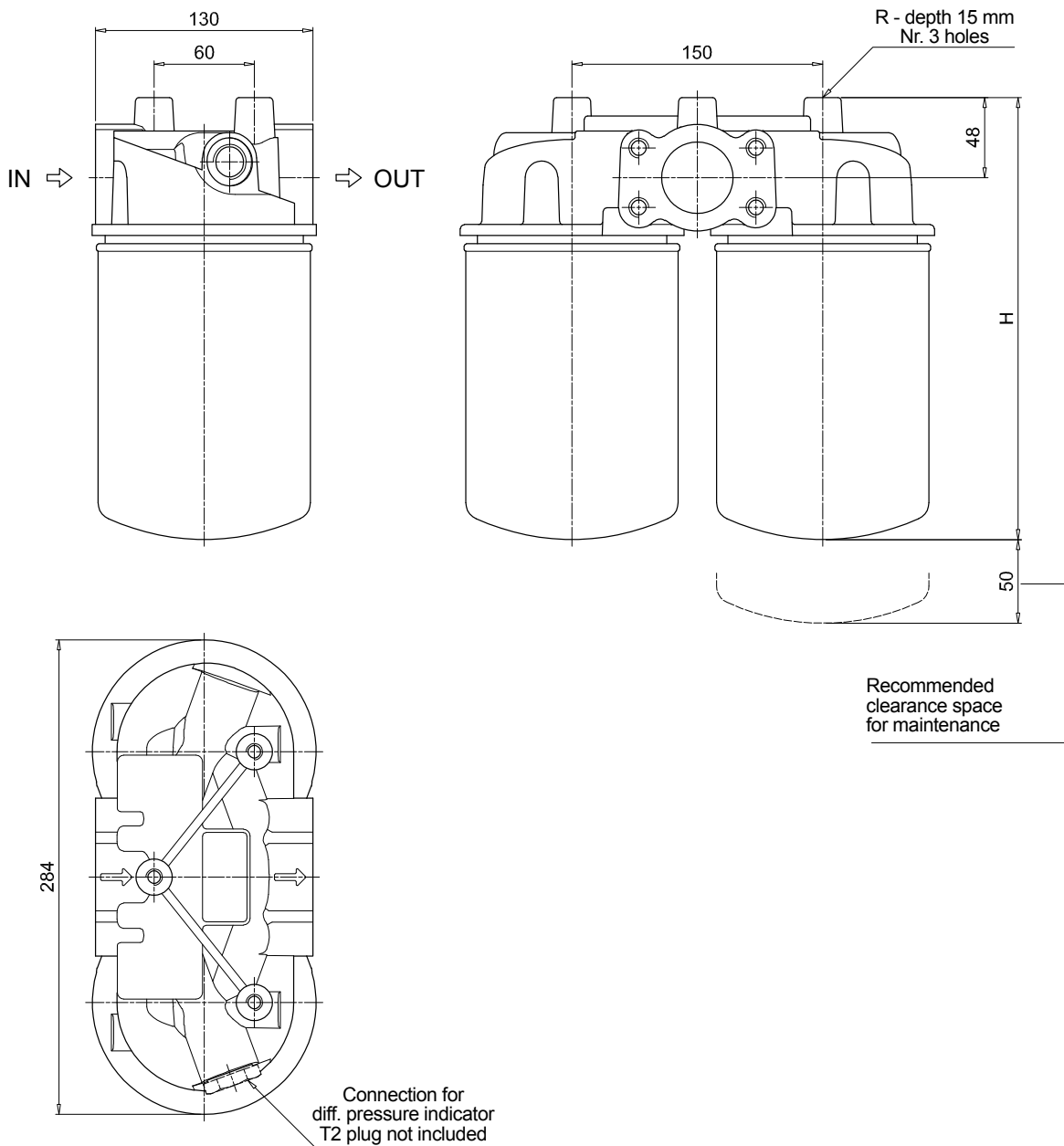
## Dimensions

### MPS301 - MPS351

Filter size	H [mm]
<b>301</b>	266
<b>351</b>	315

Connections	R
<b>G1</b>	M10
<b>G2-G3</b>	7/16" UNC
<b>F1</b>	M10
<b>F2</b>	7/16" UNC









# MSH series

Maximum working pressure up to 3.5 MPa (35 bar) - Flow rate up to 195 l/min



## Description

## Technical data

### Spin-on filters

**Maximum working pressure up to 3.5 MPa (35 bar)**  
**Flow rate up to 195 l/min**

MSH is a range of spin-on filters suitable to be used in low pressure lines. They offer a good balance between performances, dimensions and prices. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 195 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Strong sealing between the housing and cans, to be used in heavy applications
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators for low pressure applications

#### Common applications:

- Delivery lines, in economic industrial equipment or mobile machines

### Filter housing materials

- Head: Anodized Aluminium
- Bypass valve: Nylon - Steel
- Element: Aluminium - Painted Steel

### Bypass valve

Opening pressure: 250 kPa (2.5 bar) ±10%

### Δp element type

- Δp: 5 bar
- Oil flow from OUT to IN

### Seals

- Standard NBR - series A
- Optional FPM - series V

### Temperature

From -20 °C to +110 °C

### Note

MSH filters are provided for vertical mounting



## Weights [kg] and volumes [dm<sup>3</sup>]

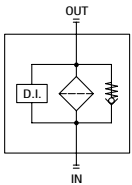
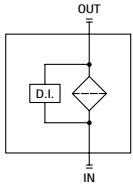
Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>MSH 050</b>	1.50	0.65
<b>MSH 070</b>	1.90	0.95
<b>MSH 100</b>	3.30	1.80
<b>MSH 150</b>	3.80	2.20

## Cartridge

Thread connections	
Type	Connection
<b>CH 050 - 070</b>	M32 x 2
<b>CH 100 - 150</b>	M45 x 2

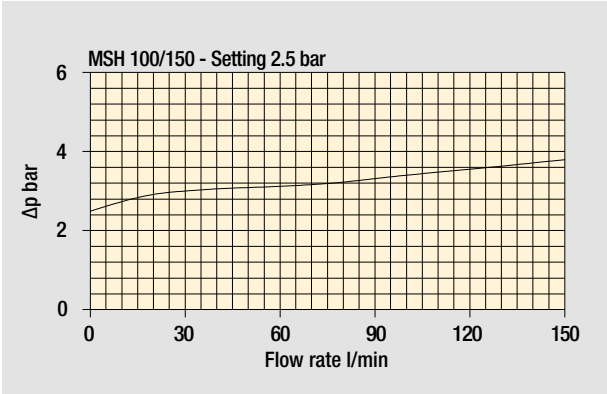
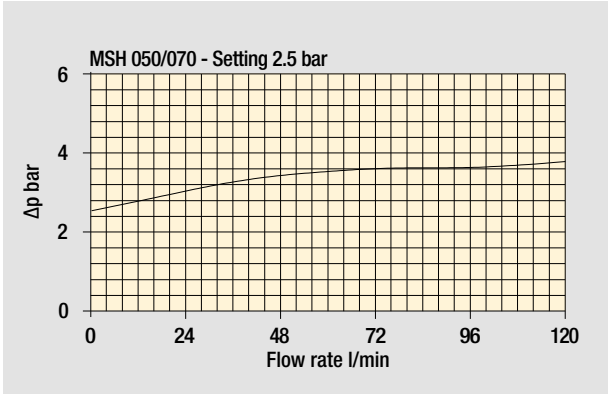
**CH**

Filter series	Style S	Style B
<b>MSH 050</b>	•	•
<b>MSH 070</b>	•	•
<b>MSH 100</b>	•	•
<b>MSH 150</b>	•	•



### 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. Δp varies proportionally with density.

# MSH MSH050 - MSH070 MSH100 - MSH150

Designation & Ordering code

## COMPLETE FILTER

Series and size **MSH050** | **MSH070** | **MSH100** | **MSH150** Configuration example: **MSH050** **B** **A** **G1** **A10** **P01**

**Bypass valve**  
**S** Without bypass  
**B** 2.5 bar

**Seal**  
**A** NBR

Connections	MSH 050 - 070	MSH 100 - 150
<b>G1</b>	G 1"	G 1 1/2"
<b>G2</b>	G 3/4"	G 1 1/4"
<b>G3</b>	1" NPT	1 1/2" NPT
<b>G4</b>	3/4" NPT	1 1/4" NPT
<b>G5</b>	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P10</b> Resin impregnated paper 10 µm
	<b>P25</b> Resin impregnated paper 25 µm

**Execution**  
**P01** MP Filtri standard

## CARTRIDGE

Cartridge series and size **CH050** | **CH070** | **CH100** | **CH150** Configuration example: **CH050** **A10** **A** **P01**

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P10</b> Resin impregnated paper 10 µm
	<b>P25</b> Resin impregnated paper 25 µm

**Seal**  
**A** NBR

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

## CLOGGING INDICATORS

See page 714-715

### Differential pressure indicators

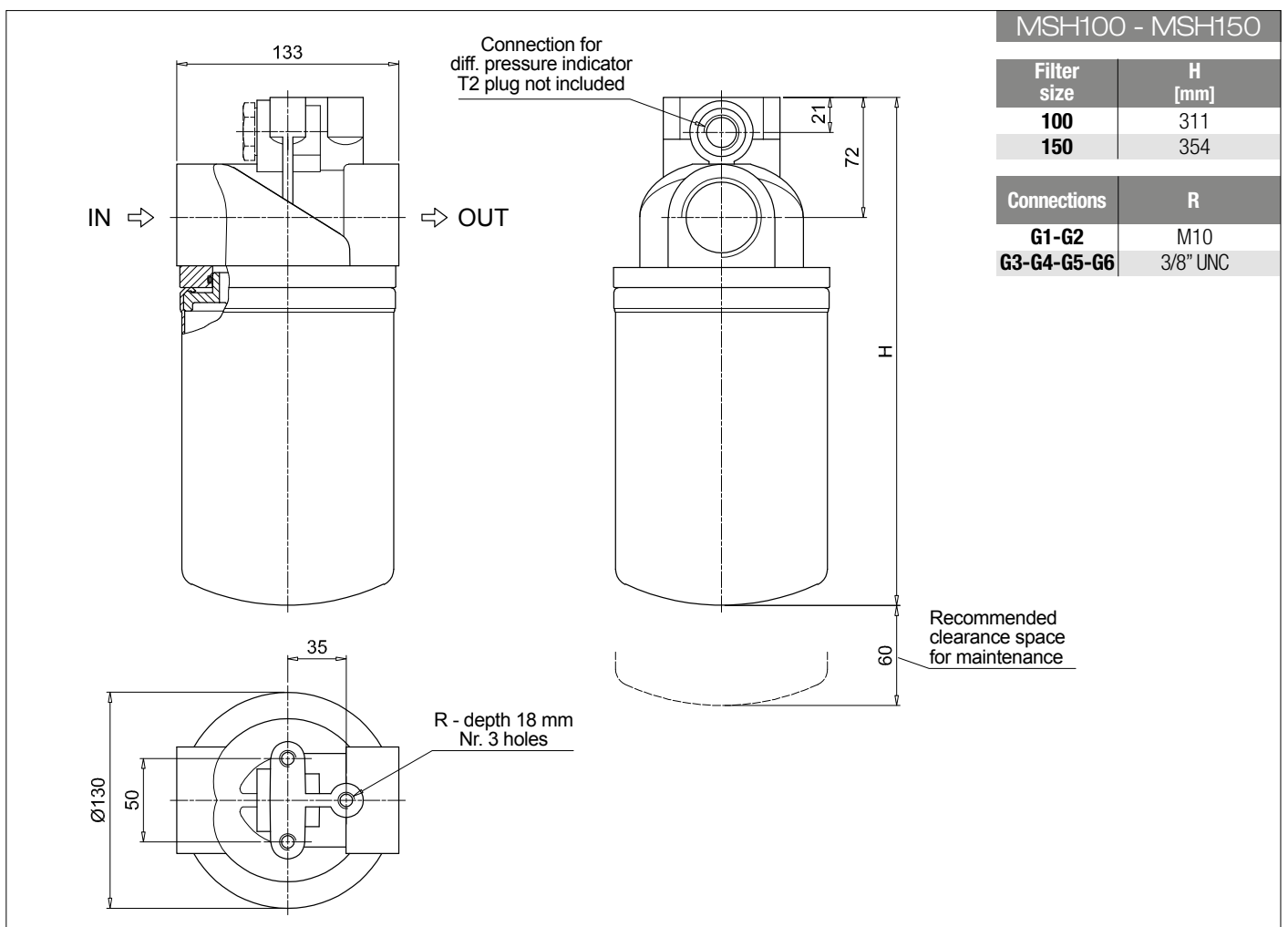
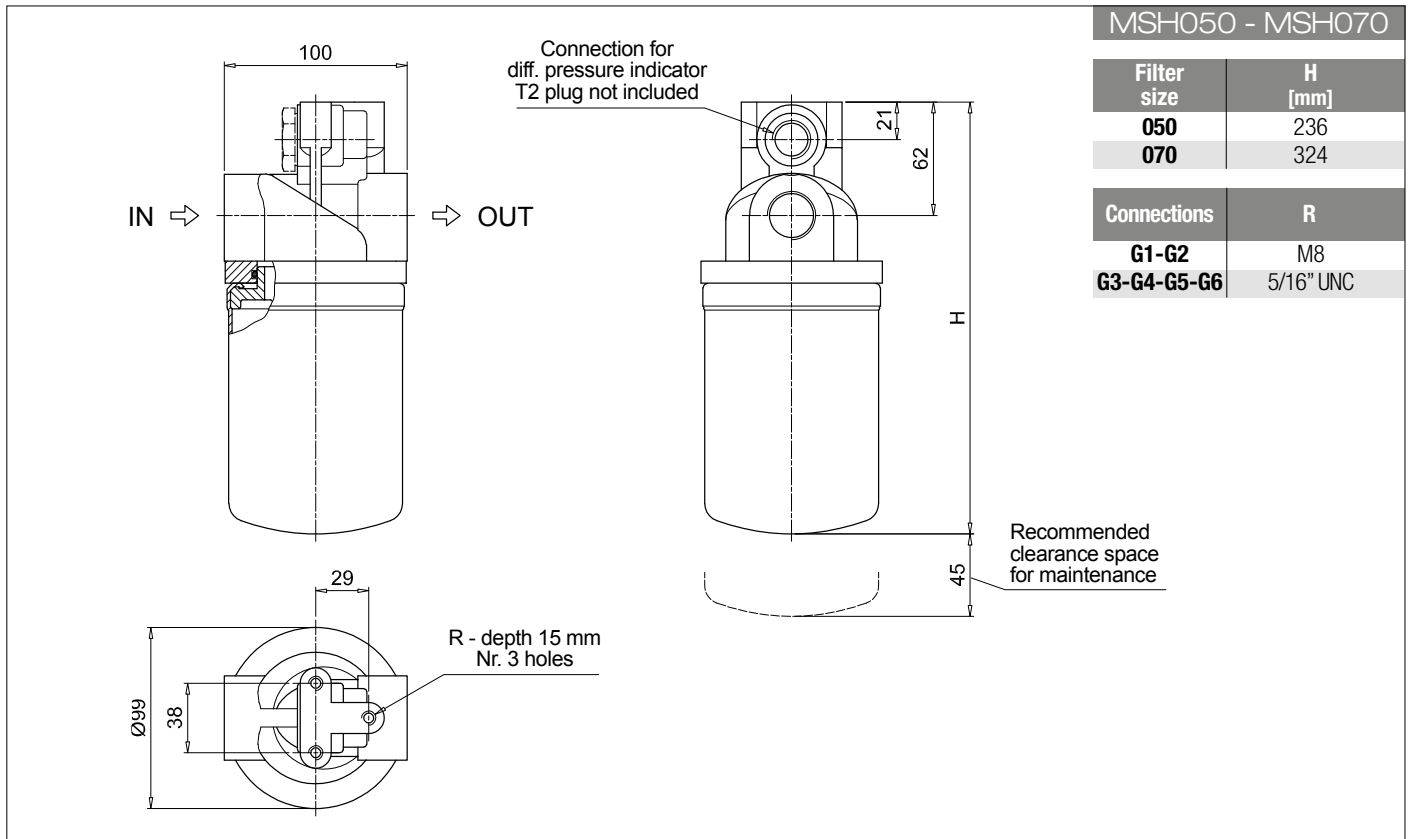
<b>DEA</b> Electrical differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator
<b>DLE</b> Electrical / visual differential pressure indicator

<b>DTA</b> Electronic differential pressure indicator
<b>DVA</b> Visual differential pressure indicator
<b>DVM</b> Visual differential pressure indicator

## PLUGS

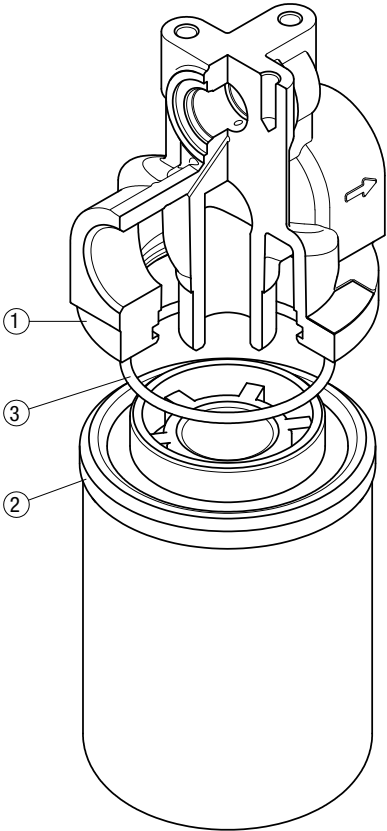
See page 737

<b>T2</b> Plug (not included)
-------------------------------



# MSH SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc. 1	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3
Filter series	Filter assembly	Cartridge	Seal code number
<b>MSH 050-070</b>	See order table	See order table	0-R 167 (ø 63.50 x 3.53)
<b>MSH 100-150</b>	See order table	See order table	0-R 4362 (ø 91.67 x 3.53)



**LMP - low and medium pressure filters are used as process filters to protect pumps, pressure reducers and hydraulic circuits from damage due to oil contamination as per ISO 4406.**

**LMP series is available in 5 different sizes: 100, 200, 400, 900 and 950 and a wide range of versions.**

**LMP filters are available with several working pressures suitable for all hydraulic circuits as:**

- **return filters in external tank mounting construction for medium and high flow rates in single and duplex versions**
- **in-line filters for low and medium pressures for off-line applications**
- **in-line process filters for medium pressures, for example, for forced lubrication applications, in single or duplex versions**
- **in-line filters for medium pressures for filtering hydraulic boost circuits**
- **in-line filters as high holding capacity filters on test beds**

**LMP filters are thus specifically designed to be suitable for a wide range of application: from steel plants to mobile equipments, from test benches to naval application, providing the right solution for filtering requirements in all sectors.**

**LMP filters are available in single, manifold and duplex versions (LMD series).**

## FILTER SIZING

For the proper corrective factor Y see chapter at page 25



# Low & Medium Pressure filters



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THE **X** CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

LFEX series

with **MYCLEAN** FEX Filter Element



- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as LFEX are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

# LFEX series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 300 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



LFEX060



LFEX080



LFEX110



LFEX160

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 1.6 MPa (16 bar)**  
**Flow rate up to 300 l/min**

LFEX is a range of low pressure filter for protection of sensitive components in low pressure hydraulic systems. They are also suitable for the off-line filtration of small reservoirs. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4" and SAE connections up to 1 5/8", for a maximum flow rate of 300 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid
- Bypass valve, to relieve excessive pressure drop across the filter media
- NEW Visual and electrical differential clogging indicators, capable to hold the overall dimension
- MYclean interface connection for the filter element, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

#### Common applications:

Delivery lines, in any low pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Aluminium
- Bypass valve: Polyamide - Steel
- Bowl: Polyamide

#### Bypass valve

Opening pressure 350 kPa (3.5 bar) ±10%

#### Δp element type

- Microfibre filter elements - series N: 8 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

Standard NBR series A

#### Temperature

From -25 °C to +110 °C

#### Note

LFEX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>LFEX 060</b>	1.00	0.60
<b>LFEX 080</b>	1.15	0.80
<b>LFEX 110</b>	1.90	1.60
<b>LFEX 160</b>	2.10	2.00

## Hydraulic symbols

Filter series	Style S	Style B
<b>LFEX 060</b>	•	•
<b>LFEX 080</b>	•	•
<b>LFEX 110</b>	•	•
<b>LFEX 160</b>	•	•

### Filter element design - N Series

Filter series	A03	A06	A10	A16	A25	M25	M60	M90	P10	P25
<b>LFE<sup>X</sup> 060</b>	45	47	65	66	68	84	84	86	67	73
<b>LFE<sup>X</sup> 080</b>	58	59	73	72	76	86	87	88	79	82

Connections of filter under test G 3/4"

Filter series	A03	A06	A10	A16	A25	M25	M60	M90	P10	P25
<b>LFE<sup>X</sup> 060</b>	49	51	75	77	80	104	105	107	74	95
<b>LFE<sup>X</sup> 080</b>	67	67	86	87	92	107	108	110	96	112

Connections of filter under test G 1"

Filter series	A03	A06	A10	A16	A25	M25	M60	M90	P10	P25
<b>LFE<sup>X</sup> 110</b>	107	115	182	195	216	295	298	300	232	242
<b>LFE<sup>X</sup> 160</b>	146	150	210	212	237	300	303	304	254	262

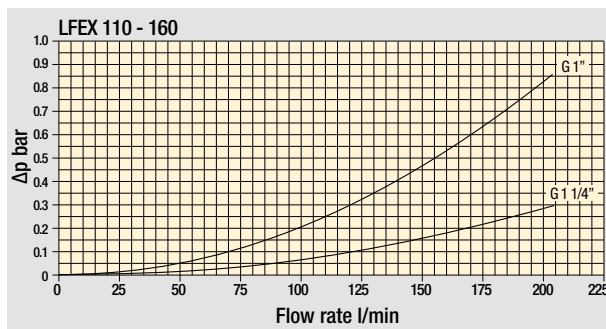
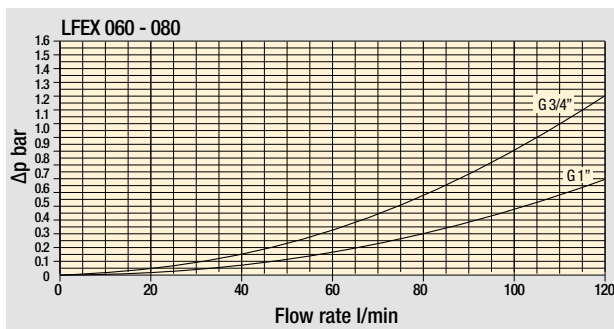
Connections of filter under test G 1 1/4"

### Maximum flow rate for a complete delivery filter with a pressure drop $\Delta p = 0.7$ bar.

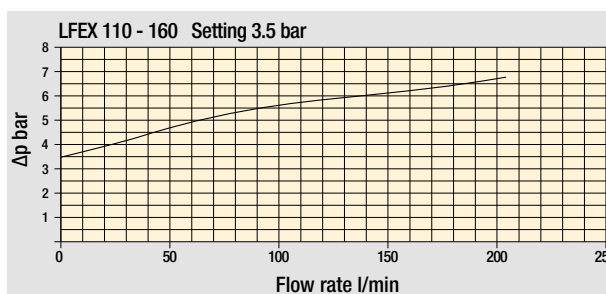
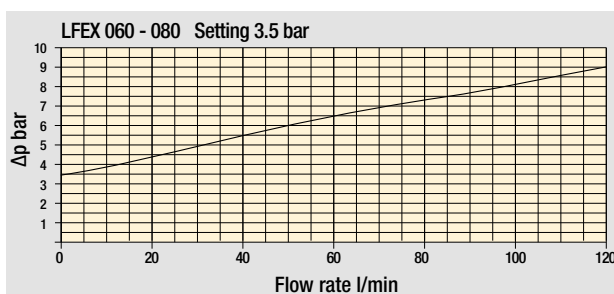
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

Please, contact our Sales Department for further additional information.



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.

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **LFEX060** **B** **A** **A** **6** **A10** **N** **P01**

**LFEX060** | **LFEX080** Filter featuring **MY CLEAN** Filter Element

**Bypass valve**

**S** Without bypass

**B** With bypass 3.5 bar

**Seals and treatments**

**A** NBR

**Connections**

**A** G 3/4"

**B** G 1"

**C** 3/4" NPT

**D** 1" NPT

**E** SAE 12 - 1 1/16" - 12 UN

**F** SAE 16 - 1 5/16" - 12 UN

**Connection for clogging indicator**

**1** Without

**6** With plugged connections

**Filtration rating**

<b>A03</b> Inorganic microfiber	3 µm	<b>M25</b> Wire mesh	25 µm
<b>A06</b> Inorganic microfiber	6 µm	<b>M60</b> Wire mesh	60 µm
<b>A10</b> Inorganic microfiber	10 µm	<b>M90</b> Wire mesh	90 µm
<b>A16</b> Inorganic microfiber	16 µm	<b>P10</b> Resin impregnated paper	10 µm
<b>A25</b> Inorganic microfiber	25 µm	<b>P25</b> Resin impregnated paper	25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Element Δp**  
**N** 8 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series and size Configuration example: **FEX060** **A10** **A** **N** **P01**

**FEX060** | **FEX080** Filter Element with **MY CLEAN** feature

**Filtration rating**

<b>A03</b> Inorganic microfiber	3 µm	<b>M25</b> Wire mesh	25 µm
<b>A06</b> Inorganic microfiber	6 µm	<b>M60</b> Wire mesh	60 µm
<b>A10</b> Inorganic microfiber	10 µm	<b>M90</b> Wire mesh	90 µm
<b>A16</b> Inorganic microfiber	16 µm	<b>P10</b> Resin impregnated paper	10 µm
<b>A25</b> Inorganic microfiber	25 µm	<b>P25</b> Resin impregnated paper	25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**

**A** NBR

**Element Δp**  
**N** 8 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

**DES** Electrical differential pressure indicator

**DVS** Visual differential pressure indicator

### PLUGS

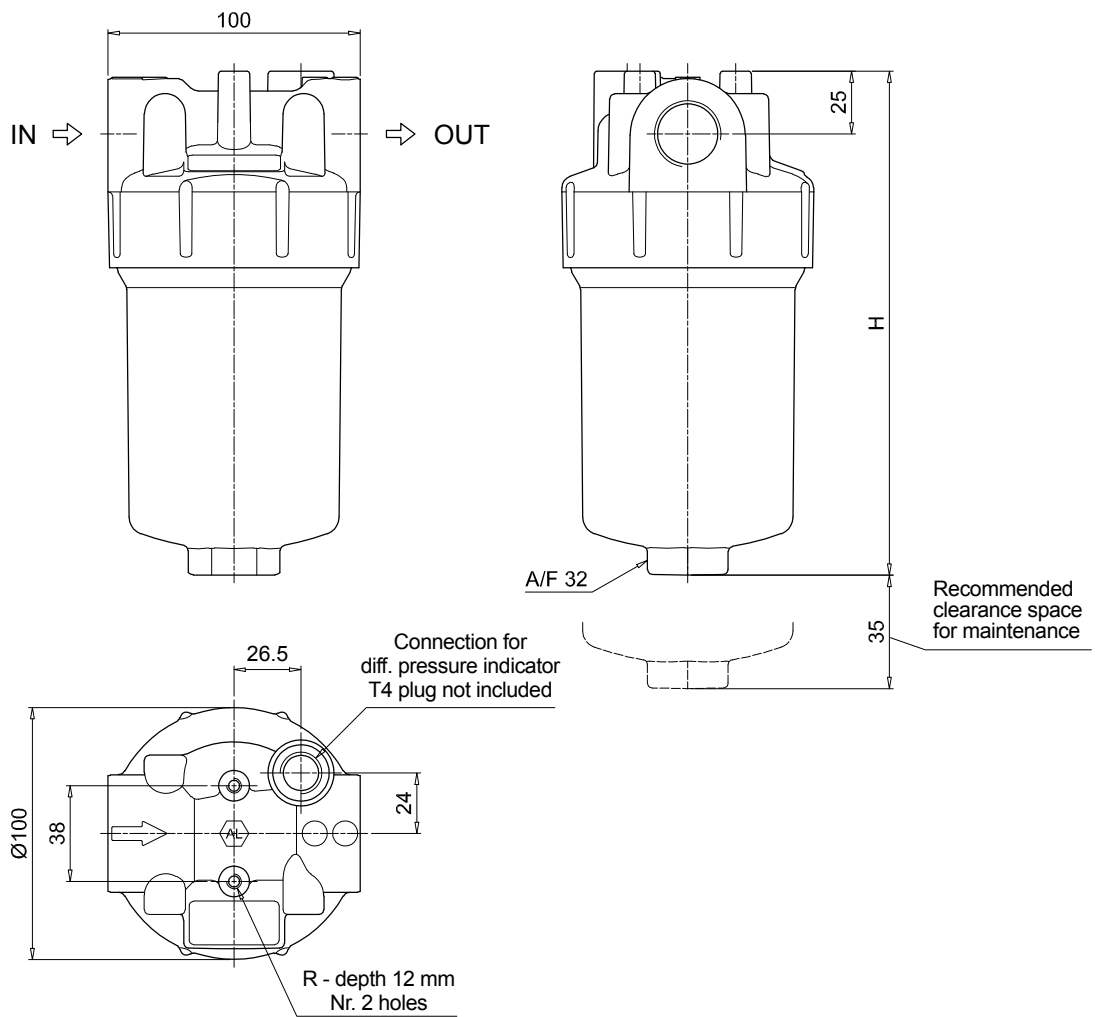
See page 737

**T4** Plug

Filter size	H [mm]
<b>060</b>	202
<b>080</b>	265

Connections	R
<b>A</b>	M6
<b>B</b>	M6
<b>C</b>	1/4" UNC
<b>D</b>	1/4" UNC
<b>E</b>	1/4" UNC
<b>F</b>	1/4" UNC



# LFEX LFEX110 - LFEX160

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **LFEX110** **B** **A** **A** **6** **A10** **N** **P01**

**LFEX110** | **LFEX160** Filter featuring  Filter Element

#### Bypass valve

- S** Without bypass
- B** With bypass 3.5 bar

#### Seals and treatments

- A** NBR

#### Connections

- A** G 1"
- B** G 1 1/4"
- C** 1" NPT
- D** 1 1/4" NPT
- E** SAE 16 - 1 5/16" - 12 UN
- F** SAE 20 - 1 5/8" - 12 UN

#### Connection for clogging indicator

- 1** Without
- 6** With plugged connections

#### Filtration rating

<b>A03</b> Inorganic microfiber	3 µm	<b>M25</b> Wire mesh	25 µm
<b>A06</b> Inorganic microfiber	6 µm	<b>M60</b> Wire mesh	60 µm
<b>A10</b> Inorganic microfiber	10 µm	<b>M90</b> Wire mesh	90 µm
<b>A16</b> Inorganic microfiber	16 µm	<b>P10</b> Resin impregnated paper	10 µm
<b>A25</b> Inorganic microfiber	25 µm	<b>P25</b> Resin impregnated paper	25 µm

**WA025** Water absorber inorganic microfiber 25 µm

Element Δp  
**N** 8 bar

Execution  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series and size Configuration example: **FEX110** **A10** **A** **N** **P01**

**FEX110** | **FEX160** Filter Element with  feature

#### Filtration rating

<b>A03</b> Inorganic microfiber	3 µm	<b>M25</b> Wire mesh	25 µm
<b>A06</b> Inorganic microfiber	6 µm	<b>M60</b> Wire mesh	60 µm
<b>A10</b> Inorganic microfiber	10 µm	<b>M90</b> Wire mesh	90 µm
<b>A16</b> Inorganic microfiber	16 µm	<b>P10</b> Resin impregnated paper	10 µm
<b>A25</b> Inorganic microfiber	25 µm	<b>P25</b> Resin impregnated paper	25 µm

**WA025** Water absorber inorganic microfiber 25 µm

#### Seals and treatments

- A** NBR

Element Δp  
**N** 8 bar

Execution  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

**DES** Electrical differential pressure indicator

**DVS** Visual differential pressure indicator

### PLUGS

See page 737

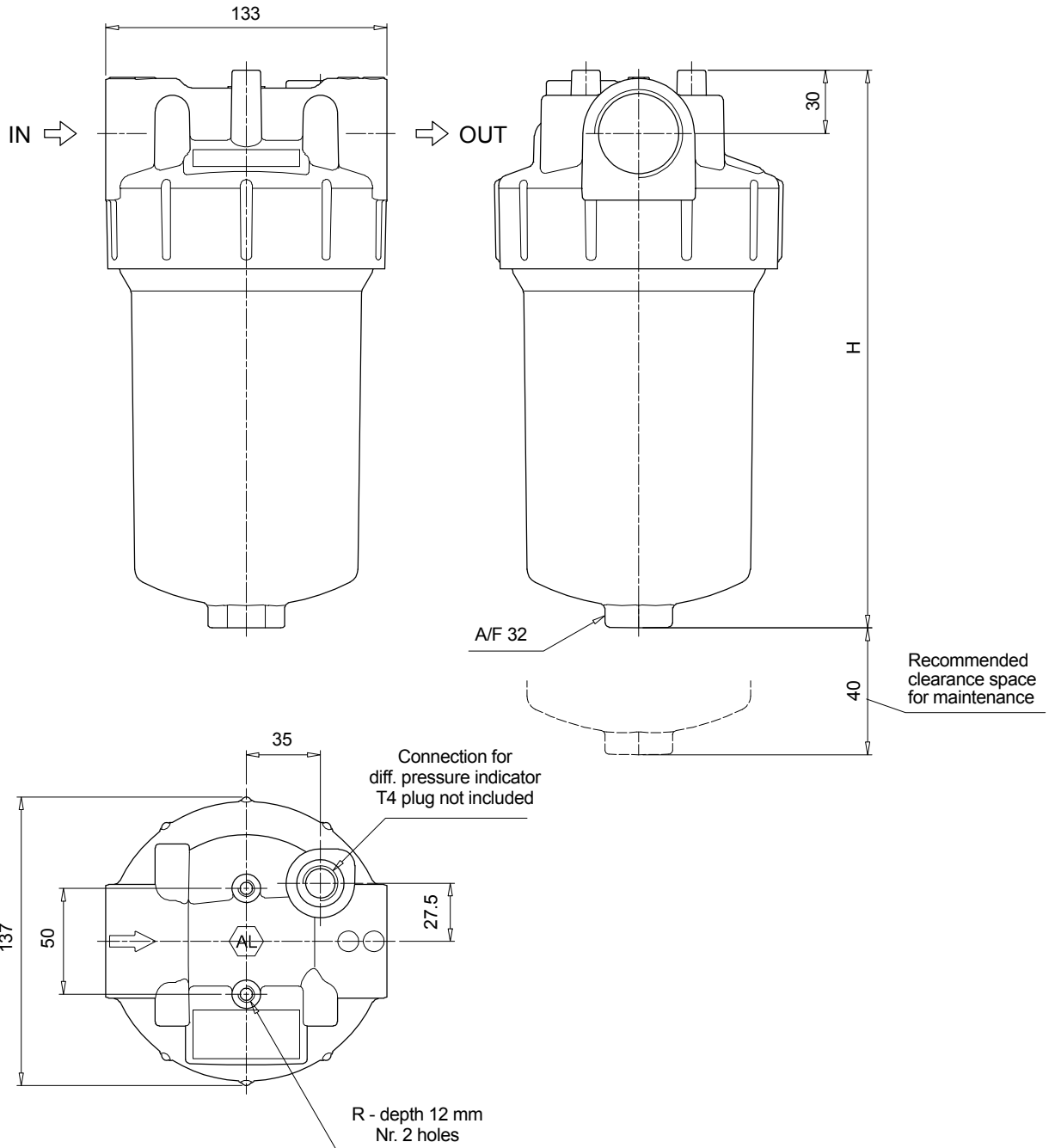
**T4** Plug



Filter size	H [mm]
<b>110</b>	266
<b>160</b>	315

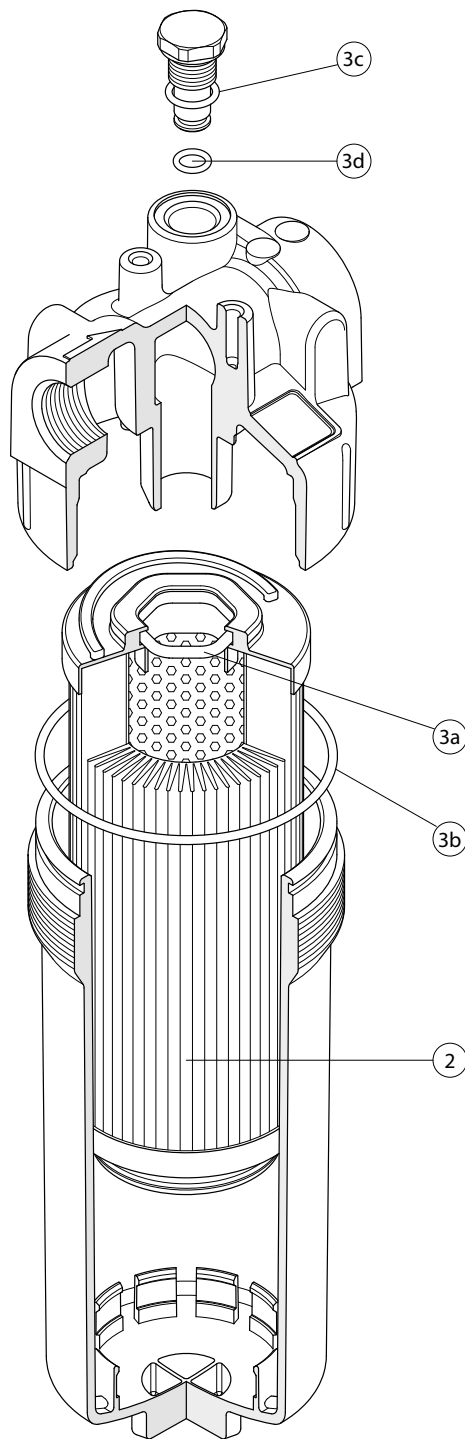
  

Connections	R
<b>A</b>	M8
<b>B</b>	M8
<b>C</b>	5/16" UNC
<b>D</b>	5/16" UNC
<b>E</b>	5/16" UNC
<b>F</b>	5/16" UNC



# LFEX SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	<b>2</b>	<b>3</b> (3a ÷ 3d)	<b>4</b>
Filter series	Filter element	Seal Kit code number NBR	Indicator connection plug NBR
<b>LFEX 060-080</b>	See order table	02050771	T4A
<b>LFEX 110-160</b>		02050772	





# LMP 110 series

Maximum working pressure up to 8 MPa (80 bar) - Flow rate up to 165 l/min



# LMP 110 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 8 MPa (80 bar)**  
**Flow rate up to 165 l/min**

LMP110 is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1", for a maximum return flow rate of 165 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators.

#### Common applications:

Delivery lines, in any low pressure industrial equipment or mobile machines

### Filter housing materials

- Head: Aluminium
- Housing: Cataphoresis - Painted steel
- Bypass valve: Brass - Aluminium

### Pressure

- Test pressure: 12 MPa (120 bar)
- Burst pressure: 29 MPa (290 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 8 MPa (80 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

### $\Delta p$ element type

- Microfibre filter elements - series N - W: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

LMP filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>LMP 110</b>		1.60	1.80	2.10	2.60		0.75	0.81	1.11	1.53

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LMP 110</b>	<b>1</b>	40	42	65	69	85	163	117	120
	<b>2</b>	49	57	83	83	101	163	136	138
	<b>3</b>	66	70	92	102	124	164	142	144
	<b>4</b>	86	102	118	124	144	165	148	149

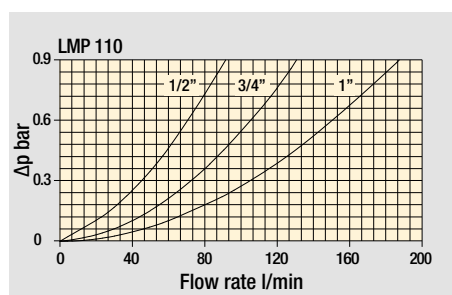
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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>.

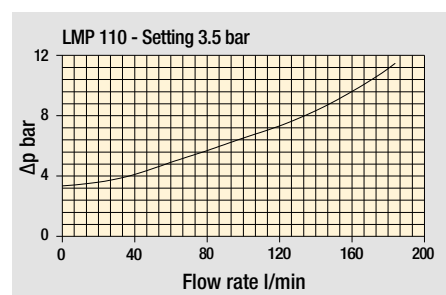
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

### Pressure drop



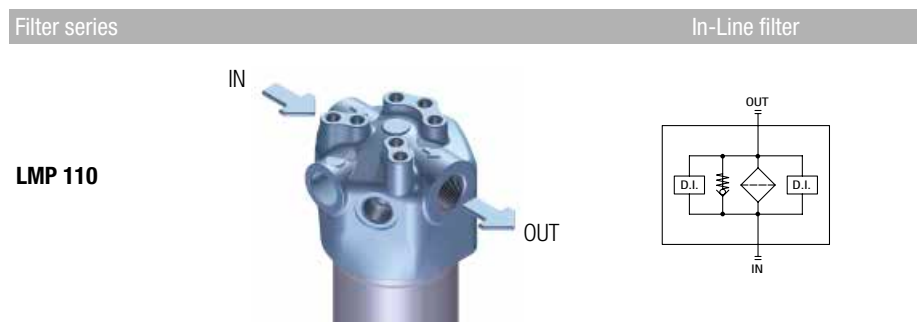
Filter housings  $\Delta p$  pressure drop



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.

### Hydraulic symbols



# LMP 110

## Designation & Ordering code

### COMPLETE FILTER

Series and size **LMP110** Configuration example: **LMP110** **4** **B** **A** **D** **1** **A10** **N** **P01**

**Length**  
**1** | **2** | **3** | **4** |

**Bypass valve**  
**S** Without bypass | **B** With bypass 3.5 bar

**Seals and treatments**  
**A** NBR  
**V** FPM

**Connections**

	Aux (only LMP 112 - 116)
<b>A</b> G 3/4"	G 3/4"
<b>B</b> G 1"	G 3/4"
<b>C</b> 3/4" NPT	3/4" NPT
<b>D</b> 1" NPT	3/4" NPT
<b>E</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
<b>F</b> SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN

**Connection for differential pressure indicator**  
**1** Without  
**2** With standard connection  
**3** With connection on the opposite side  
**6** With two connections on both sides

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series and size **CU110** Configuration example: **CU110** **4** **A10** **A** **N** **P01**

**Element length**  
**1** | **2** | **3** | **4** |

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Seals and treatments**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

**DEA** Electrical differential pressure indicator  
**DEM** Electrical differential pressure indicator  
**DEU** Electrical differential pressure indicator  
**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator  
**DTA** Electronic differential pressure indicator  
**DVA** Visual differential pressure indicator  
**DVM** Visual differential pressure indicator

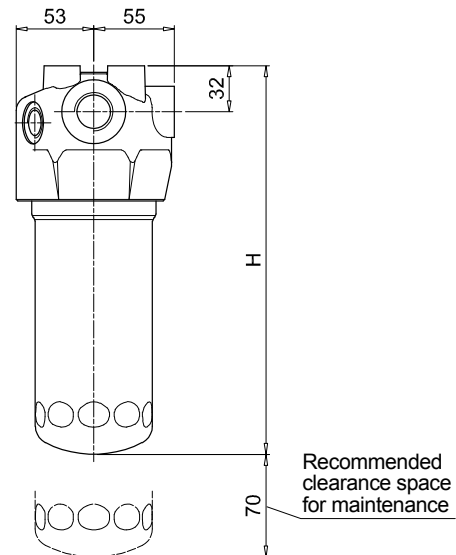
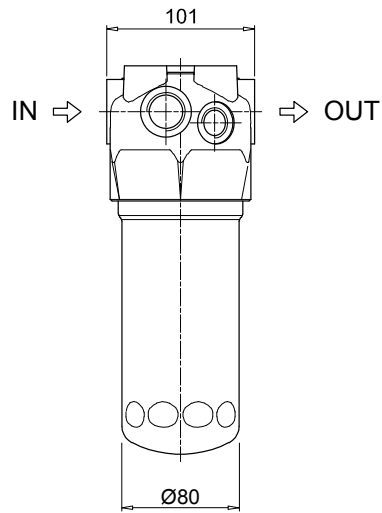
### PLUGS

See page 737

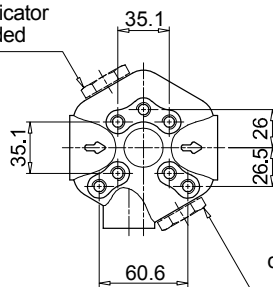
**T2** Plug (not included)



LMP110	
Filter length	H [mm]
1	182
2	215
3	265
4	365

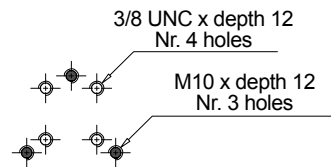


2 - Standard connection for diff. pressure indicator  
T2 plug not included

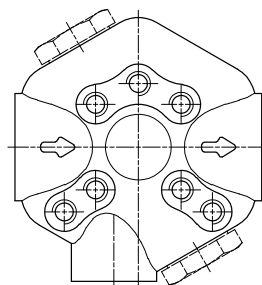


3 - Connection for diff. pressure indicator on the opposite side  
T2 plug not included

Fixing holes  
Option for Metric and UNC screws

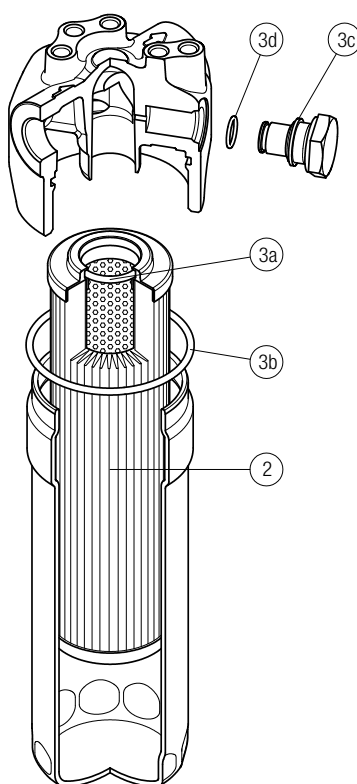


LMP 110



Order number for spare parts

**LMP 110**



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		
		NBR	FPM	NBR	FPM	
<b>LMP 110</b>	See order table	02050478	02050479	T2H	T2V	





# LMP 112 / 123 series

MULTIPOINT

Maximum working pressure up to 8 MPa (80 bar) - Flow rate up to 175 l/min



### Description

### Technical data

#### Low & Medium Pressure filters

**Maximum working pressure up to 8 MPa (80 bar)**  
**Flow rate up to 175 l/min**

LMP MULTIPOINT filters is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1", for a maximum return flow rate of 175 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators
- Multiport and multifunction schemes, to meet any type of application.
- LMP112: 3/4" additional input port
- LMP116: 3/4" additional output port
- LMP118: 3/4" bypass port, to send the bypass flow to the reservoir instead of the system
- LMP119: 3/4" relief port, to relief the input pressure in the filter, protecting the components downstream the filter against back pressure caused by the pressure drop (cold starts)
- LMP120: connections placed in the same side
- LMP122: connections placed in the same side and 1" additional output port
- LMP123: 2 and 3 bar integrated relief valve

#### Common applications:

Delivery lines, in any low pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Aluminium
- Housing: Cataphoresis - Painted steel
- Bypass valve: Brass - Aluminium

#### Pressure

- Test pressure: 12 MPa (120 bar)
- Burst pressure:
  - LMP 112/119: 29 MPa (290 bar)
  - LMP 120/123: 38 MPa (380 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 8 MPa (80 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N - W: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

LMP MULTIPOINT filters are provided for vertical mounting

### Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>LMP 112-116-118-119</b>		1.60	1.80	2.10	2.60		0.75	0.81	1.11	1.53
<b>LMP 120-122</b>		1.90	2.10	2.40	2.90		0.75	0.81	1.11	1.53
<b>LMP 123</b>		1.70	1.90	2.20	2.70		0.75	0.81	1.11	1.53

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LMP 112</b>	<b>1</b>	36	38	55	57	67	105	84	86
	<b>2</b>	44	49	66	66	76	105	93	94
	<b>3</b>	56	58	71	77	87	106	96	97
	<b>4</b>	67	77	85	88	97	106	99	99
<b>LMP 116</b>	<b>1</b>	36	38	54	56	64	96	79	80
	<b>2</b>	43	49	63	64	72	96	86	87
	<b>3</b>	54	57	68	73	82	96	88	89
	<b>4</b>	65	73	79	82	89	96	91	91
<b>LMP 118</b> <b>LMP 119</b>	<b>1</b>	40	42	65	69	85	163	117	120
	<b>2</b>	49	57	83	83	101	163	136	138
	<b>3</b>	66	70	92	102	124	164	142	144
	<b>4</b>	86	102	118	124	144	165	148	149
<b>LMP 120</b>	<b>1</b>	40	43	66	70	87	172	121	125
	<b>2</b>	50	58	85	85	104	172	142	144
	<b>3</b>	67	71	94	105	129	173	149	151
	<b>4</b>	88	106	122	129	151	174	155	157
<b>LMP 122</b>	<b>1</b>	39	42	64	67	81	146	109	111
	<b>2</b>	49	56	80	80	96	146	124	126
	<b>3</b>	65	68	88	96	114	146	129	130
	<b>4</b>	82	97	110	115	131	147	134	135

**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  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	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LMP 123</b>	<b>1</b>	35	37	50	52	59	83	70	71
	<b>2</b>	41	46	58	58	65	83	76	76
	<b>3</b>	51	53	62	65	72	83	77	78
	<b>4</b>	59	65	70	72	78	83	79	79

**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 2.7$  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>.

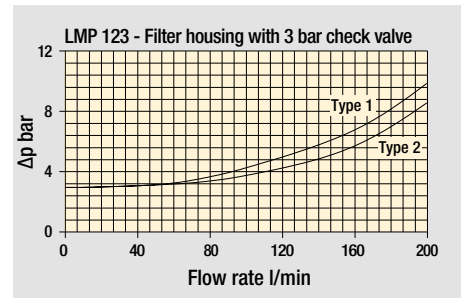
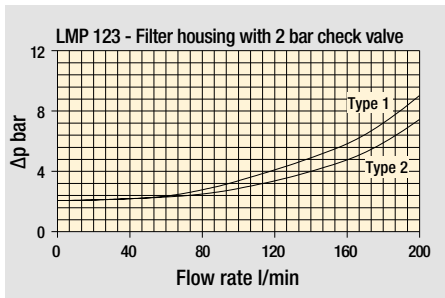
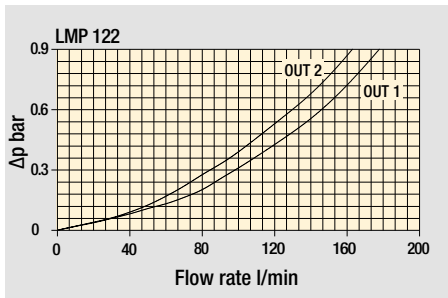
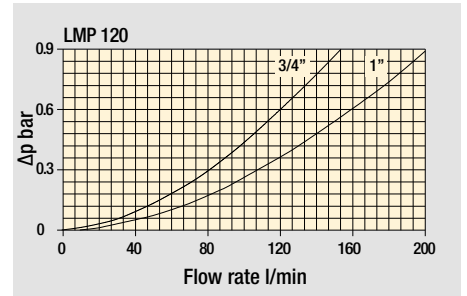
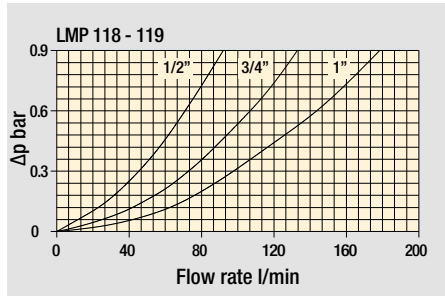
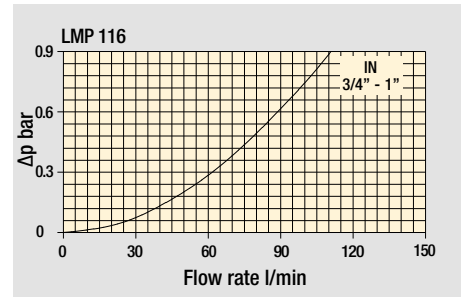
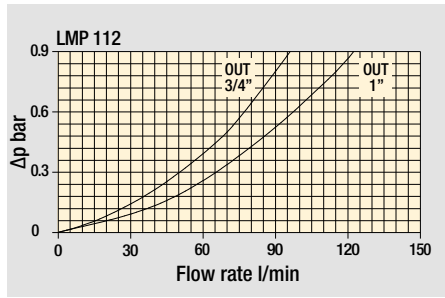
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

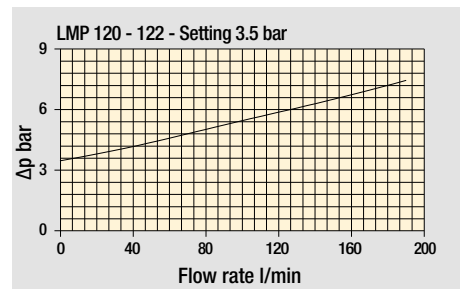
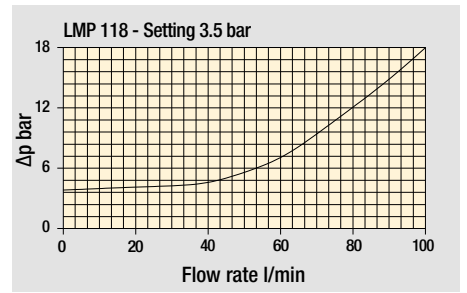
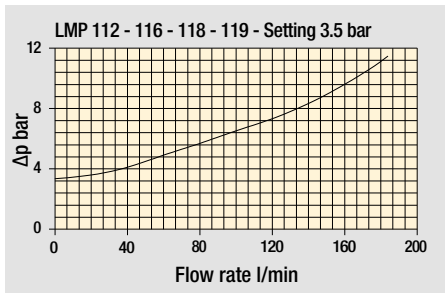
Please, contact our Sales Department for further additional information.

## 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.



**LMP 112** Double IN port

**LMP 120** Port IN-OUT on the same side

**LMP 116** Double OUT port

**LMP 122** Lateral OUT port high flow

OUT 1 Plug not provided

**LMP 118** Bypass lateral  
Always cleaning fluid in OUT port

**LMP 123** Bypass valve  
Type 1 for heat exchanger high flow

**LMP 119** Safety valve 6 bar  
for heat exchanger

**LMP 123** Type 2

Designation & Ordering code

**COMPLETE FILTER**

Series and size **LMP112 | LMP116** Configuration example: **LMP112** **4** **B** **A** **D** **1** **A10** **N** **P01**

Length **1** | **2** | **3** | **4**

Bypass valve **S** Without bypass **B** With bypass 3.5 bar

Seals and treatments **A** NBR **V** FPM

Connections		Aux (only LMP 112 - 116)
<b>A</b> G 3/4"	G 3/4"	G 3/4"
<b>B</b> G 1"	G 3/4"	G 3/4"
<b>C</b> 3/4" NPT	3/4" NPT	3/4" NPT
<b>D</b> 1" NPT	3/4" NPT	3/4" NPT
<b>E</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
<b>F</b> SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN

Connection for differential pressure indicator **1** Without **2** With standard connection **3** With connection on the opposite side **6** With two connections on both sides

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp **N** 20 bar Execution **P01** MP Filtri standard **Pxx** Customized

**FILTER ELEMENT**

Element series and size **CU110** Configuration example: **CU110** **4** **A10** **A** **N** **P01**

Element length **1** | **2** | **3** | **4**

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Seals and treatments **A** NBR **V** FPM Element Δp **N** 20 bar Execution **P01** MP Filtri standard **Pxx** Customized

**CLOGGING INDICATORS**

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

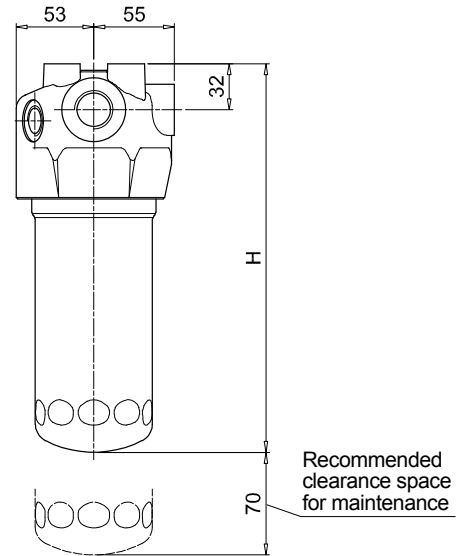
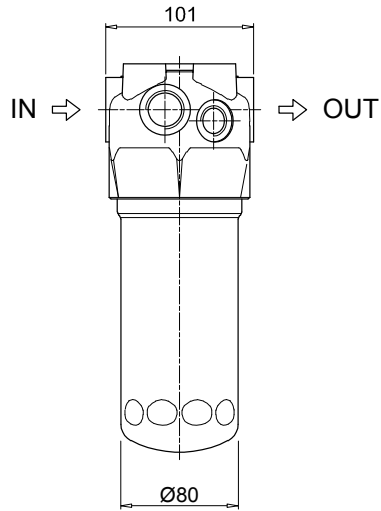
**PLUGS**

See page 737

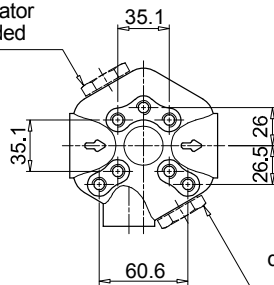
<b>T2</b> Plug (not included)
-------------------------------

LMP112 - LMP116

Filter length	H [mm]
1	182
2	215
3	265
4	365

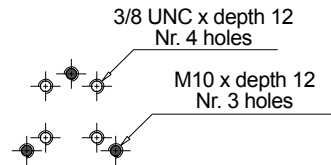


2 - Standard connection for diff. pressure indicator  
T2 plug not included

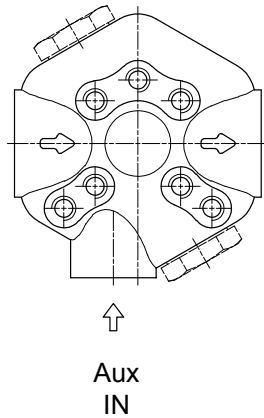


3 - Connection for diff. pressure indicator  
on the opposite side  
T2 plug not included

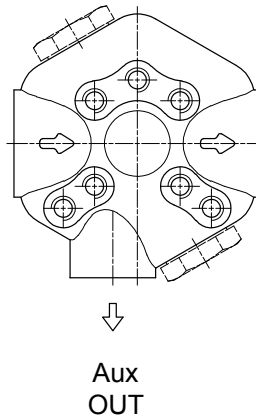
Fixing holes  
Option for Metric and UNC screws



LMP 112



LMP 116



Designation & Ordering code

**COMPLETE FILTER**

Series and size **LMP118 | LMP119** Configuration example: **LMP118** **4** **B** **A** **D** **1** **A10** **N** **P01**

**Length**  
1 | 2 | 3 | 4

**Bypass valve**  
**B** With bypass 3.5 bar

**Seals and treatments**  
**A** NBR  
**V** FPM

**Connections**

	Aux OUT
<b>A</b> G 3/4"	G 3/4"
<b>B</b> G 1"	G 3/4"
<b>C</b> 3/4" NPT	3/4" NPT
<b>D</b> 1" NPT	3/4" NPT
<b>E</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
<b>F</b> SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN

**Connection for differential pressure indicator**  
**1** Without  
**2** With standard connection

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

**FILTER ELEMENT**

Element series and size **CU110** Configuration example: **CU110** **4** **A10** **A** **N** **P01**

**Element length**  
1 | 2 | 3 | 4

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**Seals and treatments**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

**CLOGGING INDICATORS**

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

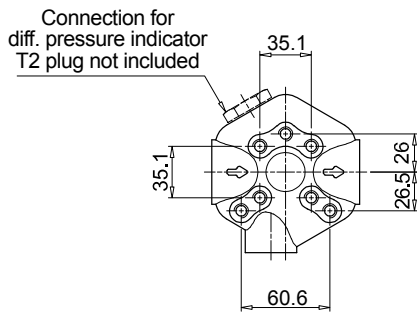
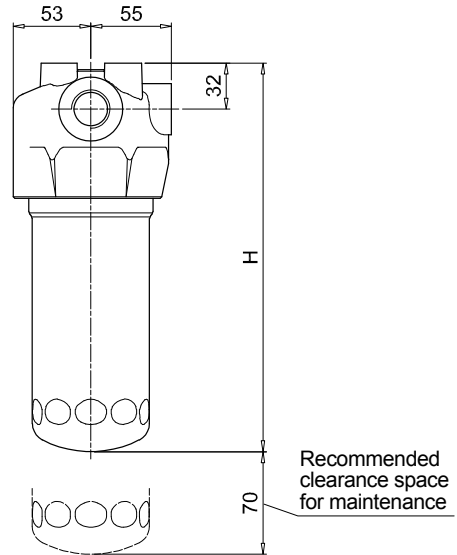
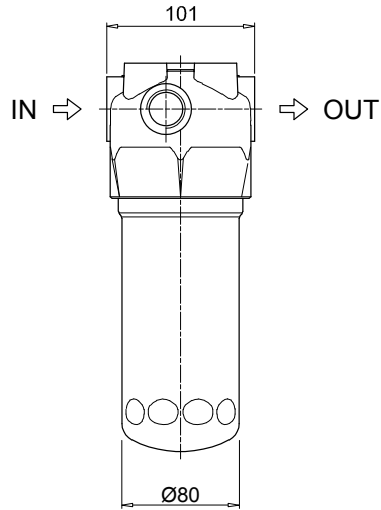
**PLUGS**

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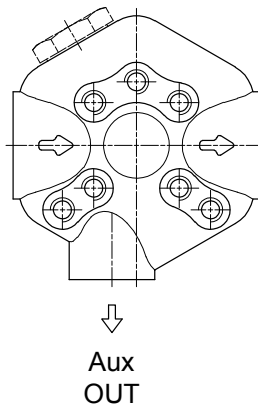
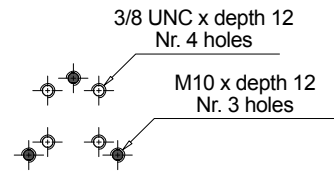
<b>T2</b> Plug (not included)
-------------------------------

LMP118 - LMP119

Filter length	H [mm]
1	182
2	215
3	265
4	365



Fixing holes  
Option for Metric and UNC screws



Designation & Ordering code

**COMPLETE FILTER**

Series and size **LMP120 | LMP122** Configuration example: **LMP120** **4** **B** **A** **D** **1** **A10** **N** **P01**

Length **1** | **2** | **3** | **4**

Bypass valve **S** Without bypass **B** With bypass 3.5 bar

Seals and treatments **A** NBR **V** FPM

Connections	LMP120	LMP122
<b>A</b> G 3/4"	•	-
<b>B</b> G 1"	•	•
<b>C</b> 3/4" NPT	•	-
<b>D</b> 1" NPT	•	•
<b>E</b> SAE 12 - 1 1/16" - 12 UN	•	-
<b>F</b> SAE 16 - 1 5/16" - 12 UN	•	•

Connection for differential pressure indicator **1** Without **2** With standard connection

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp **N** 20 bar Execution **P01** MP Filtri standard **Pxx** Customized

**FILTER ELEMENT**

Element series and size **CU110** Configuration example: **CU110** **4** **A10** **A** **N** **P01**

Element length **1** | **2** | **3** | **4**

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Seals and treatments **A** NBR **V** FPM Element Δp **N** 20 bar Execution **P01** MP Filtri standard **Pxx** Customized

**CLOGGING INDICATORS**

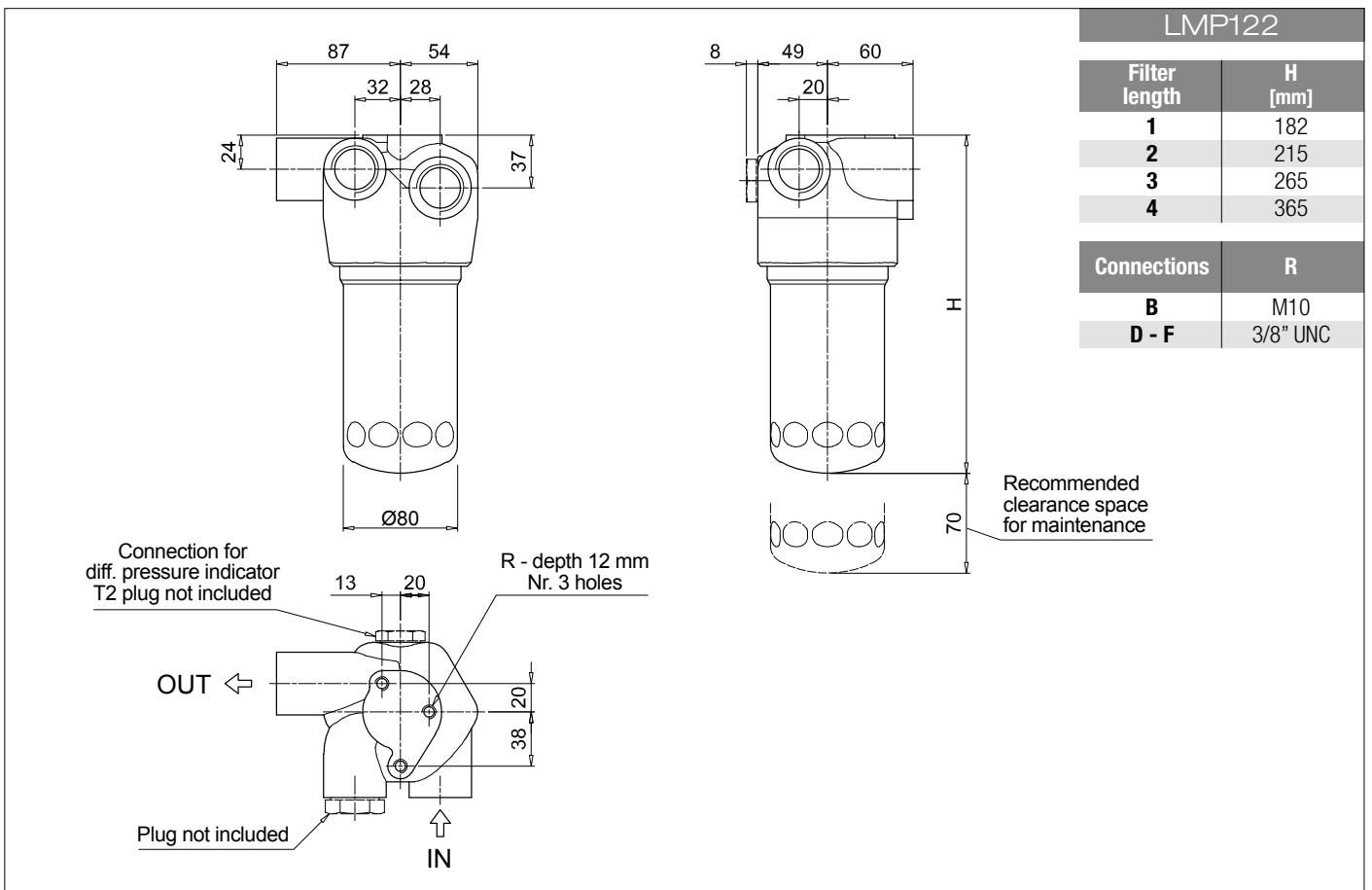
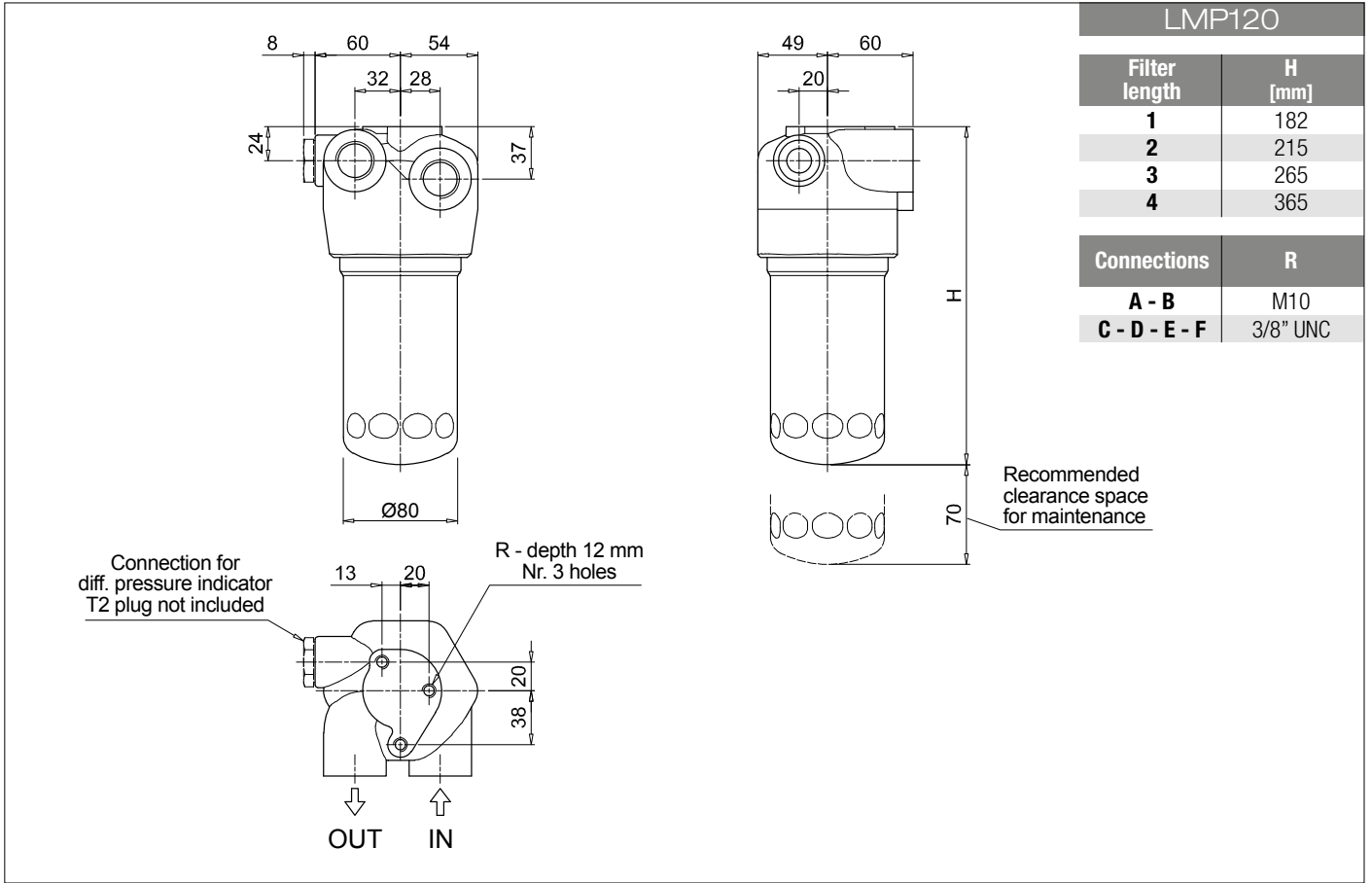
See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

**PLUGS**

See page 737

<b>T2</b> Plug
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Designation & Ordering code

**COMPLETE FILTER**

Series and size **LMP123** Configuration example: **LMP123** **4** **R** **A** **F** **1** **A10** **N** **P01**

Length **1** | **2** | **3** | **4**

Valves	Bypass	OUT to cooler	Check valve
<b>C</b>	without	front	2 bar
<b>D</b>			3 bar
<b>G</b>		side	2 bar
<b>H</b>			3 bar
<b>M</b>	With bypass 3.5 bar	front	2 bar
<b>N</b>			3 bar
<b>Q</b>		side	2 bar
<b>R</b>			3 bar

Seals and treatments  
**A** NBR  
**V** FPM

Connections  
**B** G 1"  
**F** SAE 16 - 1 5/16" - 12 UN

Connection for differential pressure indicator  
**1** Without  
**2** With standard connection

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Element Δp  
**N** 20 bar

Execution  
**P01** MP Filtri standard  
**Pxx** Customized

**FILTER ELEMENT**

Element series and size **CU110** Configuration example: **CU110** **4** **A10** **A** **N** **P01**

Element length **1** | **2** | **3** | **4**

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

Seals and treatments  
**A** NBR  
**V** FPM

Element Δp  
**N** 20 bar

Execution  
**P01** MP Filtri standard  
**Pxx** Customized

**CLOGGING INDICATORS**

See page 716

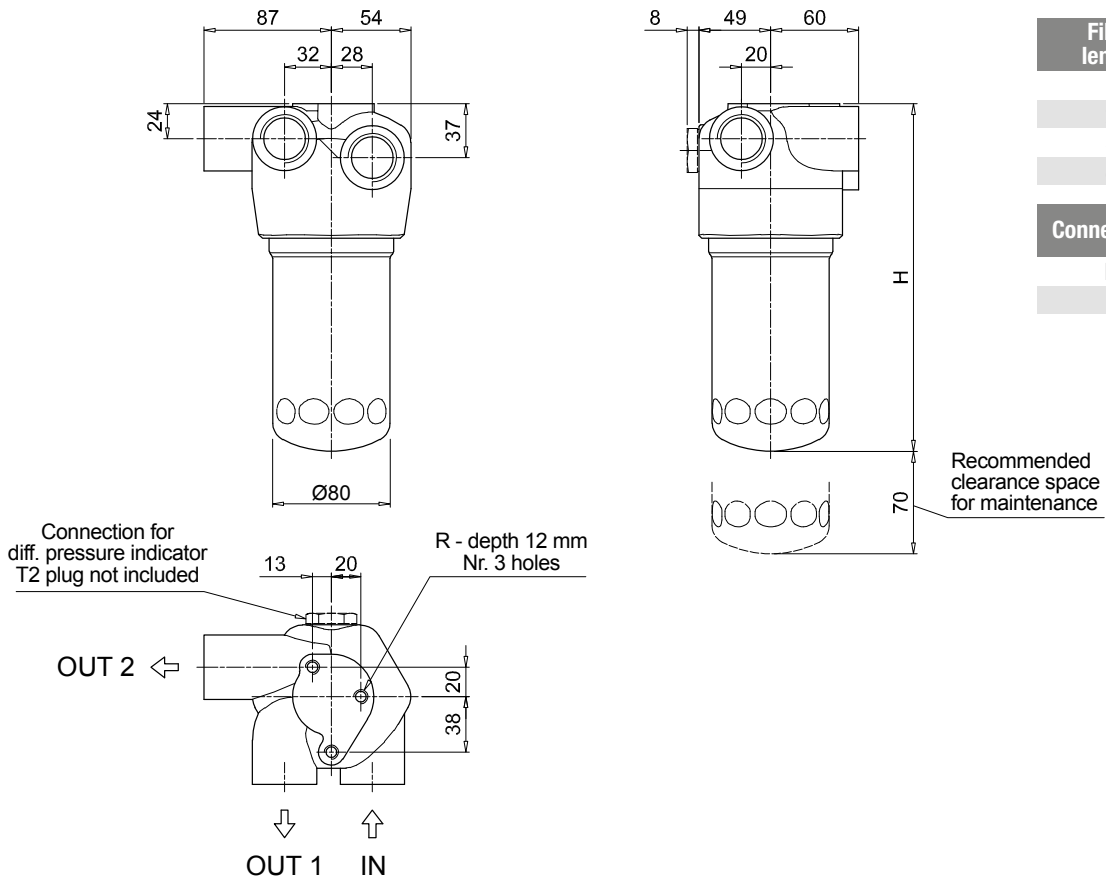
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<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

**PLUGS**

See page 737

**T2** Plug





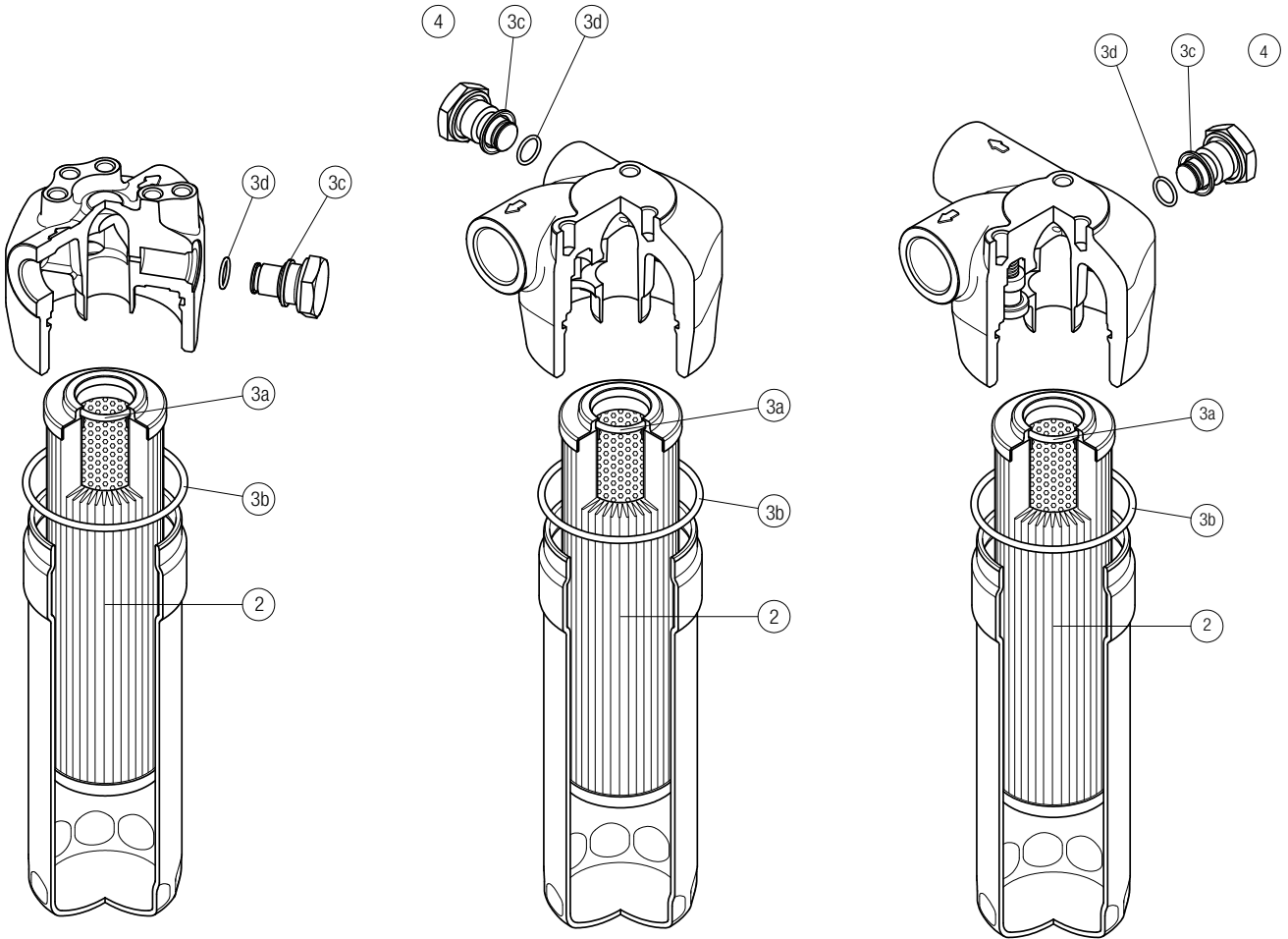
LMP123	
Filter length	H [mm]
1	182
2	215
3	265
4	365
Connections	R
B	M10
F	3/8" UNC

Order number for spare parts

LMP 112 - 116 - 118 - 119

LMP 120

LMP 122 - 123



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		
LMP 112-116 -118-119	See order table	NBR	FPM	NBR	FPM	
LMP 120		02050478	02050479	T2H	T2V	
LMP 122-123						





# LMP 210-211

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 365 l/min



# LMP 210-211 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 6 MPa (60 bar)**  
**Flow rate up to 365 l/min**

LMP210 is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools.

They are also suitable for the off-line filtration of small reservoirs. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 1 1/2", for a maximum flow rate of 365 l/min (LMP210)
- Female threaded connections up to 1 1/2", for a maximum return flow rate of 365 l/min (LMP211)
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any low pressure industrial equipment or mobile machines

### Filter housing materials

- Head: Aluminium
- Bowl: Cataphoretic painted steel
- Bypass valve: AISI 304 - Polyamide

### Pressure

- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

Inlet/Outlet In-Line

### Note

LMP 210 - 211 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	Length	1	2	3
<b>LMP 210-211</b>		3.10	4.80	6.40		1.60	2.10	2.80

Filter series	Length	Filter element design - N Series									
		A03	A06	A10	A16	A25	M25	M60	M90	P10	P25
LMP 210	1	106	130	190	200	221	286	287	287	261	265
	2	153	175	220	237	249	288	289	290	265	269
	3	204	214	248	260	265	289	290	291	277	281
LMP 211	1	118	149	227	240	269	358	359	360	324	330
	2	178	207	268	292	307	361	362	363	329	335
	3	247	260	306	323	329	362	363	364	345	351

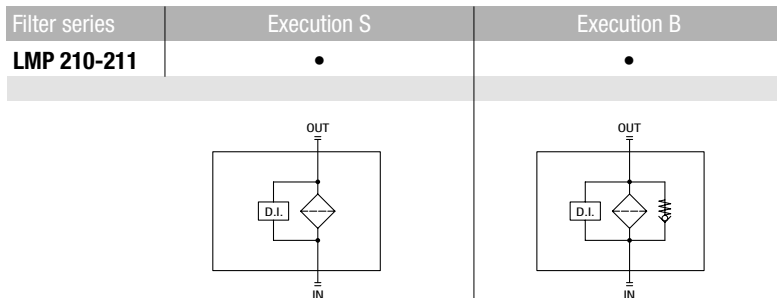
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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).

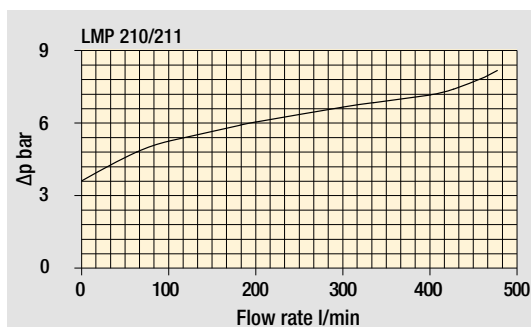
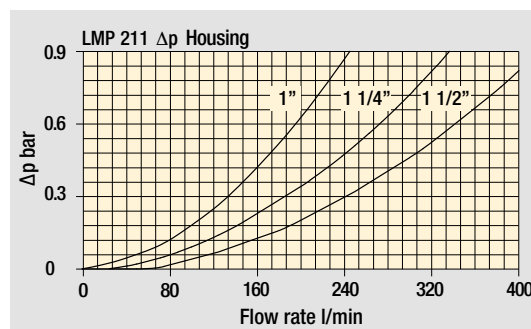
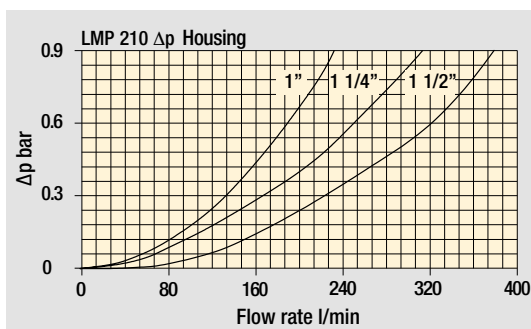
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

### Hydraulic symbols



### Pressure drop

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.

# LMP 210

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **LMP210** **3** **B** **A** **F1** **A10** **N** **P01**

**Series and size**  
**LMP210**

**Length**  
**1** | **2** | **3**

**Bypass valve**  
**S** Without bypass | **B** With bypass 3.5 bar

**Seals and treatments**  
**A** NBR  
**V** FPM

**Connections**  
**F1** 1" SAE 3000 psi/M  
**F2** 1 1/4" SAE 3000 psi/M  
**F3** 1 1/2" SAE 3000 psi/M  
**F4** 1" SAE 3000 psi/UNC  
**F5** 1 1/4" SAE 3000 psi/UNC  
**F6** 1 1/2" SAE 3000 psi/UNC

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm | **M25** Wire mesh 25 µm  
**A06** Inorganic microfiber 6 µm | **M60** Wire mesh 60 µm  
**A10** Inorganic microfiber 10 µm | **M90** Wire mesh 90 µm  
**A16** Inorganic microfiber 16 µm | **P10** Resin impregnated paper 10 µm  
**A25** Inorganic microfiber 25 µm | **P25** Resin impregnated paper 25 µm  
**WA025** Water absorber inorganic microfiber 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **CU210** **3** **A10** **A** **N** **P01**

**Element series and size**  
**CU210**

**Element length**  
**1** | **2** | **3**

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm | **M25** Wire mesh 25 µm  
**A06** Inorganic microfiber 6 µm | **M60** Wire mesh 60 µm  
**A10** Inorganic microfiber 10 µm | **M90** Wire mesh 90 µm  
**A16** Inorganic microfiber 16 µm | **P10** Resin impregnated paper 10 µm  
**A25** Inorganic microfiber 25 µm | **P25** Resin impregnated paper 25 µm  
**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

**DEA** Electrical differential pressure indicator  
**DEM** Electrical differential pressure indicator  
**DEU** Electrical differential pressure indicator  
**DLA** Electrical / visual differential pressure indicator

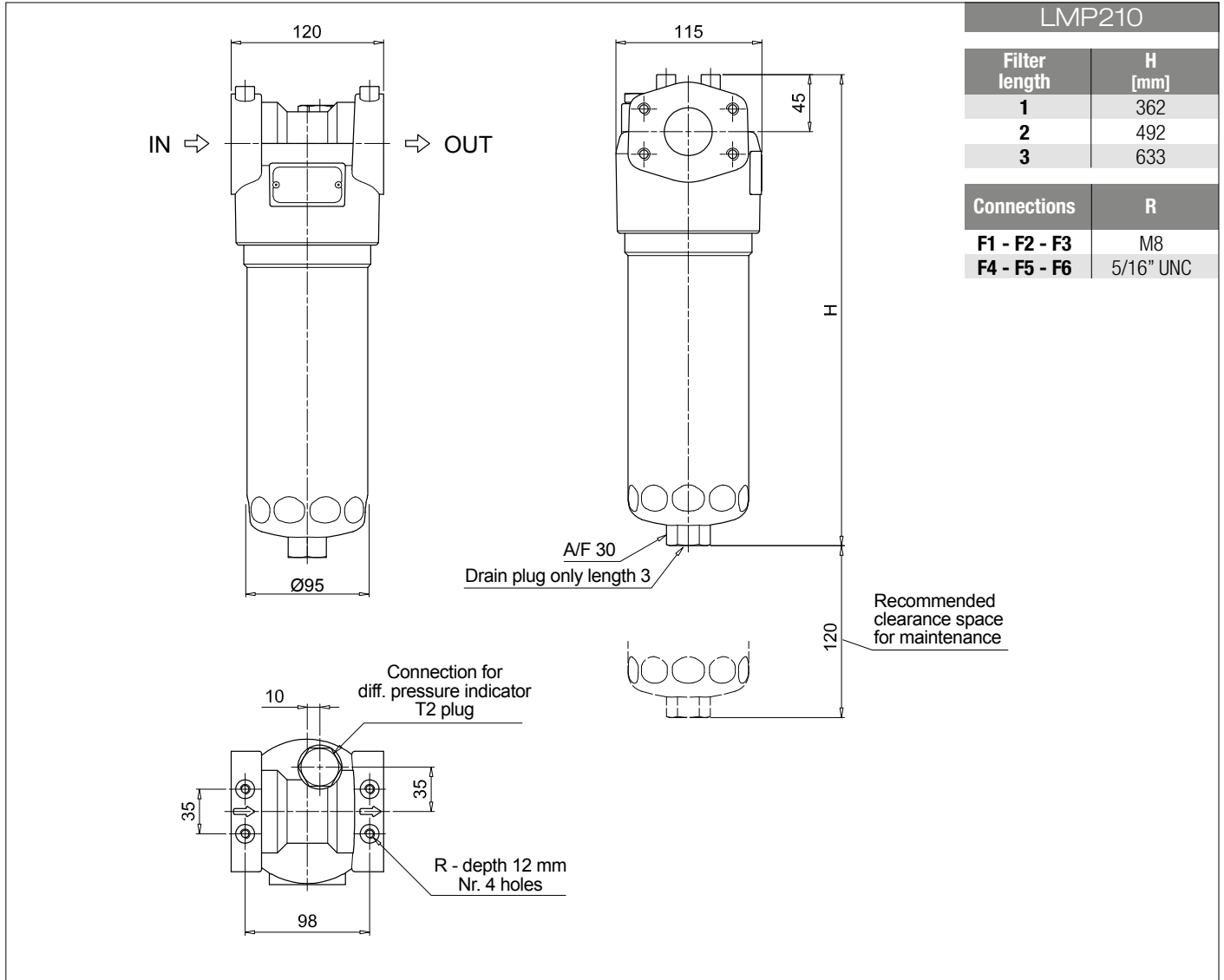
**DLE** Electrical / visual differential pressure indicator  
**DTA** Electronic differential pressure indicator  
**DVA** Visual differential pressure indicator  
**DVM** Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug





LMP210	
Filter length	H [mm]
1	362
2	492
3	633
Connections	R
F1 - F2 - F3	M8
F4 - F5 - F6	5/16" UNC

# LMP 211

## Designation & Ordering code

### COMPLETE FILTER

Series and size **LMP211** Configuration example: **LMP211** **3** **B** **A** **D** **6** **A10** **N** **P01**

**Length**  
**1** | **2** | **3** |

**Bypass valve**  
**S** Without bypass | **B** With bypass 3.5 bar

**Seals and treatments**  
**A** NBR  
**V** FPM

**Connections**  
**A** G 1"  
**B** G 1 1/4"  
**C** G 1 1/2"  
**D** 1" NPT  
**E** 1 1/4" NPT  
**F** 1 1/2" NPT  
**G** SAE 16 - 1 5/16" - 12 UN  
**H** SAE 20 - 1 5/8" - 12 UN  
**I** SAE 24 - 1 7/8" - 12 UN

**Connection for differential pressure indicator**  
**6** With plugged connection

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm | **M25** Wire mesh 25 µm  
**A06** Inorganic microfiber 6 µm | **M60** Wire mesh 60 µm  
**A10** Inorganic microfiber 10 µm | **M90** Wire mesh 90 µm  
**A16** Inorganic microfiber 16 µm | **P10** Resin impregnated paper 10 µm  
**A25** Inorganic microfiber 25 µm | **P25** Resin impregnated paper 25 µm  
**WA025** Water absorber inorganic microfiber 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series and size **CU210** Configuration example: **CU210** **3** **A10** **A** **N** **P01**

**Element length**  
**1** | **2** | **3** |

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm | **M25** Wire mesh 25 µm  
**A06** Inorganic microfiber 6 µm | **M60** Wire mesh 60 µm  
**A10** Inorganic microfiber 10 µm | **M90** Wire mesh 90 µm  
**A16** Inorganic microfiber 16 µm | **P10** Resin impregnated paper 10 µm  
**A25** Inorganic microfiber 25 µm | **P25** Resin impregnated paper 25 µm  
**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

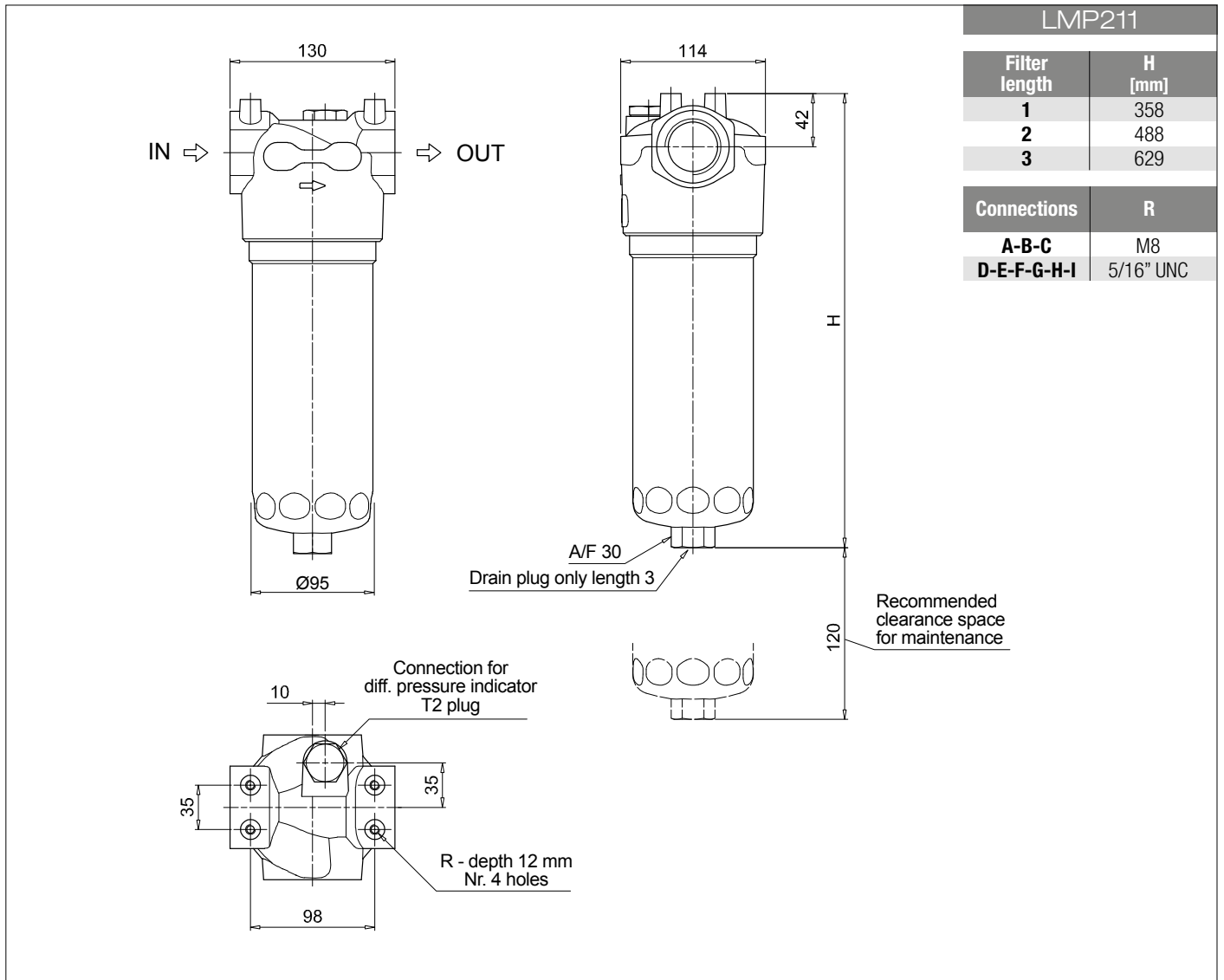
**DEA** Electrical differential pressure indicator  
**DEM** Electrical differential pressure indicator  
**DEU** Electrical differential pressure indicator  
**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator  
**DTA** Electronic differential pressure indicator  
**DVA** Visual differential pressure indicator  
**DVM** Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug

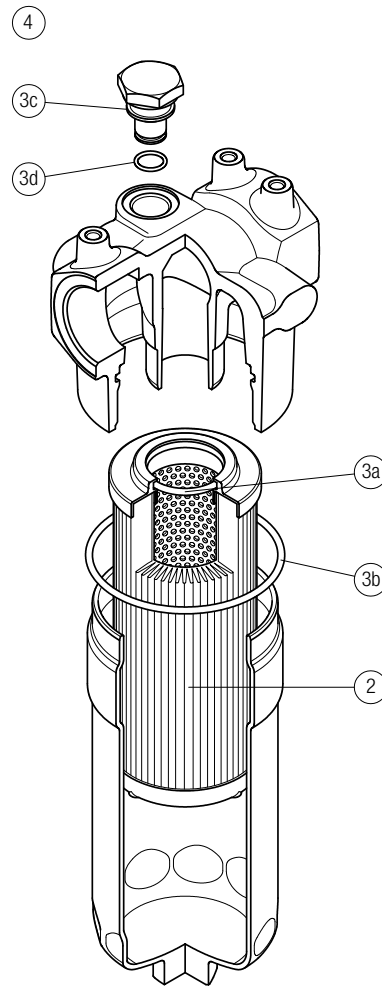
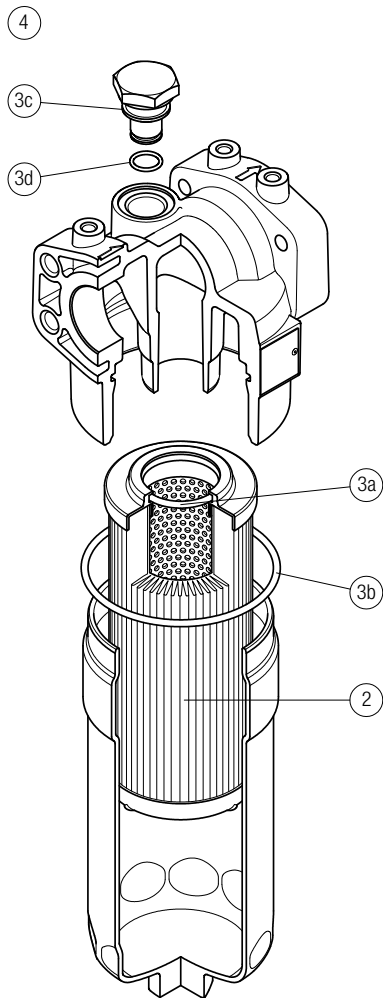


# LMP 210-211 SPARE PARTS

Order number for spare parts

LMP 210

LMP 211



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		
LMP 210-211	See order table	NBR	FPM	NBR	FPM	
	2	02050435	02050436	T2H	T2V	
		3 (3a ÷ 3d)		4		





# LPH 630 series

Maximum working pressure up to 1 MPa (10 bar) Flow rate up to 1600 l/min



# LPH 630 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 1 MPa (10 bar)**  
**Flow rate up to 1600 l/min**

LPH630 is a high capacity low pressure filter with large filtration surface particularly suitable for industrial applications and off-line filtration of the lubrication system reservoirs.

#### Available features:

- 2 1/2" flanged connection connections, for a maximum flow rate of 1600 l/min
- Versatile orientation of the connections, to suite a variety of hydraulic systems
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Visual, electrical and electronic differential clogging indicators.

#### Common applications:

- Lubrication
- Off-line filtration of reservoirs
- Filtration systems

### Filter housing materials

- Head & Cover: Anodized Aluminium
- Bypass valve: Phosphatized steel
- Bowl: Phosphatized steel

### Bypass valve

- Opening pressure 175 kPa (1.75 bar)  $\pm 10\%$
- Opening pressure 250 kPa (2.5 bar)  $\pm 10\%$

### $\Delta p$ element type

- Microfibre filter elements - series MR: 10 bar
- 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

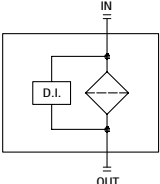
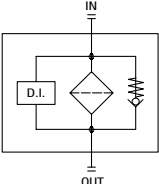
### Note

LPH filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
	Length 7	Length 7
<b>LPH 630</b>	1.50	0.60

## Hydraulic symbols

Filter series	Style S	Style C-E
<b>LPH 630</b>		



Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LPH 630</b>	<b>7</b>	633	671	1091	1130	1217	1669	1518	1602

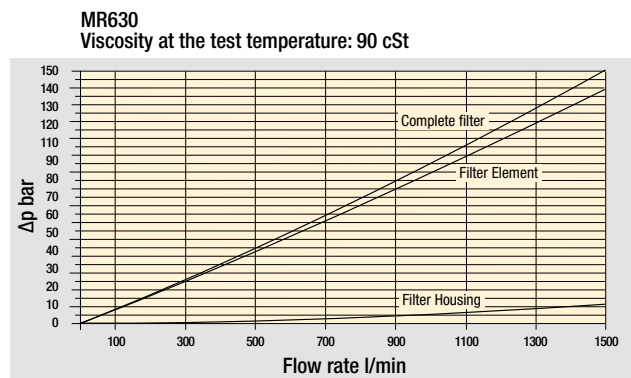
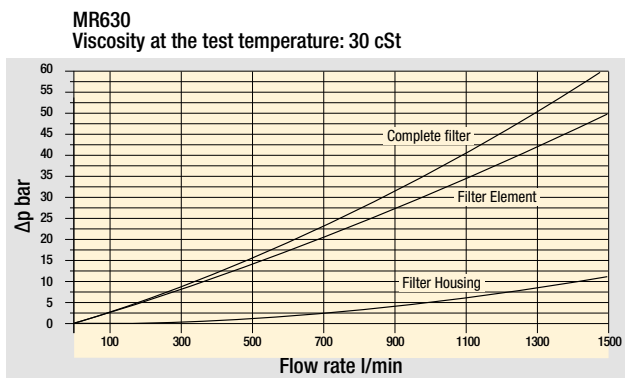
**Maximum flow rate for a complete delivery filter with a pressure drop  $\Delta p = 0.7$  bar.**

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).

Please, contact our Sales Department for further additional information.

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.

# LPH 630

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **LPH630** **7** **C** **E** **1** **1** **A** **F1** **A10** **P01**

**Series and size**  
LPH630

**Length**  
7

**Bypass valve**  
S Without bypass  
C With bypass 1.75 bar  
E With bypass 2.5 bar

**Diffuser and magnetic filter**  
O With magnetic filter  
E Without magnetic filter

**Port IN position**  
1 On the left of the bracket

**Port OUT position**  
1 On the left of the bracket

**Seals and treatments**  
A NBR  
V FPM

**Connection**  
F1 2 1/2" SAE 3000 psi/M  
F3 2 1/2" SAE 3000 psi/UNC

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Execution**  
P01 MP Filtri standard  
Pxx Customized

### FILTER ELEMENT

Configuration example: **MR630** **7** **M25** **A** **P01**

**Element series and size**  
MR630

**Element length**  
7

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**  
A NBR  
V FPM

**Execution**  
P01 MP Filtri standard  
Pxx Customized

### CLOGGING INDICATORS

See page 716

**DEA** Electrical differential pressure indicator

**DEM** Electrical differential pressure indicator

**DEU** Electrical differential pressure indicator

**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator

**DTA** Electronic differential pressure indicator

**DVA** Visual differential pressure indicator

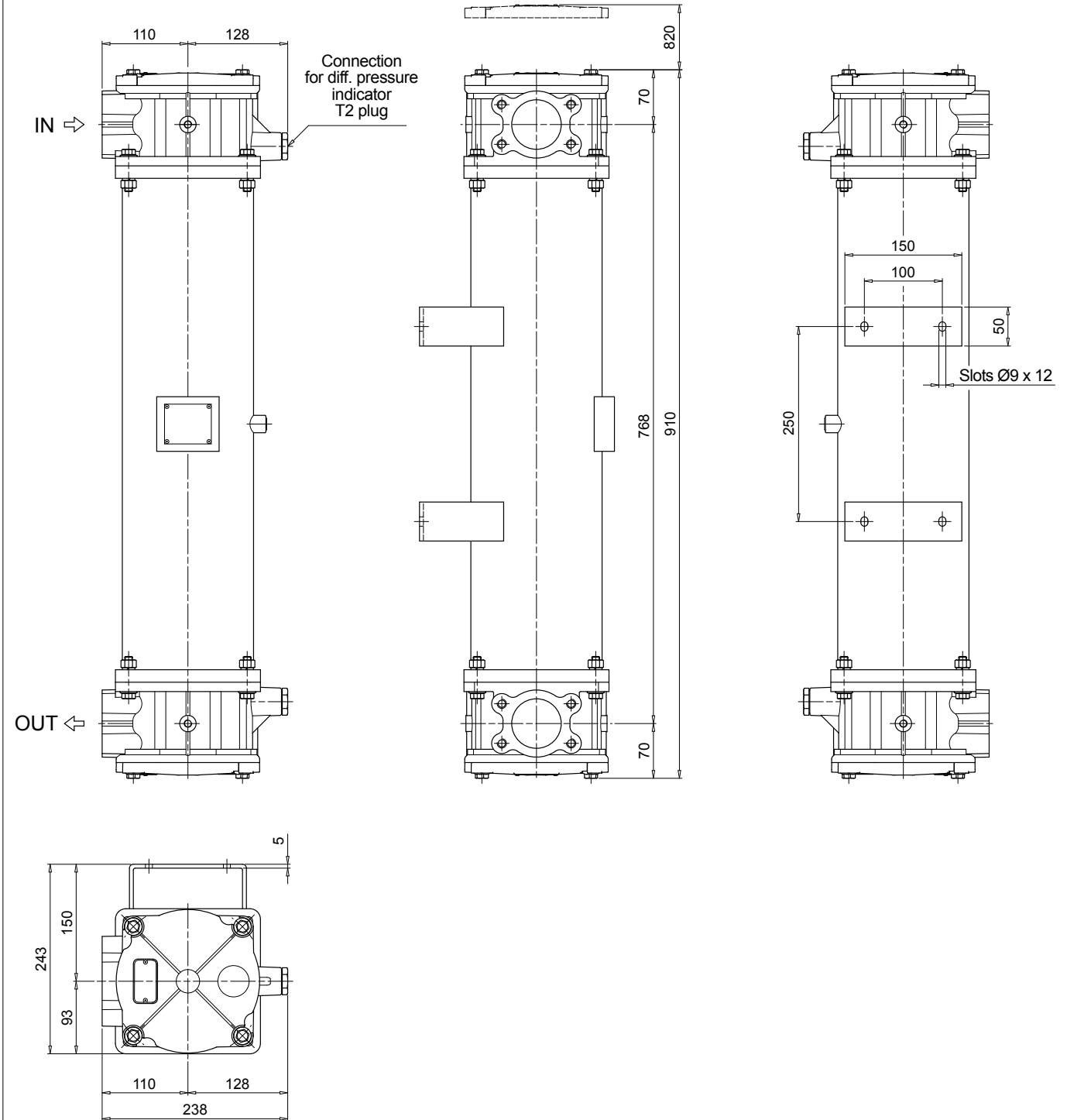
**DVM** Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug

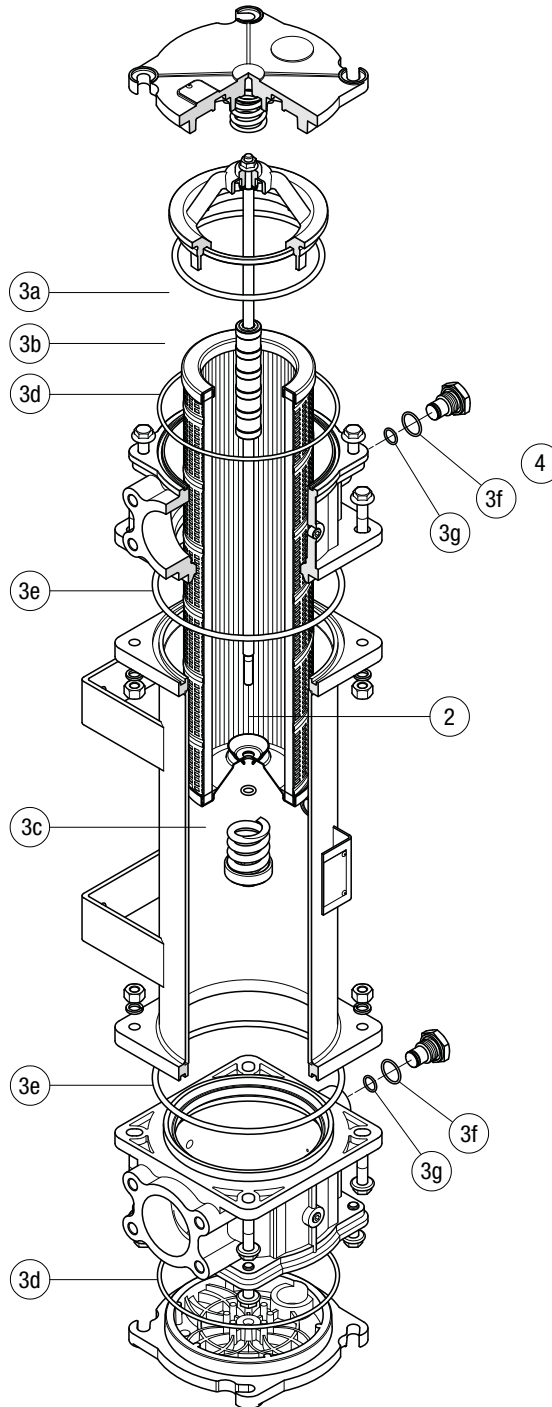
LPH630



# LPH 630

Order number for spare parts

## LPH 630



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 2 pc. 4	
Filter series	Filter element See order table	Seal Kit code number NBR FPM		Indicator connection plug NBR FPM	
<b>LPH 630</b>		02050640	02050641	T2H	T2V





# LMP 400-401 & 430-431 series

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 780 l/min



## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 6 MPa (60 bar)**  
**Flow rate up to 780 l/min**

LMP400 is a range of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 2" and flanged connections up to 2 1/2", for a maximum flow rate of 780 l/min
- In line or 90° connections, to meet any type of application
- Base-mounting design also available, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems

### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Bypass valve: Steel

### Pressure LMP 400 length 2 - 3 - 4

- Working pressure: 6 MPa (60 bar)
- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

### Pressure LMP 400 length 5 - 6

- Working pressure: 5 MPa (50 bar)
- Test pressure: 7.5 MPa (75 bar)
- Burst pressure: 15 MPa (150 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 5 MPa (50 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

LMP 400 - 430: In-line Inlet/Outlet  
 LMP 401 - 431: 90° Inlet/Outlet

### Note

LMP 400 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	2	3	4	5	6	Length	2	3	4	5	6
<b>LMP 400-401 &amp; 430-431</b>		7.20	8.10	8.80	11.90	14.40		3.50	5.00	6.50	9.50	13.50



Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
LMP 400	2	205	244	370	411	515	720	524	556
	3	280	333	474	515	602	760	637	660
	4	347	400	535	564	637	769	660	688
	5	459	501	610	660	717	781	700	721
	6	504	575	676	689	728	783	708	727
LMP 401	2	200	236	347	382	468	628	475	501
	3	268	315	434	468	537	659	565	582
	4	328	373	484	507	565	665	582	603
	5	423	456	544	582	626	674	613	629
	6	459	516	594	604	634	676	619	633
LMP 430	5	459	501	610	660	717	781	700	721
	6	504	575	676	689	728	783	708	727
LMP 431	5	423	456	544	582	626	674	613	629
	6	459	516	594	604	634	676	619	633

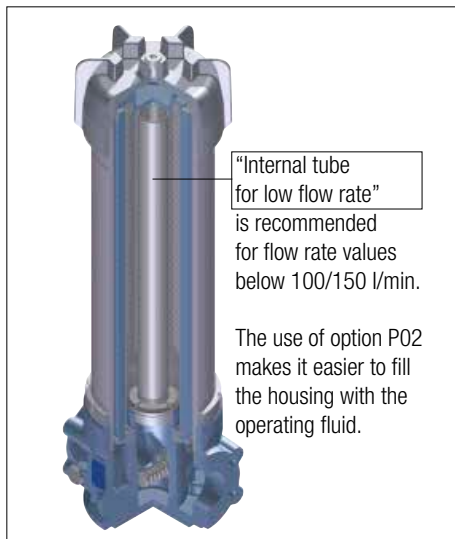
**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

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>.

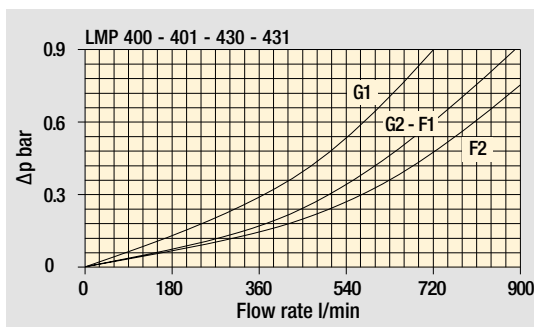
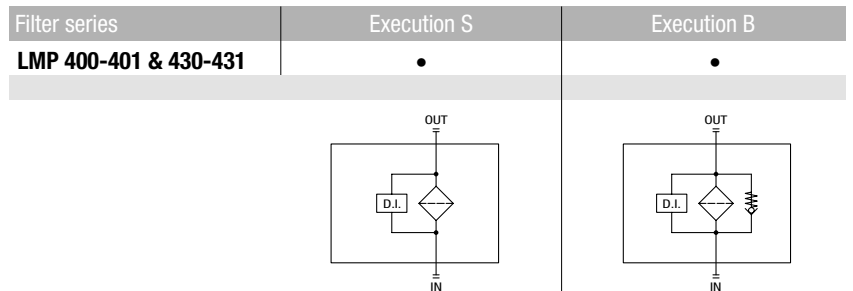
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

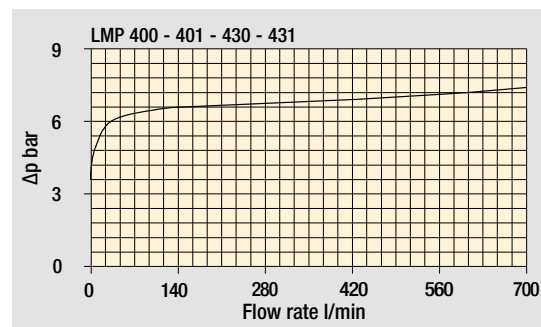
LMP 430-431: execution P02



Hydraulic symbols



Filter housings  $\Delta p$  pressure drop



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.

# LMP 400-401

## Designation & Ordering code

### COMPLETE FILTER

Series and size **LMP400 | LMP401** Configuration example: **LMP401** **3** **B** **A** **G1** **A10** **N** **P01**

Length **2** | **3** | **4** | **5** | **6** |

Bypass valve **S** Without bypass **B** With bypass 3.5 bar

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR	•	•	-

Connections

<b>G1</b> G 1 1/2"	<b>F1</b> 2" SAE 3000 psi/M
<b>G2</b> G 2"	<b>F2</b> 2 1/2" SAE 3000 psi/M
<b>G3</b> 1 1/2" NPT	<b>F3</b> 2" SAE 3000 psi/UNC
<b>G4</b> 2" NPT	<b>F4</b> 2 1/2" SAE 3000 psi/UNC
<b>G5</b> SAE 24 - 1 7/8" - 12 UN	
<b>G6</b> SAE 32 - 2 1/2" - 12 UN	

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>WA025</b> Water absorber inorganic microfiber 25 µm	

Element Δp	Filter length					
	2	3	4	5	6	
<b>N</b> 20 bar						

Execution	
<b>P01</b> MP Filtri standard	• • • • • •
<b>P02</b> Maintenance from the bottom of the housing	• •
<b>Pxx</b> Customized	

### FILTER ELEMENT

Element series and size **CU400** Configuration example: **CU400** **3** **A10** **A** **N** **P01**

Element length **2** | **3** | **4** | **5** | **6** |

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>WA025</b> Water absorber inorganic microfiber 25 µm	

Seals	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR	•	•	-

Element Δp	Filter length					
	2	3	4	5	6	
<b>N</b> 20 bar						

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

### CLOGGING INDICATORS

See page 716

**DEA** Electrical differential pressure indicator

**DEM** Electrical differential pressure indicator

**DEU** Electrical differential pressure indicator

**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator

**DTA** Electronic differential pressure indicator

**DVA** Visual differential pressure indicator

**DVM** Visual differential pressure indicator

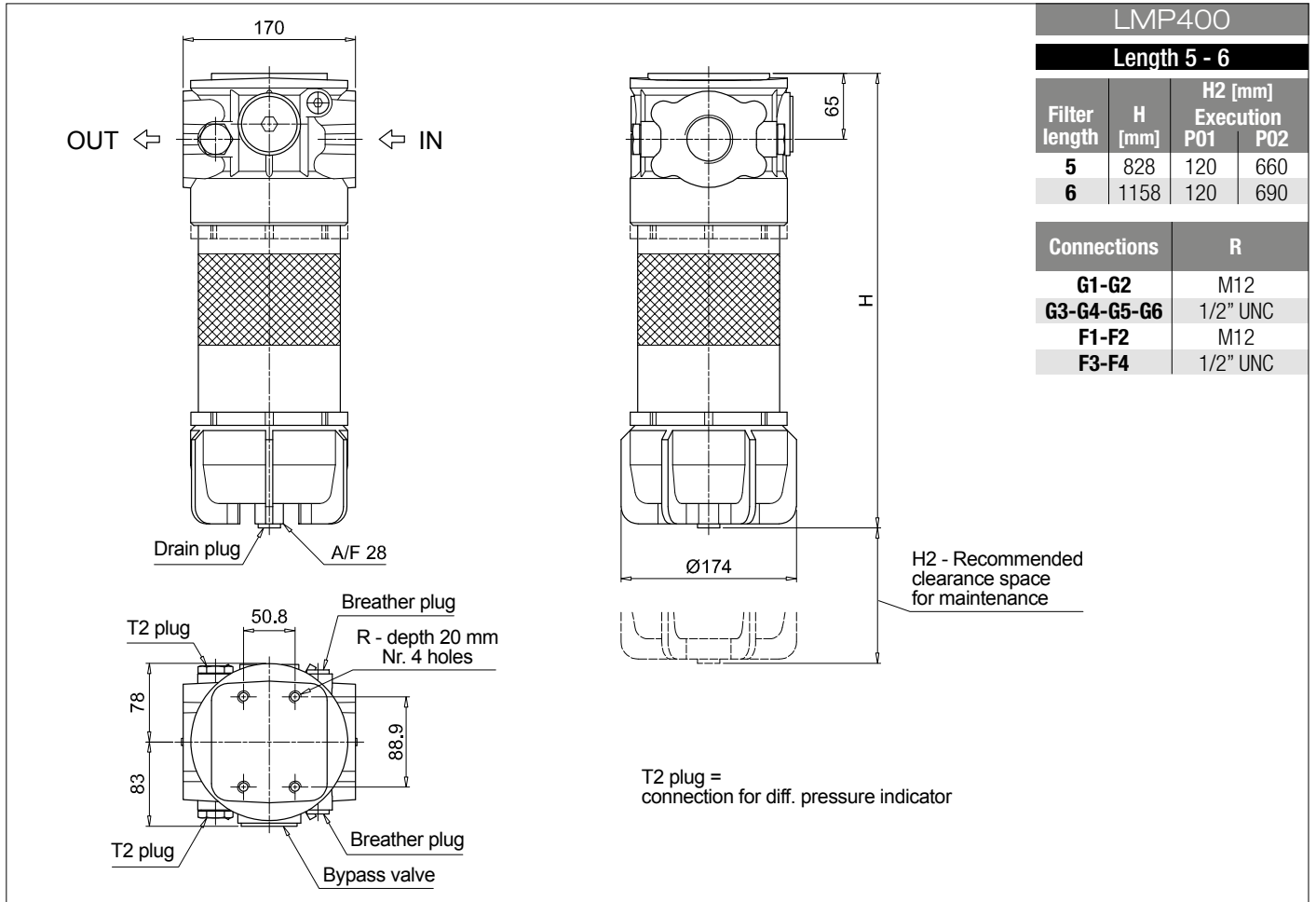
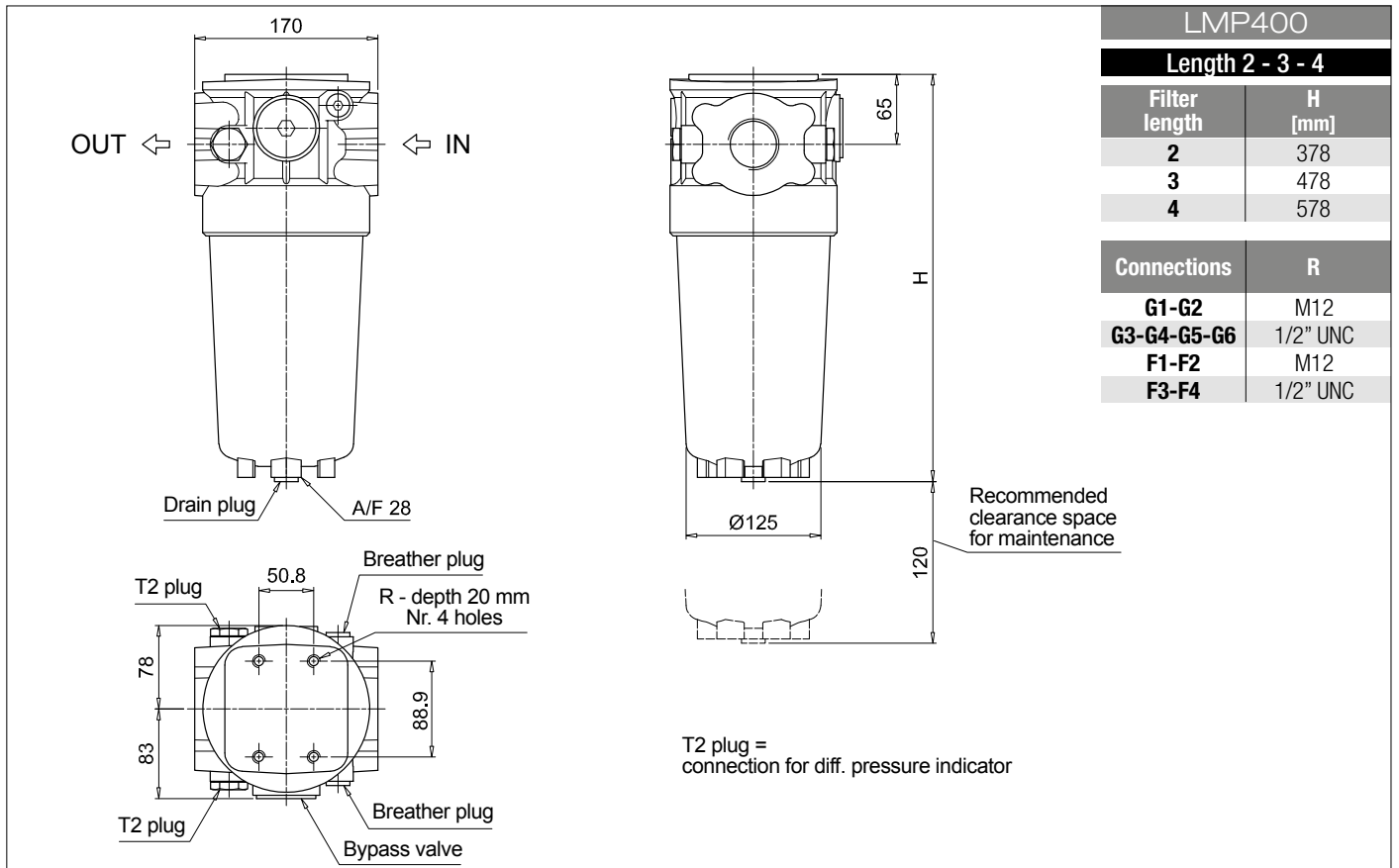
### PLUGS

See page 737

**T2** Plug

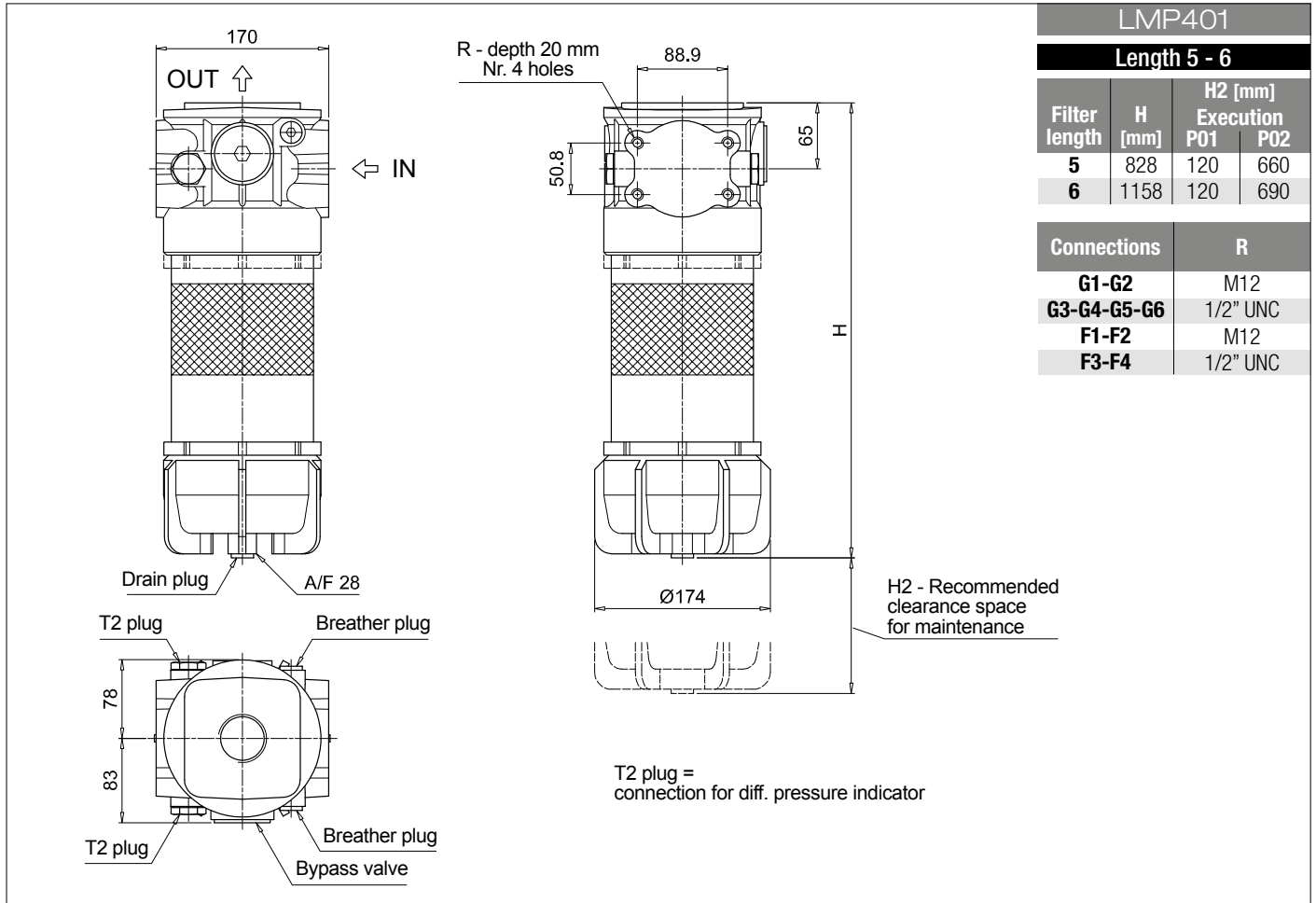
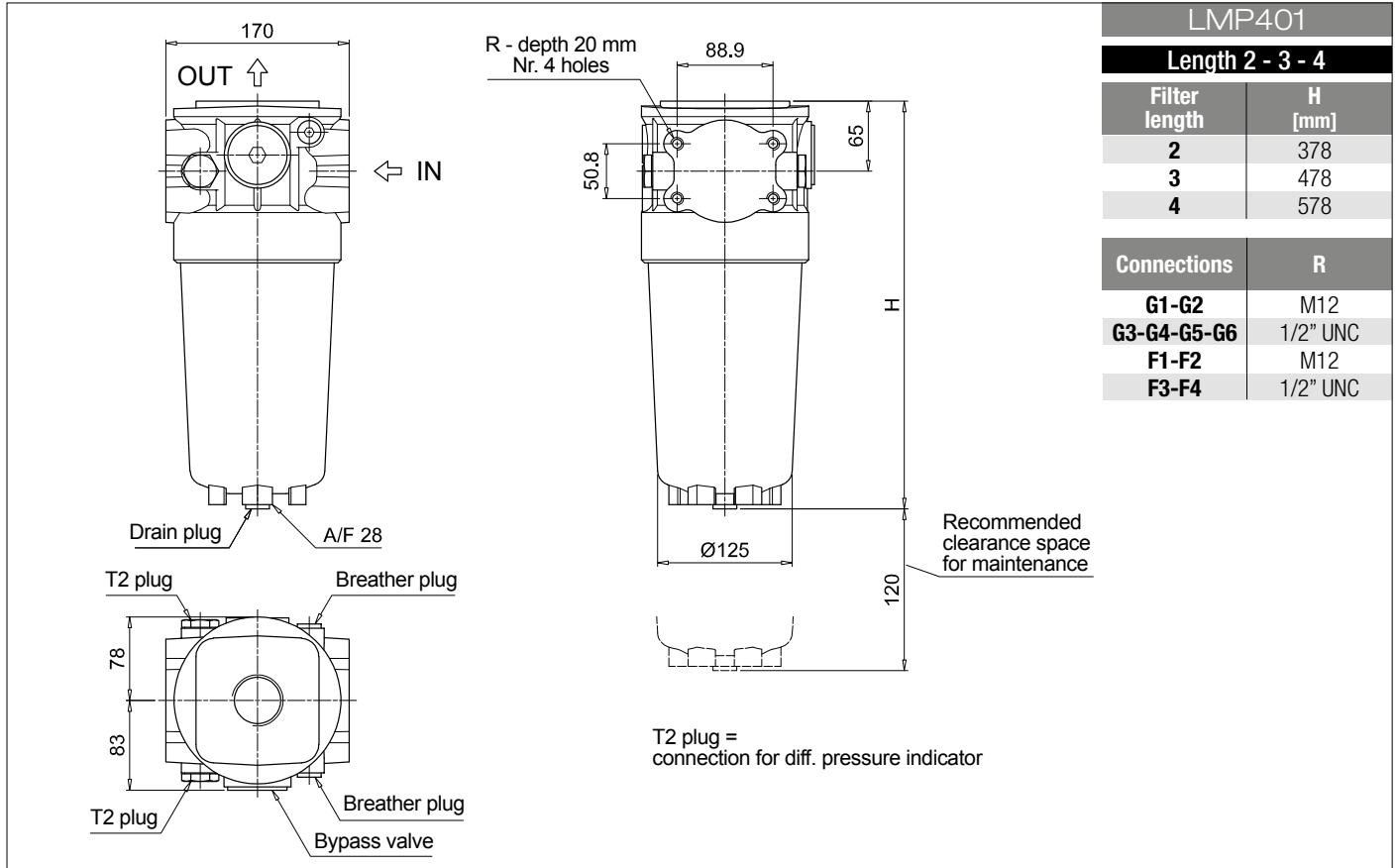
# LMP 400-401

## Dimensions



# LMP 400-401

## Dimensions





# LMP 430-431

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>LMP431</b>   <b>5</b>   <b>B</b>   <b>A</b>   <b>G1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>									
<b>LMP430</b>   <b>LMP431</b>											
Length		5   6									
Bypass valve		S Without bypass   B With bypass 3.5 bar									
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR		•	•	-							
Connections											
G1 G 1 1/2"		F1 2" SAE 3000 psi/M									
G2 G 2"		F2 2 1/2" SAE 3000 psi/M									
G3 1 1/2" NPT		F3 2" SAE 3000 psi/UNC									
G4 2" NPT		F4 2 1/2" SAE 3000 psi/UNC									
G5 SAE 24 - 1 7/8" - 12 UN											
G6 SAE 32 - 2 1/2" - 12 UN											
Filtration rating (filter media)											
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
WA025 Water absorber inorganic microfiber 25 µm											
		Element Δp		Execution							
		N 20 bar		P01 MP Filtri standard							
				P02 With internal tube for low flow rate							
				Pxx Customized							

### FILTER ELEMENT

Element series and size		Configuration example: <b>CU400</b>   <b>5</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>									
<b>CU400</b>											
Element length		5   6									
Filtration rating (filter media)											
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
WA025 Water absorber inorganic microfiber 25 µm											
Seals		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR		•	•	-							
		Element Δp		Execution							
		N 20 bar		P01 MP Filtri standard							
				Pxx Customized							

### CLOGGING INDICATORS

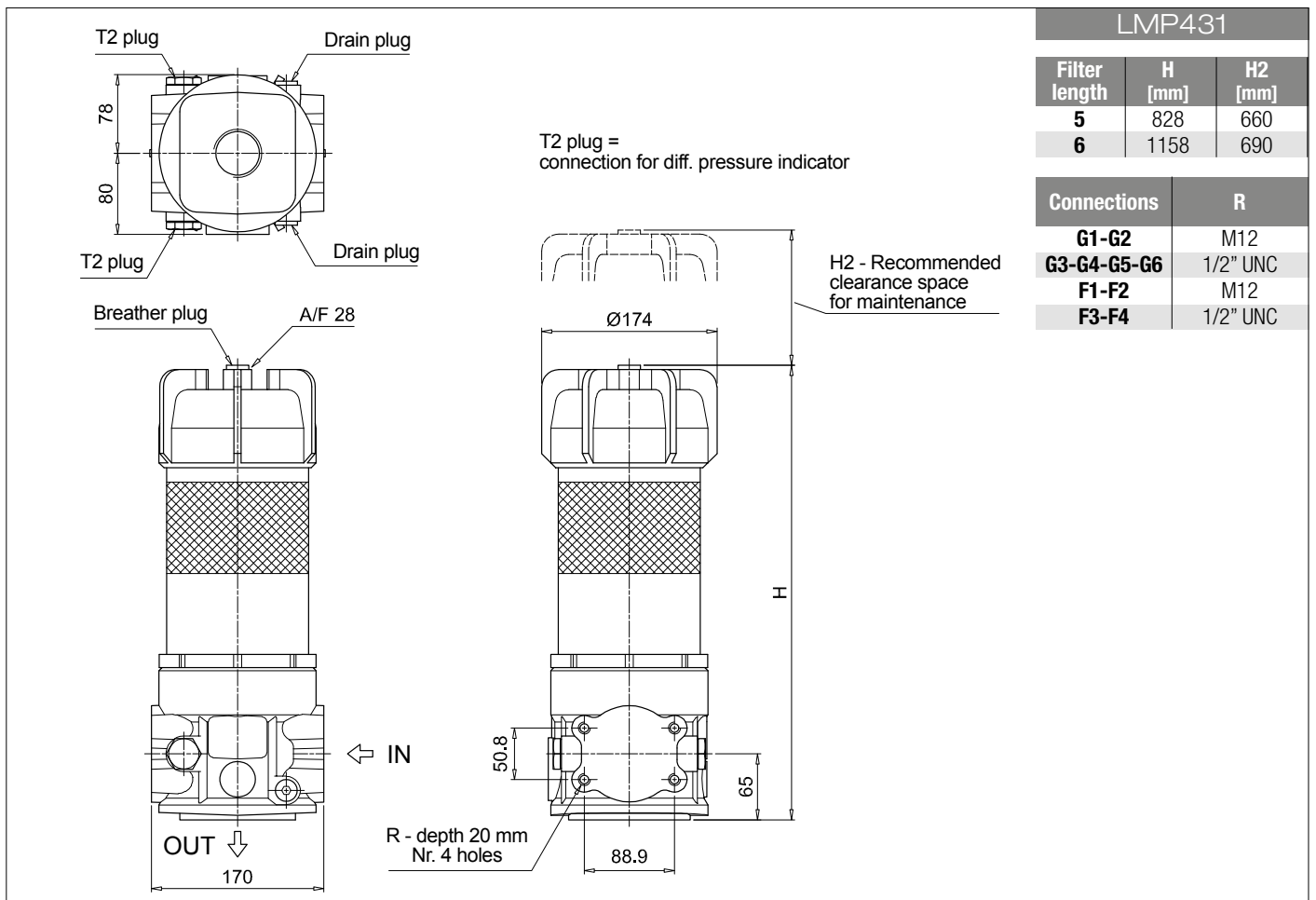
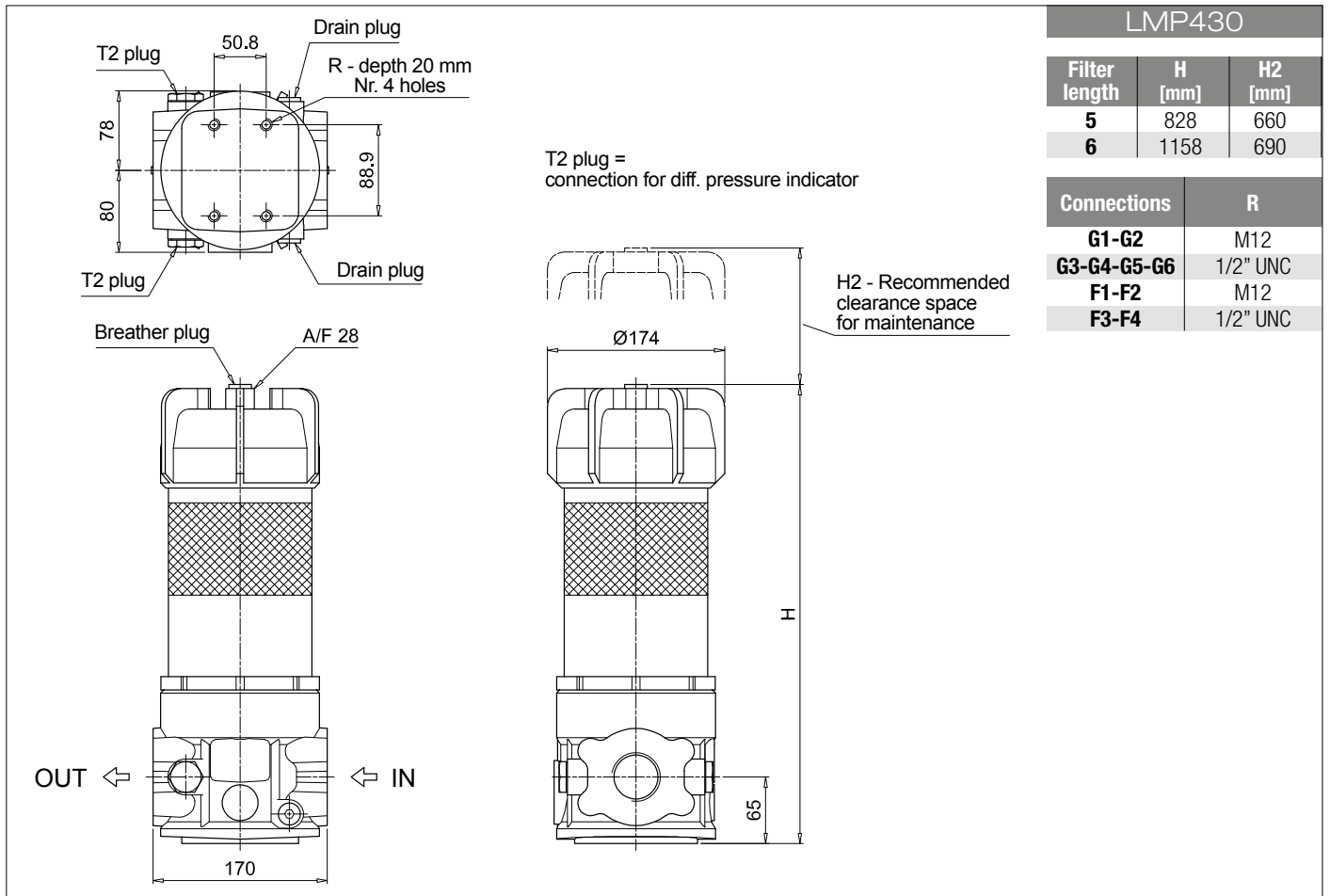
See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

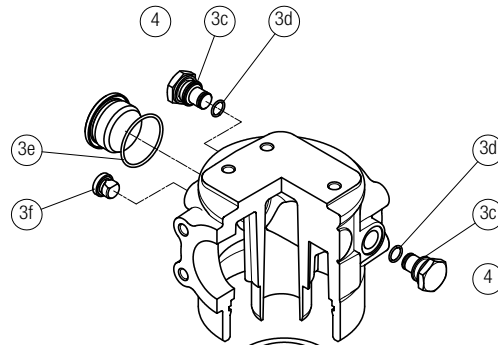
See page 737

T2 Plug
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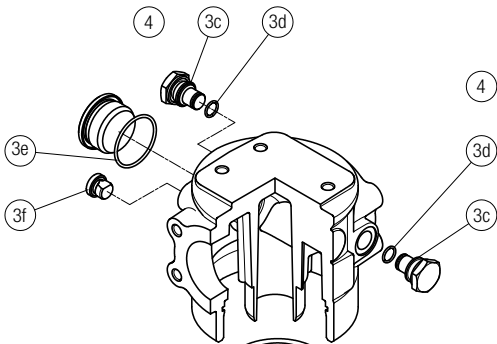


Order number for spare parts

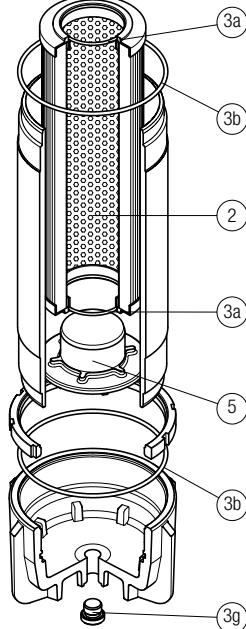
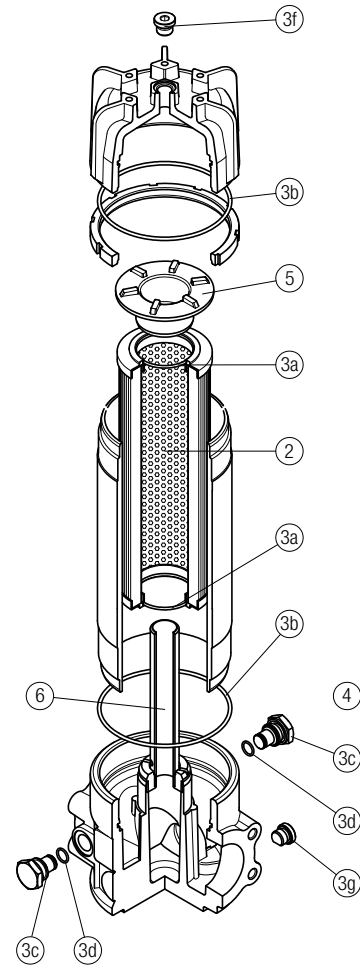
**LMP 400 - 401**  
length 2 - 3 - 4



**LMP 400 - 401**  
length 5 - 6



**LMP 430 - 431**  
length 5 - 6



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pcs.	Q.ty: 2 pcs.	Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number NBR FPM	Indicator connection plug NBR FPM	Housing spigot no bypass with bypass	Internal tube for low flow rate, execution P02
LMP 400-401 length 2-3-4	See order table	02050391 02050392	T2H T2V	01044108	
LMP 400-401 length 5-6	See order table	02050393 02050394		01044108	02001414
LMP 430-431 length 5-6	See order table	02050393 02050394			Length 5: 02025041   Length 6: 02025042







# LMP 950-951 series

Maximum working pressure up to 3 MPa (30 bar) - Flow rate up to 2400 l/min



# LMP 950-951 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 3 MPa (30 bar)**  
**Flow rate up to 2400 l/min**

LMP950 is a range of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 2400 l/min
- In line or 90° connections, to meet any type of application
- Base-mounting design, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems
- Lubrication systems

### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Bypass valve: Anodized Aluminium

### Pressure

- Test pressure: 4,5 MPa (45 bar)
- Burst pressure: 12 MPa (120 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 3 MPa (30 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

LMP 950: In-line Inlet/Outlet  
 LMP 951: 90° Inlet/Outlet

### Note

LMP 950 - 951 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]		
	Length	2	3	Length	2	3
<b>LMP 950-951</b>		25.1	33.5		15	28

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90
LMP 950	2	613	756	953	1219	1515	2170
	3	1148	1219	1502	1713	1808	2293
LMP 951	2	635	789	1007	1308	1649	2420
	3	1226	1308	1634	1881	1993	2566

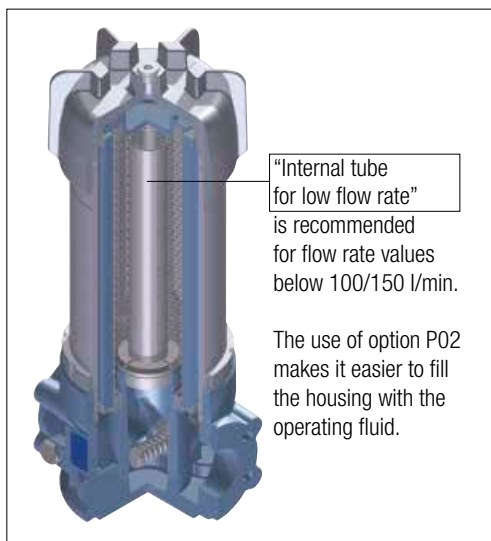
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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>.

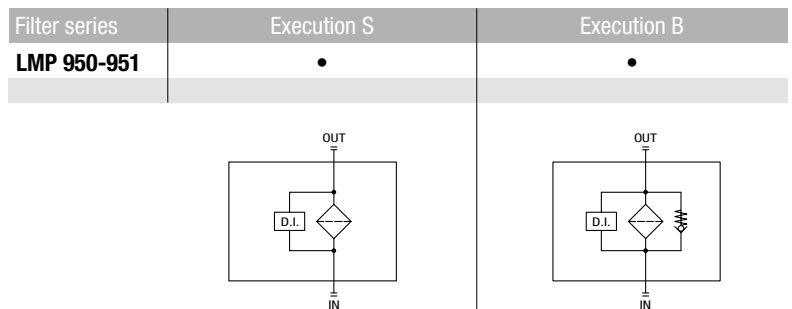
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

### Execution P02

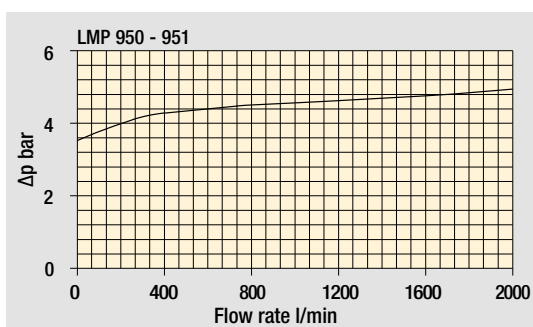
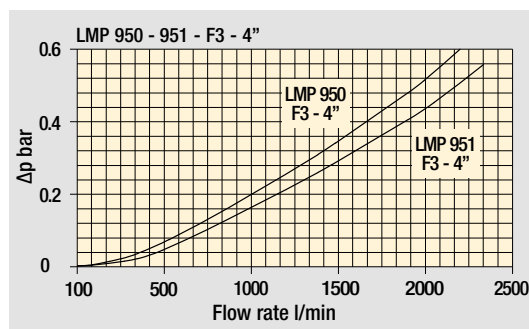
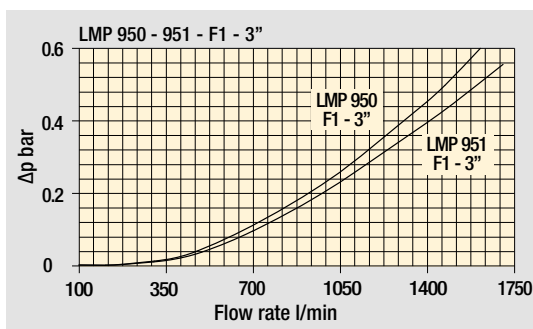


### Hydraulic symbols



### 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.

# LMP 950-951

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>LMP950   LMP951</b>	Configuration example: <b>LMP951</b>   <b>2</b>   <b>B</b>   <b>A</b>   <b>F2</b>   <b>A10</b>   <b>N</b>   <b>P01</b>								
<b>Length</b> <b>2</b>   <b>3</b>									
<b>Bypass valve</b> <b>S</b> Without bypass   <b>B</b> With bypass 3.5 bar									
<b>Seals and treatments</b> <b>A</b> NBR <b>V</b> FPM									
<b>Connections</b> <b>F1</b> 3" SAE 3000 psi/M <b>F2</b> 3" SAE 3000 psi/UNC <b>F3</b> 4" SAE 3000 psi/M <b>F4</b> 4" SAE 3000 psi/UNC									
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm									
	<table border="1"> <tr> <th>Element Δp</th> <th>Execution</th> </tr> <tr> <td><b>N</b> 20 bar</td> <td><b>P01</b> MP Filtri standard</td> </tr> <tr> <td></td> <td><b>P02</b> With internal tube for low flow rate</td> </tr> <tr> <td></td> <td><b>Pxx</b> Customized</td> </tr> </table>	Element Δp	Execution	<b>N</b> 20 bar	<b>P01</b> MP Filtri standard		<b>P02</b> With internal tube for low flow rate		<b>Pxx</b> Customized
Element Δp	Execution								
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard								
	<b>P02</b> With internal tube for low flow rate								
	<b>Pxx</b> Customized								

### FILTER ELEMENT

<b>Element series and size</b> <b>CU950</b>	Configuration example: <b>CU950</b>   <b>2</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>						
<b>Element length</b> <b>2</b>   <b>3</b>							
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm							
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM							
	<table border="1"> <tr> <th>Element Δp</th> <th>Execution</th> </tr> <tr> <td><b>N</b> 20 bar</td> <td><b>P01</b> MP Filtri standard</td> </tr> <tr> <td></td> <td><b>Pxx</b> Customized</td> </tr> </table>	Element Δp	Execution	<b>N</b> 20 bar	<b>P01</b> MP Filtri standard		<b>Pxx</b> Customized
Element Δp	Execution						
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard						
	<b>Pxx</b> Customized						

### CLOGGING INDICATORS

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

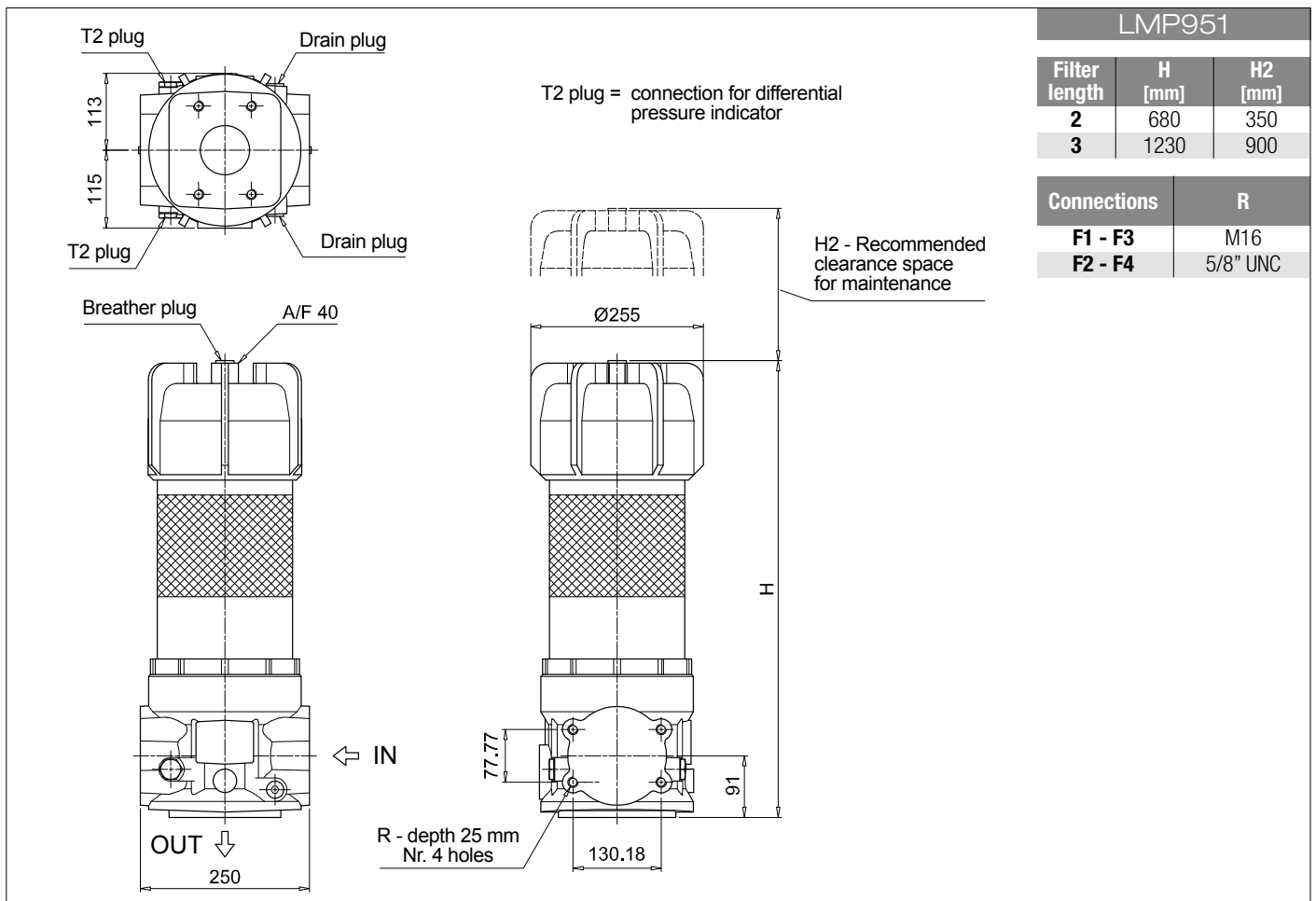
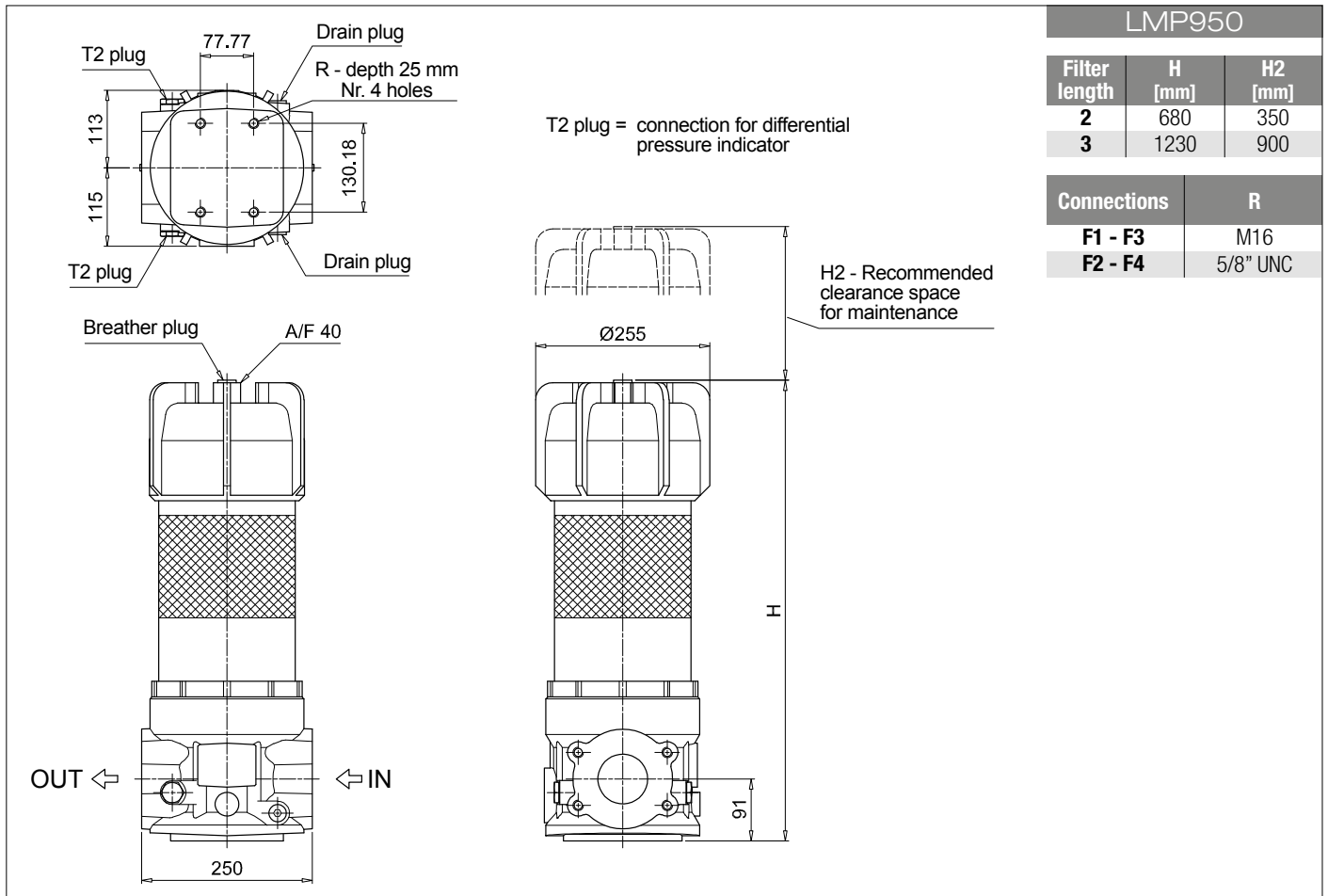
See page 737

<b>T2</b> Plug
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### ACCESSORIES

See page 466

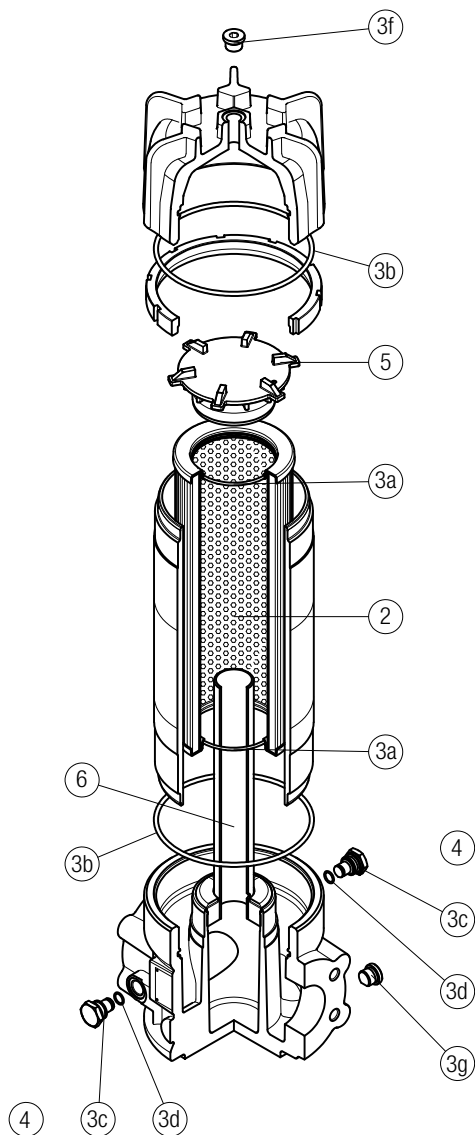
<b>CFA</b> Retaining clamp
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# LMP 950-951 SPARE PARTS

Order number for spare parts

LMP 950 - 951



Item:	Q.ty: 2 pcs.		Q.ty: 1 pc.		Q.ty: 2 pcs.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Housing spigot		Internal tube for low flow rate, exec. PO2		
LMP 950-951 length 2-3	See order table	NBR	FPM	NBR	FPM	no bypass	with bypass	length 2	length 3	
		02050367	02050368	T2H	T2V	01044106	02001379	02025032	02025033	







# LMP 952-953-954 series

Maximum working pressure up to 2.5 MPa (25 bar) - Flow rate up to 4500 l/min



# LMP 952-953-954 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 2.5 MPa (25 bar)**  
**Flow rate up to 4500 l/min**

LMP952, LMP953 and LMP954 are ranges of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

Multiple LMP950 filters are connected to a manifold to reduce the pressure drop caused by the filter media and to increase the life time of the filter element.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 4" flanged connections, for a maximum flow rate of 4500 l/min
- Base-mounting design, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems

### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Phosphatized Steel
- Bypass valve: Anodized Aluminium

### Pressure

Test pressure: 3.5 MPa (35 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Number of filter elements

- LMP 952: 2 filter elements CU950-3
- LMP 953: 3 filter elements CU950-3
- LMP 954: 4 filter elements CU950-3

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

LMP 952-953-954:  
In-line Inlet/Outlet

### Note

LMP 952 - 953 - 954 filters  
are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	3	Length	3
<b>LMP 952</b>		96		66
<b>LMP 953</b>		138		99
<b>LMP 954</b>		192		132

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90
<b>LMP 952</b>	<b>3</b>	2172	2294	2766	3106	3256	3998
<b>LMP 953</b>	<b>3</b>	2842	2964	3403	3696	3820	4395
<b>LMP 954</b>	<b>3</b>	3259	3372	3770	4026	4133	4618

### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ 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	Execution S - Execution B	Execution S - Execution B	Execution S - Execution B
<b>LMP 952</b>	•	-	-
<b>LMP 953</b>	-	•	-
<b>LMP 954</b>	-	-	•

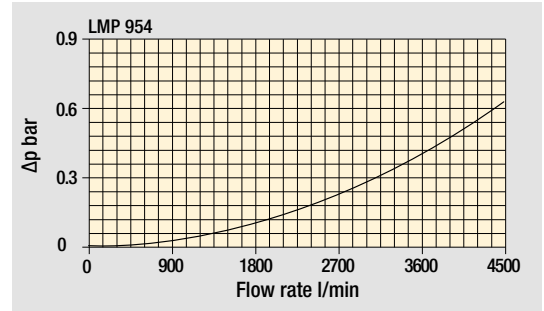
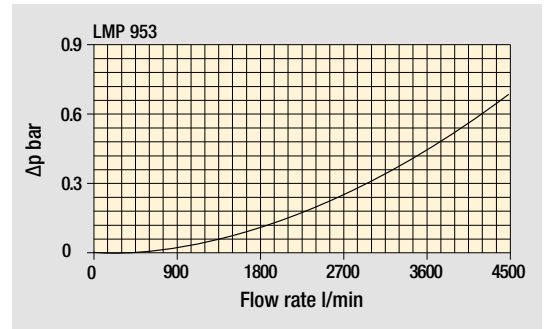
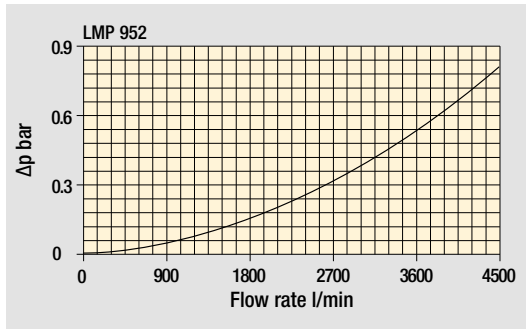
  

S		S		S	
B		B		B	

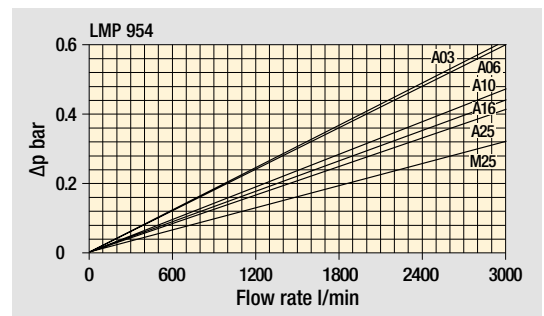
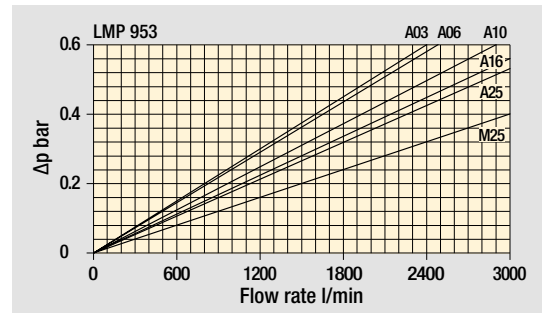
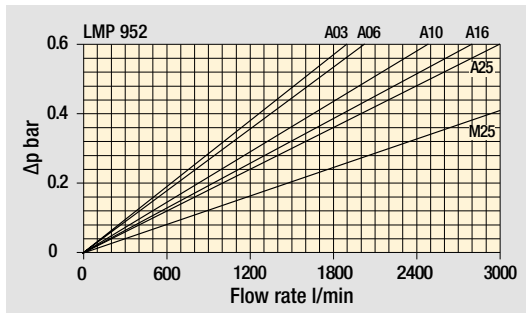
# LMP 952-953-954 GENERAL INFORMATION

## Pressure drop

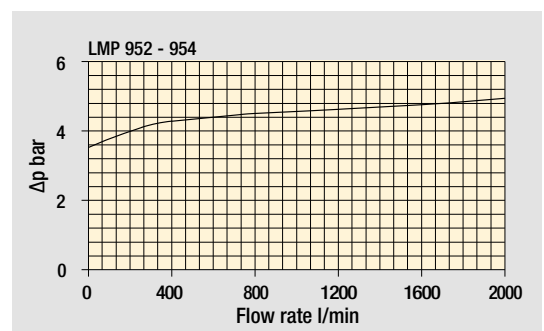
### Filter housings $\Delta p$ pressure drop



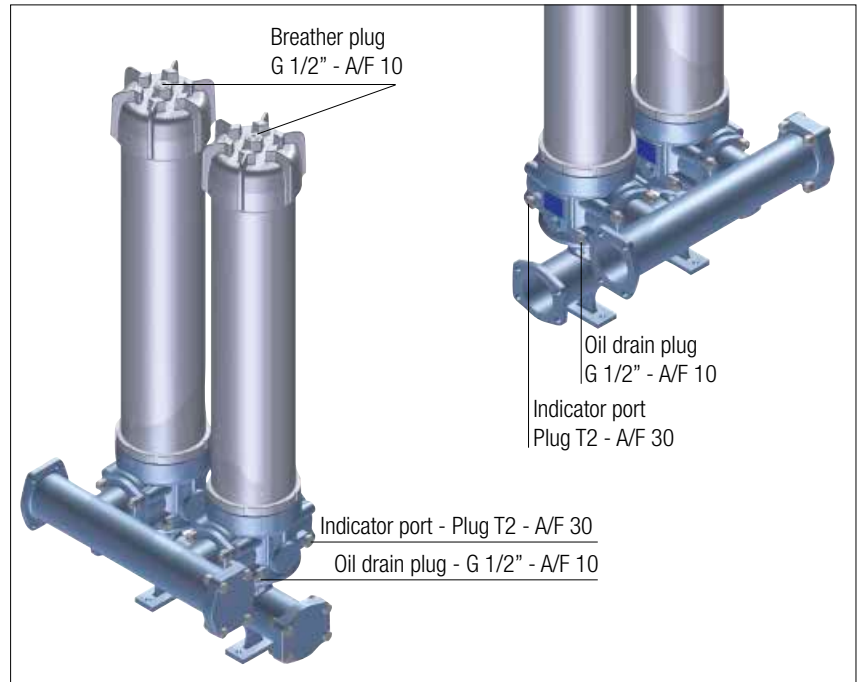
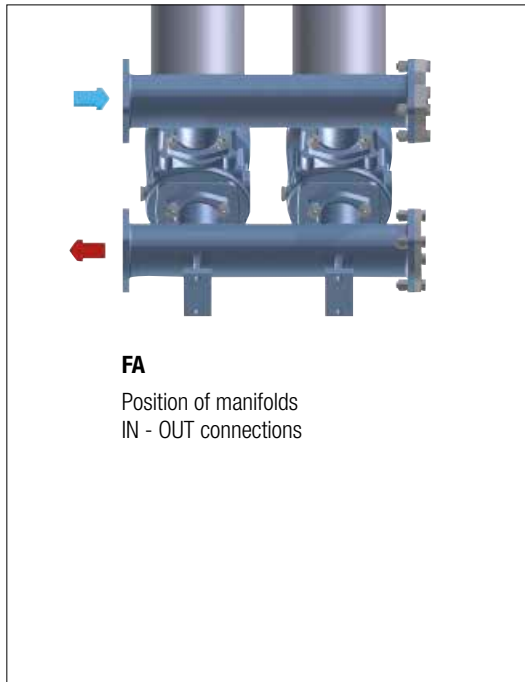
### Pressure drop of filter complete with cartridge, oil viscosity 30 mm<sup>2</sup>/s (cSt)



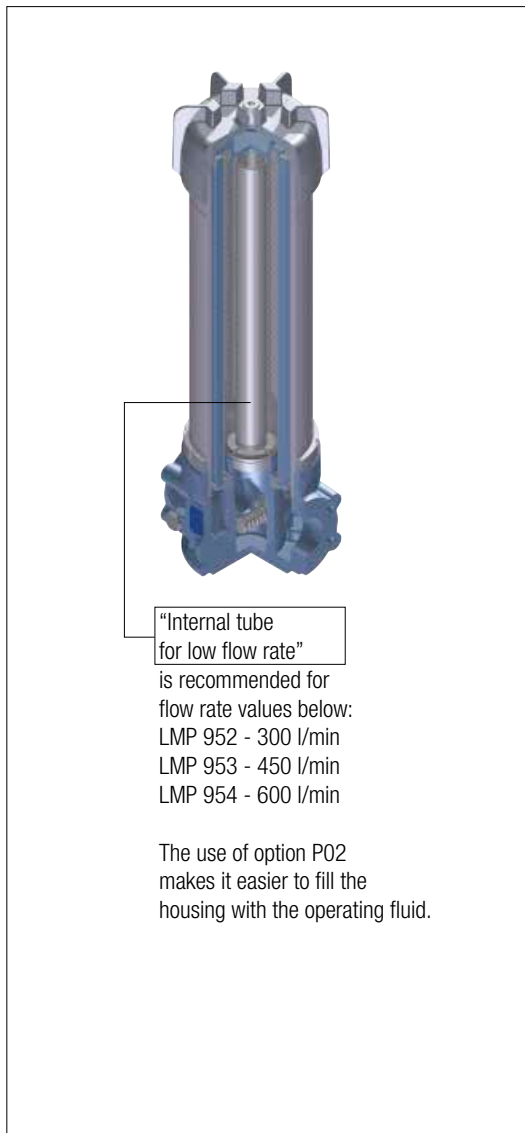
### Bypass valve pressure drop



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.

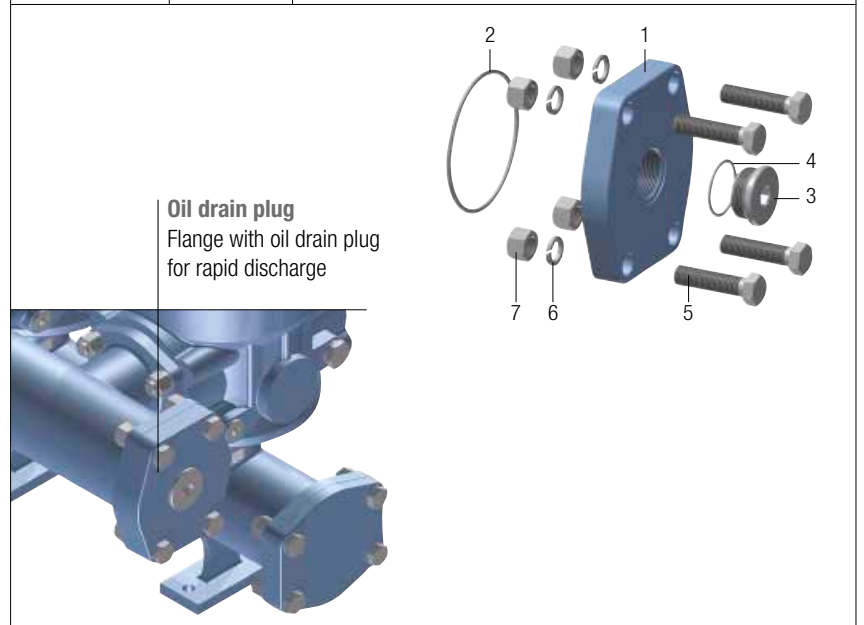


Execution P02



CMV4 & CUV4 Flange options

Code	Thread	Materials
CMV4	G 1 1/4"	1 - 4" SAE flange 2 - O-R 4437 (FPM) for flange 3 - Plug G 1-1/4" 4 - O-R 3168 for plug (FPM) 5 - No. 4 Hex bolt screws UNI-EN 24017 M16 x 65-10.9 6 - No. 4 Spring washers UNI 1751-B 16 7 - No. 4 Nuts UNI 5587 - M16
CUV4	SAE 20	1 - 4" SAE flange 2 - O-R 4437 (FPM) for flange 3 - Plug SAE 20 1 5/8" - 12 UN 4 - 1147 O-R for plug (FPM) 5 - No. 4 Hex bolt screws 5/8" UNC x 2 1/2" 6 - No. 4 Spring washers UNI 1751-B 16 7 - No. 4 Nuts 5/8" UNC



# LMP 952-953-954

Designation & Ordering code

## COMPLETE FILTER

Series and size **LMP952 | LMP953 | LMP954** Configuration example: **LMP952** **3** **B** **A** **FA** **A10** **N** **P01**

Length **3**

Bypass valve **S** Without bypass **B** With bypass 3.5 bar

Seals and treatments **A** NBR **V** FPM

Connections **FA** 4" SAE 3000 psi

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	
<b>A25</b> Inorganic microfiber 25 µm	

**WA025** Water absorber inorganic microfiber 25 µm

Element Δp **N** 20 bar

Execution **P01** MP Filtri standard  
**P02** With internal tube for low flow rate  
**Pxx** Customized

## FILTER ELEMENT

Element series and size **CU950** Configuration example: **CU950** **3** **A10** **A** **N** **P01**

Element length **3**

Filter series and size

<b>LMP952</b> Nr. 2 filter elements
<b>LMP953</b> Nr. 3 filter elements
<b>LMP954</b> Nr. 4 filter elements

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	
<b>A25</b> Inorganic microfiber 25 µm	

**WA025** Water absorber inorganic microfiber 25 µm

Seals **A** NBR **V** FPM

Element Δp **N** 20 bar

Execution **P01** MP Filtri standard  
**Pxx** Customized

## CLOGGING INDICATORS

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

## PLUGS

See page 737

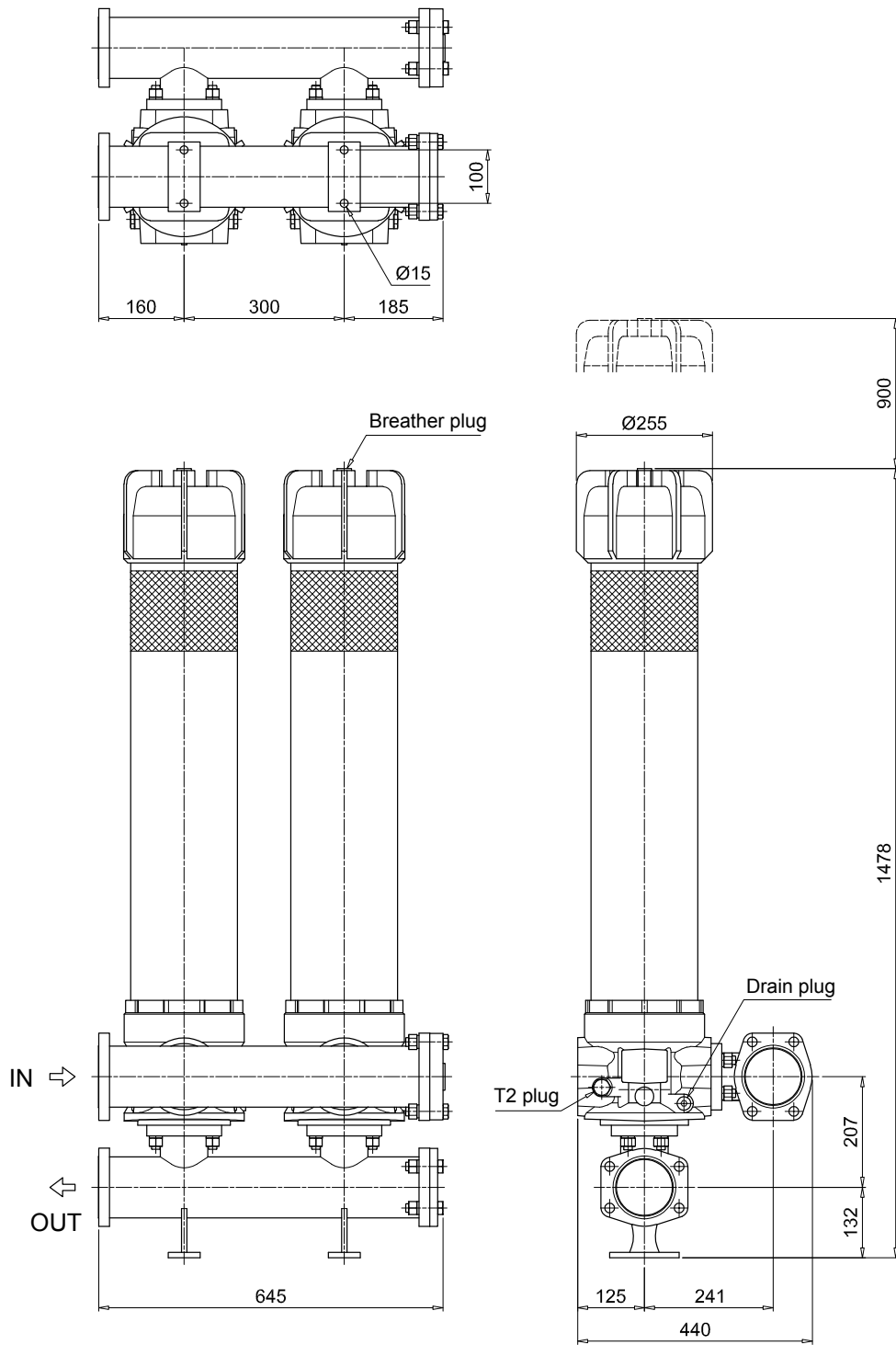
**T2** Plug



# LMP 952-953-954

Dimensions

LMP952

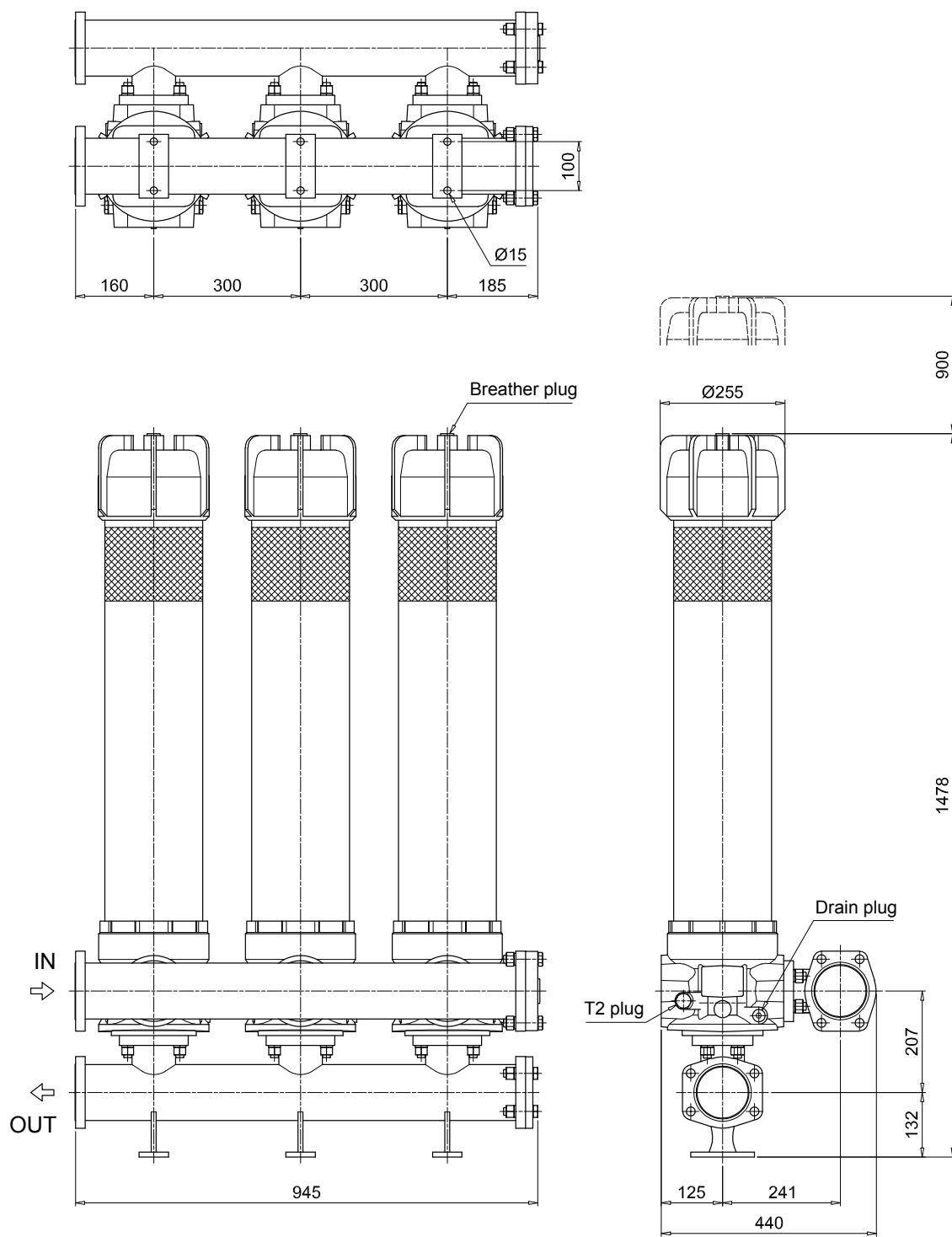


T2 plug = connection for differential pressure indicator

# LMP 952-953-954

## Dimensions

LMP953

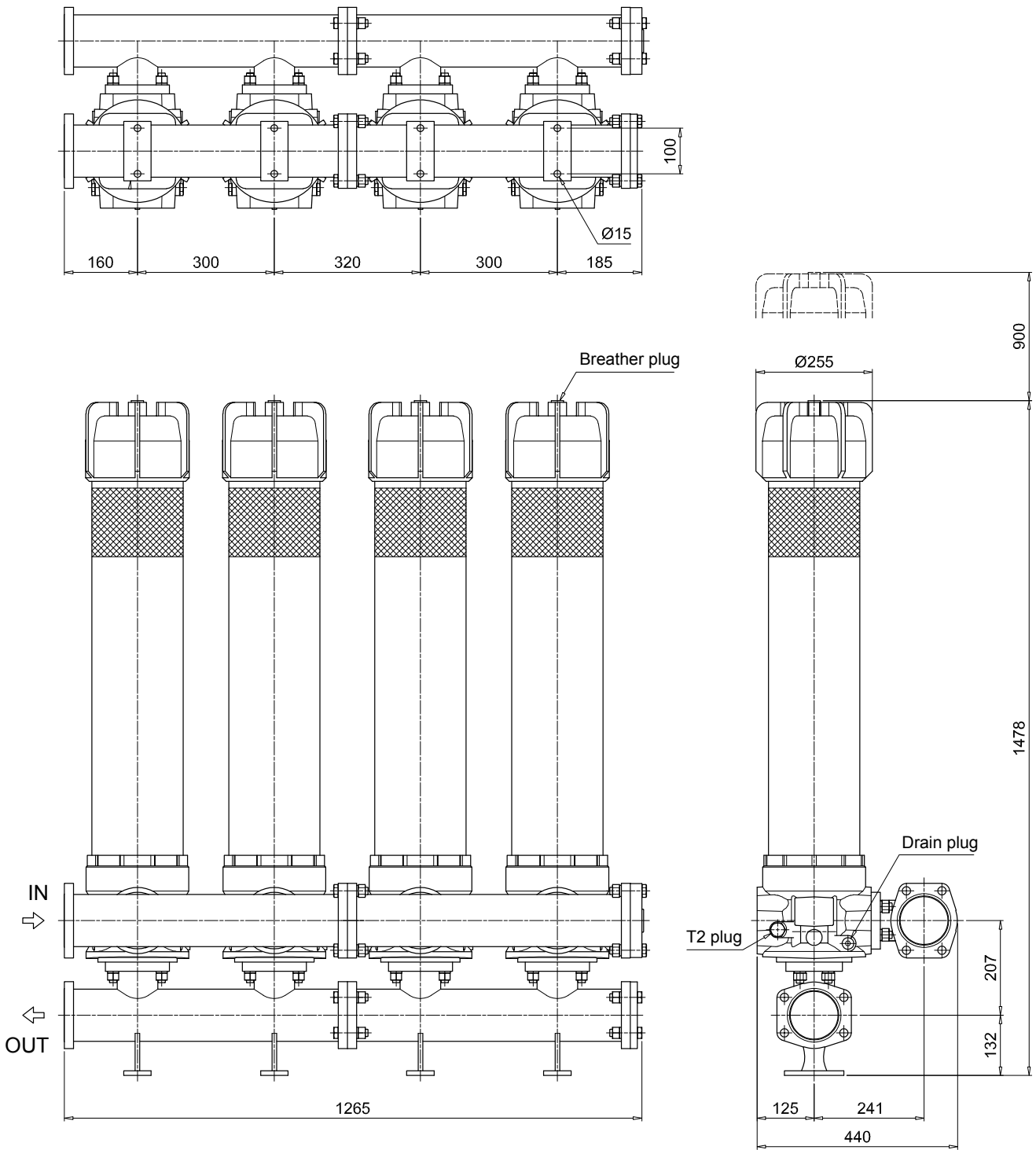


T2 plug = connection for differential pressure indicator

# LMP 952-953-954

Dimensions

LMP954

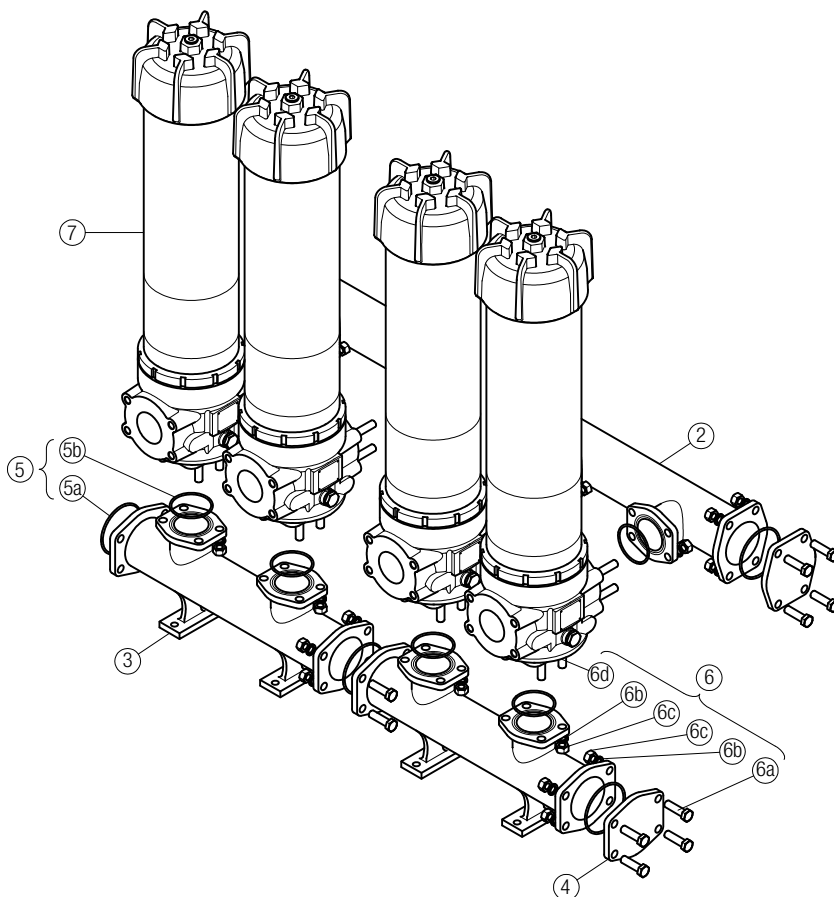


T2 plug = connection for differential pressure indicator

# LMP 952-953-954 SPARE PARTS

Order number for spare parts

LMP 952 - 953 - 954



Item 7:  
for complete filter code and  
spare parts, see  
LMP 950 - 951 series chapter

Quantity:  
- filter spare parts:  
LMP 952 - 2 pcs.  
LMP 953 - 3 pcs.  
LMP 954 - 4 pcs.

- filter seal kit:  
LMP 952 - 2 pcs.  
LMP 953 - 3 pcs.  
LMP 954 - 4 pcs.

Item:	2		3		4		5 (5a-5b)		6 (6a ÷ 6d)		7	
Filter series	Q.ty	Manifold IN	OUT	4" SAE 3000 psi plugged flange Q.ty	Manifolds seal kit Q.ty	NBR	FPM	Threaded fasteners kit Q.ty		Q.ty	Filter	
LMP 952	1 pc.	01039270	01039271	2 pcs.	01042012	1 pc.	02050404	02050405	1 pc.	02049051	2 pcs.	LMP9513xxF1xxxNPOx
LMP 953	1 pc.	01039337	01039338	2 pcs.		1 pc.	02050404	02050405	1 pc.	02049052	3 pcs.	
LMP 954	2 pcs.	01039270	01039271	2 pcs.		1 pc.	02050406	02050407	1 pc.	02049053	4 pcs.	





# LMD 211 series

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 200 l/min



# LMD 211 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

#### Duplex

**Maximum working pressure up to 6 MPa (60 bar)**

**Flow rate up to 200 l/min**

LMD211 is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 200 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve integrated in the changeover lever, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Optional sampling ports, to get samples of fluid or to connect additional instrument to the system
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

#### Filter housing materials

- Head: Aluminium
- Bowl: Cataphoretic painted steel
- Bypass valve: AISI 304 - Polyamide

#### Pressure

- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm$ 10%
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

Inlet/Outlet In-Line

#### Note

LMD 211 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	Length	1	2	3
<b>LMD 211</b>		9.5	11.2	12.8		4.1	4.6	5.3



Filter series	Length	Filter element design - N Series									
		A03	A06	A10	A16	A25	M25	M60	M90	P10	P25
LMD 211	1	90	95	140	147	156	191	192	192	177	181
	2	113	121	158	162	173	192	192	193	181	183
	3	131	146	166	169	177	193	194	194	184	187

### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

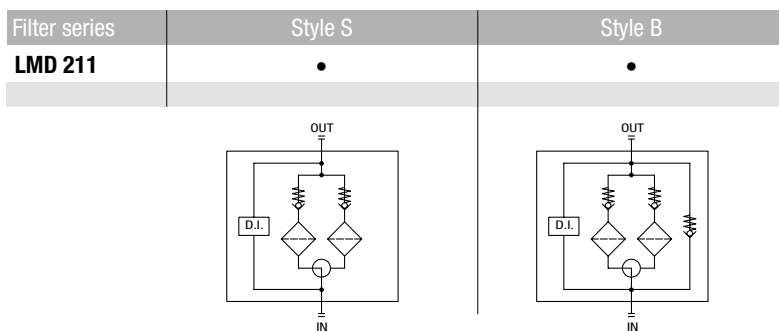
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

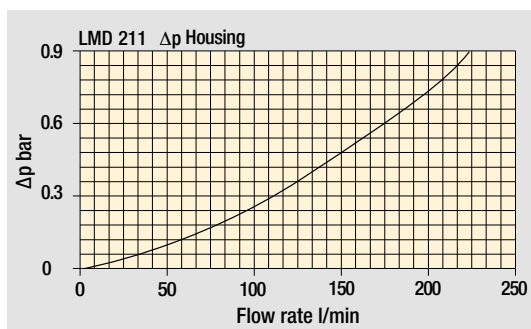
Please, contact our Sales Department for further additional information.

## Hydraulic symbols

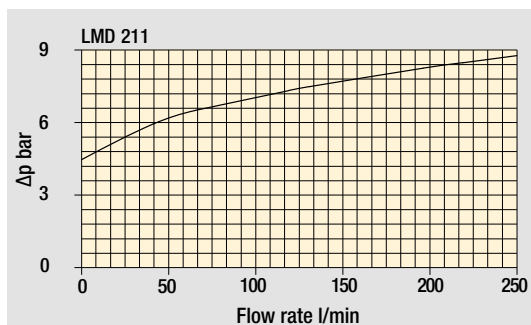


## Pressure drop

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.

# LMD 211

## Designation & Ordering code

### COMPLETE FILTER

Series and size **LMD211** Configuration example: **LMD211** | **3** | **B** | **A** | **C** | **6** | **A10** | **N** | **P01**

**Length**  
**1** | **2** | **3**

**Bypass valve**  
**S** Without bypass | **B** With bypass 3.5 bar

**Seals and treatments**  
**A** NBR  
**V** FPM

**Connections**  
**C** G 1 1/2"  
**F** 1 1/2" NPT  
**I** SAE 24 - 1 7/8" - 12 UN  
**L** 1 1/2" SAE 3000 psi/M + G 1 1/4"  
**M** 1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT  
**N** 1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" UN

**Connection for differential pressure indicator**  
**6** With plugged connection

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series and size **CU210** Configuration example: **CU210** | **3** | **A10** | **A** | **N** | **P01**

**Element length**  
**1** | **2** | **3**

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

**DEA** Electrical differential pressure indicator

**DEM** Electrical differential pressure indicator

**DEU** Electrical differential pressure indicator

**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator

**DTA** Electronic differential pressure indicator

**DVA** Visual differential pressure indicator

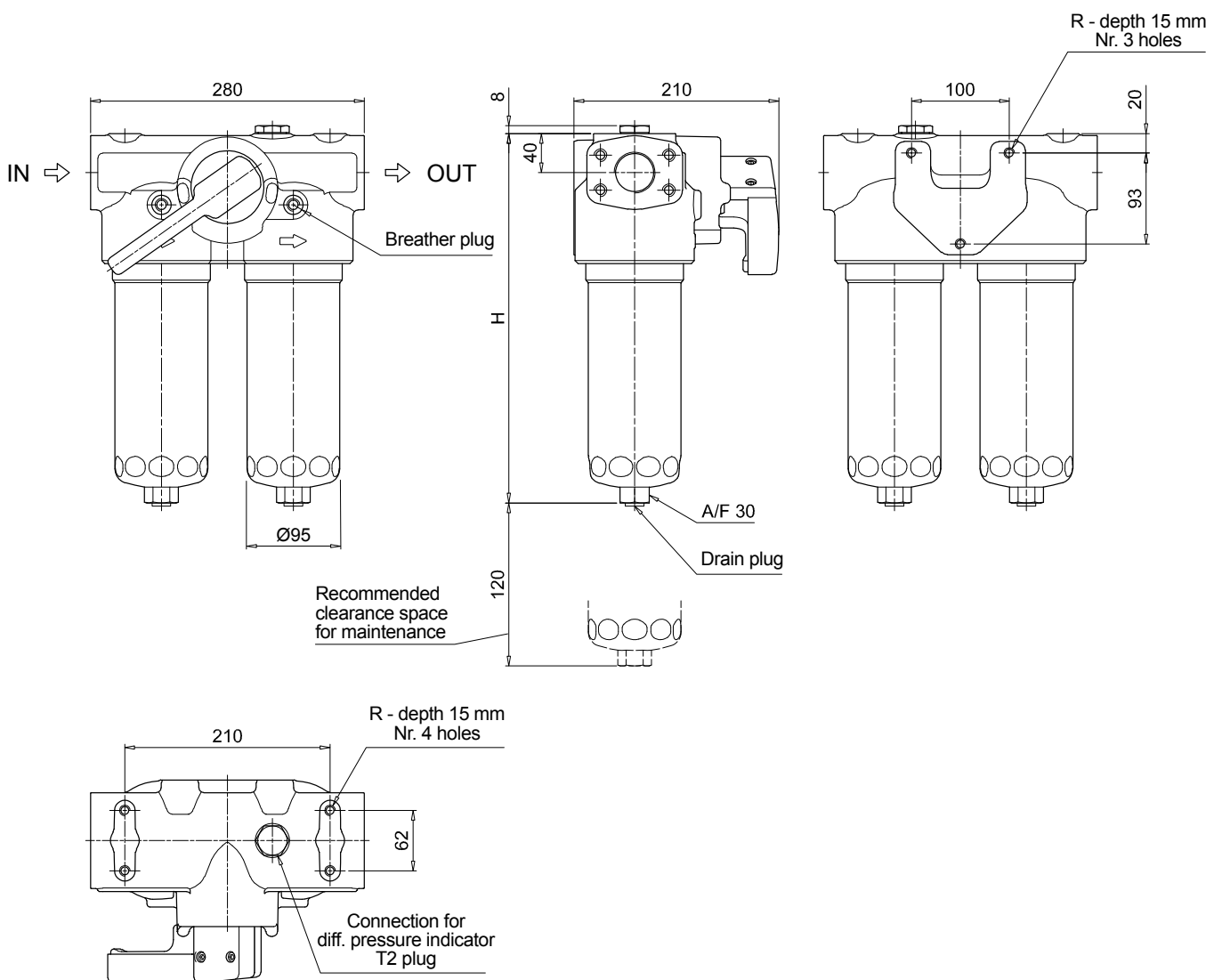
**DVM** Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug

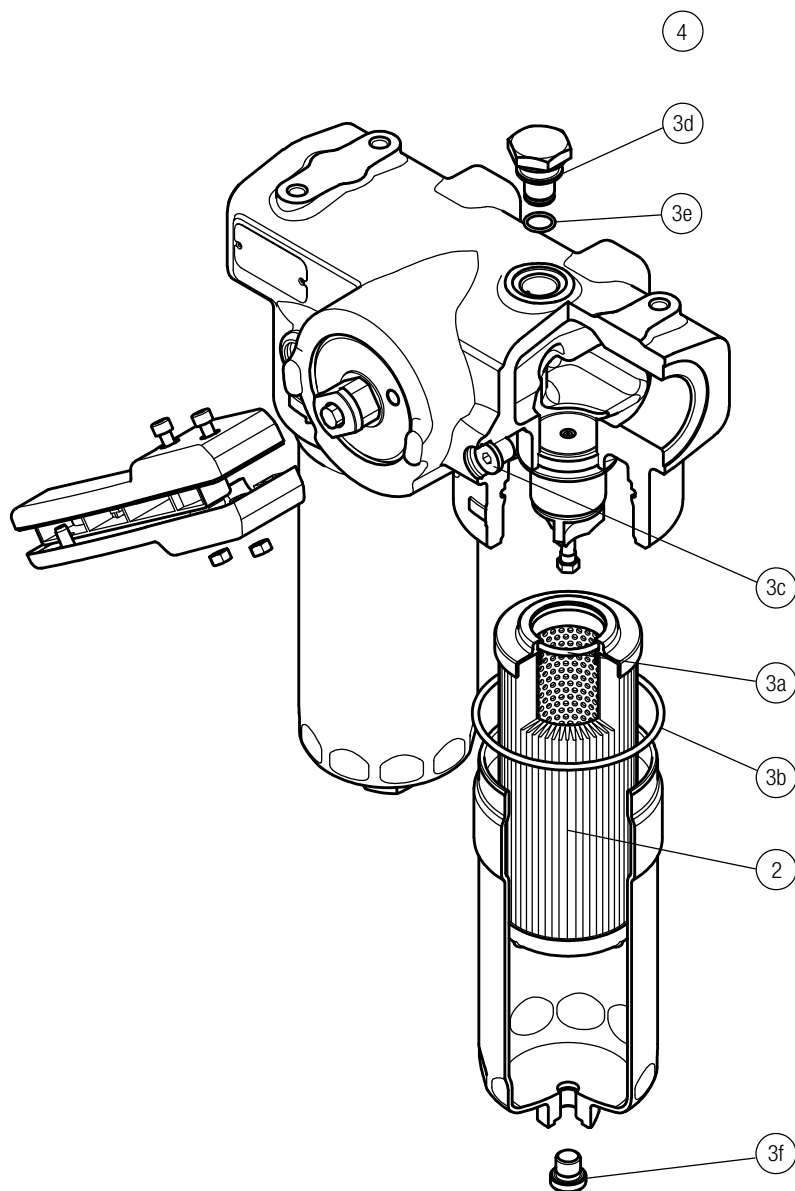
LMD211	
Filter length	H [mm]
<b>1</b>	383
<b>2</b>	513
<b>3</b>	651
Connections	R
<b>C</b>	M10
<b>F - I</b>	3/8" UNC
<b>L</b>	M10
<b>M - N</b>	3/8" UNC



# LMD 211 SPARE PARTS

Order number for spare parts

LMD 211



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 2 pcs.	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM	
<b>LDD</b>	See order table	02050671	02050672	T2H	T2V	





# LMD 400-401 & 431 series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 600 l/min



## Description

## Technical data

### Low & Medium Pressure filters

#### Duplex

**Maximum working pressure up to 1.6 MPa (16 bar)**

**Flow rate up to 600 l/min**

LMD400 is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 2 1/2" flanged connections, for a maximum flow rate of 600 l/min
- LMD400: In-line connections
- LMD401: In-line connections with compact design
- LMD431: In-line connections with compact design and base mounting
- Base-mounting design also available, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid.  
For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Steel - Painted black
- Bypass valve: Steel
- 3-way ball valve: Steel housings - Stainless Steel ball
- Valve: Phosphatized Steel - Stainless Steel

#### Pressure

Test pressure: 2.5 MPa (25 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

- LMD 400-401: In-line Inlet/Outlet
- LMD 401: Same side
- LMD 400-401-431: In-Line

#### Note

LMD 400 - 401 - 431 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]			
	Length	4	5	6	Length	4	5	6
<b>LMD 400 - 401</b>	60	65	72		20	28	33	
<b>LMD 431</b>	-	68	78		-	28	33	



Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LMD 400 - 401</b>	<b>4</b>	308	349	453	474	530	628	547	567
	<b>5</b>	395	427	509	547	589	637	577	592
	<b>6</b>	429	483	558	568	597	639	583	597
<b>LMD 431</b>	<b>5</b>	395	427	509	547	589	637	577	592
	<b>6</b>	429	483	558	568	597	639	583	597

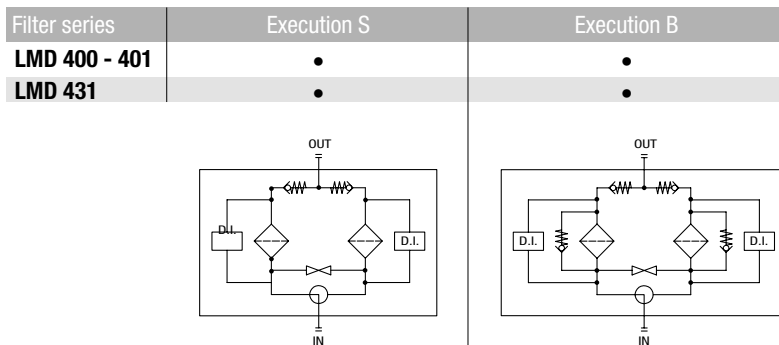
**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

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>.

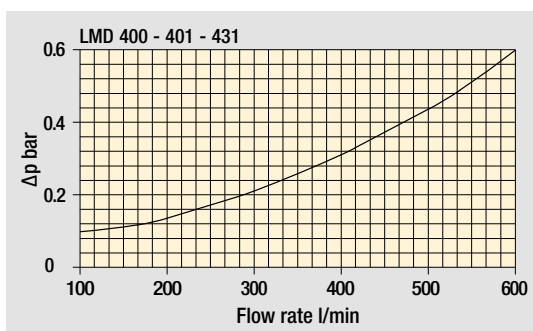
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

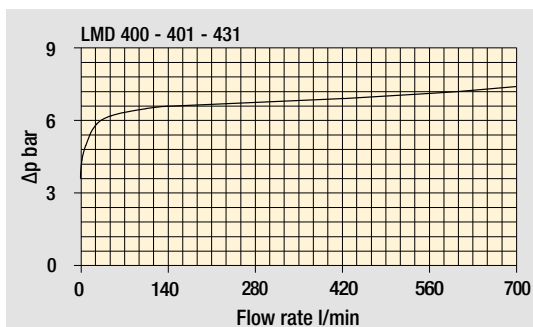
Hydraulic symbols



Pressure drop  
Filter housings  $\Delta p$  pressure drop



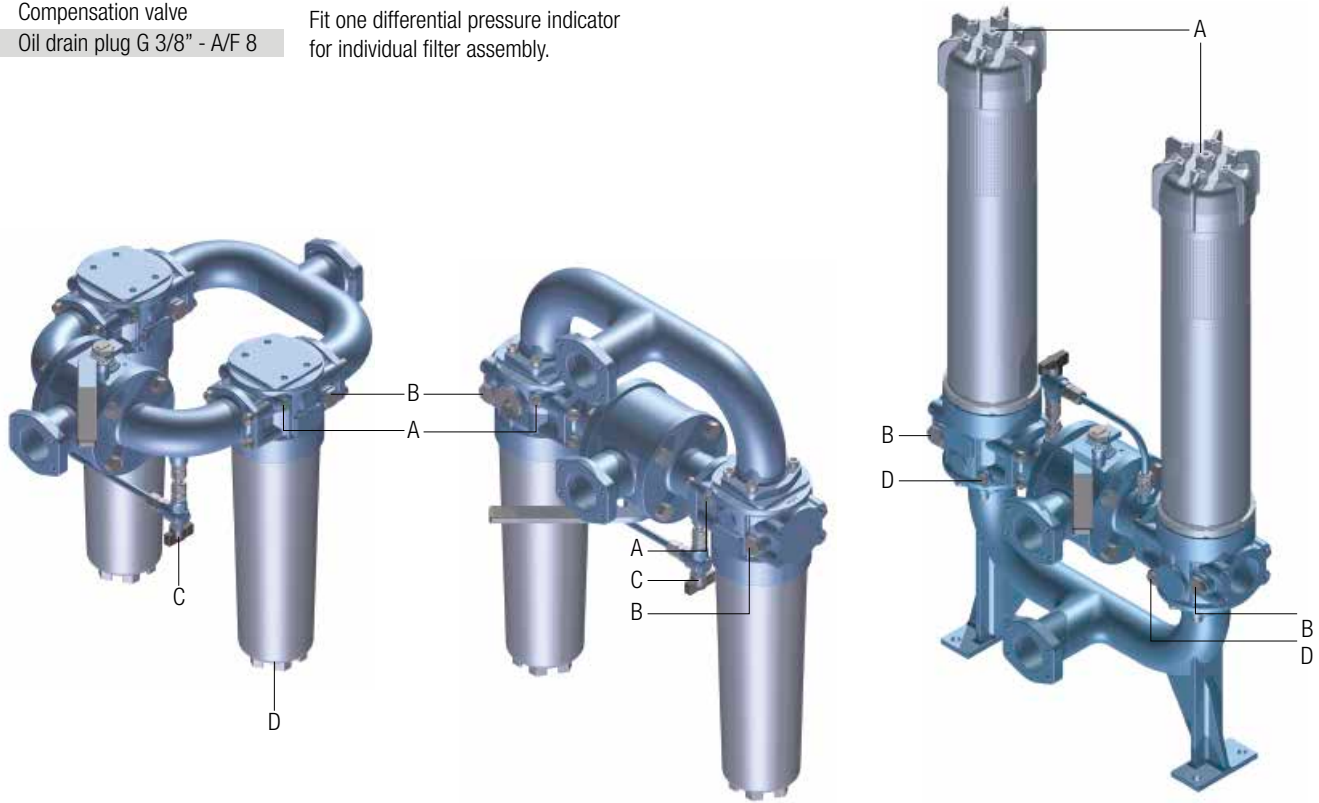
Bypass valve pressure drop



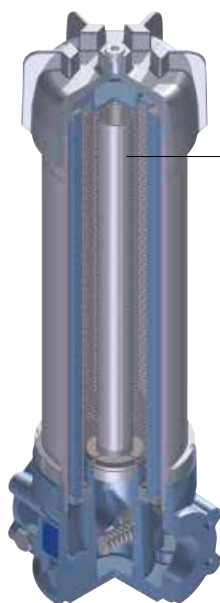
The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

Focus on

- A** Breather plug G 3/8" - A/F 8
  - B** Indicator port Plug T2 - A/F 30
  - C** Compensation valve
  - D** Oil drain plug G 3/8" - A/F 8
- LMP 400 - 401 & 431  
Fit one differential pressure indicator  
for individual filter assembly.



## LMD 431: Execution P02



"Internal tube for low flow rate" is recommended for flow rate values below 150 l/min.

The use of option P02 makes it easier to fill the housing with the operating fluid.



# LMD 400-401

## Designation & Ordering code

### COMPLETE FILTER

Series and size **LMD400** | **LMD401** Configuration example: **LMD401** **4** **B** **V** **F1** **A10** **N** **P01**

Length **4** | **5** | **6**

Bypass valve **S** Without bypass | **B** With bypass 3.5 bar

Seals and treatments **V** FPM

Connections	LMD400	LMD401
<b>F1</b> 2 1/2" SAE 3000 psi/M	•	•
<b>F2</b> 2 1/2" SAE 3000 psi/UNC	•	•
<b>F3</b> 2 1/2" SAE 3000 psi/M, In-line connections	-	•
<b>F4</b> 2 1/2" SAE 3000 psi/UNC, In-line connections	-	•

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

Element Δp	Execution	Filter length		
		4	5	6
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard	•	•	•
	<b>P02</b> Maintenance from the bottom of the housing	-	•	•
	<b>Pxx</b> Customized	-	-	-

### FILTER ELEMENT

Element series and size **CU400** Configuration example: **CU400** **4** **A10** **V** **N** **P01**

Element length **4** | **5** | **6**

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

Seals **V** FPM

Element Δp	Execution
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard
	<b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

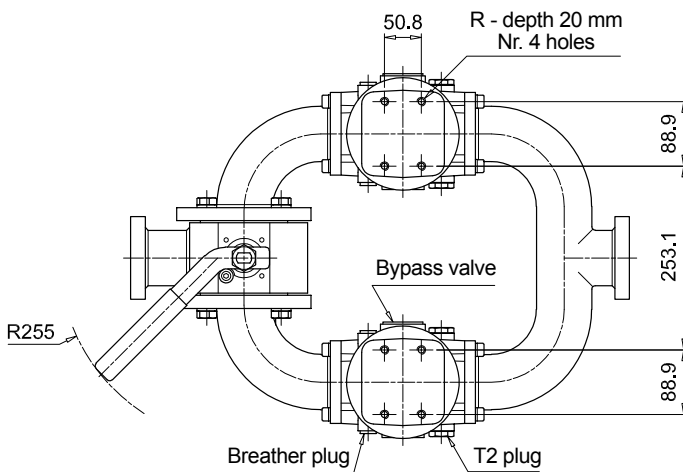
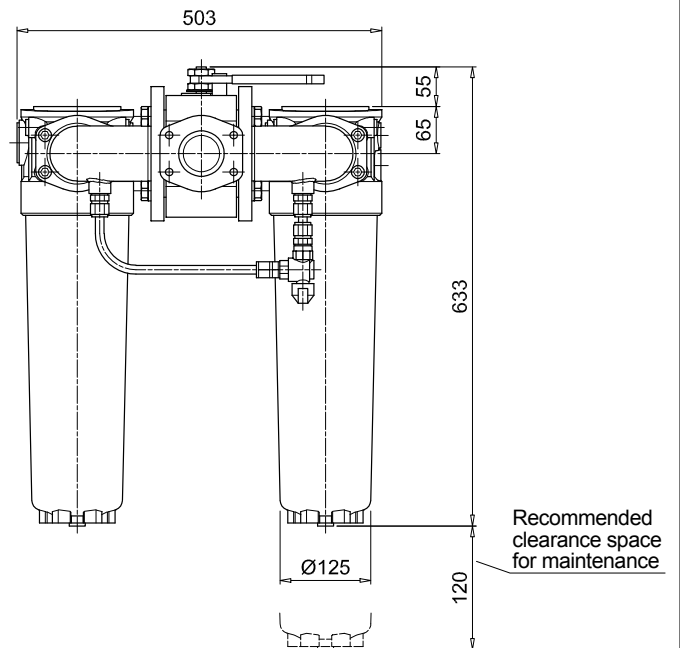
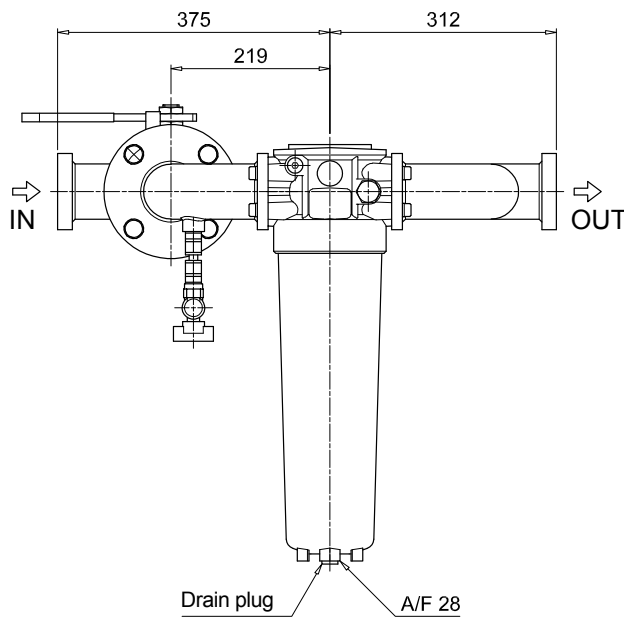
See page 737

**T2** Plug

# LMD 400-401

## Dimensions

LMD400	
Length 4	
Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC



T2 plug = connection for differential pressure indicator

# LMD 400-401

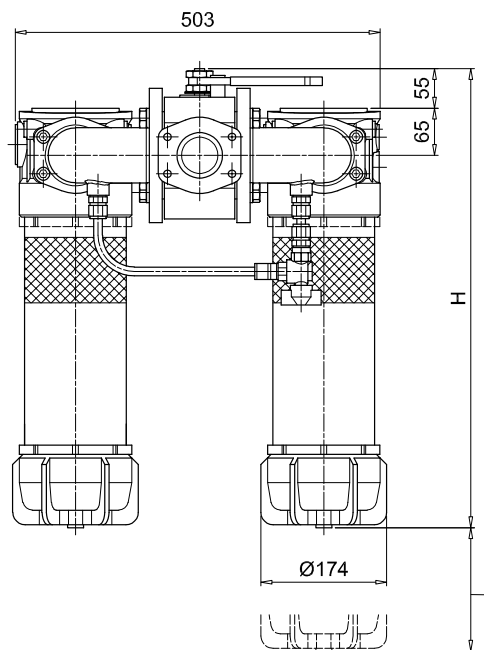
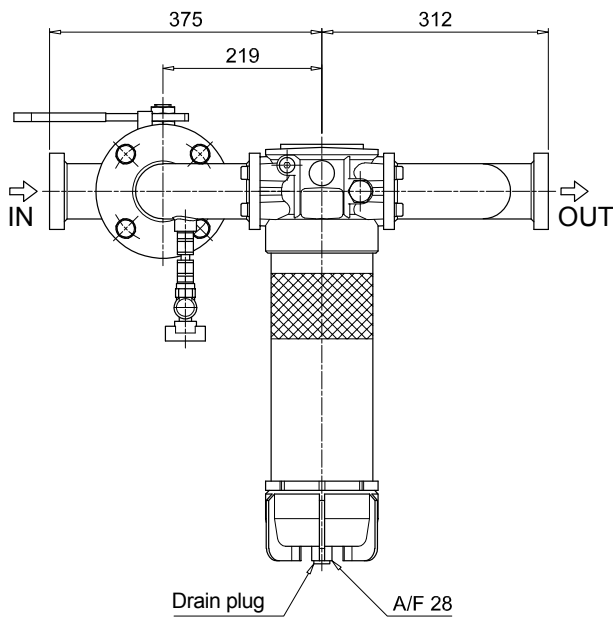
## Dimensions

### LMD400

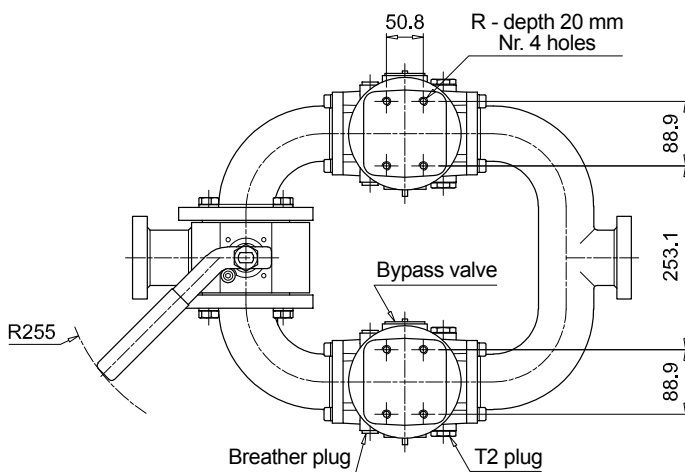
#### Length 5 - 6

Filter length	H [mm]	H2 [mm] Execution	
		P01	P02
5	883	120	660
6	1213	120	690

Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC



H2 - Recommended clearance space for maintenance

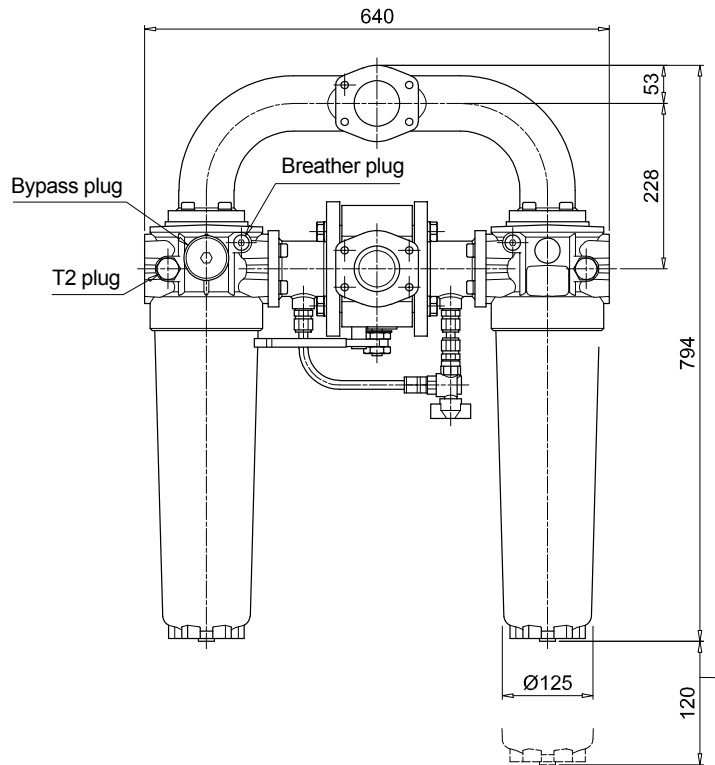
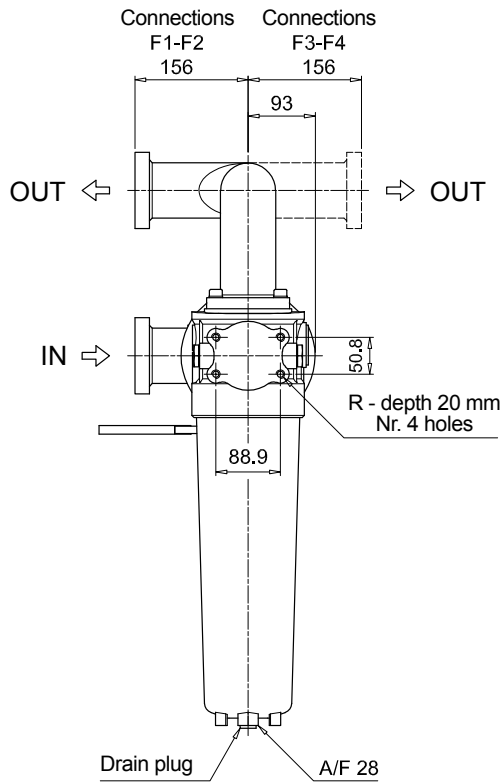


T2 plug = connection for differential pressure indicator

# LMD 400-401

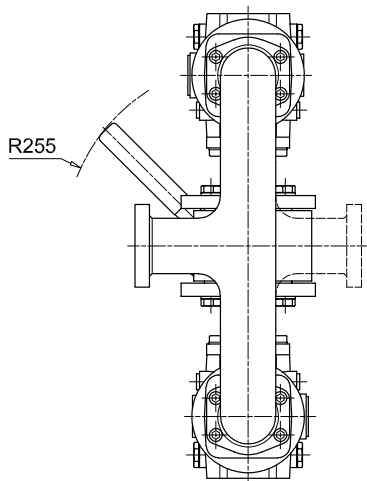
## Dimensions

LMD401	
Length 4	
Connections	R
<b>F1</b>	M12
<b>F2</b>	1/2" UNC
<b>F3</b>	M12
<b>F4</b>	1/2" UNC



T2 plug = connection for differential pressure indicator

Recommended clearance space for maintenance



# LMD 400-401

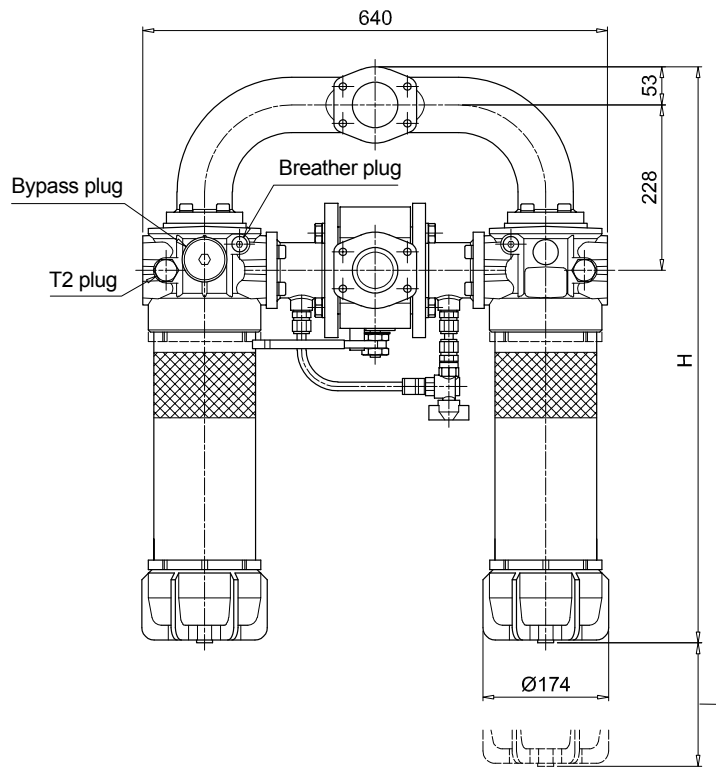
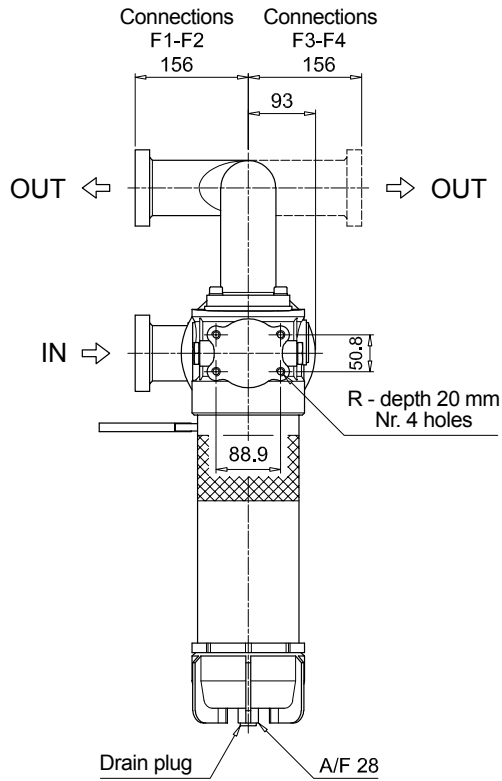
## Dimensions

LMD401

Length 5 - 6

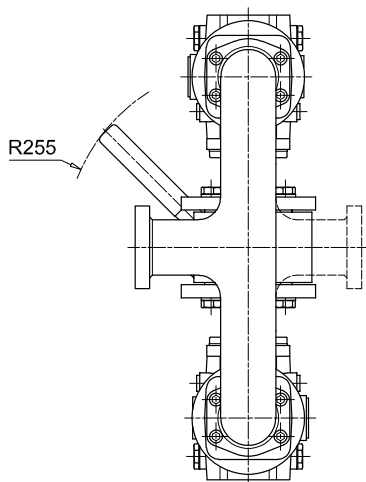
Filter length	H [mm]	H2 [mm] Execution	
		P01	P02
5	1044	120	660
6	1374	120	690

Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC



T2 plug = connection for differential pressure indicator

H2 - Recommended clearance space for maintenance







# LMD 431

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>LMD431</b>	Configuration example: <b>LMD431</b>   <b>5</b>   <b>B</b>   <b>V</b>   <b>F1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>
<b>Length</b> <b>5</b>   <b>6</b>	
<b>Bypass valve</b> <b>S</b> Without bypass   <b>B</b> With bypass 3.5 bar	
<b>Seals and treatments</b> <b>V</b> FPM	
<b>Connections</b> <b>F1</b> 2 1/2" SAE 3000 psi/M <b>F2</b> 2 1/2" SAE 3000 psi/UNC <b>F3</b> 2 1/2" SAE 3000 psi/M, In-line connections <b>F4</b> 2 1/2" SAE 3000 psi/UNC, In-line connections	
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm   <b>P10</b> Resin impregnated paper 10 µm <b>A25</b> Inorganic microfiber 25 µm   <b>P25</b> Resin impregnated paper 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm	
<b>Element Δp</b> <b>N</b> 20 bar	<b>Execution</b> <b>P01</b> MP Filtri standard <b>P02</b> With internal tube for low flow rate <b>Pxx</b> Customized

### FILTER ELEMENT

<b>Element series and size</b> <b>CU400</b>	Configuration example: <b>CU400</b>   <b>5</b>   <b>A10</b>   <b>V</b>   <b>N</b>   <b>P01</b>
<b>Element length</b> <b>5</b>   <b>6</b>	
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm   <b>P10</b> Resin impregnated paper 10 µm <b>A25</b> Inorganic microfiber 25 µm   <b>P25</b> Resin impregnated paper 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm	
<b>Seals</b> <b>V</b> FPM	
<b>Element Δp</b> <b>N</b> 20 bar	<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

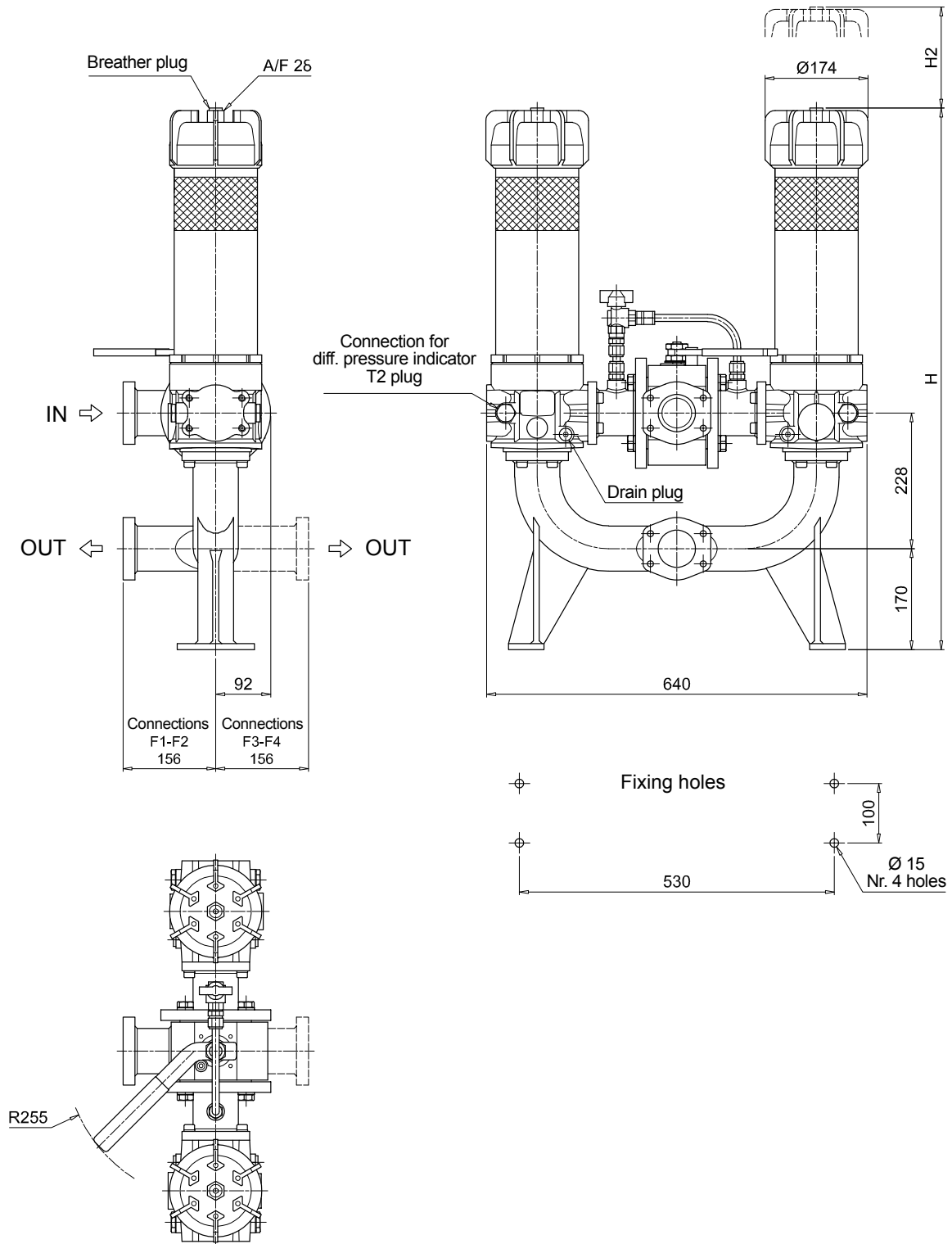
### PLUGS

See page 737

<b>T2</b> Plug
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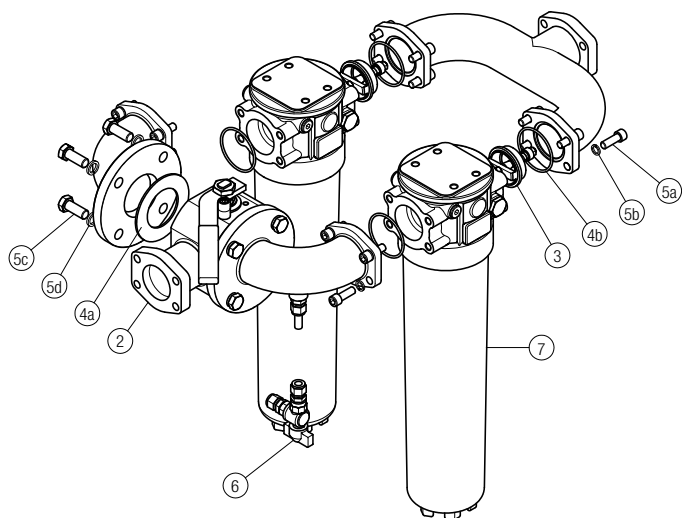
### LMD431

Filter length	H [mm]	H2 [mm]
5	1161	660
6	1491	690

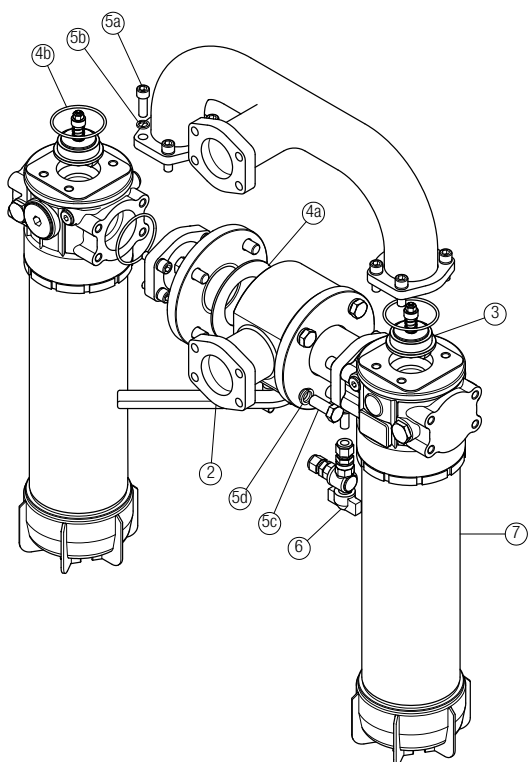


Order number for spare parts

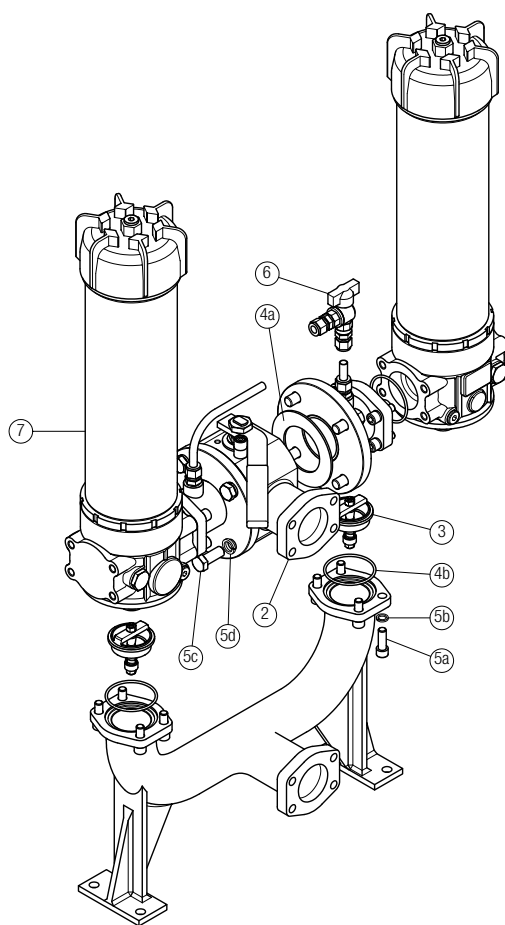
**LMD 400**



**LMD 401**



**LMD 431**



Item:	Q.ty: 1 pc.		Q.ty: 2 pcs.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pcs.
Filter series	3-way ball valve PN 16 2 1/2" SAE 3000 psi/M 2 1/2" SAE 3000 psi/UNC		One-way valve	Seal Kit	Threaded fasteners kit	Kit ball valve with hose fitting	Filter See order table
<b>LMD 400-401-431</b>	02001440	02001441	02001429	02050399	02049062	02025043	LMP400xF2.....





# LMD 951 series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 1200 l/min



# LMD 951 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

#### Duplex

**Maximum working pressure up to 1.6 MPa (16 bar)**

**Flow rate up to 1200 l/min**

LMD950 is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 1200 l/min
- Base-mounting design, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Painted black
- Bypass valve: Steel
- 3-way ball valve: Steel body - Stainless steel ball
- Check valve: Cast Iron body - AISI 304 leaf

#### Pressure

- SAE + DIN Flange
- Test pressure: 2.5 MPa (25 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm$ 10%
- Other opening pressures on request.

#### Number of filter elements

LMD 951: 2 filter elements CU950-3

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

- LMD 951: In-line Inlet/Outlet
- Same side

#### Note

LMD 951 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	DN 80	DN 100	DN 80	DN 100
<b>LMD 951</b>	102	130	62	66



Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90
<b>LMD 951</b>	<b>3</b>	853	884	995	1066	1096	1233

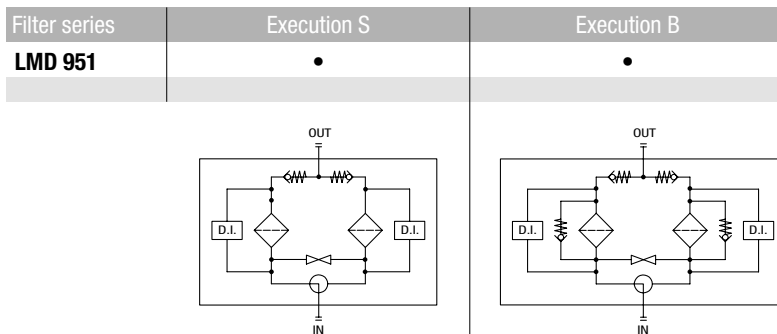
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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>.

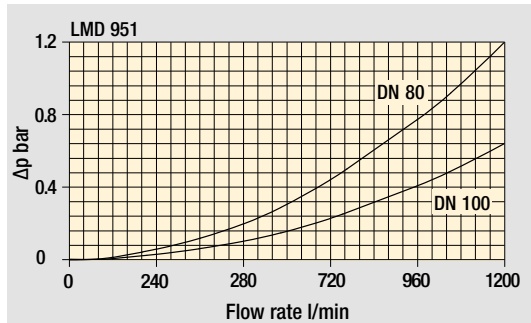
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

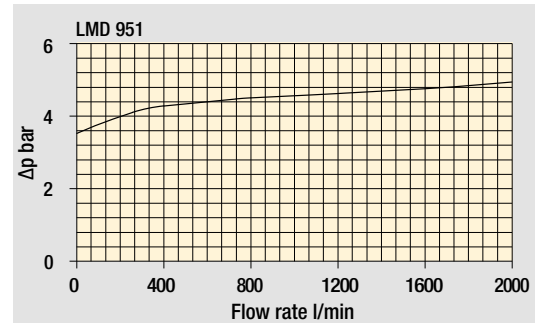
### Hydraulic symbols



### Pressure drop



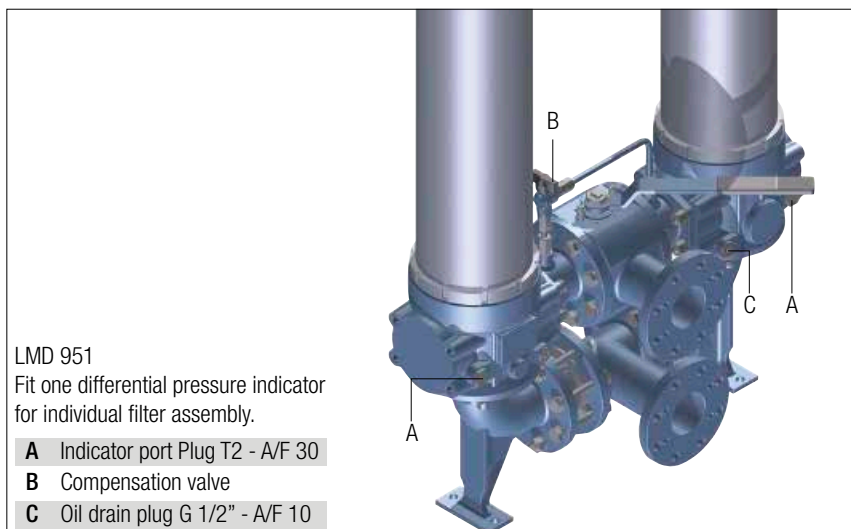
Filter housings  
 $\Delta p$  pressure drop



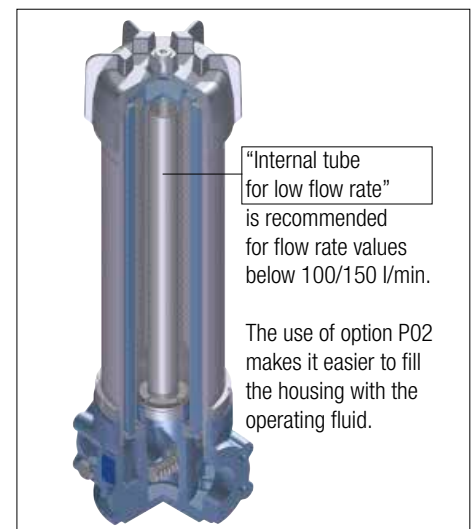
Bypass valve  
pressure drop

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.

### Focus on



### Execution P02



# LMD 951

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>LMD951</b> <b>3</b> <b>B</b> <b>V</b> <b>F1</b> <b>A10</b> <b>N</b> <b>P01</b>							
<b>LMD951</b>								
<b>Length</b>	<b>3</b>							
<b>Bypass valve</b>	<b>S</b> Without bypass		<b>B</b> With bypass 3.5 bar					
<b>Seals and treatments</b>	<b>V</b> FPM							
<b>Connections</b>	<b>F1</b> 3" SAE 3000 psi/M <b>F2</b> 3" SAE 3000 psi/UNC <b>F3</b> 4" SAE 3000 psi/M <b>F4</b> 4" SAE 3000 psi/UNC <b>F5</b> 3" SAE 3000 psi/M, In-line connections <b>F6</b> 3" SAE 3000 psi/UNC, In-line connections <b>F7</b> 4" SAE 3000 psi/M, In-line connections <b>F8</b> 4" SAE 3000 psi/UNC, In-line connections							
<b>Filtration rating (filter media)</b>	<b>A03</b> Inorganic microfiber 3 µm <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm							
	<b>Element Δp</b>				<b>Execution</b>			
	<b>N</b> 20 bar				<b>P01</b> MP Filtri standard <b>P02</b> With internal tube for low flow rate <b>Pxx</b> Customized			

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example: <b>CU950</b> <b>3</b> <b>A10</b> <b>V</b> <b>N</b> <b>P01</b>					
<b>CU950</b>						
<b>Element length</b>	<b>3</b>					
<b>Filtration rating (filter media)</b>	<b>A03</b> Inorganic microfiber 3 µm <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm					
<b>Seals</b>	<b>V</b> FPM					
	<b>Element Δp</b>			<b>Execution</b>		
	<b>N</b> 20 bar			<b>P01</b> MP Filtri standard <b>Pxx</b> Customized		

### CLOGGING INDICATORS

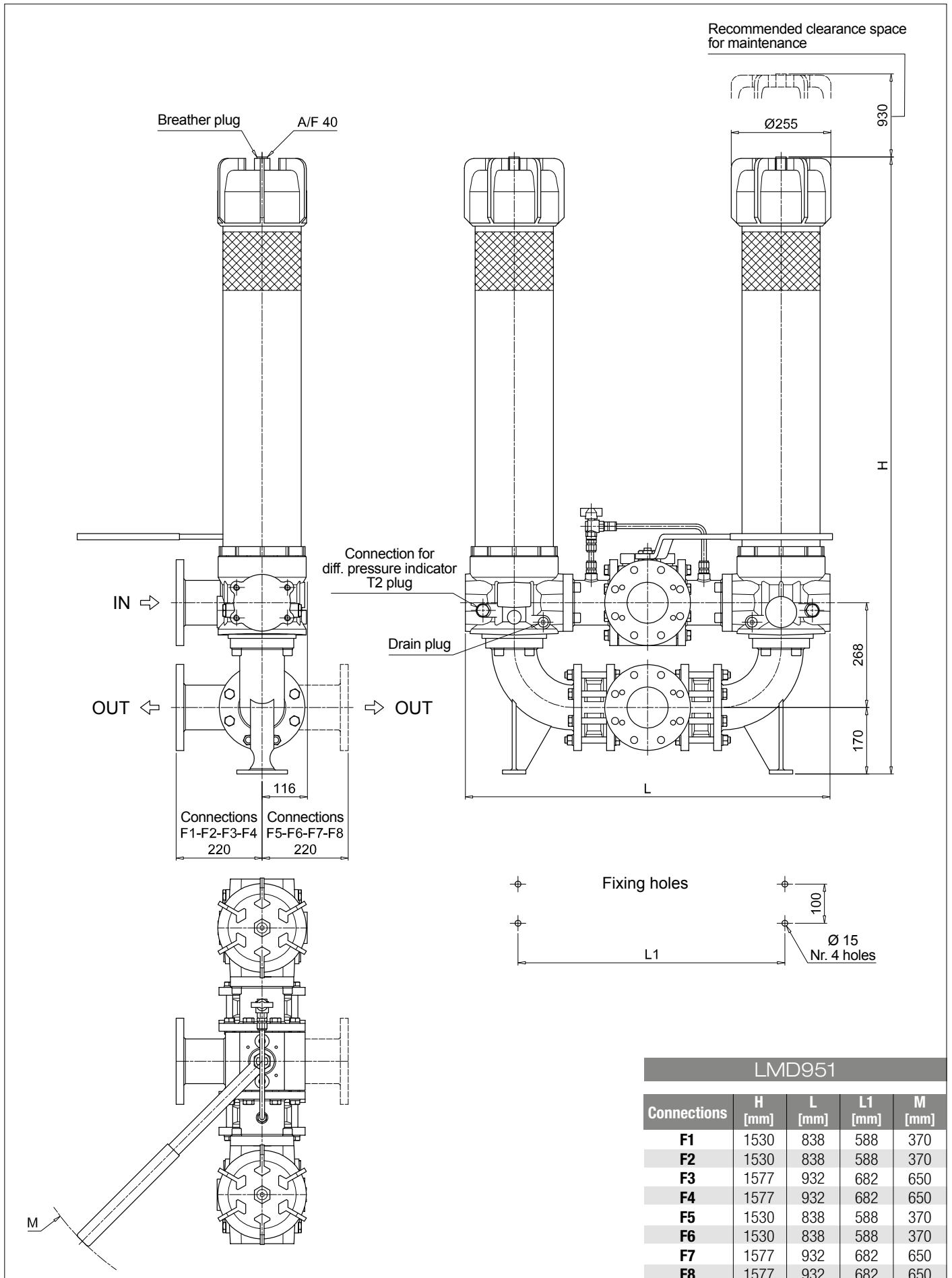
See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

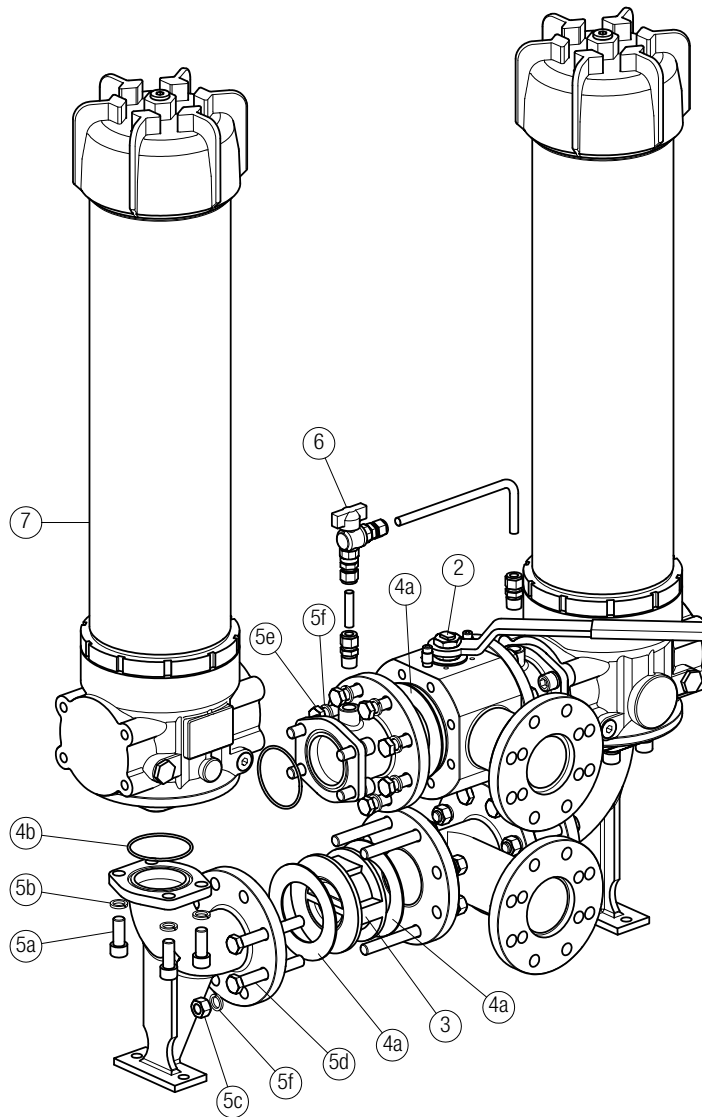
<b>T2</b> Plug
----------------



# LMD 951 SPARE PARTS

Order number for spare parts

LMD 951



Item 7:  
for complete filter code and  
spare parts, see  
LMP 950 - 951 series chapter

Quantity:  
- filter spare parts: 2 pcs.  
- filter seal kit: 2 pcs.

Item:	Q.ty: 1 pc. <b>2</b>		Q.ty: 2 pcs. <b>3</b>	Q.ty: 1 pc. <b>4</b>	Q.ty: 1 pc. <b>5</b> (5a ÷ 5f)	Q.ty: 1 pc. <b>6</b>	Q.ty: 2 pcs. <b>7</b>
Filter series LMD 951	3-way ball valve PN 16		One-way valve	Seal Kit	Threaded fasteners kit	G 1/2" Ball Valve Kit with straight fittings	Filter
<b>F1 - F2 - F5 - F6 / D1 - D3 (3" SAE / DIN PN16 DN 80)</b>	3" SAE 3000 psi/M 02001135	3" SAE 3000 psi/UNC 02001438	02001418	02050388	02049056	02025043	LMP9513xVF1xxxNP01
<b>F3 - F4 - F7 - F8 / D2 - D4 (4" SAE / DIN PN16 DN 100)</b>	4" SAE 3000 psi/M 02001162	4" SAE 3000 psi/UNC 02001439	02001419	02050389	02049057		LMP9513xVF3xxxNP01





# DIN 24550 **Filter element according to DIN 24550**

## LDP & LDD series

Maximum working pressure up to 6 MPa (60 bar)

Flow rate up to 360 l/min

## LMP 900-901 series

Maximum working pressure up to 3 MPa (30 bar)

Flow rate up to 2000 l/min

## LMP 902-903 series

Maximum working pressure up to 2 MPa (20 bar)

Flow rate up to 3000 l/min





# LDP & LDD series

Filter element according to DIN 24550

---

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 360 l/min

# LDP & LDD GENERAL INFORMATION

## Filter element according to DIN 24550

### Descriptions

#### Low & Medium Pressure filters

**Maximum working pressure up to 6 MPa (60 bar)**  
**Flow rate up to 360 l/min**

**LDP** is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools.

They are also suitable for the off-line filtration of small reservoirs. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2", for a maximum return flow rate of 360 l/min
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in low pressure industrial equipment or mobile machines

**LDD** is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 360 l/min
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve integrated in the changeover lever, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Optional sampling ports, to get samples of fluid or to connect additional instrument to the system
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

### Technical data

#### Filter housing materials

- Head: Aluminium
- Bowl: Cataphoretic painted steel
- Bypass valve: AISI 304 - Polyamide

#### Pressure

- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

Inlet/Outlet In-Line

#### Note

LDP - LDD filters are provided for vertical mounting

### Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>LDP 016</b>	2.0	1.2
<b>LDP 025</b>	3.0	1.6
<b>LDP 040</b>	5.0	2.2
<b>LDD 016</b>	9.3	3.6
<b>LDD 025</b>	9.5	4.1
<b>LDD 040</b>	11.3	4.8

# GENERAL INFORMATION LDP & LDD

Filter element according to DIN 24550

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Filter element design - N Series									
	A03	A06	A10	A16	A25	M25	M60	M90	P10	P25
<b>LDP 016</b>	83	91	178	198	222	350	353	358	295	309
<b>LDP 025</b>	124	134	227	245	265	357	358	358	319	330
<b>LDP 040</b>	173	191	274	284	311	359	360	361	332	337
<b>LDD 016</b>	68	73	120	130	140	189	190	192	169	174
<b>LDD 025</b>	93	98	142	149	157	191	192	192	178	181
<b>LDD 040</b>	118	126	161	165	175	192	192	193	182	184

**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  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

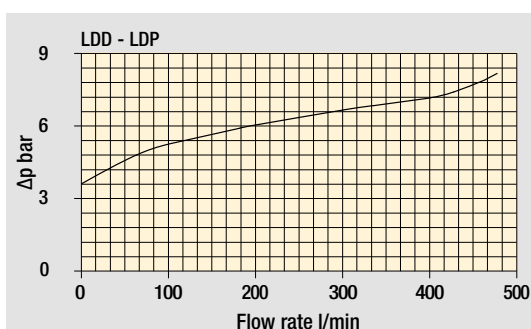
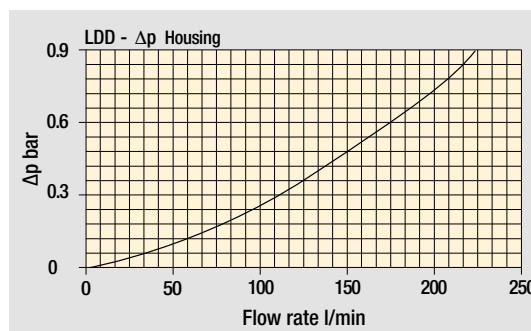
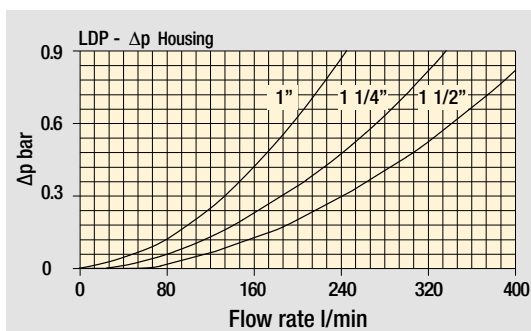
Filter series	Execution S	Execution B	Execution S	Execution B
<b>LDP 016</b>	●	●	-	-
<b>LDP 025</b>	●	●	-	-
<b>LDP 040</b>	●	●	-	-
<b>LDD 016</b>	-	-	●	●
<b>LDD 025</b>	-	-	●	●
<b>LDD 040</b>	-	-	●	●

Filter series	Execution S	Execution B	Execution S	Execution B
<b>LDP 016</b>				

## 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.

# LDP Filter element according to DIN 24550

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **LDP** **025** **B** **A** **D** **6** **A10** **N** **P01**

**Series**  
**LDP**

**Size**  
**016** Element according to DIN 24550 - T3 DN160  
**025** Element according to DIN 24550 - T3 DN250  
**040** Element according to DIN 24550 - T3 DN400

**Bypass valve**  
**S** Without bypass      **B** With bypass 3.5 bar

**Seals and treatments**  
**A** NBR  
**V** FPM

**Connections**  
**A** G 1"      **F** 1 1/2" NPT  
**B** G 1 1/4"      **G** SAE 16 - 1 5/16" - 12 UN  
**C** G 1 1/2"      **H** SAE 20 - 1 5/8" - 12 UN  
**D** 1" NPT      **I** SAE 24 - 1 7/8" - 12 UN  
**E** 1 1/4" NPT

**Connection for differential pressure indicator**  
**6** With plugged connection

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm      **M25** Wire mesh 25 µm  
**A06** Inorganic microfiber 6 µm      **M60** Wire mesh 60 µm  
**A10** Inorganic microfiber 10 µm      **M90** Wire mesh 90 µm  
**A16** Inorganic microfiber 16 µm      **P10** Resin impregnated paper 10 µm  
**A25** Inorganic microfiber 25 µm      **P25** Resin impregnated paper 25 µm  
**WA025** Water absorber inorganic microfiber 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **DN** **025** **A10** **A** **N** **P01**

**Element series**  
**DN**

**Element size**  
**016** Element according to DIN 24550 - T3 DN160  
**025** Element according to DIN 24550 - T3 DN250  
**040** Element according to DIN 24550 - T3 DN400

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm      **M25** Wire mesh 25 µm  
**A06** Inorganic microfiber 6 µm      **M60** Wire mesh 60 µm  
**A10** Inorganic microfiber 10 µm      **M90** Wire mesh 90 µm  
**A16** Inorganic microfiber 16 µm      **P10** Resin impregnated paper 10 µm  
**A25** Inorganic microfiber 25 µm      **P25** Resin impregnated paper 25 µm  
**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

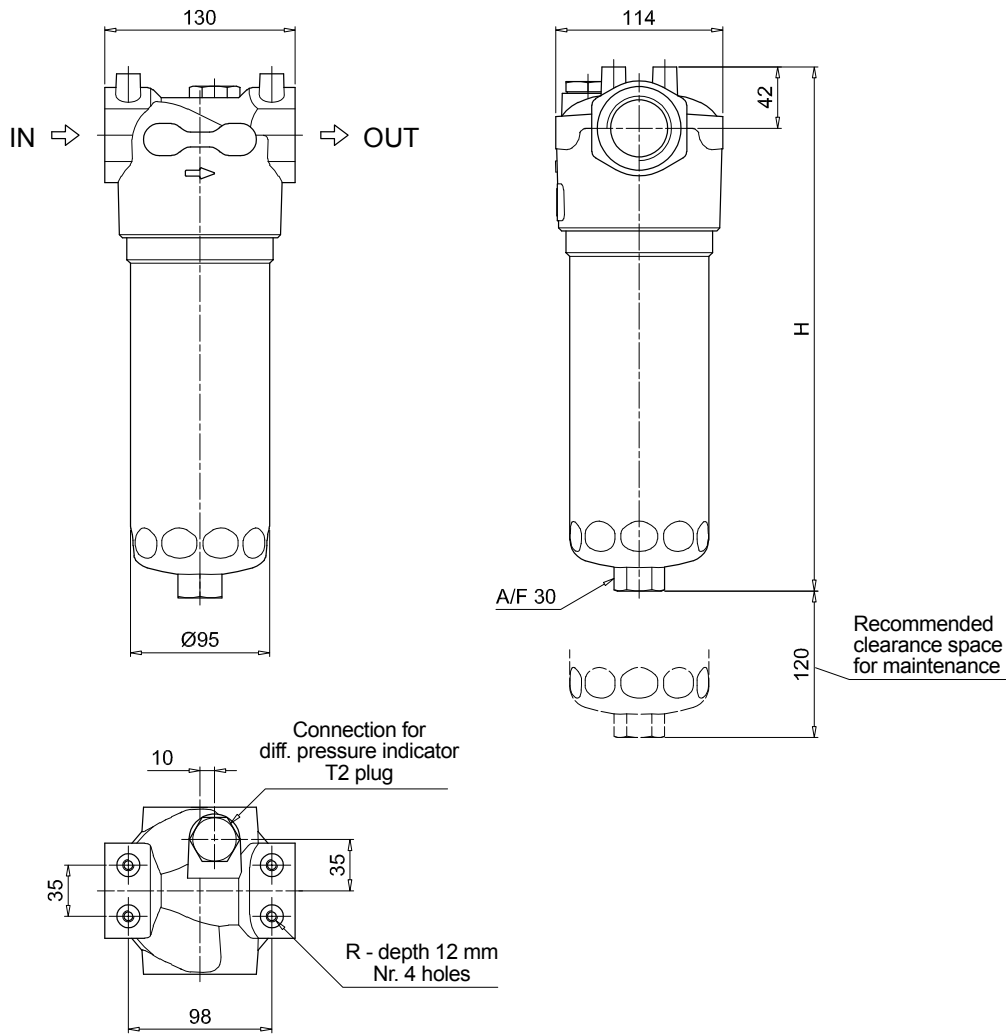
See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b> Plug
----------------



LDP	
Filter size	H [mm]
<b>016</b>	268
<b>025</b>	358
<b>040</b>	508
Connections	R
<b>A-B-C</b>	M8
<b>D-E-F-G-H-I</b>	5/16" UNC

# LDD Filter element according to DIN 24550

## Designation & Ordering code

### COMPLETE FILTER

Series **LDD** Configuration example: **LDD 025 B A C 6 A10 N P01**

**Size**

**016** Element according to DIN 24550 - T3 DN160  
**025** Element according to DIN 24550 - T3 DN250  
**040** Element according to DIN 24550 - T3 DN400

**Bypass valve**

**S** Without bypass      **B** With bypass 3.5 bar

**Seals and treatments**

**A** NBR  
**V** FPM

**Connections**

**C** G 1 1/2"  
**F** 1 1/2" NPT  
**I** SAE 24 - 1 7/8" - 12 UN  
**L** 1 1/2" SAE 3000 psi/M + G 1 1/4"  
**M** 1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT  
**N** 1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" UN

**Connection for differential pressure indicator**

**6** With plugged connection

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Element series **DN** Configuration example: **DN 025 A10 A N P01**

**Element size**

**016** Element according to DIN 24550 - T3 DN160  
**025** Element according to DIN 24550 - T3 DN250  
**040** Element according to DIN 24550 - T3 DN400

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

**Seals and treatments**

**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

See page 716

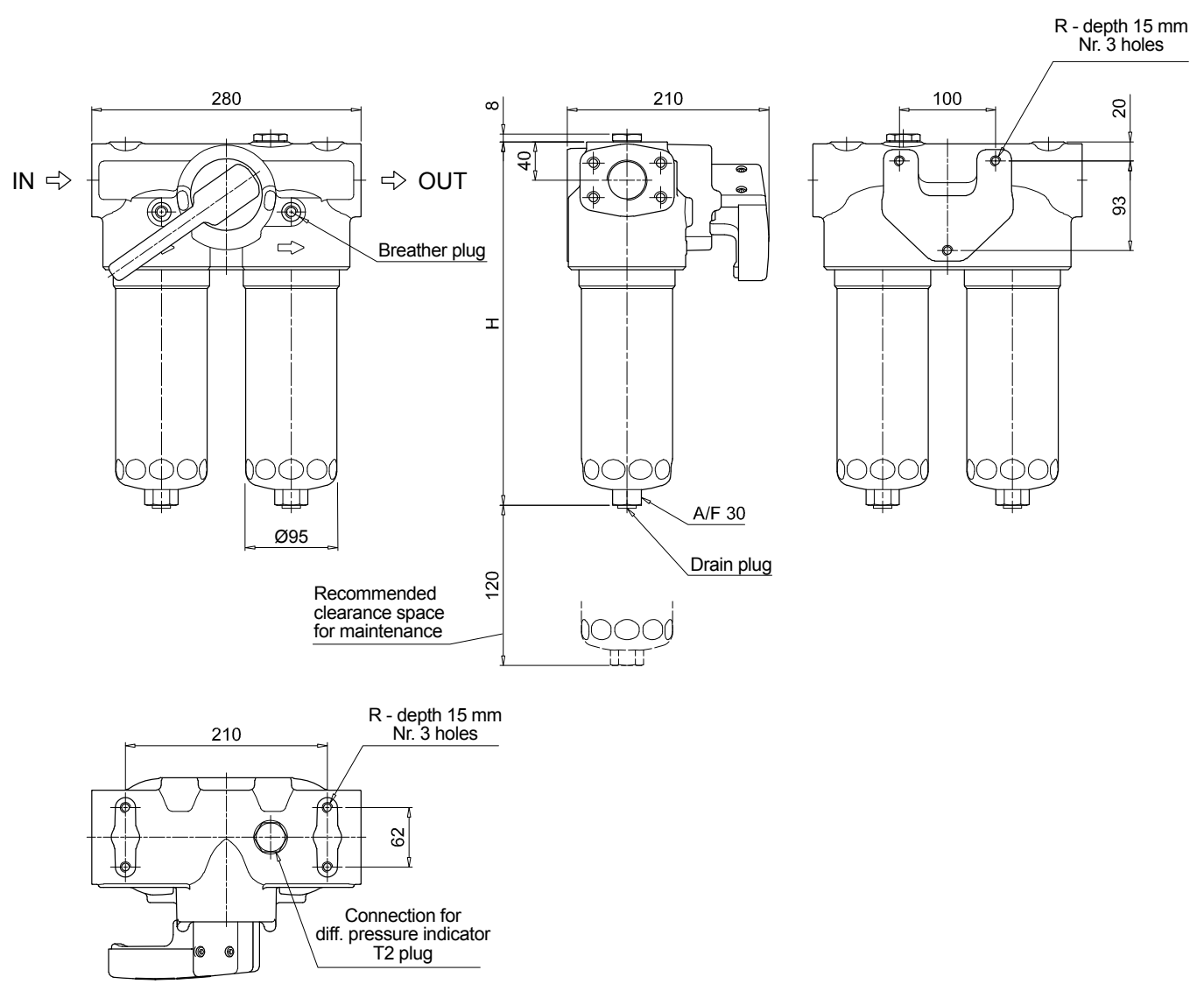
<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b> Plug
----------------

LDD	
Filter size	H [mm]
<b>016</b>	293
<b>025</b>	383
<b>040</b>	533
Connections	R
<b>C</b>	M10
<b>F - I</b>	3/8" UNC
<b>L</b>	M10
<b>M - N</b>	3/8" UNC

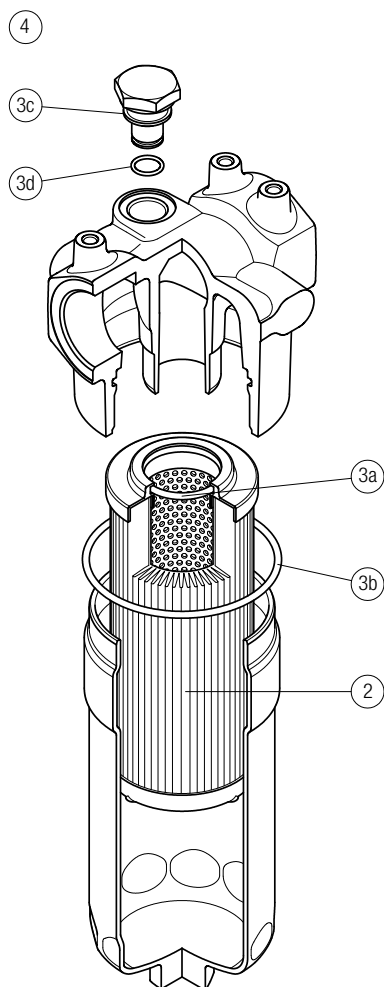


# LDP SPARE PARTS

Filter element according to DIN 24550

Order number for spare parts

LDP

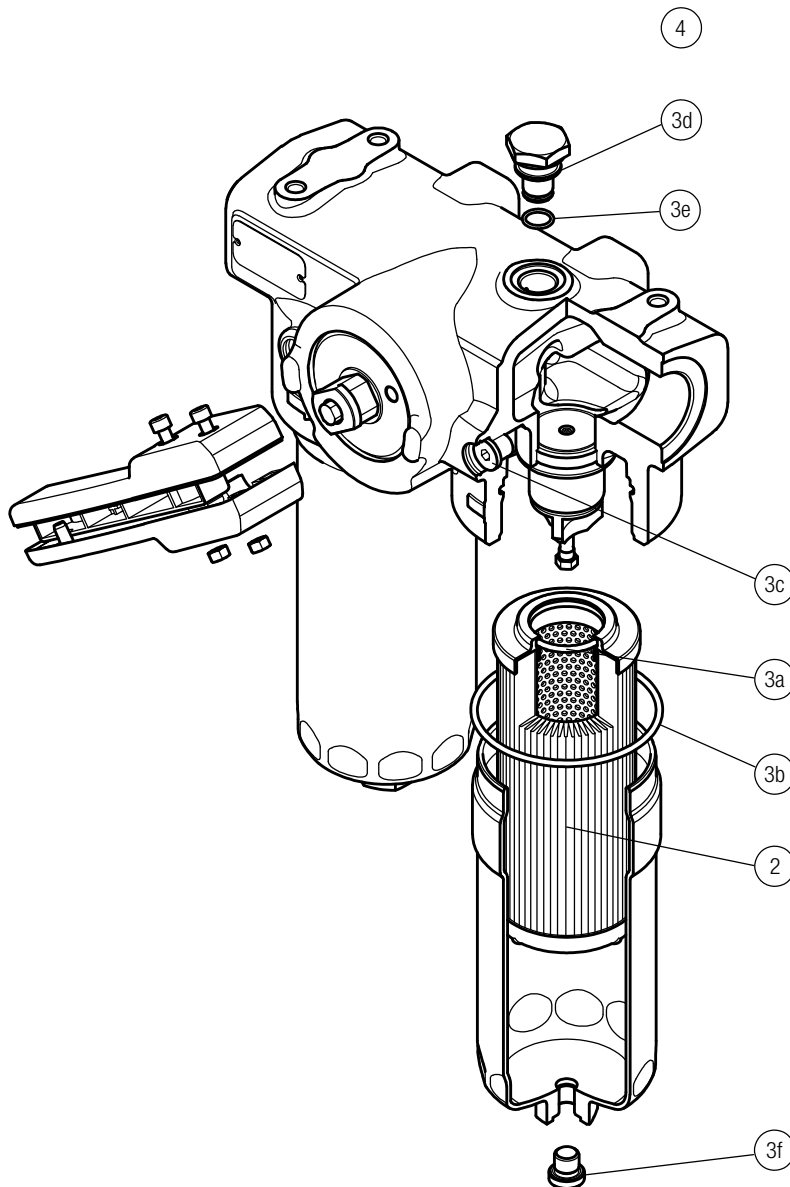


Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
LDP	See order table	NBR	FPM	NBR	FPM
	<b>2</b>	<b>3</b> (3a ÷ 3d)		<b>4</b>	
		02050435	02050436	T2H	T2V



Order number for spare parts

LDD



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 2 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
LDD	See order table	NBR	FPM	NBR	FPM
	<b>2</b>	<b>3</b> (3a ÷ 3i)		<b>4</b>	
		02050671	02050672	T2H	T2V



# LMP 900-901 series

Filter element according to DIN 24550

Maximum working pressure up to 3 MPa (30 bar) - Flow rate up to 2000 l/min



# LMP 900-901 GENERAL INFORMATION

## Filter element according to DIN 24550

### Description

#### Low & Medium Pressure filters

**Maximum working pressure up to 3 MPa (30 bar)**

**Flow rate up to 2000 l/min**

LMP900 is a range of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 2000 l/min
- In line or 90° connections, to meet any type of application
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems
- Lubrication systems

### Technical data

#### Filter housing materials

- Head: Anodized aluminium
- Housing: Anodized aluminium
- Manifolds: Anodized aluminium
- Bypass valve: Steel

#### Pressure

- Test pressure: 4.5 MPa (45 bar)
- Burst pressure: 12 MPa (120 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 3 MPa (30 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### Number of filter elements

LMP 900-1: 1 filter element CU900

LMP 900-2: 2 filter elements CU900

#### Filter elements

Filter element according to DIN 24550

Size: 1000

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Connections

LMP 900: In-line Inlet/Outlet

LMP 901: 90° Inlet/Outlet

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

LMP 900 - 901 filters are provided for vertical mounting

### Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]		
	Length	1	2	Length	1	2
<b>LMP 900-901</b>		19.2	30.4		16	24

# GENERAL INFORMATION LMP 900-901

Filter element according to DIN 24550

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90
LMP 900	1	706	877	1264	1291	1444	1803
	2	1100	1264	1556	1573	1668	1867
LMP 901	1	715	899	1337	1369	1552	2000
	2	1147	1337	1689	1710	1828	2081

## Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ 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.

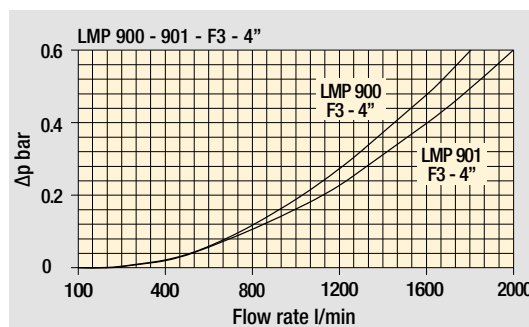
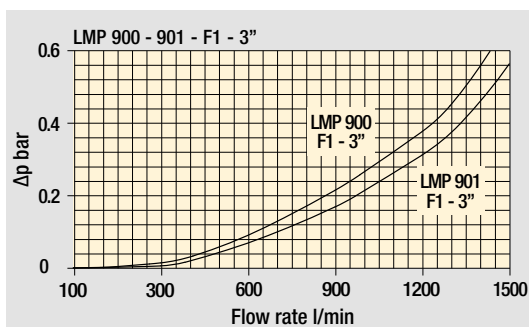
## LMP 900-901 Length 2



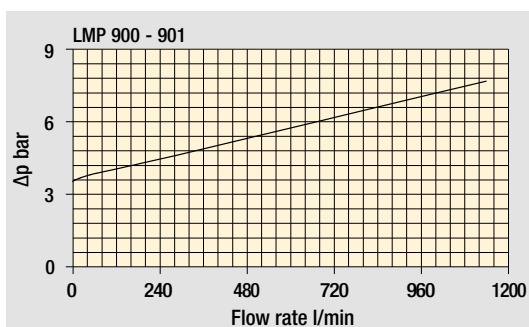
## Hydraulic symbols

Filter series	Execution S	Execution B
LMP 900-901	●	●

## 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.

# LMP 900-901 Filter element according to DIN 24550

Designation & Ordering code

## COMPLETE FILTER

Series and size **LMP900 | LMP901** Configuration example: **LMP901** **2** **B** **A** **F2** **A10** **N** **P01**

Length **1** | **2**

Bypass valve **S** Without bypass | **B** With bypass 3.5 bar

Seals and treatments **A** NBR | **V** FPM

Connections **F1** 3" SAE 3000 psi/M | **F2** 3" SAE 3000 psi/UNC | **F3** 4" SAE 3000 psi/M | **F4** 4" SAE 3000 psi/UNC

Filtration rating (filter media) **A03** Inorganic microfiber 3 µm | **M25** Wire mesh 25 µm | **A06** Inorganic microfiber 6 µm | **M60** Wire mesh 60 µm | **A10** Inorganic microfiber 10 µm | **M90** Wire mesh 90 µm | **A16** Inorganic microfiber 16 µm | **A25** Inorganic microfiber 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

Element Δp	Execution	Filter length	
		1	2
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard	•	•
	<b>P02</b> Maintenance from the bottom of the housing	-	•
	<b>Pxx</b> Customized		

## FILTER ELEMENT

Element series and size **CU900** Configuration example: **CU900** **A10** **A** **N** **P01**

Length **1** Nr. 1 filter element | **2** Nr. 2 filter elements

Filtration rating (filter media) **A03** Inorganic microfiber 3 µm | **M25** Wire mesh 25 µm | **A06** Inorganic microfiber 6 µm | **M60** Wire mesh 60 µm | **A10** Inorganic microfiber 10 µm | **M90** Wire mesh 90 µm | **A16** Inorganic microfiber 16 µm | **A25** Inorganic microfiber 25 µm

**WA025** Water absorber inorganic microfiber 25 µm

Seals **A** NBR | **V** FPM

Element Δp	Execution	Filter length	
		1	2
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard		
	<b>Pxx</b> Customized		

## CLOGGING INDICATORS

See page 716

**DEA** Electrical differential pressure indicator

**DEM** Electrical differential pressure indicator

**DEU** Electrical differential pressure indicator

**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator

**DTA** Electronic differential pressure indicator

**DVA** Visual differential pressure indicator

**DVM** Visual differential pressure indicator

## PLUGS

See page 737

**T2** Plug - Filter length 1 - 2

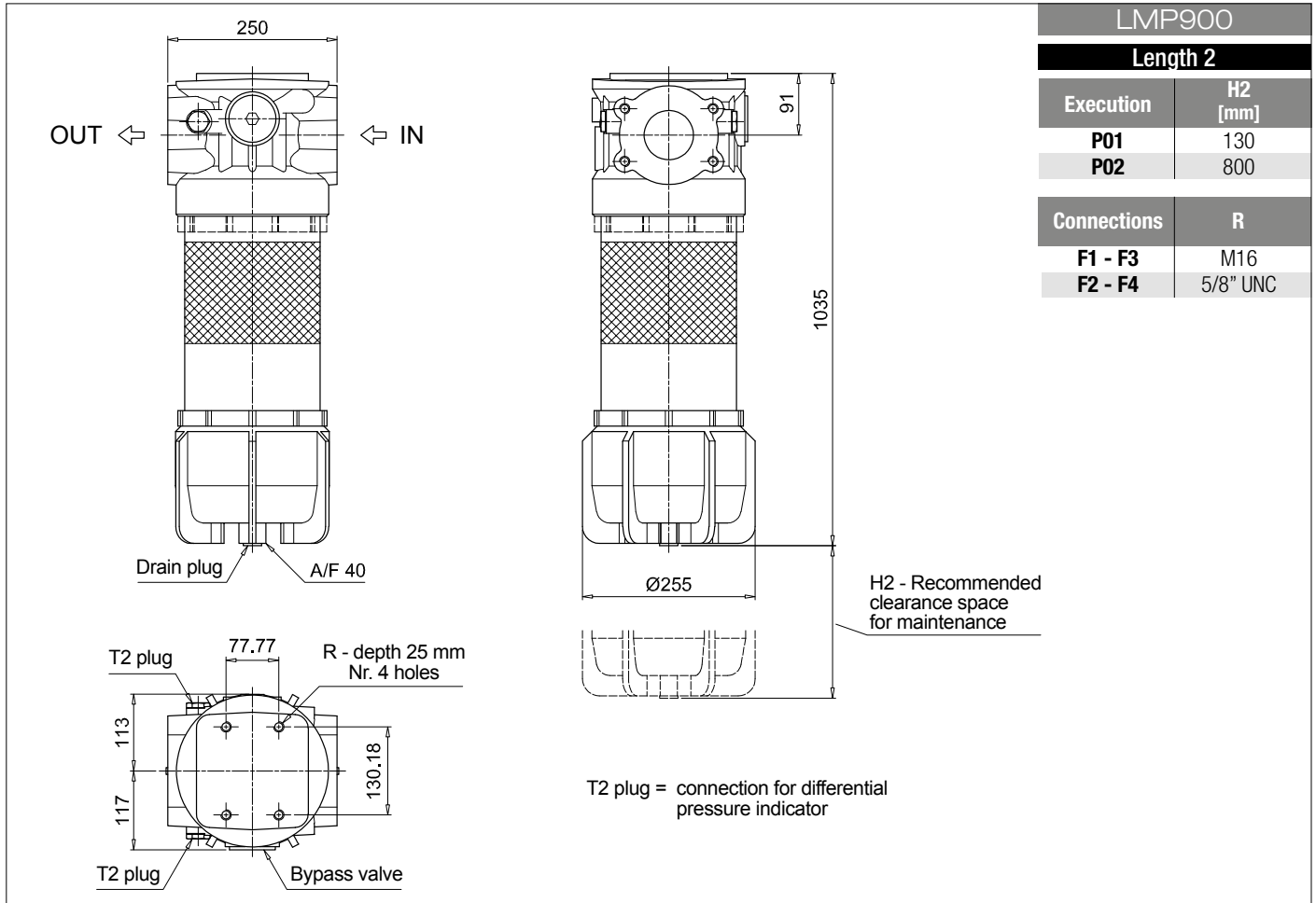
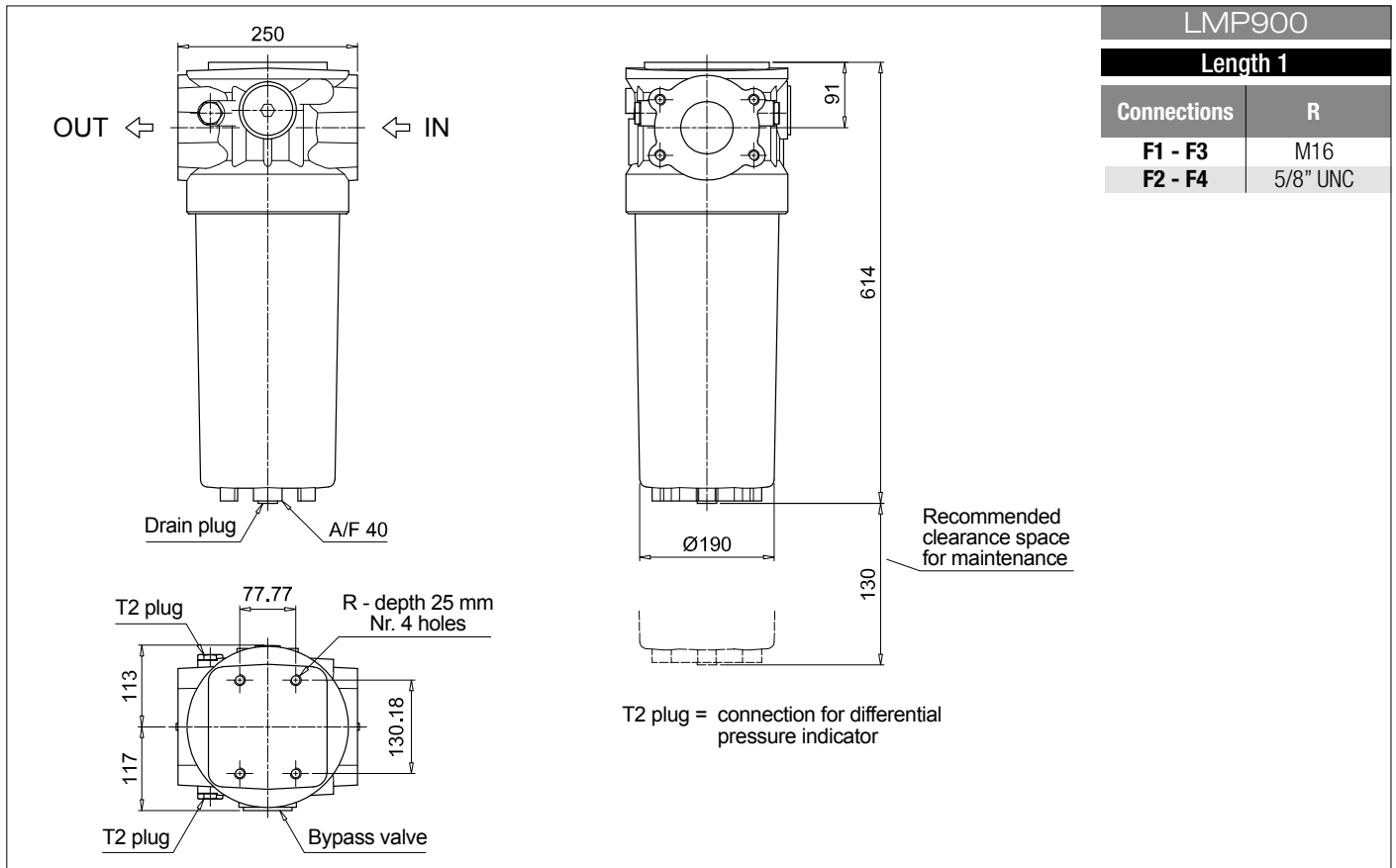
## ACCESSORIES

See page 466

**CFA** Retaining clamp - Filter length 2

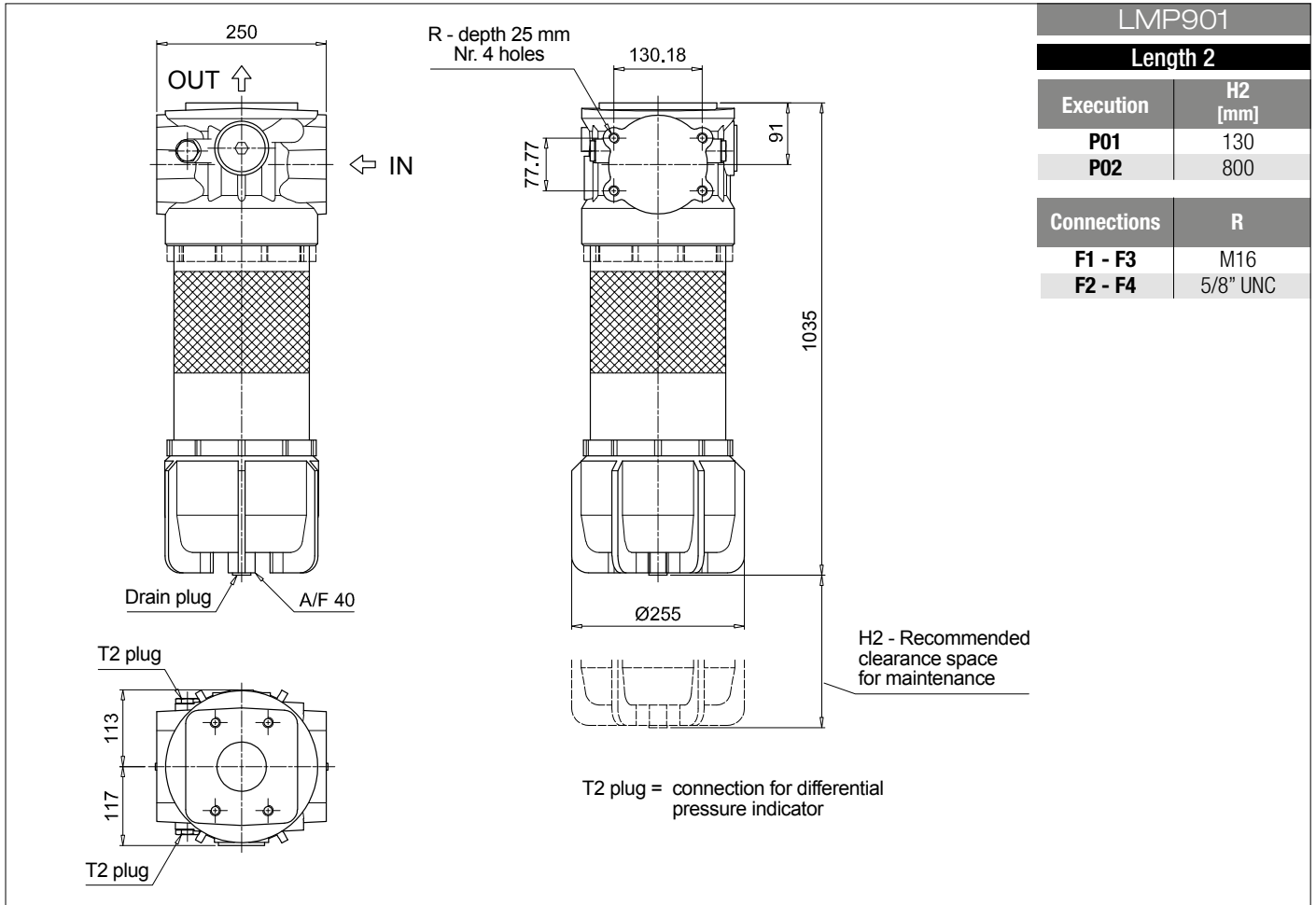
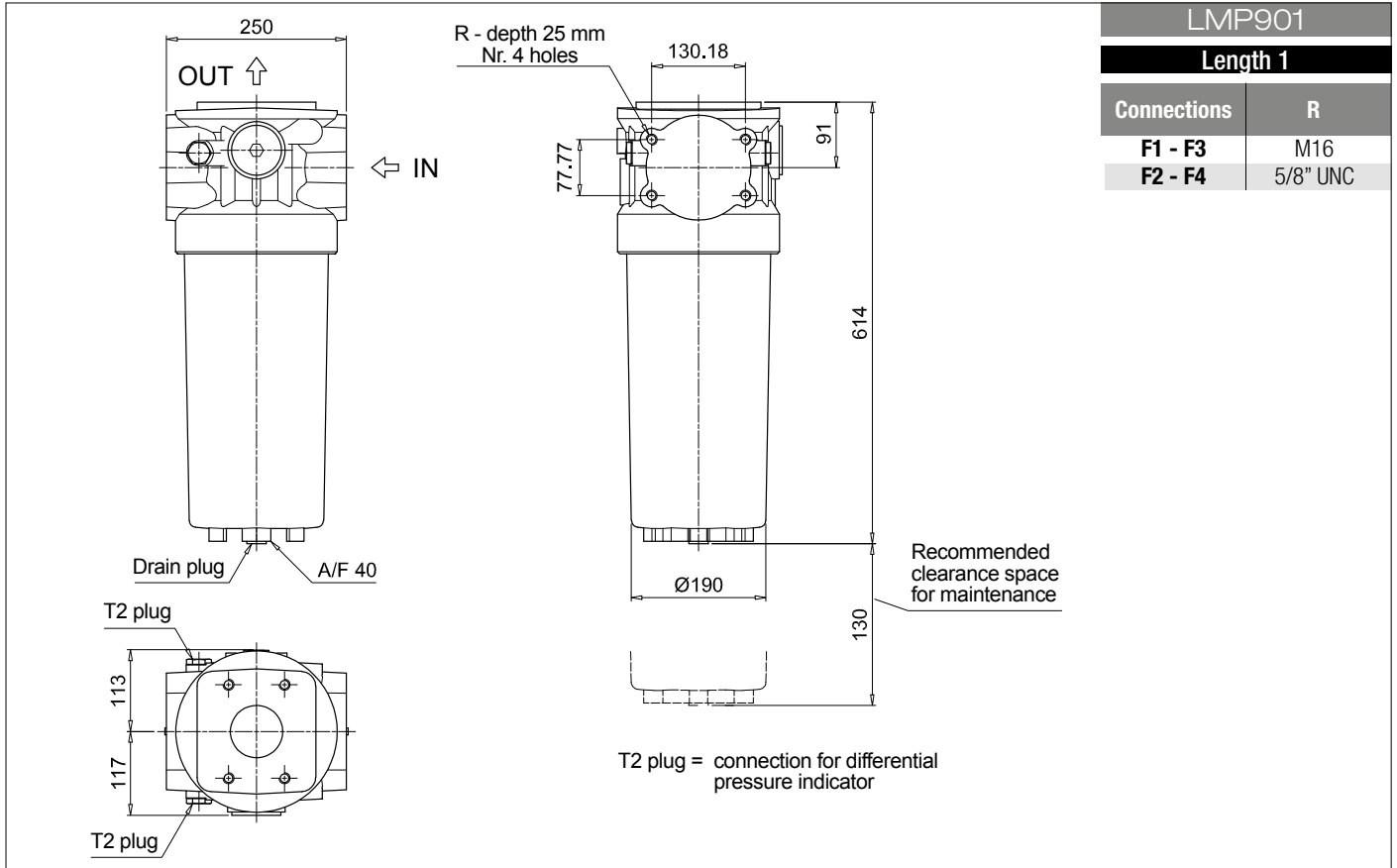
# Filter element according to DIN 24550 LMP 900-901

Dimensions



# LMP 900-901 Filter element according to DIN 24550

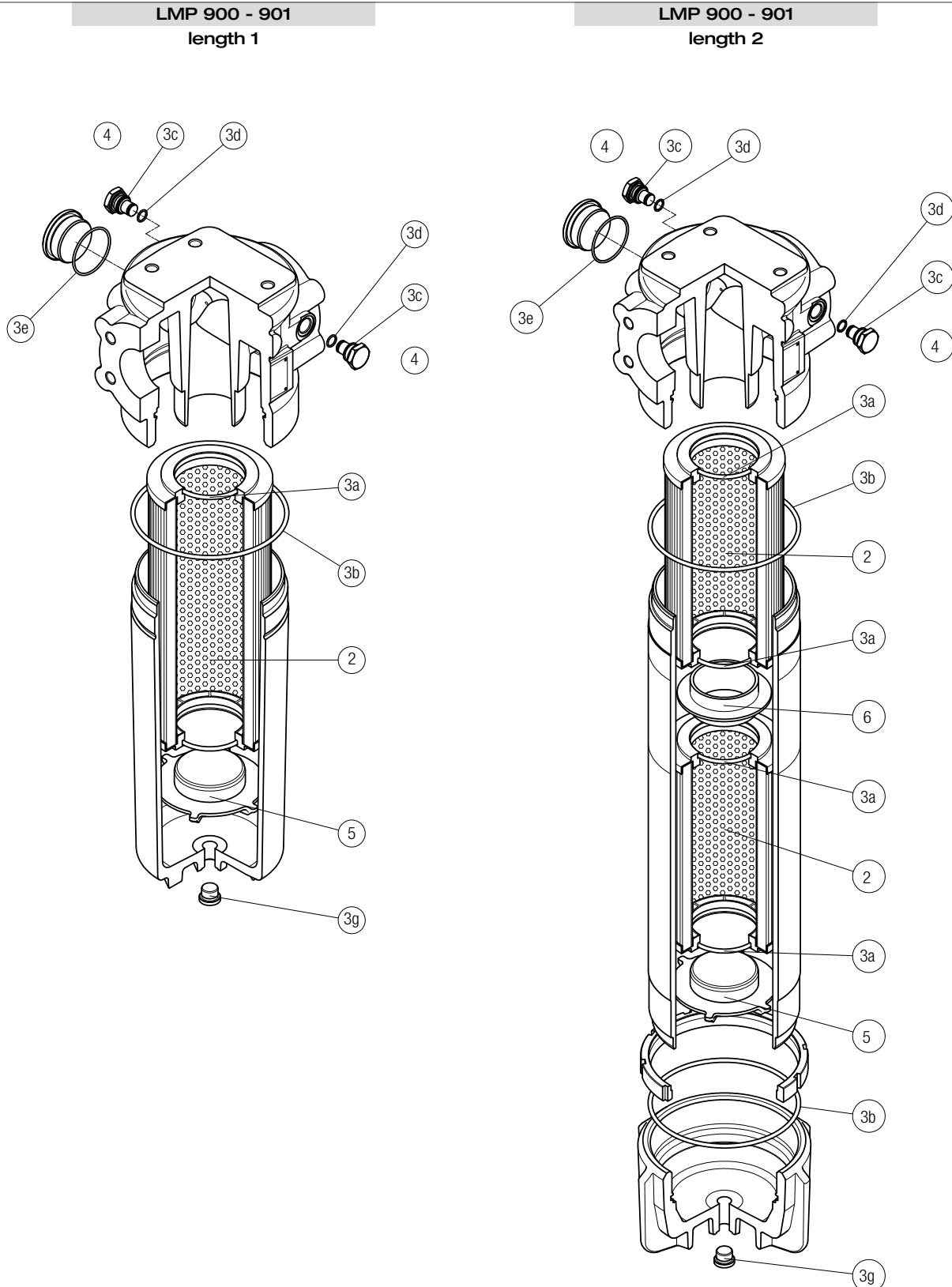
## Dimensions





# SPARE PARTS LMP 900-901

Order number for spare parts



Item:	2		3 (3a ÷ 3g)		4		5		6			
Filter series	Filter element		Seal Kit code number		Indicator connection plug		Housing spigot		Coupling spigot			
	Q.ty	See order table	Q.ty	NBR	FPM	Q.ty	NBR	FPM	Q.ty	Q.ty		
<b>LMP 900-901 length 1</b>	1 pc.		1 pc.	02050363	02050364	2 pcs.	T2H	T2V	1 pc.	01044104	-	01044099
<b>LMP 900-901 length 2</b>	2 pcs.		1 pc.	02050365	02050366	2 pcs.			1 pc.		1 pc.	



# LMP 902-903 series

Filter element according to DIN 24550

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 3000 l/min



# LMP 902-903 GENERAL INFORMATION

## Filter element according to DIN 24550

### Description

#### Low & Medium Pressure filters

**Maximum working pressure up to 2 MPa (20 bar)**

**Flow rate up to 3000 l/min**

LMP902 and LMP903 are ranges of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

Multiple LMP950 filters are connected to a manifold to reduce the pressure drop caused by the filter media and to increase the life time of the filter element.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 4" flanged connections, for a maximum flow rate of 3000 l/min
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid.  
For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems

### Technical data

#### Filter housing materials

- Head: Anodized aluminium
- Housing: Anodized aluminium
- Manifolds: Welded - Phosphatized steel
- Bypass valve: Steel
- Size 1000 filter elements complying with DIN 24550 standard

#### Pressure

- Test pressure: 3.5 MPa (35 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### Number of filter elements

LMP 902: 4 filter elements CU900

LMP 903: 6 filter elements CU900

#### Filter elements

Filter element according to DIN 24550

Size: 1000

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Connections

LMP 902-903: In-line Inlet/Outlet

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

LMP 902 - 903 filters are provided for vertical mounting

### Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	2	Length	2
<b>LMP 902</b>		89.6		58
<b>LMP 903</b>		129.2		87

# GENERAL INFORMATION LMP 902-903

Filter element according to DIN 24550

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90
<b>LMP 902</b>	<b>2</b>	2217	2576	3241	3282	3506	3987
<b>LMP 903</b>	<b>2</b>	2838	3170	3720	3755	3926	4278

## Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ 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.

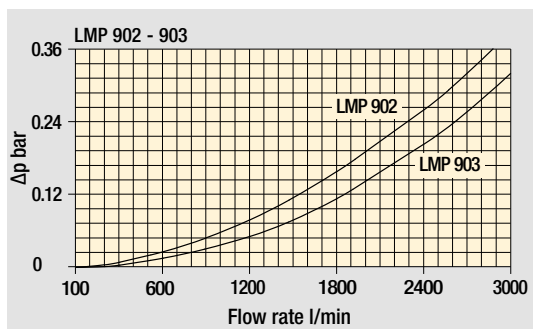
## Hydraulic symbols

Filter series	Execution S	Execution B	Execution S	Execution B
<b>LMP 902</b>	•	•	-	-
<b>LMP 903</b>	-	-	•	•

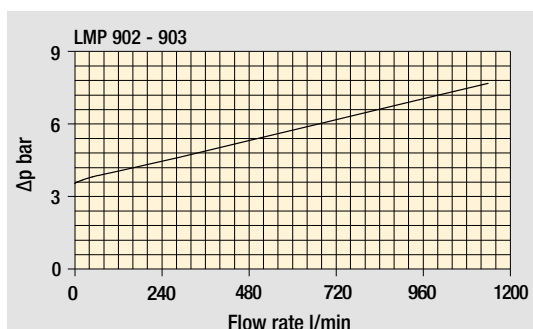
  

## Pressure drop

Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop

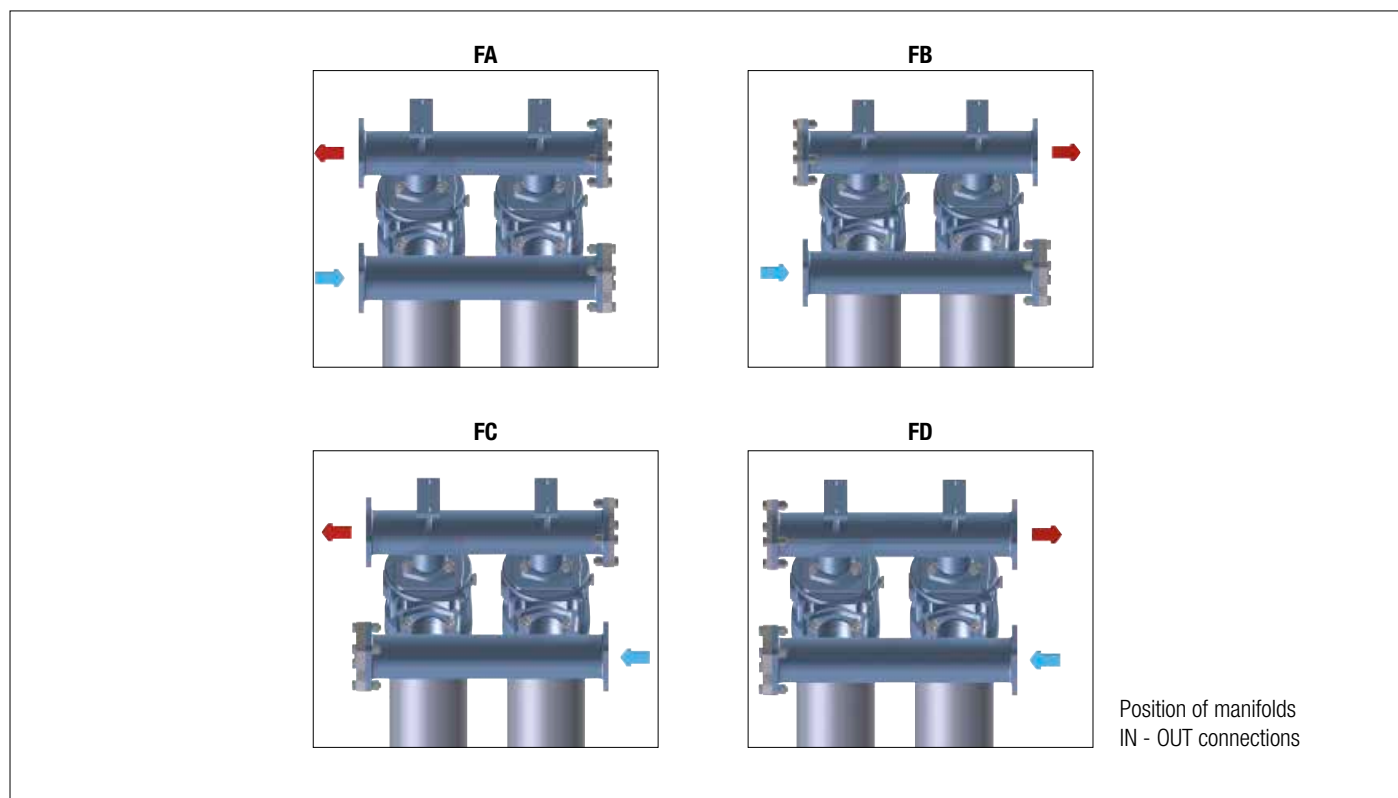


The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

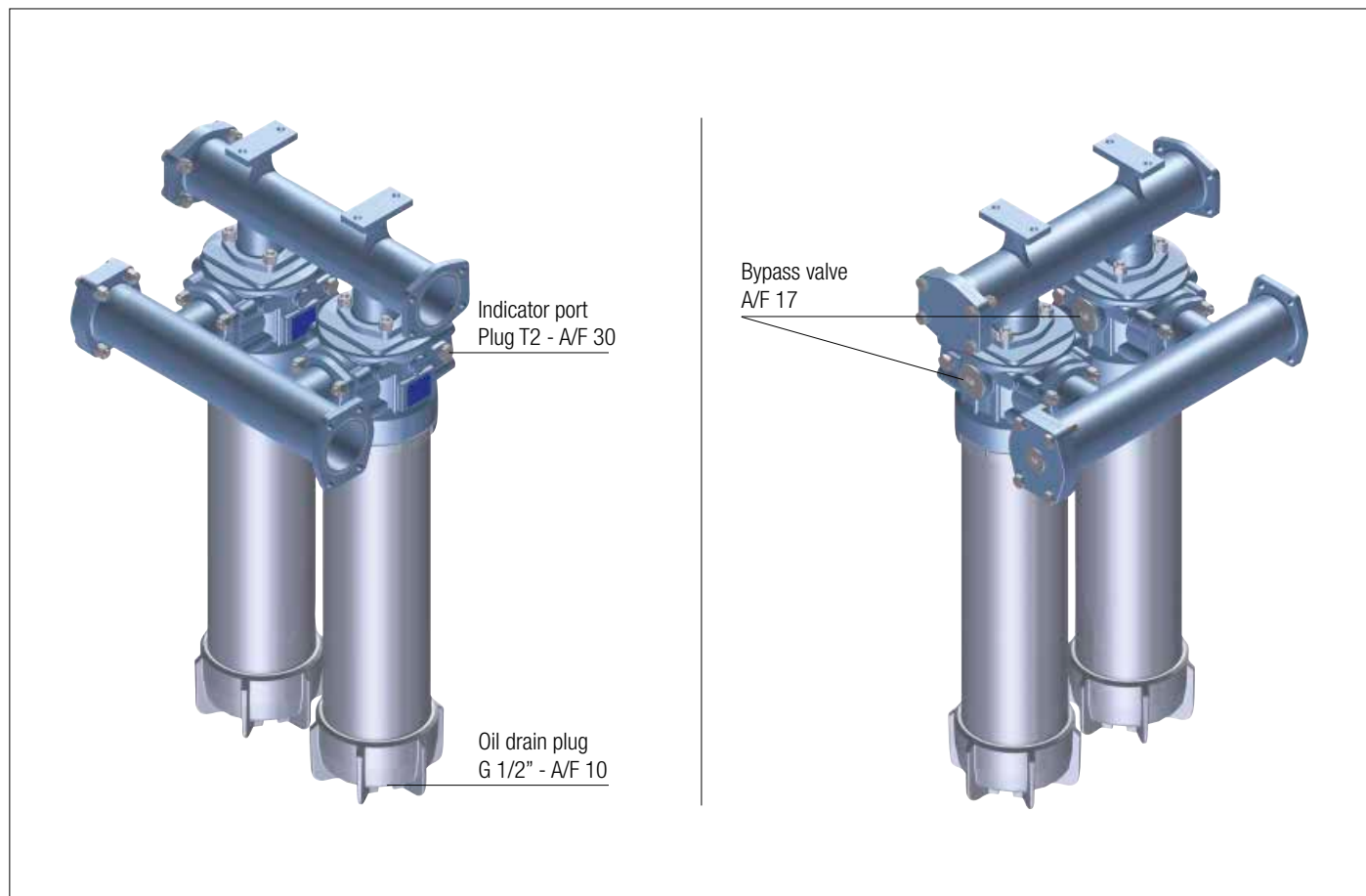
# LMP 902-903 GENERAL INFORMATION

Filter element according to DIN 24550

## Manifolds



## Focus on





# LMP 902-903 Filter element according to DIN 24550

Designation & Ordering code

## COMPLETE FILTER

Series and size **LMP902 | LMP903** Configuration example: **LMP902** **2** **B** **A** **FA** **A10** **N** **P01**

Length **2**

Bypass valve **S** Without bypass **B** With bypass 3.5 bar

Seals and treatments **A** NBR **V** FPM

Connections	IN	OUT
<b>FA</b> 4" SAE 3000 psi	left	left
<b>FB</b> 4" SAE 3000 psi	left	right
<b>FC</b> 4" SAE 3000 psi	right	left
<b>FD</b> 4" SAE 3000 psi	right	right

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	
<b>A25</b> Inorganic microfiber 25 µm	

**WA025** Water absorber inorganic microfiber 25 µm

Element Δp **N** 20 bar

Execution **P01** MP Filtri standard **Pxx** Customized

## FILTER ELEMENT

Element series and size **CU900** Configuration example: **CU900** **A10** **A** **N** **P01**

Filter series and size **LMP902** Nr. 4 filter elements **LMP903** Nr. 6 filter elements

Filtration rating (filter media)

<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	
<b>A25</b> Inorganic microfiber 25 µm	

**WA025** Water absorber inorganic microfiber 25 µm

Seals **A** NBR **V** FPM

Element Δp **N** 20 bar

Execution **P01** MP Filtri standard **Pxx** Customized

## CLOGGING INDICATORS

See page 716

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

## PLUGS

See page 737

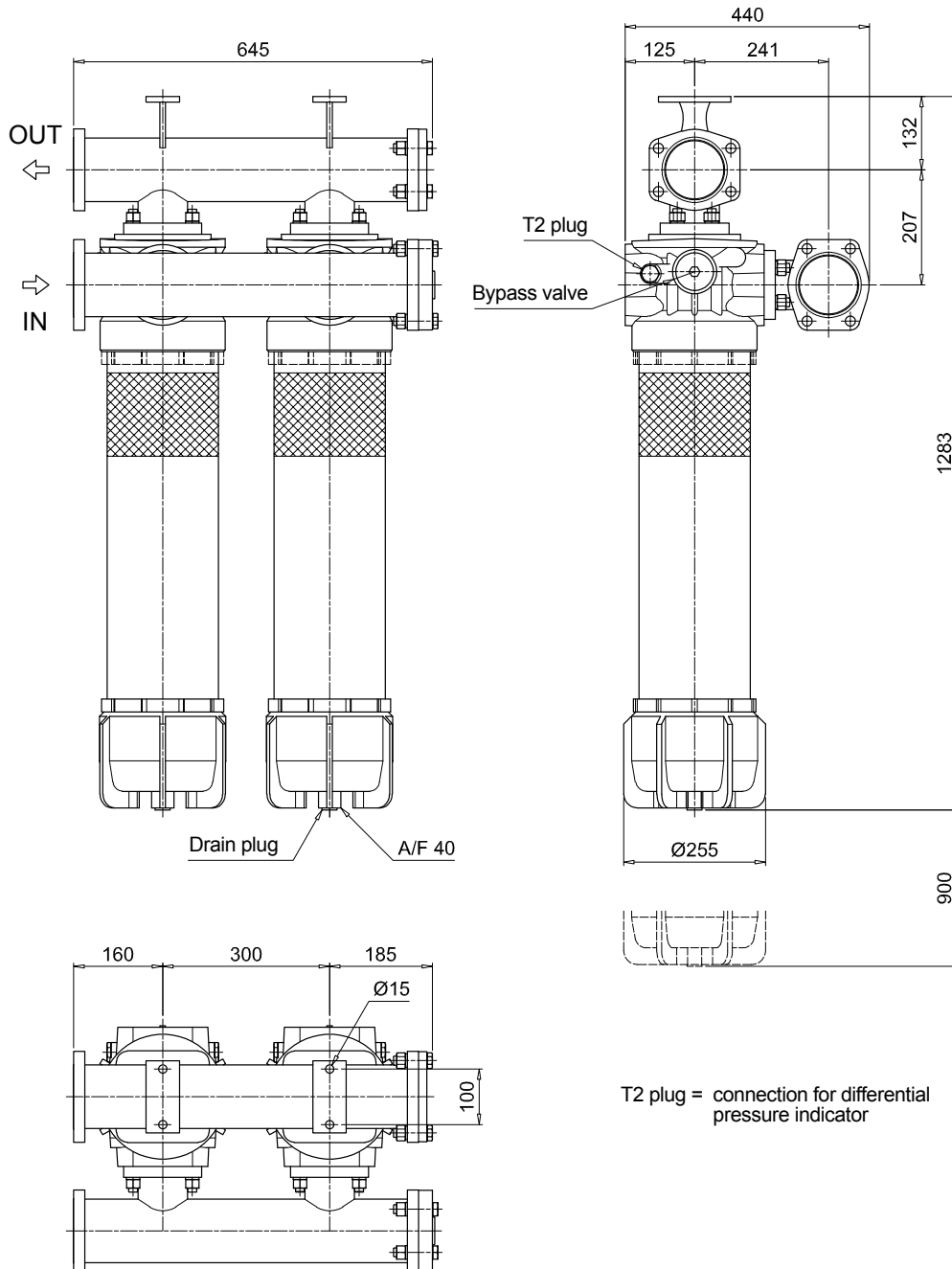
T2 Plug



# Filter element according to DIN 24550 LMP 902-903

Dimensions

LMP902

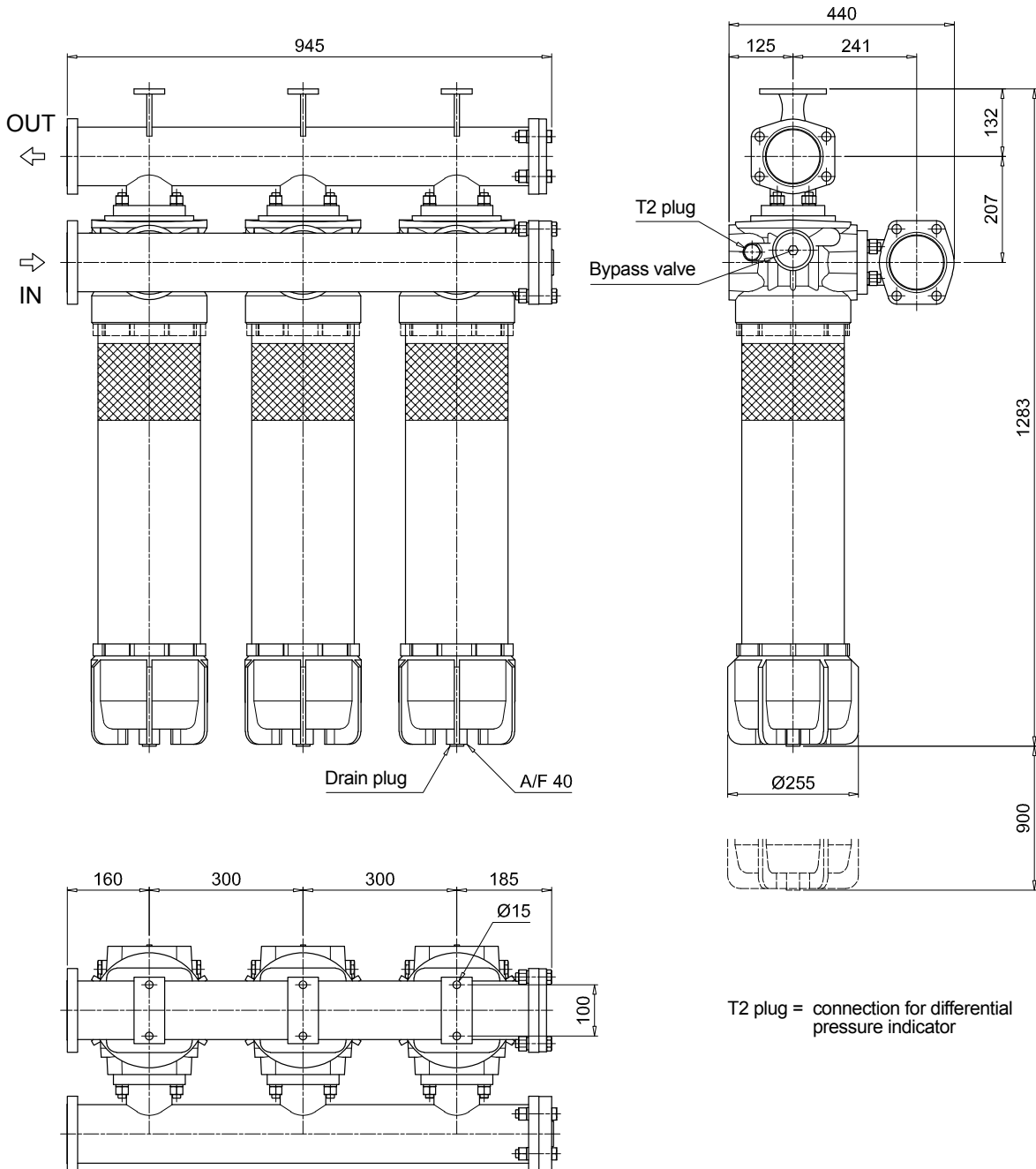


T2 plug = connection for differential pressure indicator

# LMP 902-903 Filter element according to DIN 24550

## Dimensions

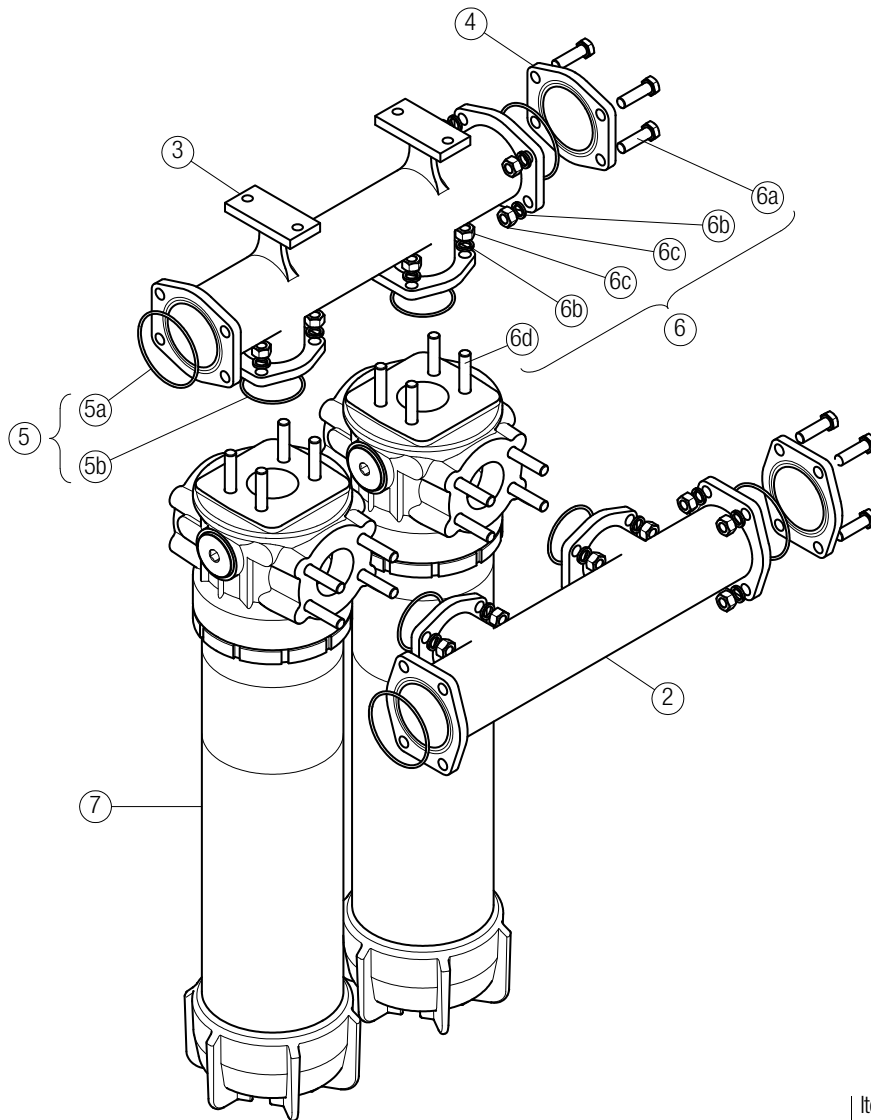
LMP903



# SPARE PARTS LMP 902-903

Order number for spare parts

LMP 902 - 903



Item 7:  
for complete filter code and  
spare parts, see  
LMP 900 - 901 series chapter

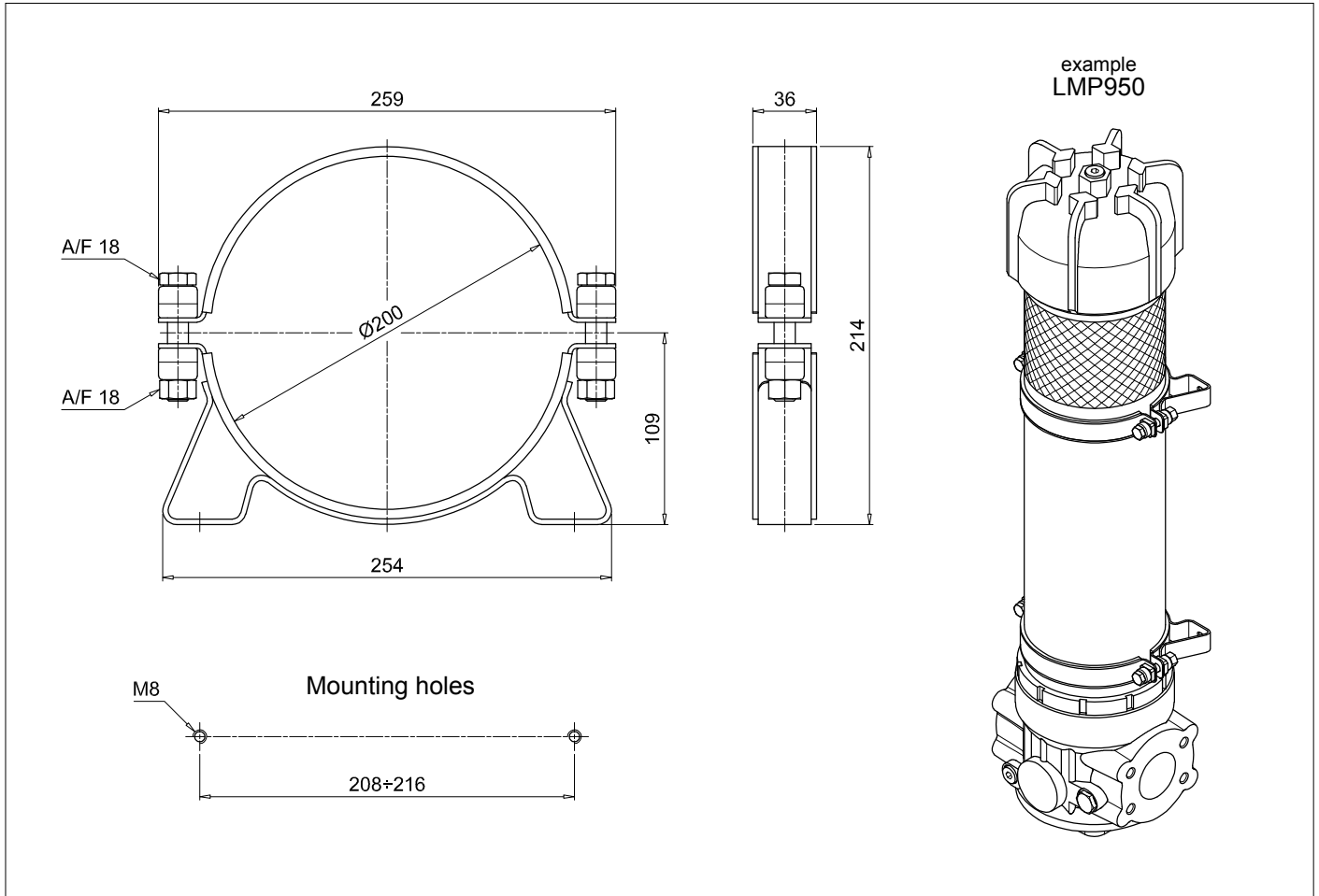
Quantity:  
- filter spare parts:  
LMP 902 - 2 pcs.  
LMP 903 - 3 pcs.

- filter seal kit:  
LMP 902 - 2 pcs.  
LMP 903 - 3 pcs.

Item:	2		3	4		5 (5a-5b)			6 (6a ÷ 6c)		7	
Filter series	Q.ty	Manifold IN	OUT	Q.ty	4" SAE 3000 psi plugged flange	Q.ty	Manifolds seal kit NBR	FPM	Q.ty	Threaded fasteners kit	Q.ty	Filter
LMP 902	1 pc.	01039270	01039271	2 pcs.	01042012	1 pc.	02050404	02050405	1 pc.	02049051	2 pcs.	LMP9012xxF1xxxNP02
LMP 903	1 pc.	01039337	01039338	2 pcs.		1 pc.	02050404	02050405	1 pc.	02049052	3 pcs.	

# Accessories

## RETAINING CLAMP



<b>Series</b>		Configuration example:	<b>CFA</b>	<b>20</b>	<b>M</b>	<b>P01</b>
<b>CFA</b>	Retaining clamp					
<b>Size</b>						
<b>20</b>						
<b>Screw</b>						
<b>M</b>	Metric					
<b>Execution</b>						
<b>P01</b>	MP Filtri standard					



High pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406.

9 versions are available with operating pressures range from 110 bar up to 560 bar.

A range of products is available to resolve all filter mounting problems, in the following configurations:

- In-line, with threaded and flange mounting
- Manifold top mounting
- Manifold side mounting
- Manifold mounting, to DIN 24340 CETOP R 35 H
- Manifold threaded/flange mounting in the top extraction filter cartridge version
- Duplex versions for continuous operation requirements

FMP series is specifically designed and suitable for:

- feed pumps of hydrostatic drives
- pressure lubrication
- hydraulic systems in the high pressure range

FMMX & FMM series is optimized for the protection of servo and proportional hydraulics:

- in agricultural machinery
- in construction machinery
- in commercial vehicles

HPB are kits designed for the direct integration into the control block; they can be easily integrated into the block through a simple cavity.

FHP & FHA series are the typical high-pressure filters optimized for industrial applications.

FHM series is designed for intermediate plate construction, CETOP design.

FHB series is designed for block mounting; the filter head can be screwed in from the outside.

FHF series is designed to assemble HF4 filter element according to SAE J2066.

FHD series is the duplex high pressure filter; with two independent filter heads, the flow can be switched without interruption during operation.

The range includes a complete set of valves:

- Bypass valve
- Check valve
- Bypass + check valve
- Reverse-flow valve
- Reverse-flow + bypass valve

## FILTER SIZING

For the proper corrective factor Y see chapter at page 25 - 26

# High pressure filters



FMMX 050	page 470
FMM	479
FHA 051	489
FMP 039	497
FMP	505
FHP	517

FHM	page 537
FHB	555
FHF 325	569
FHD	579
HPB	593
INDICATORS	717



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.  
Quality and efficiency are fundamental for MP Filtri:  
this exclusive new filter element possesses polygon shape geometry and specific seal  
that ensures only original spare parts can be used - ensuring correct operation and  
higher system reliability.

## FMMX 050 series

with MY CLEAN HPX 050 Filter Element



- Protects the machine from improper use of non-original products.
- Safety of constant quality protection & reliability

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.



The products identified as FMMX 050 are protected by:

- Italian Patent n° 102014902261205
- Canadian Patent n° 2,937,258
- European Patent n° 3 124 092 B1
- US Patent n° 20170030384 A1

TOGETHER WITH MY CLEAN, AS OPTION, FMMX 050 SERIES CAN BE PROVIDED WITH

**zerospark®**  
THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS



Zerospark® is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.



# FMMX 050 series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 154 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



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of the related document.



# FMMX 050 GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 154 l/min**

FMMX is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 250 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Visual, electrical and electronic differential clogging indicators
- MYclean interface connection for the filter element, to protect the product against non-original spare parts.
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

#### Common applications:

- Agricultural machines
- Mobile machines

#### Filter housing materials

- Head: Painted cast iron, black RAL 9005
- Housing: Phosphatized steel
- Bypass valve: Steel

#### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfiber filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet

#### Note

FMMX filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FMMX 050</b>		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FMMX 050</b>	<b>1</b>	42	43	79	82	106	147
	<b>2</b>	52	57	85	96	121	149
	<b>3</b>	66	69	97	106	130	150
	<b>4</b>	83	89	113	115	134	152
	<b>5</b>	107	110	130	134	141	154

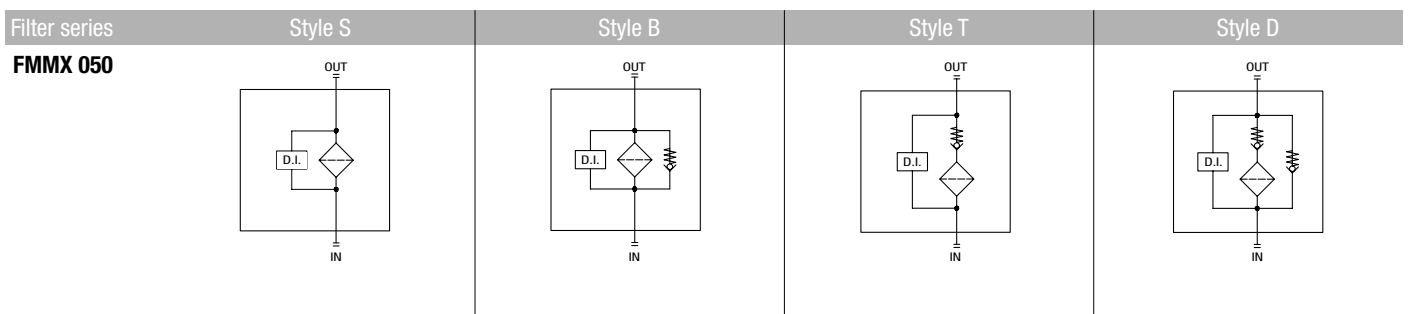
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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>.

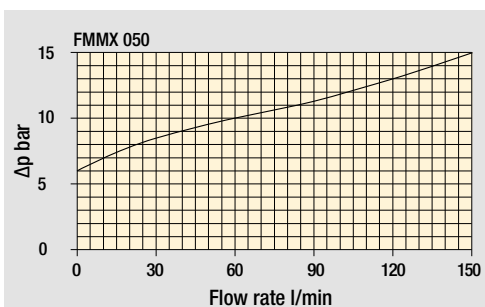
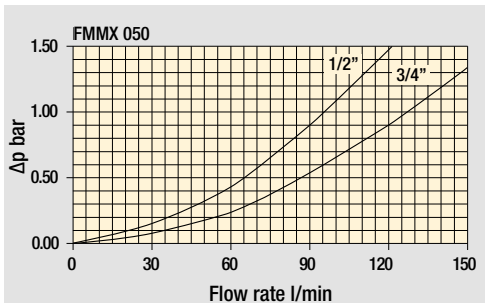
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

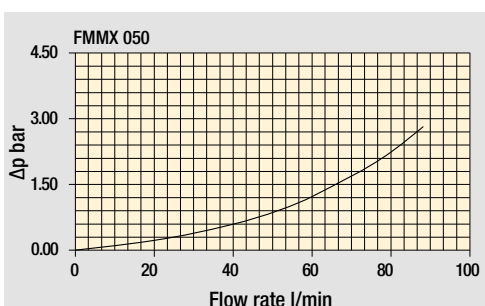
### Hydraulic symbols



Pressure drop  
Filter housings  
 $\Delta p$  pressure drop



Bypass valve  
pressure drop



Filter housing  
with check valve

Valves

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.

# FMMX 050

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FMMX050** | **3** | **B** | **A** | **G** | **A10** | **N** | **P01**

**FMMX050** Filter featuring **MYCLEAN** Filter Element

Length  
**1** | **2** | **3** | **4** | **5**

Valves  
**B** With bypass 6 bar  
**D** With check valve, with bypass 6 bar

Seals  
**A** NBR  
**V** FPM

Connections  
**A** M18x1.5 - ISO 6149      **E** 1/2" NPT  
**B** M22x1.5 - ISO 6149      **F** 3/4" NPT  
**C** G 1/2"                      **G** SAE 8 - 3/4" - 16 UNF  
**D** G 3/4"                      **H** SAE 12 - 1 1/16" - 12 UN

Filtration rating (filter media)  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm  
**M25** Wire mesh 25 µm

Element Δp  
**N** 20 bar

Executions		
Base	zero <span style="color: blue;">spark</span> <sup>+</sup>	
<b>P01</b>	<b>Z01</b>	Upper connection for clogging indicator
<b>P02</b>	<b>Z02</b>	Without connection for clogging indicator
<b>P03</b>	<b>Z03</b>	Frontal connection for clogging indicator
<b>Pxx</b>	<b>Zxx</b>	Customized

### FILTER ELEMENT

Element series and size Configuration example: **HPX050** | **3** | **A10** | **A** | **N** | **P01**

**HPX050** Filter Element with **MYCLEAN** feature

Element length  
**1** | **2** | **3** | **4** | **5**

Filtration rating (filter media)  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm  
**M25** Wire mesh 25 µm

Seals  
**A** NBR  
**V** FPM

Element Δp  
**N** 20 bar

Executions		
Base	zero <span style="color: blue;">spark</span> <sup>+</sup>	
<b>P01</b>	<b>Z01</b>	MP Filtri standard
<b>Pxx</b>	<b>Zxx</b>	Customized

### CLOGGING INDICATORS

See page 717

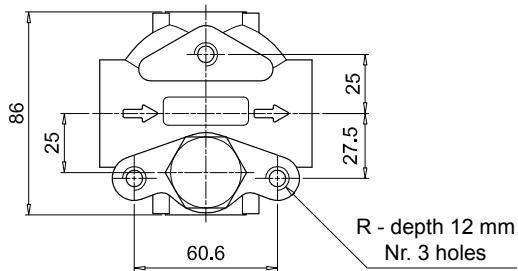
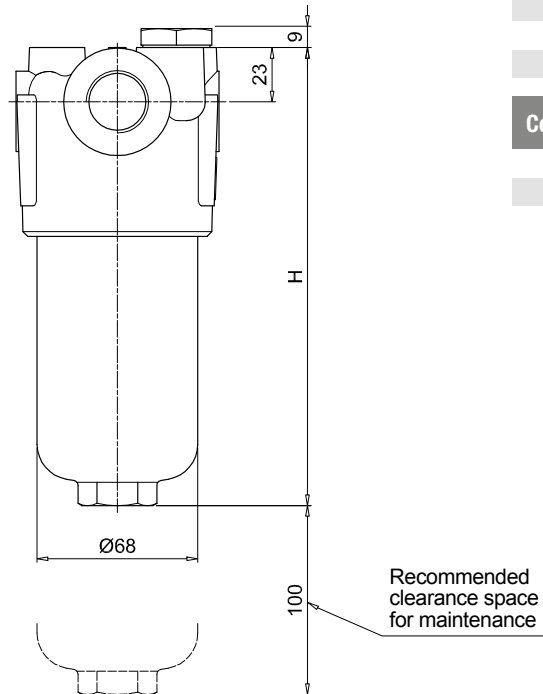
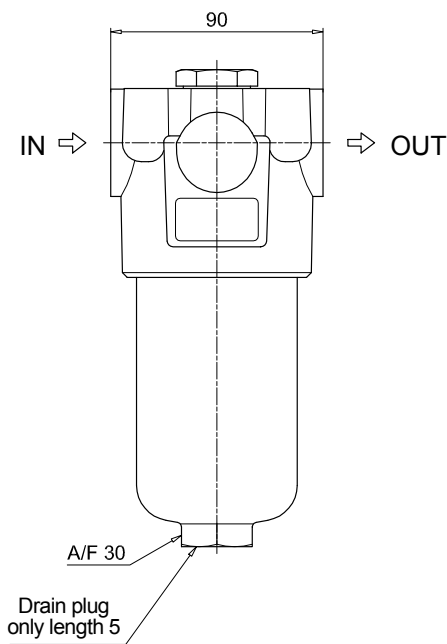
**DEA** Electrical differential pressure indicator  
**DEM** Electrical differential pressure indicator  
**DEU** Electrical differential pressure indicator  
**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator  
**DTA** Electronic differential pressure indicator  
**DVA** Visual differential pressure indicator  
**DVM** Visual differential pressure indicator

### PLUGS

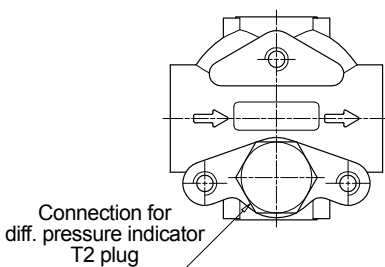
See page 737

**T2** Plug

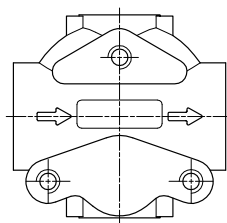


FMMX050	
Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407
Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC

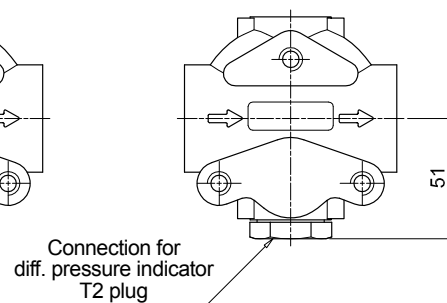
Execution P01



Execution P02



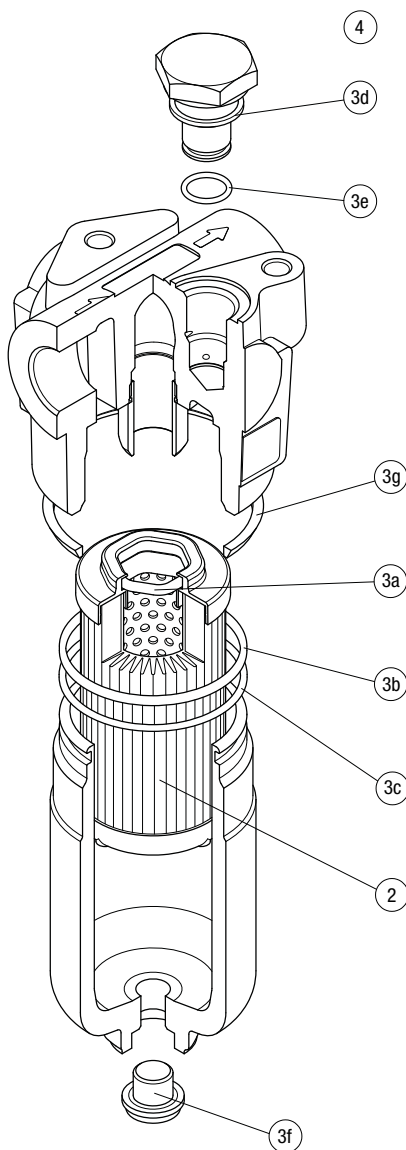
Execution P03



# FMMX 050 SPARE PARTS

Order number for spare parts

## FMMX 050



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FMMX 050	See order table	NBR	FPM	NBR	FPM
	<b>2</b>	<b>3</b> (3a ÷ 3g)		<b>4</b>	
		02050864	02050865	T2H	T2V







# FMM series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 300 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



FMM050



FMM150

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of the related document.



## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 300 l/min**

FMM is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 250 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Agricultural machines
- Mobile machines

#### Filter housing materials

- Head: Painted cast iron, black RAL 9005
- Housing: Phosphatized steel
- Bypass valve: Steel

#### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfiber filter elements - series N-R: 20 bar
- Microfiber filter elements - series S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet

#### Note

FMM filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FMM 050</b>		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23
<b>FMM 150</b>		7.50	9.50	10.90	-	-		0.60	1.00	1.25	-	-

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FMM 050</b>	<b>1</b>	42	43	79	82	106	147	29	39	57	59	74
	<b>2</b>	52	57	85	96	121	149	45	49	76	88	114
	<b>3</b>	66	69	97	106	130	150	58	61	89	99	125
	<b>4</b>	83	89	113	115	134	152	74	80	106	108	129
	<b>5</b>	107	110	130	134	141	154	93	95	111	121	139
<b>FMM 150</b>	<b>1</b>	81	88	156	163	179	295					
	<b>2</b>	142	145	227	230	236	312					
	<b>3</b>	170	180	242	245	263	315					

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ 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).

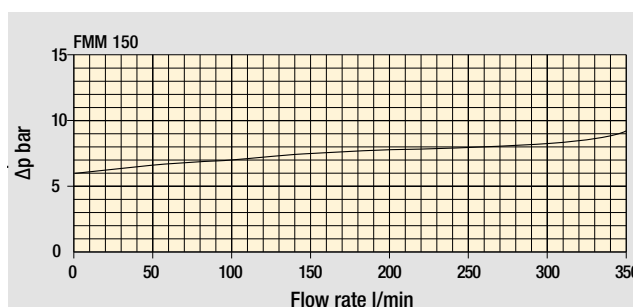
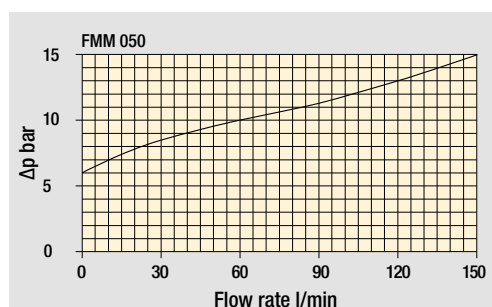
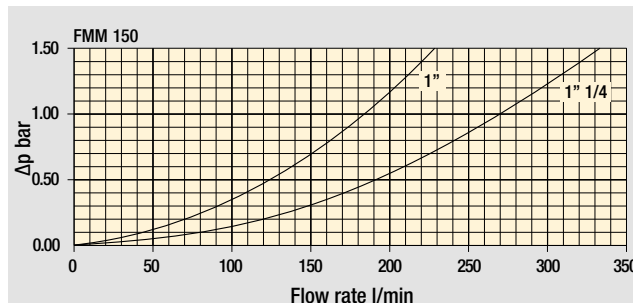
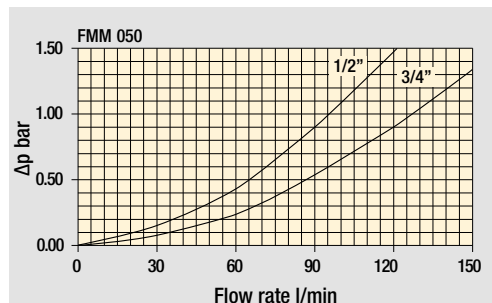
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

### Hydraulic symbols

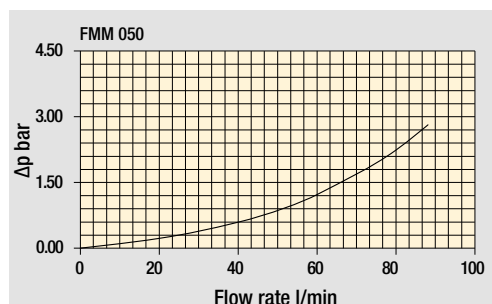
Filter series	Style S	Style B	Style T	Style D
<b>FMM 050</b>	•	•	•	•
<b>FMM 150</b>	•	•	-	-

Pressure drop  
Filter housings  
 $\Delta p$  pressure drop



Bypass valve  
pressure drop



Filter housing  
with check valve

Valves

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

Series and size **FMM050** Configuration example: **FMM050** **3** **B** **A** **G** **A10** **N** **P01**

Length  
**1** | **2** | **3** | **4** | **5** |

Valves  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar

Seals  
**A** NBR  
**V** FPM

Connections  
**A** M18x1.5 - ISO 6149      **E** 1/2" NPT  
**B** M22x1.5 - ISO 6149      **F** 3/4" NPT  
**C** G 1/2"                      **G** SAE 8 - 3/4" - 16 UNF  
**D** G 3/4"                      **H** SAE 12 - 1 1/16" - 12 UN

Filtration rating (filter media)	
<b>A03</b>	Inorganic microfiber 3 µm
<b>A06</b>	Inorganic microfiber 6 µm
<b>A10</b>	Inorganic microfiber 10 µm
<b>A16</b>	Inorganic microfiber 16 µm
<b>A25</b>	Inorganic microfiber 25 µm
<b>M25</b>	Wire mesh 25 µm

Element Δp	Valves			
	S	B	T	D
<b>N</b> 20 bar	-	•	-	-
<b>R</b> 20 bar	-	-	-	•
<b>S</b> 210 bar	•	-	•	-

Executions	
<b>P01</b>	Upper connection for clogging indicator
<b>P02</b>	Without connection for clogging indicator
<b>P03</b>	Frontal connection for clogging indicator
<b>Pxx</b>	Customized

### FILTER ELEMENT

Element series and size **HP050** Configuration example: **HP050** **3** **A10** **A** **N** **P01**

Element length  
**1** | **2** | **3** | **4** | **5** |

Filtration rating (filter media)	
<b>A03</b>	Inorganic microfiber 3 µm
<b>A06</b>	Inorganic microfiber 6 µm
<b>A10</b>	Inorganic microfiber 10 µm
<b>A16</b>	Inorganic microfiber 16 µm
<b>A25</b>	Inorganic microfiber 25 µm
<b>M25</b>	Wire mesh 25 µm

Seals	
<b>A</b>	NBR
<b>V</b>	FPM

Element Δp	
<b>N</b>	20 bar
<b>R</b>	20 bar
<b>S</b>	210 bar

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

### CLOGGING INDICATORS

See page 717

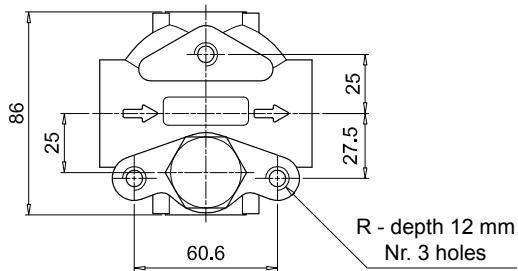
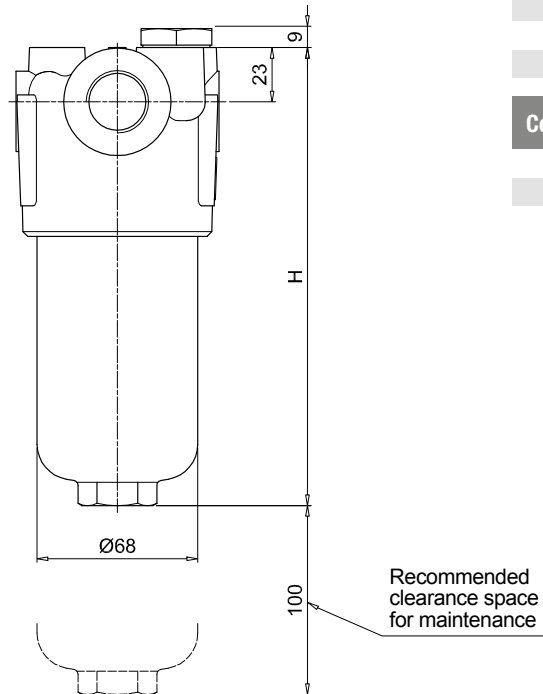
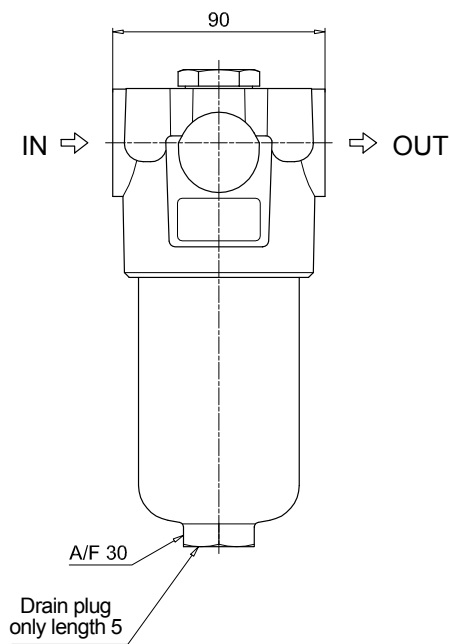
**DEA** Electrical differential pressure indicator  
**DEM** Electrical differential pressure indicator  
**DEU** Electrical differential pressure indicator  
**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator  
**DTA** Electronic differential pressure indicator  
**DVA** Visual differential pressure indicator  
**DVM** Visual differential pressure indicator

### PLUGS

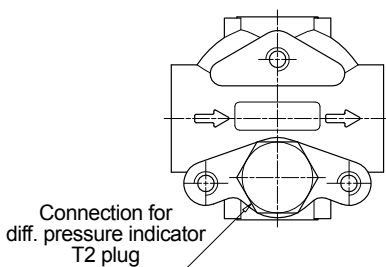
See page 737

**T2** Plug

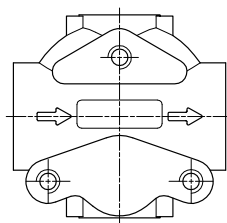


FMM050	
Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407
Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC

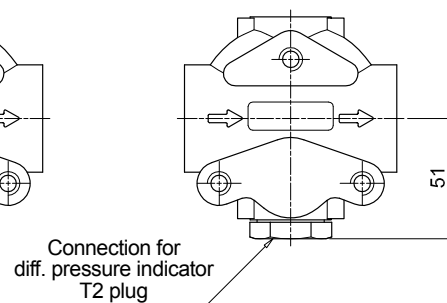
Execution P01



Execution P02



Execution P03



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FMM150** | **2** | **B** | **A** | **D** | **2** | **M25** | **N** | **P01**

**Series and size**  
**FMM150**

**Length**  
**1** | **2** | **3**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM

**Connections**  
**C** G 1"      **F** 1 1/4" NPT  
**D** G 1 1/4"      **G** SAE 16 - 1 5/16" - 12 UN  
**E** 1" NPT      **H** SAE 20 - 1 5/8" - 12 UN

**Connection for differential pressure indicator**  
**1** Without connection  
**2** Upper connection  
**3** Frontal connection

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	S	B
<b>N</b>	20 bar	- •
<b>S</b>	210 bar	• •

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

### FILTER ELEMENT

Configuration example: **HP150** | **2** | **M25** | **A** | **N** | **P01**

**Element series and size**  
**HP150**

**Element length**  
**1** | **2** | **3**

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Seals	
<b>A</b>	NBR
<b>V</b>	FPM

Element Δp	
<b>N</b>	20 bar
<b>S</b>	210 bar

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

### CLOGGING INDICATORS

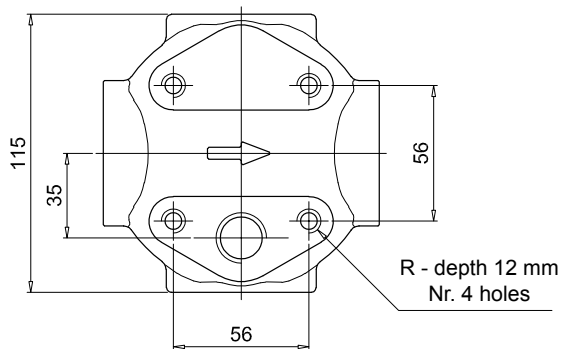
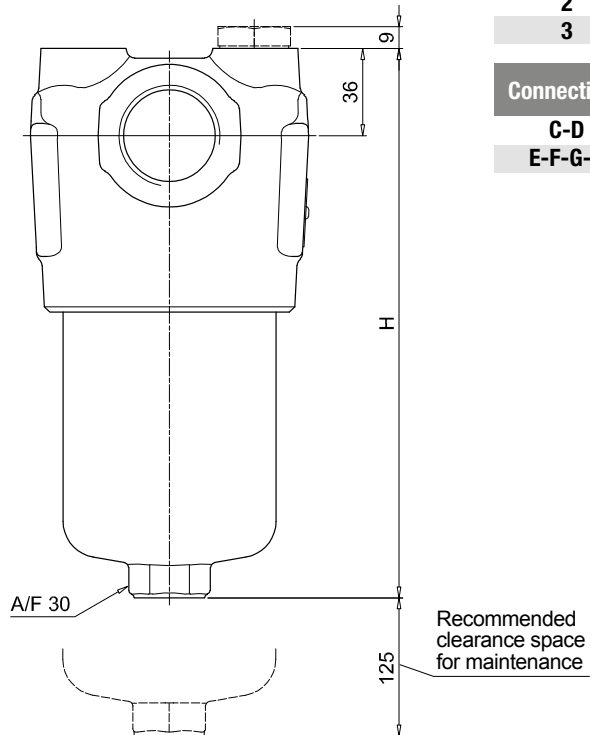
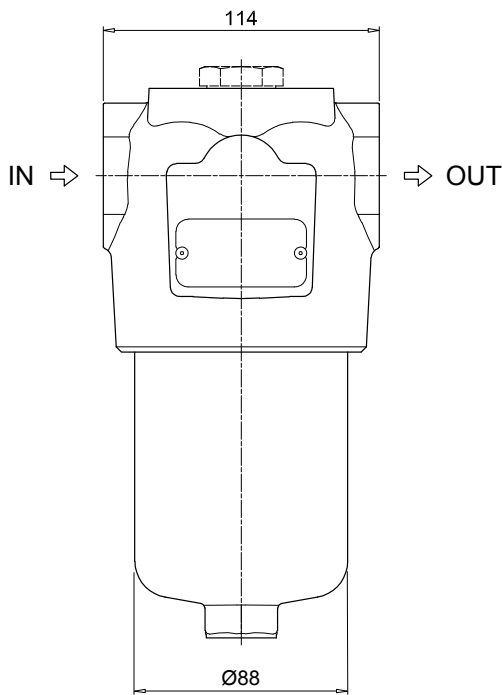
See page 717

<b>DEA</b>	Electrical differential pressure indicator	<b>DLE</b>	Electrical / visual differential pressure indicator
<b>DEM</b>	Electrical differential pressure indicator	<b>DTA</b>	Electronic differential pressure indicator
<b>DEU</b>	Electrical differential pressure indicator	<b>DVA</b>	Visual differential pressure indicator
<b>DLA</b>	Electrical / visual differential pressure indicator	<b>DVM</b>	Visual differential pressure indicator

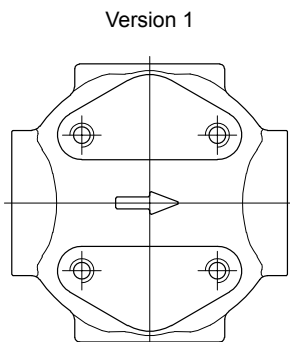
### PLUGS

See page 737

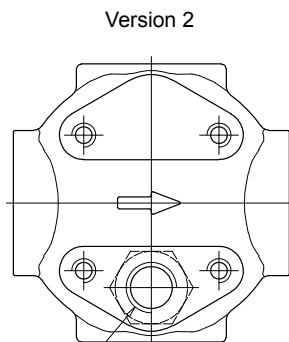
<b>T2</b>	Plug (not included)
-----------	---------------------



FMM150	
Filter length	H [mm]
1	230
2	340
3	415
Connections	R
C-D	M10
E-F-G-H	3/8" UNC

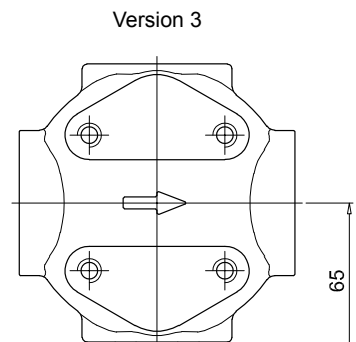


Version 1



Version 2

Connection for diff. pressure indicator  
T2 plug not included



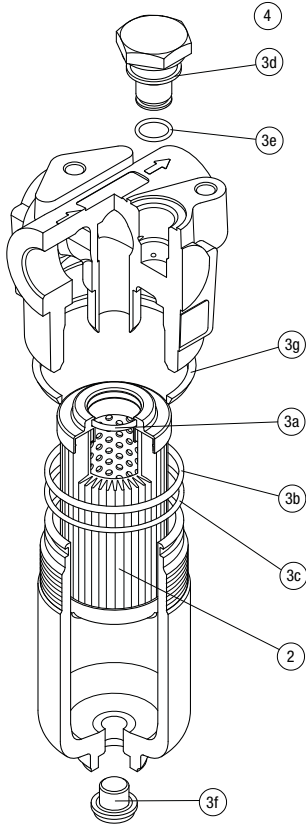
Version 3

Connection for diff. pressure indicator  
T2 plug not included

# FMM SPARE PARTS

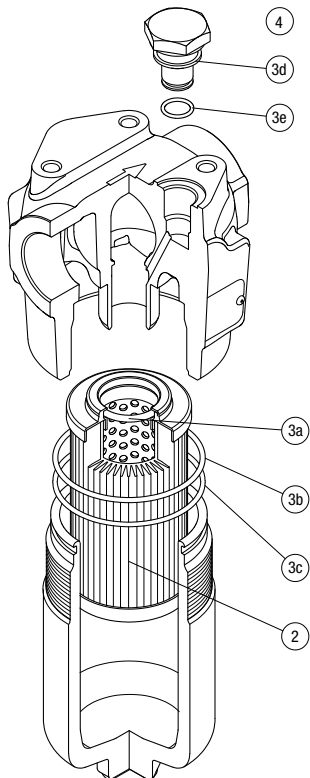
Order number for spare parts

## FMM 050



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FMM 050</b>	See order table	02050314	02050315	T2H	T2V

## FMM 150



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FMM 150</b>	See order table	02050731	02050732	T2H	T2V







# FHA 051 series

Maximum working pressure up to 56 MPa (560 bar) - Flow rate up to 150 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



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## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 56 MPa (560 bar)**

**Flow rate up to 150 l/min**

FHA is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 3/4", for a maximum flow rate of 150 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Reverse flow valve, to allow bidirectional flow through the filter housing. The back flow is not filtered
- Low collapse filter element "N", for use with filters provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any heavy duty industrial equipment or mobile machines

#### Filter housing materials

- Head: Steel (chemical heat treatment)
- Housing: Steel (chemical heat treatment)
- Bypass valve: Steel

#### Pressure

- Test pressure: 84 MPa (840 bar)
- Burst pressure: 168 MPa (1680 bar)
- Pulse pressure fatigue test: 1 00 000 cycles with pressure from 0 to 56 MPa (560 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet

#### Note

FHA filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHA 051</b>		3.28	3.65	4.06	4.54	5.74		0.33	0.47	0.62	0.79	1.23

Filter series	Length	Filter element design - N Series						Filter element design - R Series					Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FHA 051</b>	<b>1</b>	42	41	82	85	110	156	42	41	82	85	110	30	40	58	60	76
	<b>2</b>	53	58	87	100	127	158	53	58	87	100	127	45	50	78	91	120
	<b>3</b>	68	71	101	111	137	160	68	71	101	111	137	59	62	92	103	131
	<b>4</b>	86	92	118	121	142	162	86	92	118	121	142	77	83	110	113	137
	<b>5</b>	112	115	137	142	150	165	112	115	137	142	150	96	99	116	128	147

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

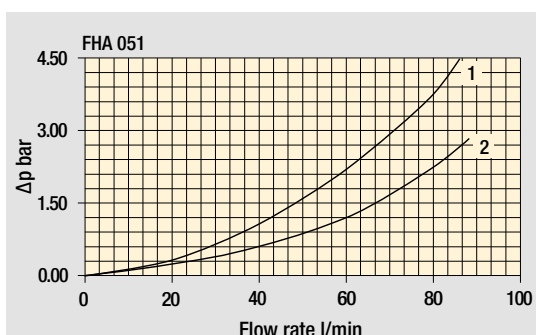
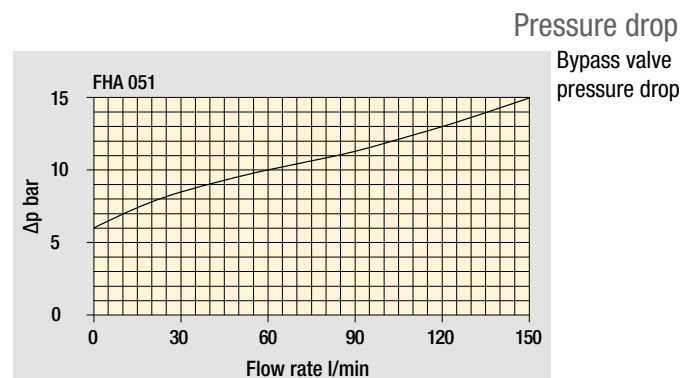
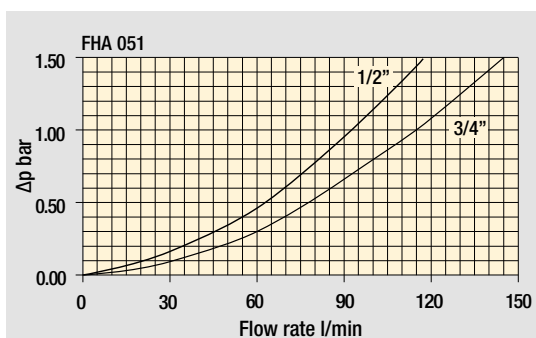
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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 S	Style B	Style T	Style D	Style V	Style Z
<b>FHA 051</b>	•	•	•	•	•	•



### Pressure drop in reverse flow valves

- 1 - Reverse flow
- 2 - In filter direction

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

Series and size **FHA051** Configuration example: **FHA051** | **3** | **B** | **A** | **G** | **A10** | **N** | **P01**

#### Length

1 | 2 | 3 | 4 | 5

#### Valves

- S** Without bypass
- B** With bypass 6 bar
- T** With check valve, without bypass
- D** With check valve, with bypass 6 bar
- V** With reverse flow, without bypass
- Z** With reverse flow, with bypass 6 bar

#### Seals

- A** NBR
- V** FPM

#### Connections

- |                             |                                   |
|-----------------------------|-----------------------------------|
| <b>A</b> M18x1.5 - ISO 6149 | <b>E</b> 1/2" NPT                 |
| <b>B</b> M22x1.5 - ISO 6149 | <b>F</b> 3/4" NPT                 |
| <b>C</b> G 1/2"             | <b>G</b> SAE 8 - 3/4" - 16 UNF    |
| <b>D</b> G 3/4"             | <b>H</b> SAE 12 - 1 1/16" - 12 UN |

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

Element Δp	Valves						
	S	B	T	D	V	Z	
<b>N</b> 20 bar	-	•	-	-	-	-	
<b>R</b> 20 bar	-	-	-	•	-	•	
<b>S</b> 210 bar	•	-	•	-	•	-	

#### Execution

- P01** Upper connection for clogging indicator
- P02** Without connection for clogging indicator
- P03** Frontal connection for clogging indicator
- Pxx** Customized

### FILTER ELEMENT

Element series and size **HP050** Configuration example: **HP050** | **3** | **A10** | **A** | **N** | **P01**

#### Element length

1 | 2 | 3 | 4 | 5

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

Seals	
<b>A</b>	NBR
<b>V</b>	FPM

Element Δp	
<b>N</b>	20 bar
<b>R</b>	20 bar
<b>S</b>	210 bar

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

### CLOGGING INDICATORS

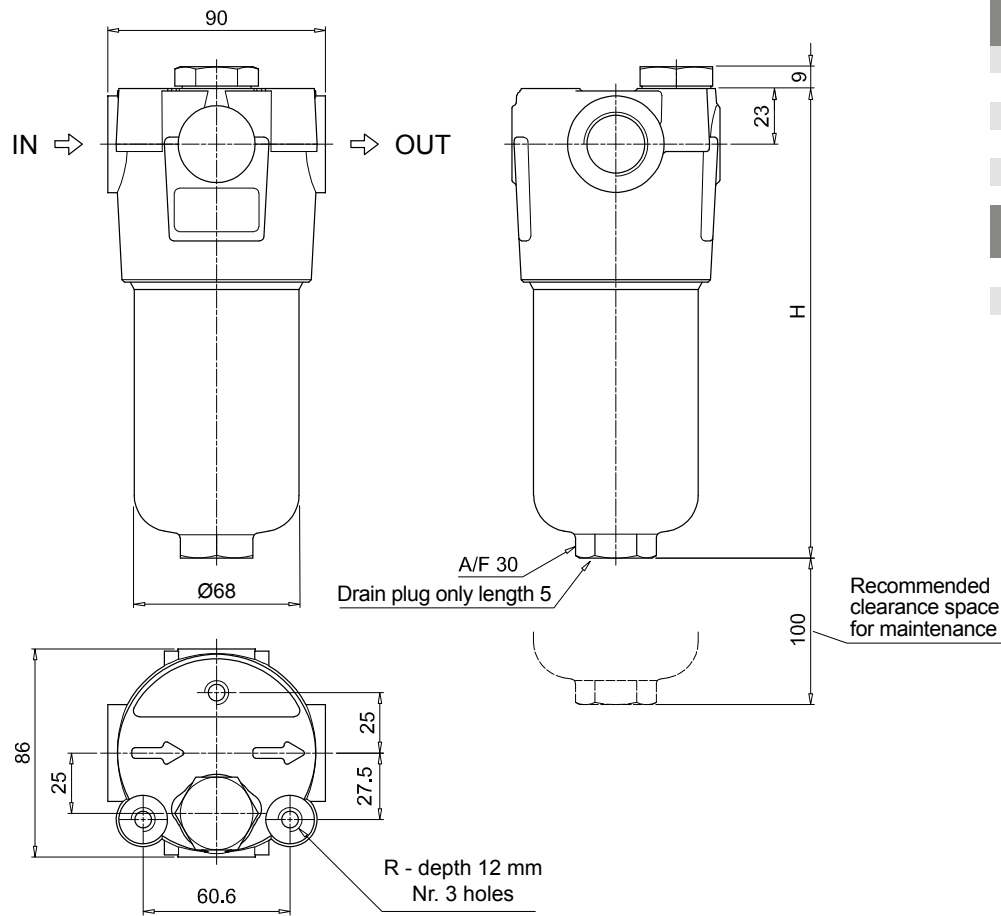
See page 717

- |  |  |
|--|--|
| <b>DEA</b> Electrical differential pressure indicator          | <b>DLE</b> Electrical / visual differential pressure indicator |
| <b>DEM</b> Electrical differential pressure indicator          | <b>DTA</b> Electronic differential pressure indicator          |
| <b>DEU</b> Electrical differential pressure indicator          | <b>DVA</b> Visual differential pressure indicator              |
| <b>DLA</b> Electrical / visual differential pressure indicator | <b>DVM</b> Visual differential pressure indicator              |

### PLUGS

See page 737

- T2** Plug (not included)



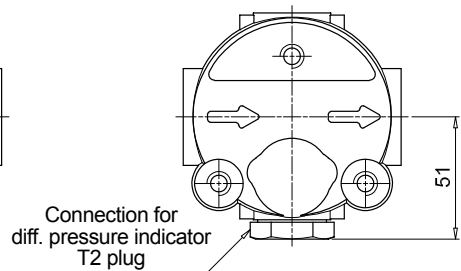
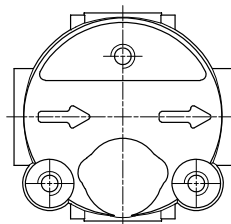
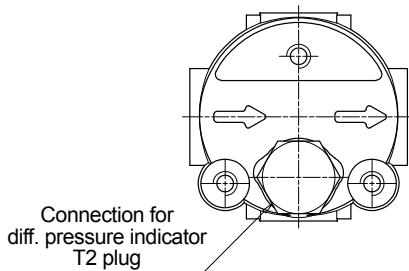
FHA051	
Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407
Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC

### Valves S - B - T - D

Execution P01

Execution P02

Execution P03

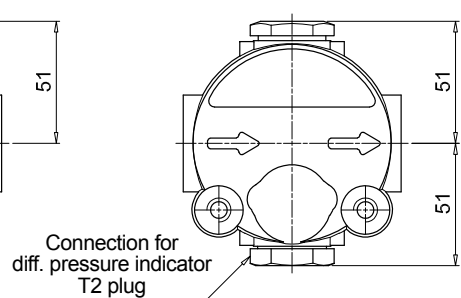
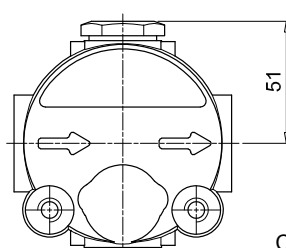
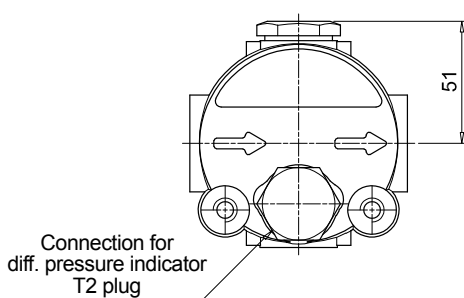


### Valves V - Z

Execution P01

Execution P02

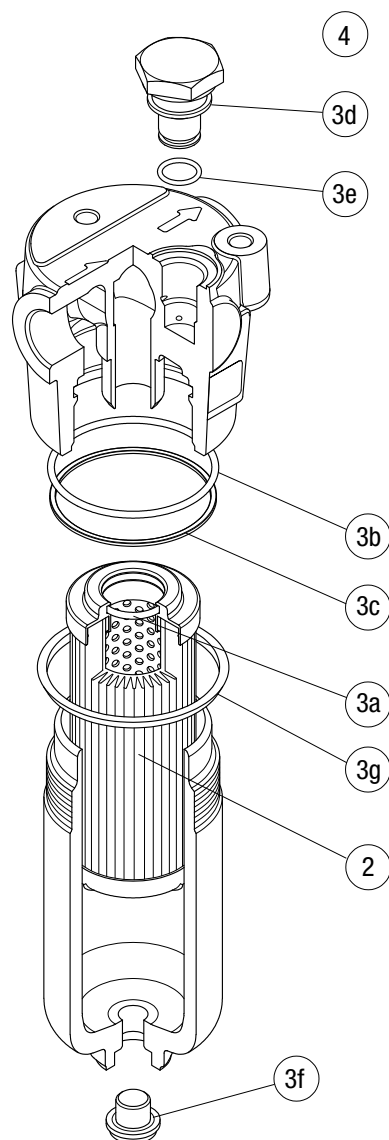
Execution P03



# FHA 051 SPARE PARTS

Order number for spare parts

FHA 051



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FHA 051	See order table	NBR	FPM	NBR	FPM
		02050288	02050305	T2H	T2V







# FMP 039 series

Maximum working pressure up to 11 MPa (110 bar) - Flow rate up to 80 l/min



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# FMP 039 GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 11 MPa (110 bar)**

**Flow rate up to 80 l/min**

FMP039 is a range of versatile medium pressure filter for transmission, protection of sensitive components in medium pressure hydraulic systems and filtration of the coolant into the machine tools.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 80 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N"
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any medium pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Anodized aluminium
- Housing: Anodized aluminium
- Bypass valve: Steel

#### Pressure

- Test pressure: 17 MPa (170 bar)
- Burst pressure: 33 MPa (330 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 11 MPa (110 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm 10\%$
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet

#### Note

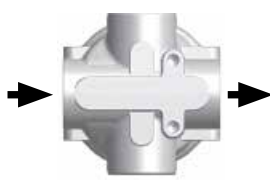
FMP 039 filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

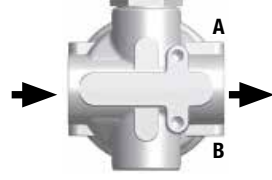
Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]			
	Length	2	3	4	Length	2	3	4
<b>FMP 039</b>		0.60	0.70	0.80		0.19	0.26	0.34

## Executions

**Execution 1:**  
without indicator connection



**Execution 6:**  
double indicator connection (A - B)

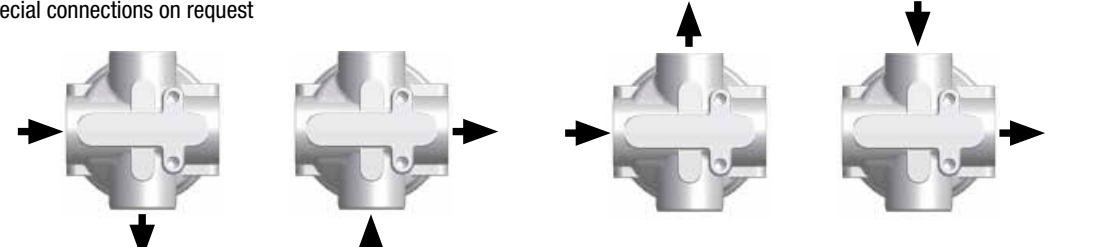


**A:**  
Closure cap with standard T2 steel. The position of the cap is reversible.

**B:**  
Standard closure cap with plastic thread protection. If necessary, a second T2 plug is available, see ordering information.

---

Special connections on request



Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FMP 039</b>	<b>2</b>	20	26	45	52	61	97
	<b>3</b>	35	39	56	64	76	98
	<b>4</b>	44	48	66	71	82	92

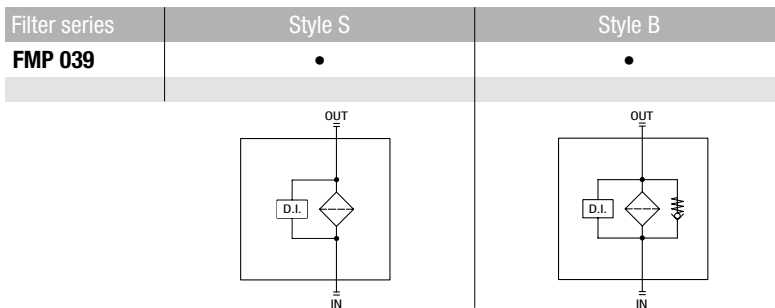
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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).

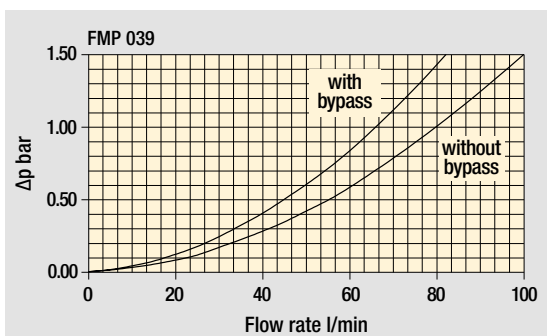
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Hydraulic symbols

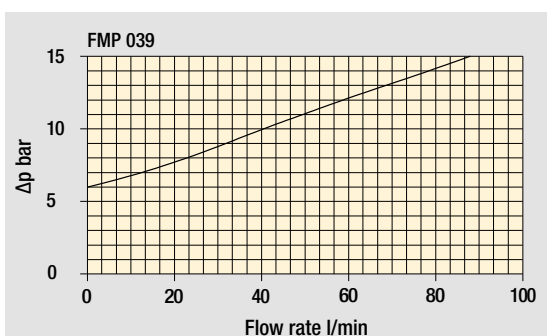


## Pressure drop

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.

# FMP 039

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FMP039** | **3** | **B** | **A** | **B** | **6** | **A03** | **N** | **P01**

**Series and size**  
**FMP039**

**Length**  
**2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM

**Connections**  
**A** G 1/2"  
**B** 1/2" NPT  
**C** SAE 8 - 3/4" - 16 UNF

**Connection for differential pressure indicator**  
**1** Without connections  
**6** With two connections on both sides

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **HP039** | **3** | **A03** | **A** | **N** | **P01**

**Element series and size**  
**HP039**

**Element length**  
**2** | **3** | **4**

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm

**Seals**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### CLOGGING INDICATORS

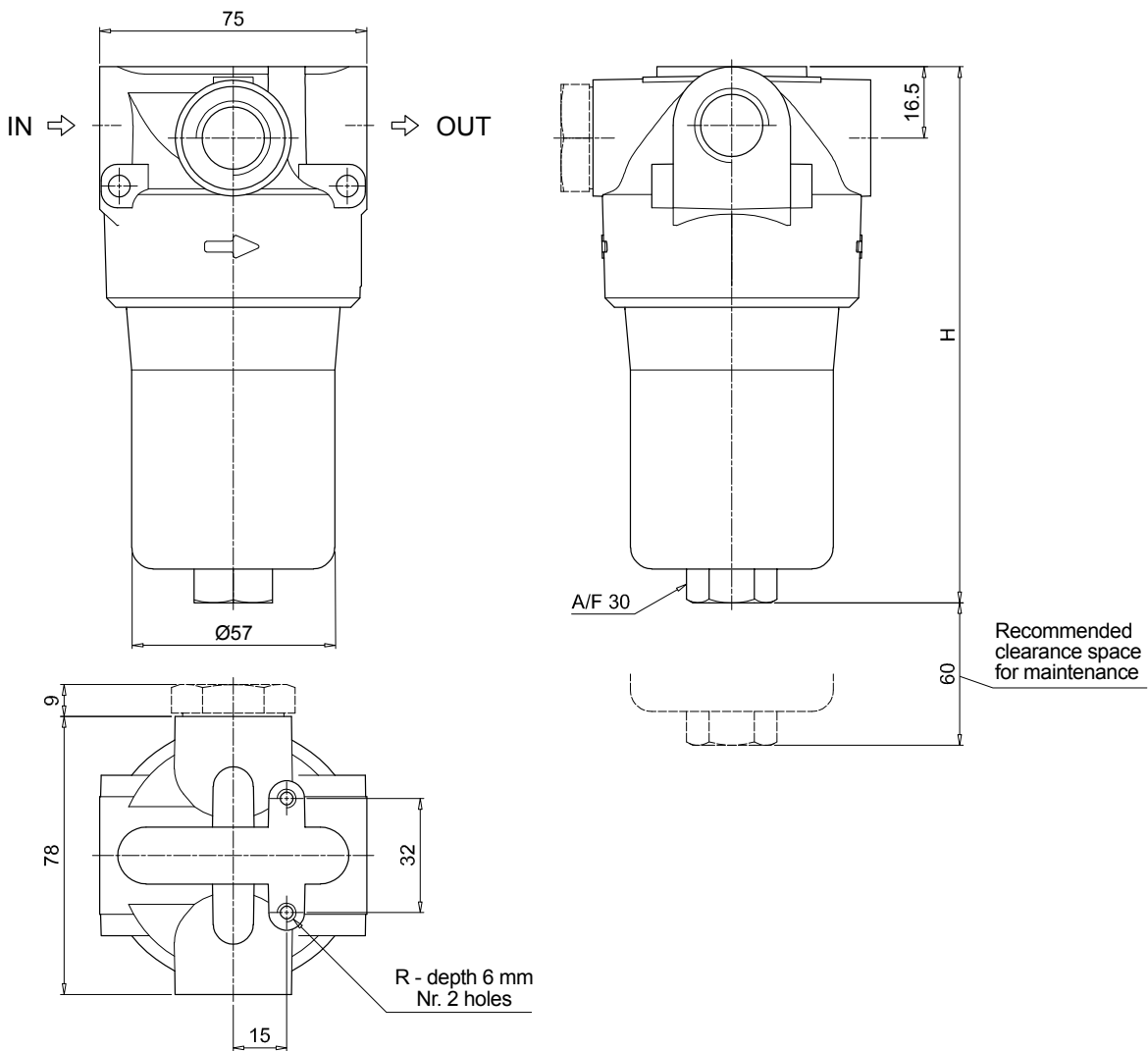
See page 717

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

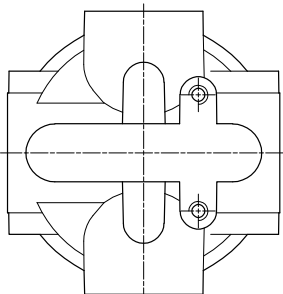
### PLUGS

See page 737

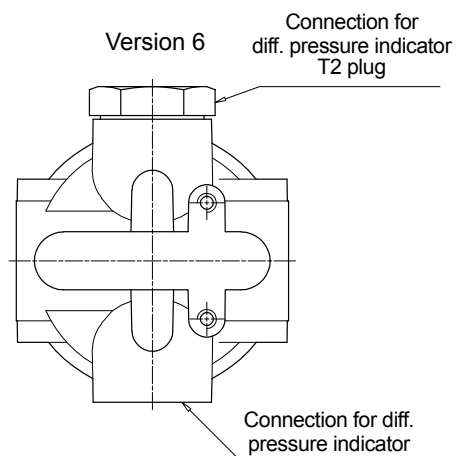
<b>T2</b> Plug (not included)
-------------------------------



Version 1



Version 6



### FMP039

Filter length	H [mm]
2	151
3	194
4	238

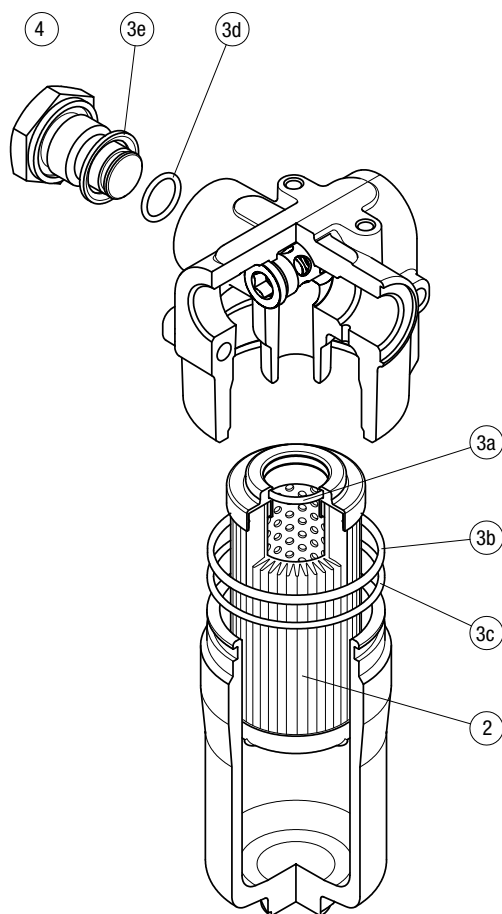
  

Connections	R
A	M6
B - C	1/4" UNC

# FMP 039 SPARE PARTS

Order number for spare parts

FMP 039



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FMP 039</b>	See order table	02050509	02050510







# FMP series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 500 l/min



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FMP065



FMP135



FMP320

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### High Pressure filters

#### In-line

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 500 l/min**

FMP is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the industrial equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 500 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Brass
- Reverse Flow: Steel (only for series FMP 320)
- Check valve: Steel

#### Pressure

- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm$ 10%
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet

#### Note

FMP filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FMP 065</b>		3.26	3.62	4.83	-		0.36	0.47	0.84	-
<b>FMP 135</b>		5.61	7.21	8.27	-		0.45	0.78	1.00	-
<b>FMP 320</b>		10.95	13.08	15.37	17.85		1.03	1.75	2.52	3.35

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FMP 065</b>	<b>1</b>	23	30	48	54	72	105
	<b>2</b>	31	45	60	65	82	106
	<b>3</b>	52	60	80	84	94	108
<b>FMP 135</b>	<b>1</b>	69	73	120	129	171	201
	<b>2</b>	110	117	149	152	211	232
	<b>3</b>	151	152	192	195	212	233
<b>FMP 320</b>	<b>1</b>	130	144	244	296	361	477
	<b>2</b>	267	291	417	438	492	509
	<b>3</b>	348	390	476	493	503	519
	<b>4</b>	389	415	483	502	525	534

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ 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>.

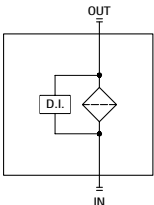
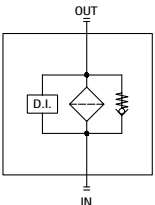
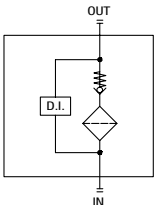
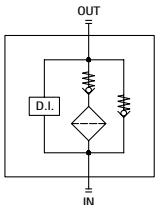
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

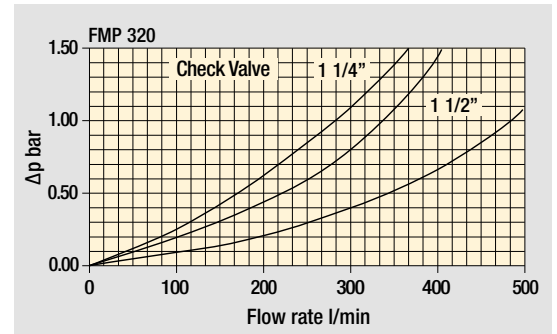
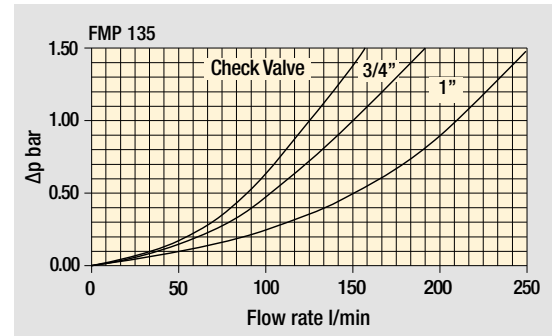
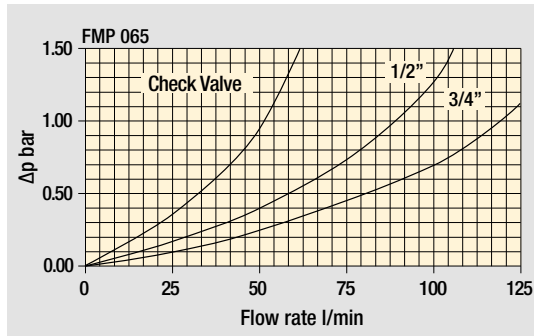
Filter series	Style S - E	Style B - C	Style T	Style D
<b>FMP 065</b>	•	•	•	•
<b>FMP 135</b>	•	•	•	•
<b>FMP 320</b>	•	•	•	•

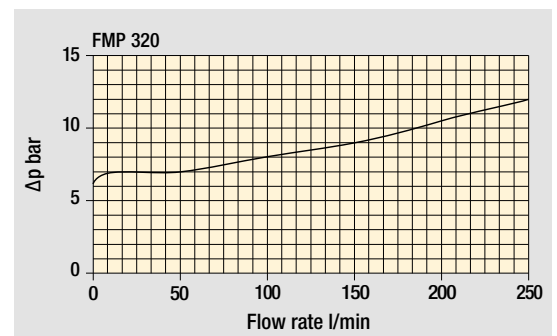
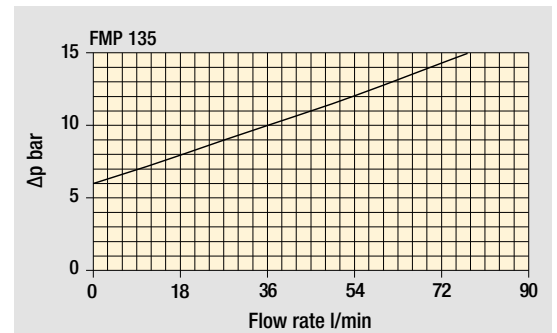
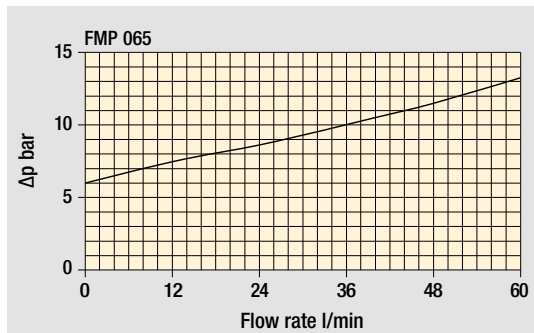
			
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## Pressure drop

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



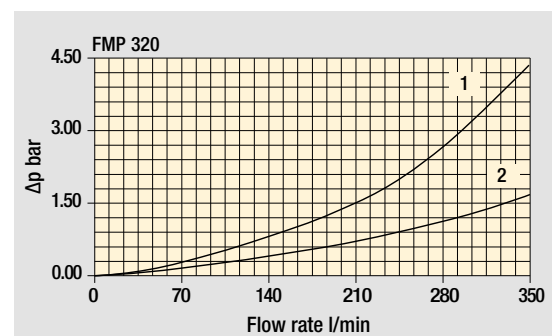
### Bypass valve pressure drop



### Valves

#### Filter housing with check valve

- 1 - Reverse flow
- 2 - In filter direction



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.



# FMP FMP065 - FMP135 - FMP320

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FMP065** | **3** | **T** | **A** | **G1** | **M25** | **S** | **P01**

**FMP065** | **FMP135** | **FMP320**

Length	FMP065	FMP135	FMP320
1	•	•	•
2	•	•	•
3	•	•	•
4	-	-	•

Valves	
<b>S</b> Without bypass	<b>C</b> With bypass 6 bar, plug on the opposite side
<b>E</b> Without bypass, plug on the opposite side	<b>T</b> With check valve, without bypass
<b>B</b> With bypass 6 bar	<b>D</b> With check valve, with bypass

Seals	
<b>A</b> NBR	<b>V</b> FPM

Connections	FMP065	FMP135	FMP320
<b>G1</b>	G 1/2"	G 3/4"	G 1 1/4"
<b>G2</b>	G 3/4"	G 1"	G 1 1/2"
<b>G3</b>	1/2" NPT	3/4" NPT	1 1/4" NPT
<b>G4</b>	3/4" NPT	1" NPT	1 1/2" NPT
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN
<b>F1</b>	-	3/4" SAE 3000 psi/M	1 1/4" SAE 3000 psi/M
<b>F2</b>	-	1" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M
<b>F3</b>	-	3/4" SAE 3000 psi/UNC	1 1/4" SAE 3000 psi/UNC
<b>F4</b>	-	1" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Element Δp	Valves					
	S	E	B	C	T	D
<b>N</b> 20 bar	-	-	•	•	-	-
<b>R</b> 20 bar	-	-	-	-	-	•
<b>H</b> 210 bar	•	•	-	-	-	-
<b>S</b> 210 bar	-	-	-	-	•	-

Execution	Filter length			
	1	2	3	4
<b>P01</b> MP Filtri standard	•	•	•	•
<b>P02</b> Maintenance from the bottom of the housing	-	-	-	•
<b>Pxx</b> Customized	-	-	-	-

### FILTER ELEMENT

Element series and size Configuration example: **HP065** | **3** | **M25** | **A** | **S** | **P01**

**HP065** | **HP135** | **HP320**

Element length	HP065	HP135	HP320
1	•	•	•
2	•	•	•
3	•	•	•
4	-	-	•

Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Seals	
<b>A</b> NBR	
<b>V</b> FPM	

Element Δp	
<b>N</b> 20 bar	
<b>R</b> 20 bar	
<b>H</b> 210 bar	
<b>S</b> 210 bar	

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

### CLOGGING INDICATORS

See page 717

<b>DEA</b> Electrical differential pressure indicator	
<b>DEM</b> Electrical differential pressure indicator	
<b>DEU</b> Electrical differential pressure indicator	
<b>DLA</b> Electrical / visual differential pressure indicator	

<b>DLE</b> Electrical / visual differential pressure indicator	
<b>DTA</b> Electronic differential pressure indicator	
<b>DVA</b> Visual differential pressure indicator	
<b>DVM</b> Visual differential pressure indicator	

### PLUGS

See page 737

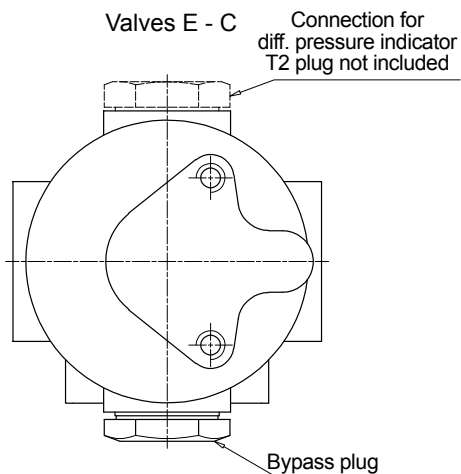
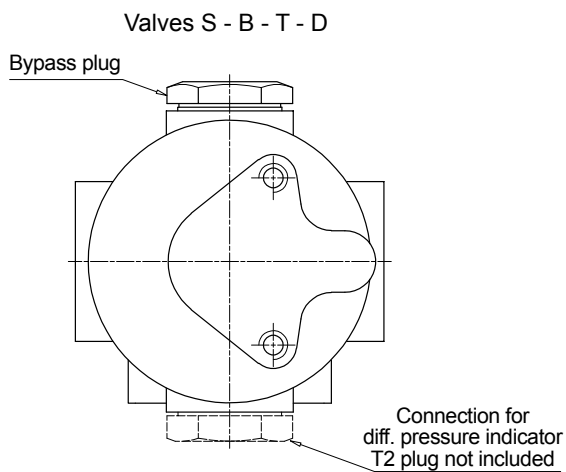
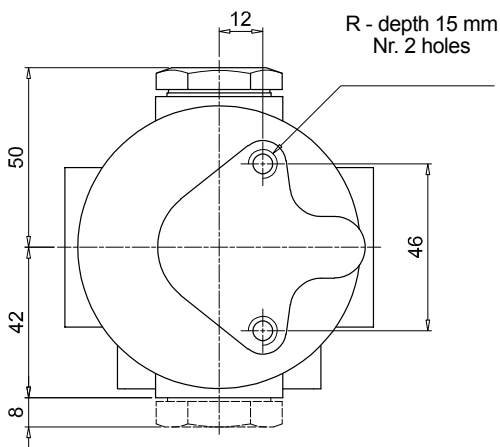
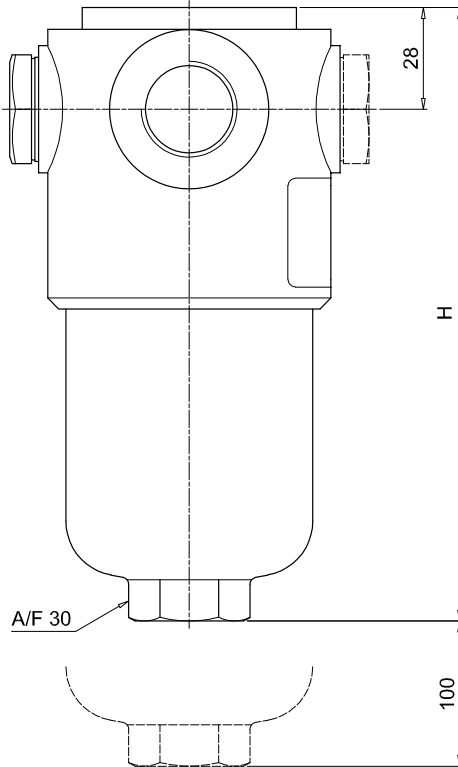
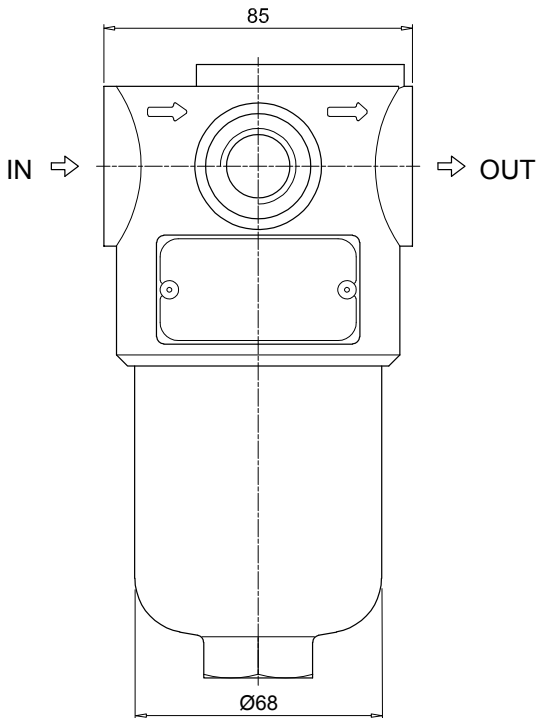
<b>T2</b> Plug (not included)	
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### FMP065

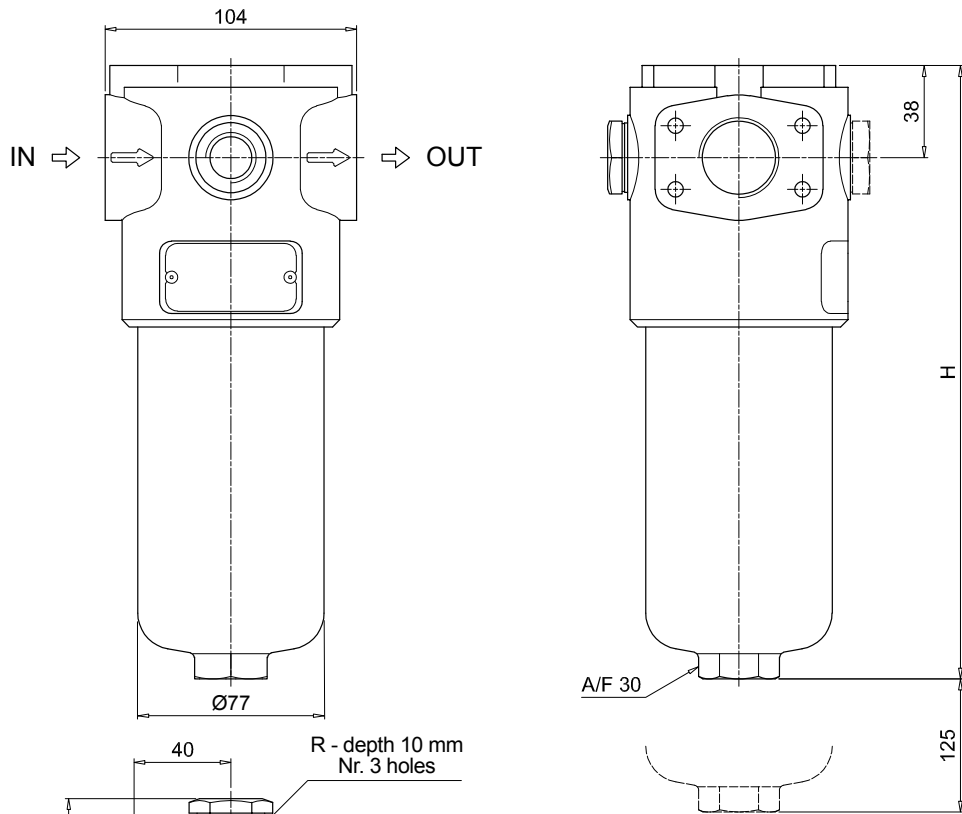
Filter length	H [mm]
1	169
2	200
3	302

Connections	R
G1-G2	M8
G3-G4-G5-G6	5/16" UNC

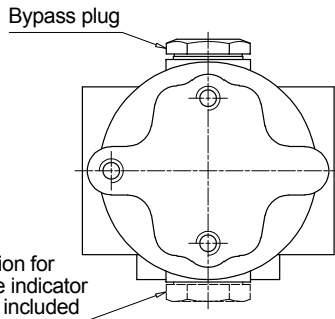


# FMP FMP065 - FMP135 - FMP320

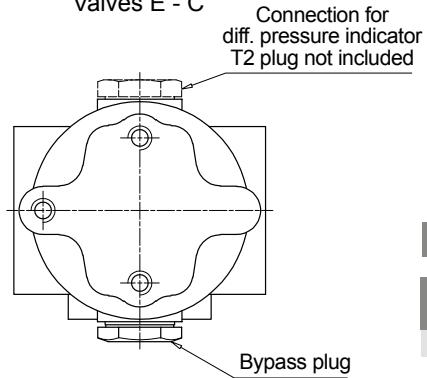
## Dimensions



Valves S - B - T - D



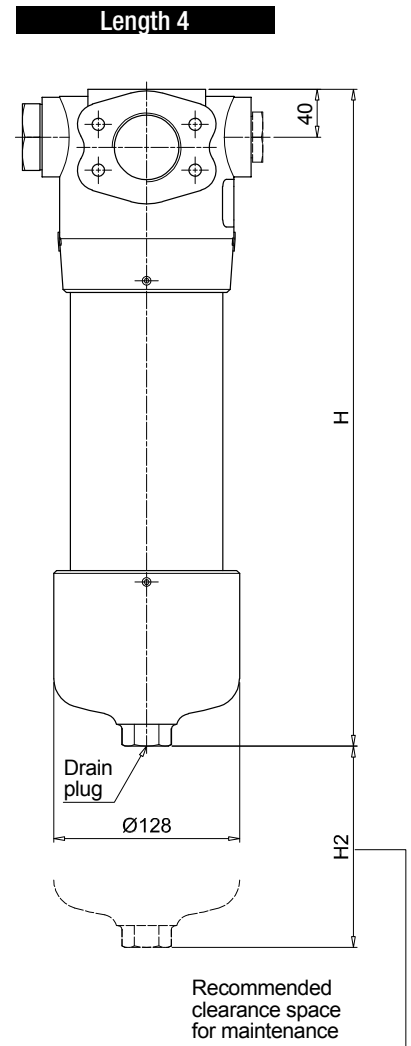
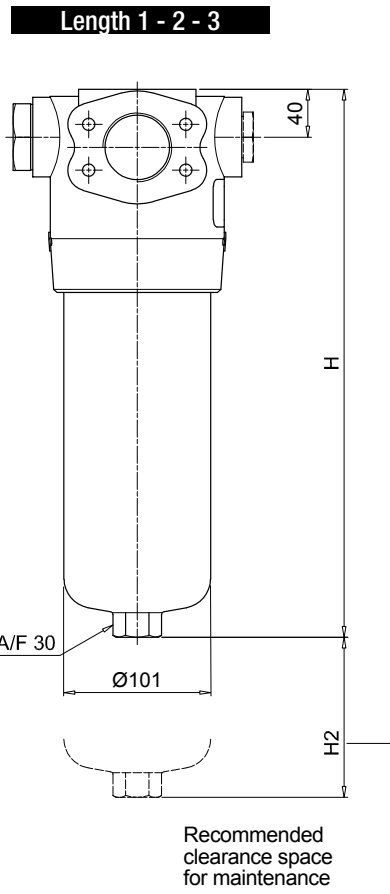
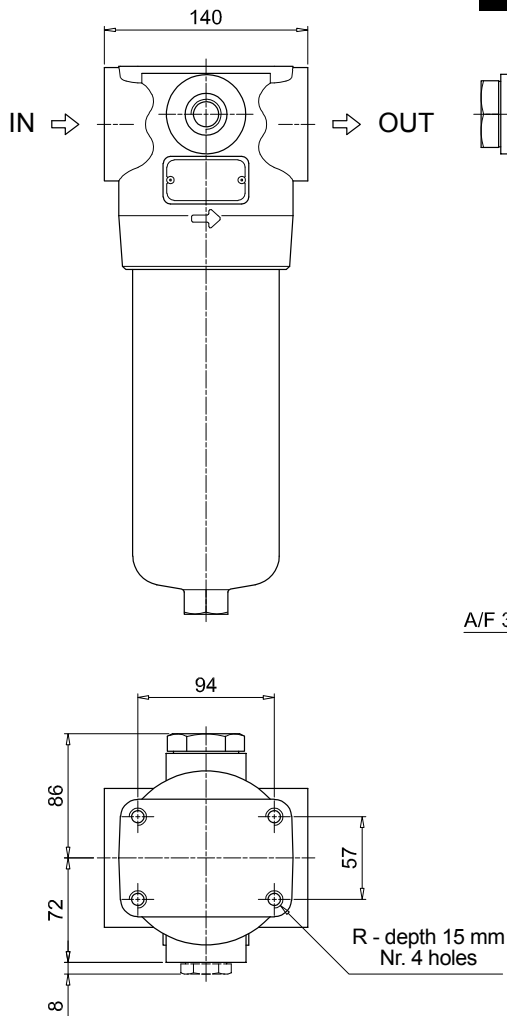
Valves E - C



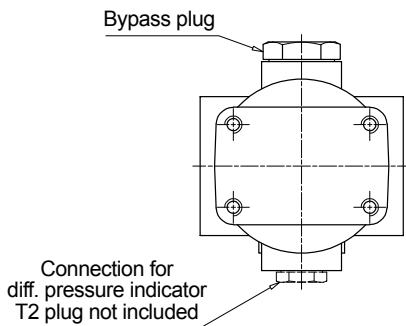
### FMP135

Filter length	H [mm]
1	221
2	334
3	409

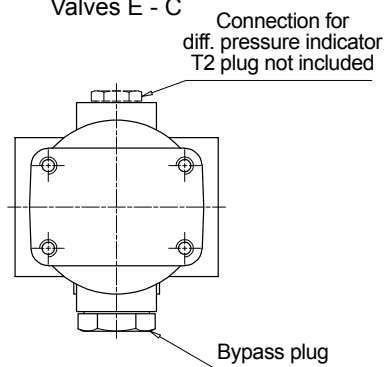
Connections	R
G1-G2	M10
G3-G4-G5-G6	3/8" UNC
F1-F2	M10
F3-F4	3/8" UNC



Valves S - B - T - D



Valves E - C



### FMP320

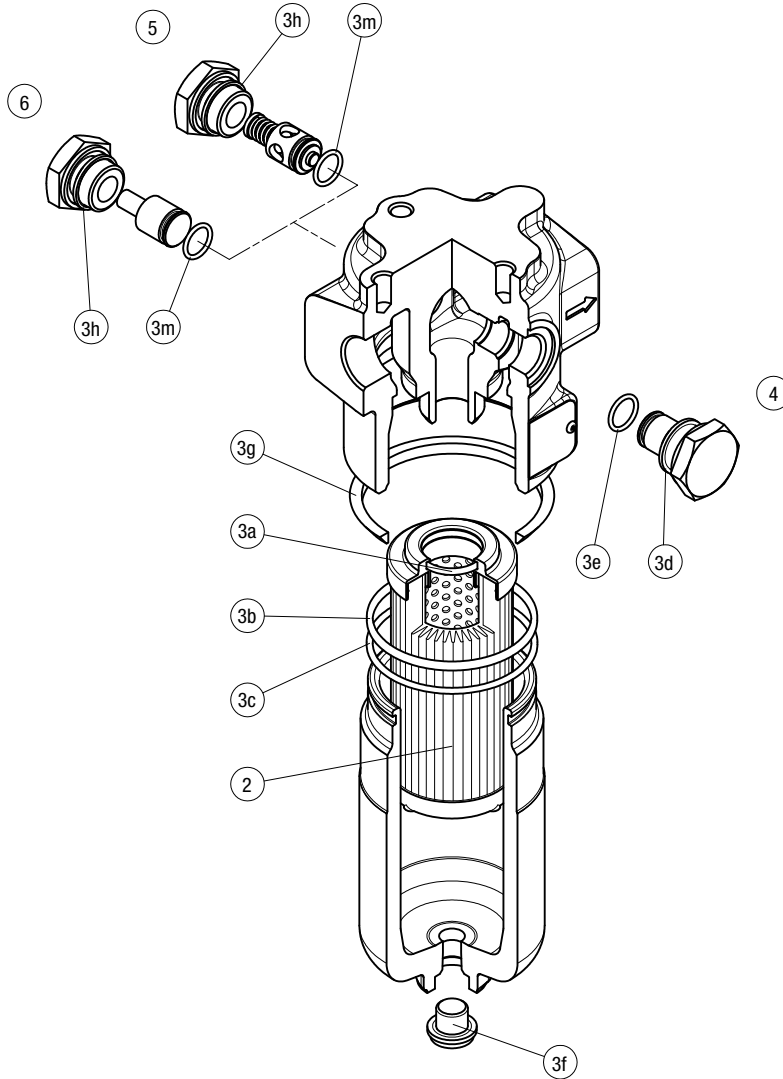
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	263	150	-
2	386	150	-
3	518	150	-
4	671	150	550

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC

# FMP SPARE PARTS

Order number for spare parts

FMP 065 - 135 - 320



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FMP 065</b>	See order table	02050267	02050278			02001312	02001385	02001314	02001386
<b>FMP 135</b>		02050293	02050294	T2H	T2V	02001312	02001385	02001314	02001386
<b>FMP 320</b>		02050274	02050285			02001396	02001397	02001398	02001399





# FHP series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 630 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



FHP010



FHP011



FHP065



FHP135



FHP350



FHP351



FHP500

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 630 l/min**

FHP is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the industrial equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 2", for a maximum return flow rate of 630 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Reverse flow valve, to allow bidirectional flow through the filter housing. The back flow is not filtered. The filter requires the use of internal check valves to direct the flow through the element in one direction and around the element in the other
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Phosphatized cast iron

- Housing: Phosphatized steel

- Bypass valve

AISI 316L: FHP 010 - 011

Brass: FHP 065 - 135

Brass / AISI 304: FHP 350-351

Steel: FHP 500

- Reverse Flow

Steel: FHP 350 - FHP 500

- Check valve: Steel

#### Pressure

- Test pressure: 63 MPa (630 bar)

- Burst pressure: 126 MPa (1260 bar)

- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%

- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar

- Microfibre filter elements - series R: 20 bar (not available for FHP 010-011 and FHP 500)

- Microfibre filter elements - series H: 210 bar

- Microfibre filter elements - series S: 210 bar (only for FHP 500)

- Wire mesh filter elements - series N: 20 bar

- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A

- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

FHP 010 - 065 - 135 - 350 - 351 - 500:

In-line Inlet/Outlet

FHP 011:

90° Inlet/Outlet

#### Note

FHP filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHP 010 - 011</b>		2.05	2.18	2.64	3.13	-		0.10	0.12	0.15	0.20	-
<b>FHP 065</b>		4.26	4.62	5.83	-	-		0.25	0.30	0.50	-	-
<b>FHP 135</b>		7.11	8.71	9.76	-	-		0.43	0.76	0.97	-	-
<b>FHP 350 - 351</b>		13.95	16.08	18.37	20.85	-		1.00	1.72	2.49	3.32	-
<b>FHP 500</b>		27.00	31.17	34.69	46.70	52.5		1.71	2.43	3.04	5.18	6.51



Filter series	Length	Filter element design - H Series					Filter element design - N Series					
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	M25
<b>FHP 010</b>	<b>1</b>	3	5	6	7	8	4	6	8	9	10	37
	<b>2</b>	5	7	13	16	22	6	8	16	19	24	40
	<b>3</b>	10	13	22	25	30	11	14	23	26	31	41
	<b>4</b>	12	15	25	27	32	16	19	27	30	33	41
<b>FHP 011</b>	<b>1</b>	3	5	6	7	9	4	6	8	9	11	47
	<b>2</b>	5	7	14	17	24	7	9	17	21	28	52
	<b>3</b>	11	14	25	29	36	11	14	26	30	37	53
	<b>4</b>	12	16	28	32	38	17	21	32	36	40	54
<b>FHP 065</b>	<b>1</b>	24	25	50	59	84	25	33	56	63	90	142
	<b>2</b>	33	38	68	77	98	34	52	72	79	106	143
	<b>3</b>	61	70	100	107	123	61	73	101	108	125	147
<b>FHP 135</b>	<b>1</b>	49	55	95	98	147	67	72	115	122	159	184
	<b>2</b>	89	106	129	131	163	105	111	140	142	192	209
	<b>3</b>	120	132	158	166	180	141	143	176	179	193	211
<b>FHP 350</b> <b>FHP 351</b>	<b>1</b>	108	115	188	197	301	127	140	234	282	343	451
	<b>2</b>	196	225	317	323	396	256	278	394	415	465	480
	<b>3</b>	266	310	384	392	440	331	370	450	466	475	490
	<b>4</b>	308	333	391	398	445	369	393	456	474	495	503
<b>FHP 500</b>	<b>1</b>	144	157	265	268	355	269	305	390	406	444	612
	<b>2</b>	232	262	350	363	398	321	357	433	441	484	619
	<b>3</b>	293	301	398	408	455	396	416	497	499	537	622
	<b>4</b>	336	377	452	455	507	430	475	516	524	545	626
	<b>5</b>	420	428	494	500	544	475	493	535	545	569	627

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ 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

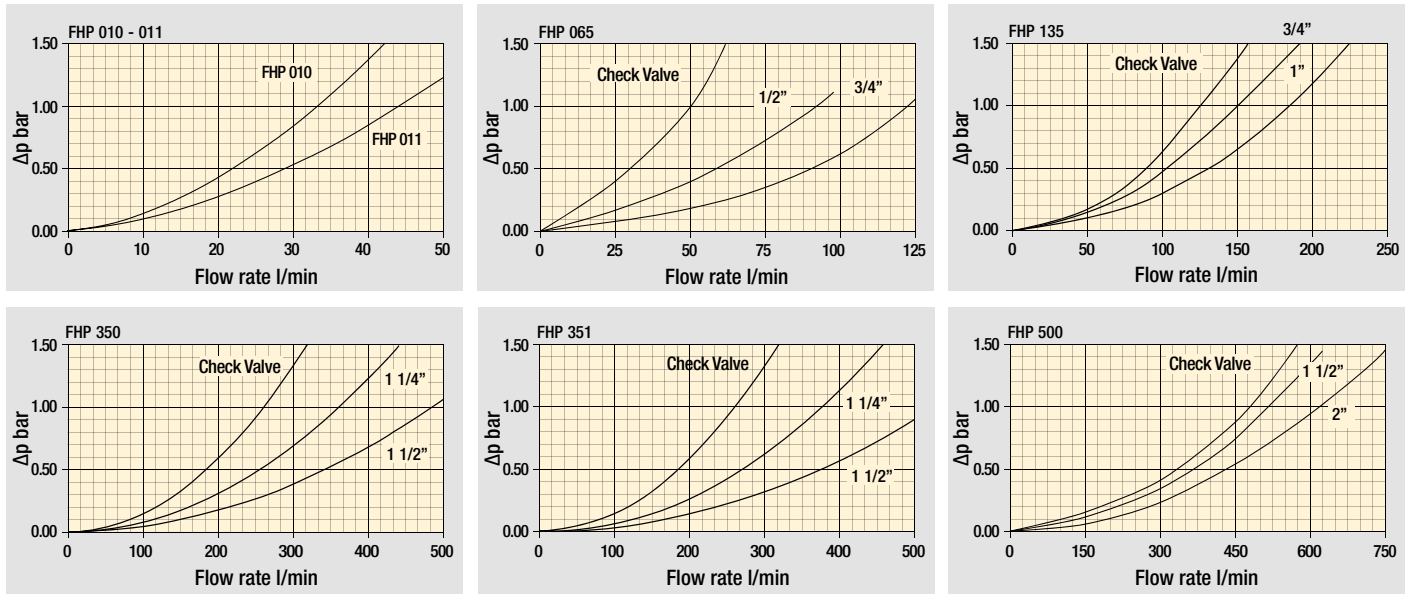
Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FHP 010 - 011</b>	•	•	-	-	•	•
<b>FHP 065</b>	•	•	•	-	-	-
<b>FHP 135</b>	•	•	•	-	-	-
<b>FHP 350-351</b>	•	•	•	•	•	•
<b>FHP 500</b>	•	•	•	•	•	•

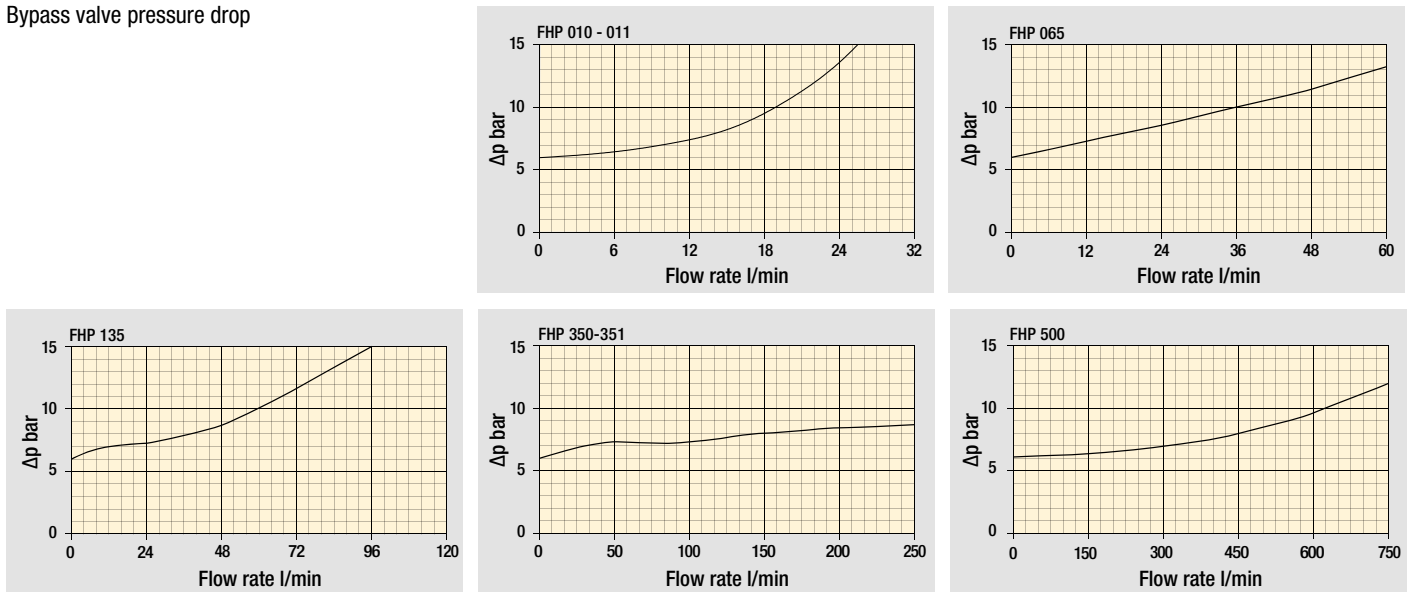
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## Pressure drop

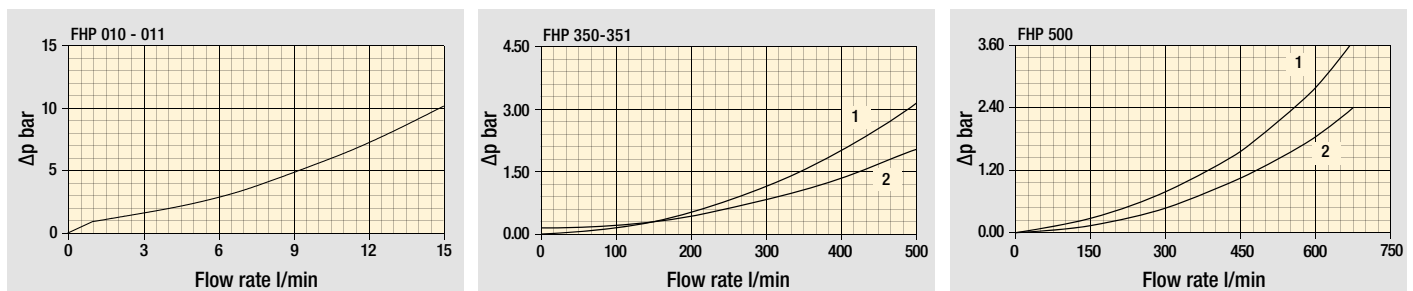
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Valves



Filter housing with check valve

Pressure drop with reverse flow valve in  
1 - Filtering direction  
2 - Opposite direction

Pressure drop with reverse flow valve in  
1 - Opposite direction  
2 - Filtering direction

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



# FHP FHP010 - FHP011

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FHP010** | **2** | **B** | **A** | **B** | **2** | **A03** | **N** | **P01**

**Series and size**  
**FHP010** | **FHP011**

**Length**  
**1** | **2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM

**Connections**  
**A** G 1/4"  
**B** 1/4" NPT  
**C** SAE 5 - 1/2" - 20 UNF  
**D** G 3/8"  
**E** 3/8" NPT  
**F** SAE 6 - 9/16" - 18 UNF

**Connection for differential pressure indicator**  
**1** Without  
**2** With connection

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	S	B	V	Z	Execution
<b>N</b> 20 bar	-	•	-	•	<b>P01</b> MP Filtri standard
<b>H</b> 210 bar	•	-	•	-	<b>Pxx</b> Customized

### FILTER ELEMENT

Configuration example: **HP011** | **2** | **A03** | **A** | **N** | **P01**

**Element series and size**  
**HP011**

**Element length**  
**1** | **2** | **3** | **4**

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Seals	Element Δp	Execution
<b>A</b> NBR	<b>N</b> 20 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>H</b> 210 bar	<b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 717

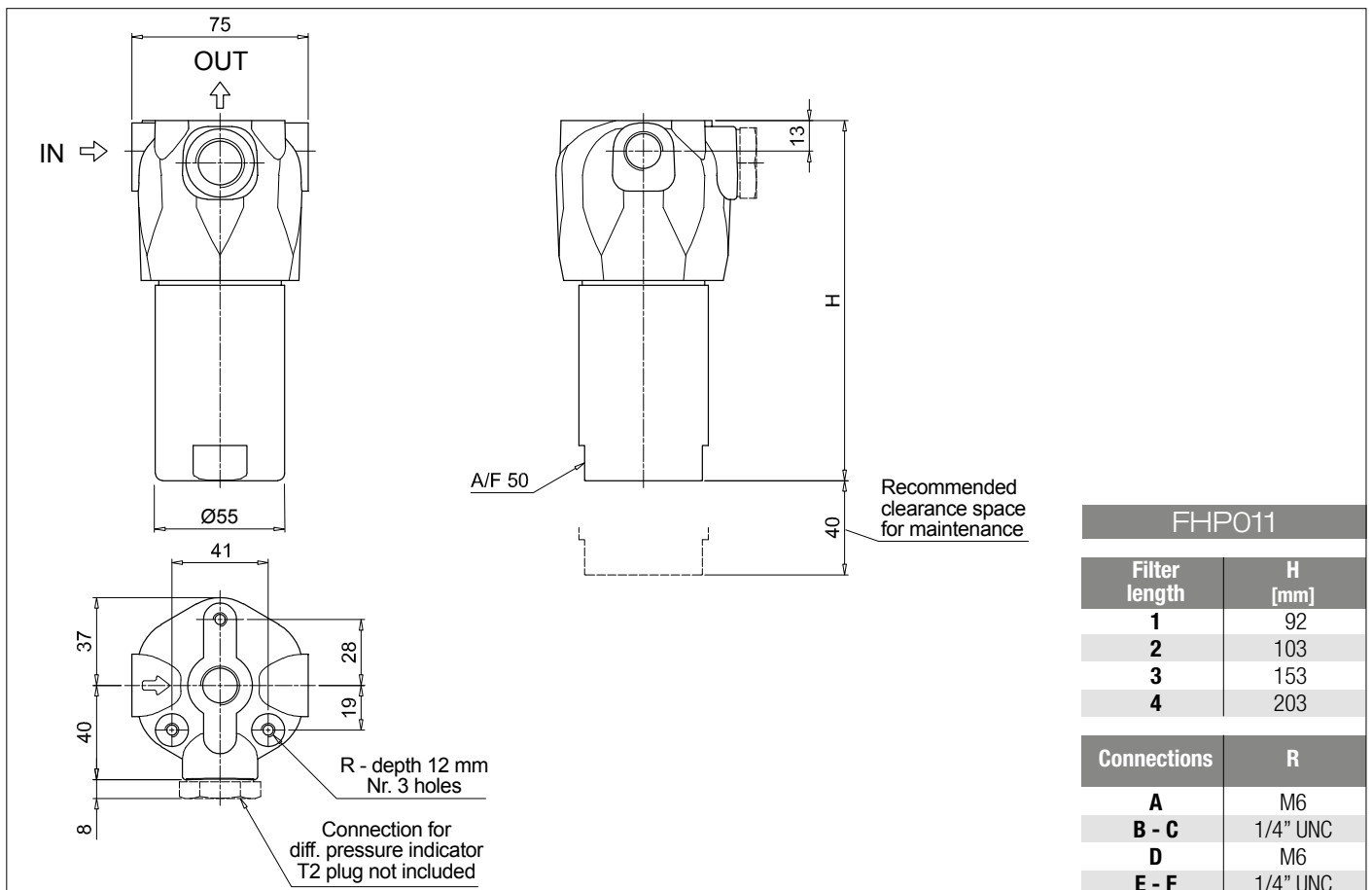
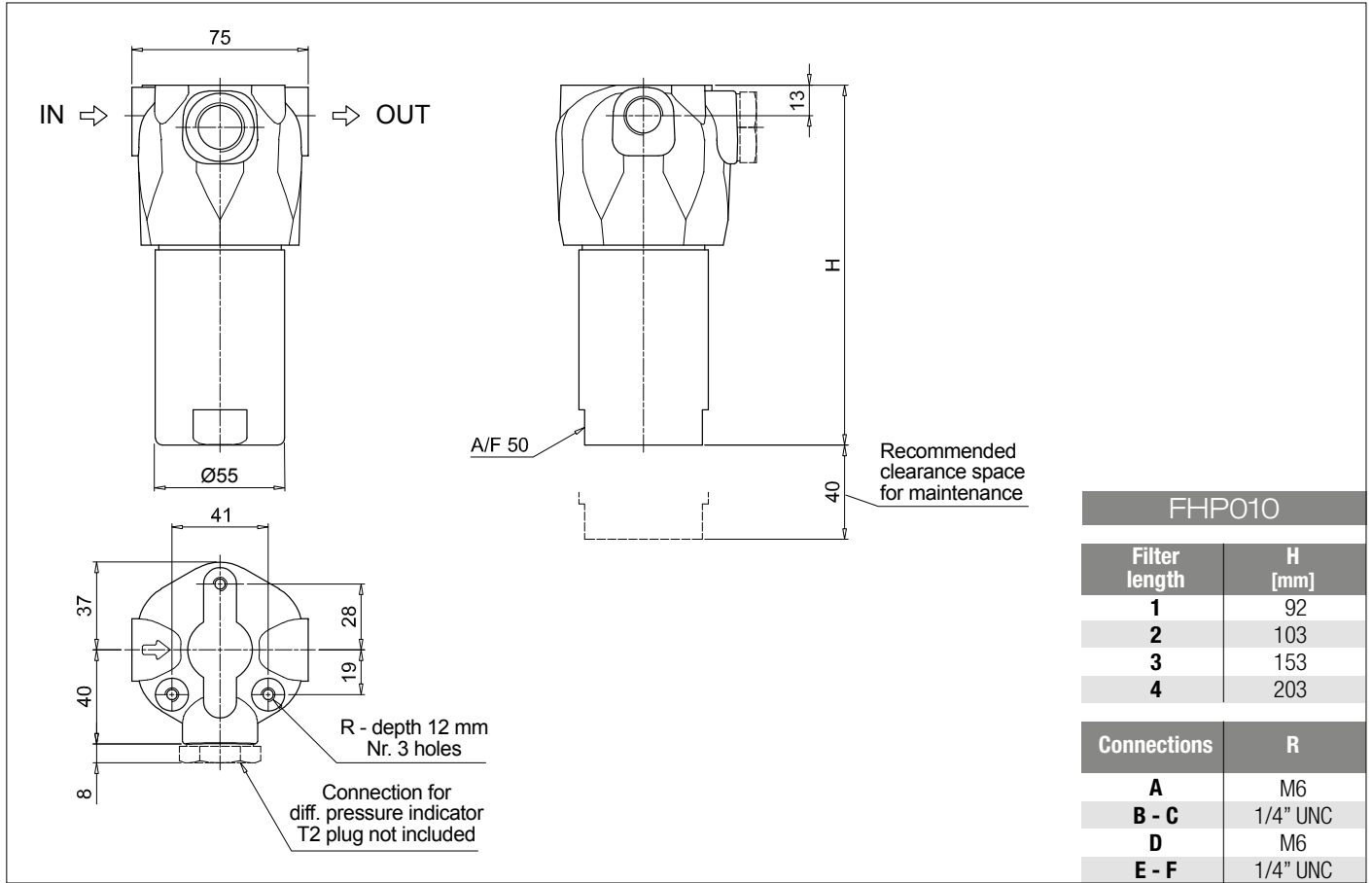
**DEA** Electrical differential pressure indicator  
**DEM** Electrical differential pressure indicator  
**DEU** Electrical differential pressure indicator  
**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator  
**DTA** Electronic differential pressure indicator  
**DVA** Visual differential pressure indicator  
**DVM** Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug (not included)



# FHP FHP065 - FHP135

## Designation & Ordering code

### COMPLETE FILTER

Series and size **FHP065** | **FHP135** Configuration example: **FHP135** **2** **B** **A** **G3** **A06** **S** **P01**

Length **1** | **2** | **3**

Valves  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass

Seals  
**A** NBR  
**V** FPM

Connections	FHP065	FHP135
<b>G1</b>	G 1/2"	G 3/4"
<b>G2</b>	G 3/4"	G 1"
<b>G3</b>	1/2" NPT	3/4" NPT
<b>G4</b>	3/4" NPT	1" NPT
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN
<b>F1</b>	-	3/4" SAE 3000 psi/M
<b>F2</b>	-	1" SAE 3000 psi/M
<b>F3</b>	-	3/4" SAE 3000 psi/UNC
<b>F4</b>	-	1" SAE 3000 psi/UNC
<b>F5</b>	-	3/4" SAE 6000 psi/M
<b>F6</b>	-	3/4" SAE 6000 psi/UNC

Filtration rating (filter media)		
<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	Valves			Execution
	S	B	T	
<b>N</b> 20 bar	-	•	-	<b>P01</b> MP Filtri standard
<b>H</b> 210 bar	•	-	-	<b>Pxx</b> Customized
<b>S</b> 210 bar	-	-	•	

### FILTER ELEMENT

Element series and size **HP065** | **HP135** Configuration example: **HP135** **2** **A06** **A** **S** **P01**

Element length **1** | **2** | **3**

Filtration rating (filter media)		
<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Seals	Element Δp	Execution
<b>A</b> NBR	<b>N</b> 20 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>H</b> 210 bar	<b>Pxx</b> Customized
	<b>S</b> 210 bar	

### CLOGGING INDICATORS

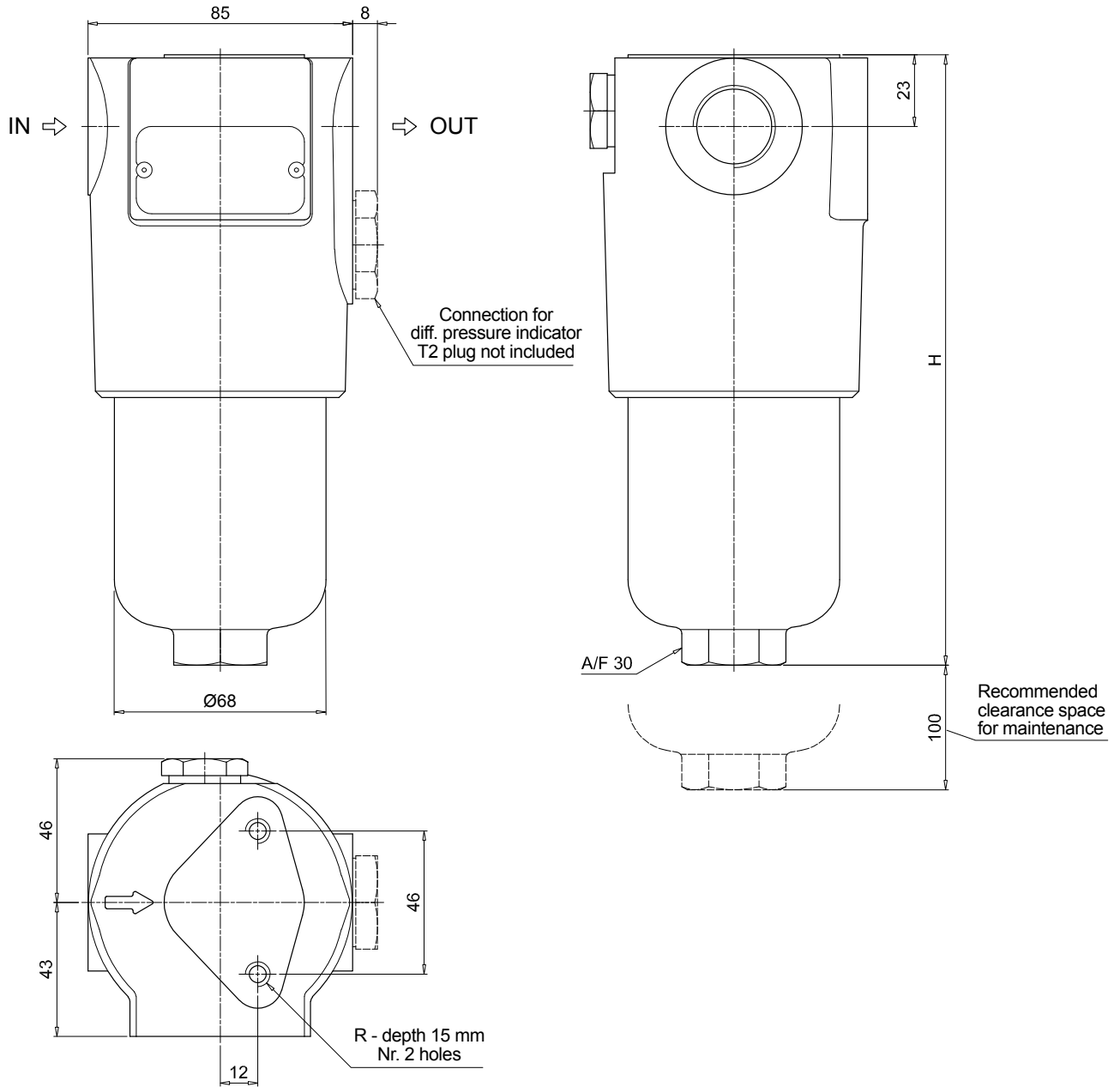
See page 717

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug (not included)



### FHP065

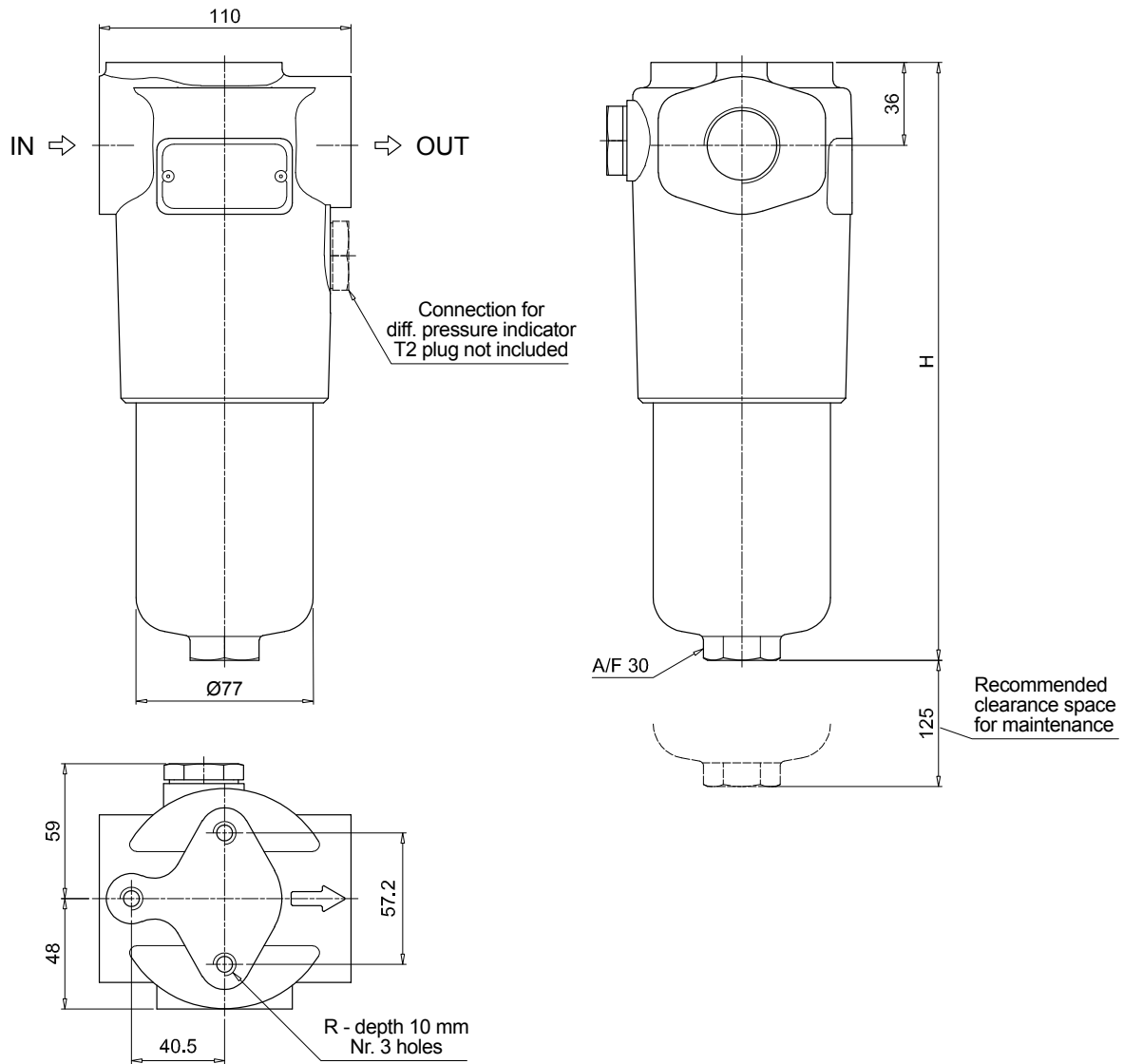
Filter length	H [mm]
1	196
2	227
3	329

Connections	R
G1-G2	M8
G3-G4-G5-G6	5/16" UNC

# FHP FHP065 - FHP135

## Dimensions



### FHP135

Filter length	H [mm]
<b>1</b>	260
<b>2</b>	373
<b>3</b>	448

Connections	R
<b>G1-G2</b>	M10
<b>G3-G4-G5-G6</b>	3/8" UNC
<b>F1-F2</b>	M10
<b>F3-F4</b>	3/8" UNC
<b>F5</b>	M10
<b>F6</b>	3/8" UNC





# FHP FHP350 - FHP351

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHP350** | **4** | **B** | **A** | **D** | **2** | **A06** | **N** | **P01**

**FHP350**  
**FHP351**

Length  
**1** | **2** | **3** | **4** |

Valves  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

Seals  
**A** NBR  
**V** FPM

Connections  
**A** G 1 1/2" **F** 1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" - 12 UN  
**B** 1 1/2" NPT **G** 1 1/4" SAE 3000 psi/M  
**C** SAE 24 - 1 7/8" - 12 UN **H** 1 1/4" SAE 3000 psi/UNC  
**D** 1 1/2" SAE 3000 psi/M + G 1 1/4" **I** 1 1/4" SAE 6000 psi/M (bolts M12, IAW ISO 6162-2:2018)  
**E** 1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT **L** 1 1/4" SAE 6000 psi/UNC

Connection for differential pressure indicator  
**2** With connection

Filtration rating (filter media)		Valves						Filter length				
Code	Media	Element Δp	S	B	T	D	V	Z	1	2	3	4
A03	Inorganic microfiber	3 μm	-	•	-	-	-	-	•	•	•	•
A06	Inorganic microfiber	6 μm	-	-	-	•	-	•	-	-	-	•
A10	Inorganic microfiber	10 μm	•	-	-	-	-	-	-	-	-	-
A16	Inorganic microfiber	16 μm	-	-	-	-	-	-	-	-	-	-
A25	Inorganic microfiber	25 μm	-	-	•	-	•	-	-	-	-	-
M25	Wire mesh	25 μm	-	-	-	-	-	-	-	-	-	-

### FILTER ELEMENT

Element series and size Configuration example: **HP320** | **4** | **A06** | **A** | **N** | **P01**

**HP320**

Element length  
**1** | **2** | **3** | **4** |

Filtration rating (filter media)		Seals		Element Δp		Execution	
Code	Media	A	V	N	R	H	S
A03	Inorganic microfiber	3 μm	NBR	20 bar	P01	MP Filtri standard	
A06	Inorganic microfiber	6 μm	FPM	20 bar	Pxx	Customized	
A10	Inorganic microfiber	10 μm		210 bar			
A16	Inorganic microfiber	16 μm		210 bar			
A25	Inorganic microfiber	25 μm		210 bar			
M25	Wire mesh	25 μm		210 bar			

### CLOGGING INDICATORS

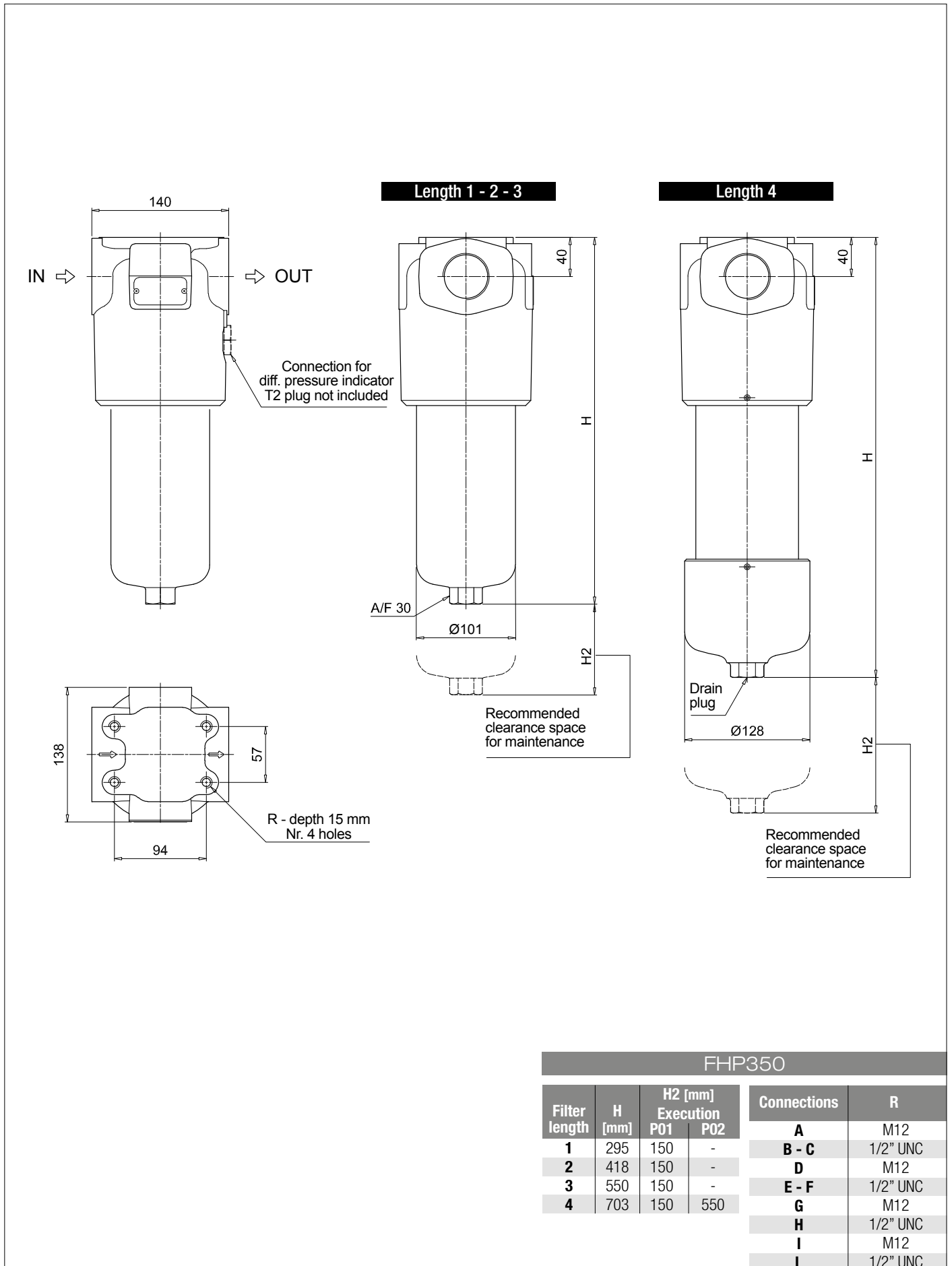
See page 717

<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

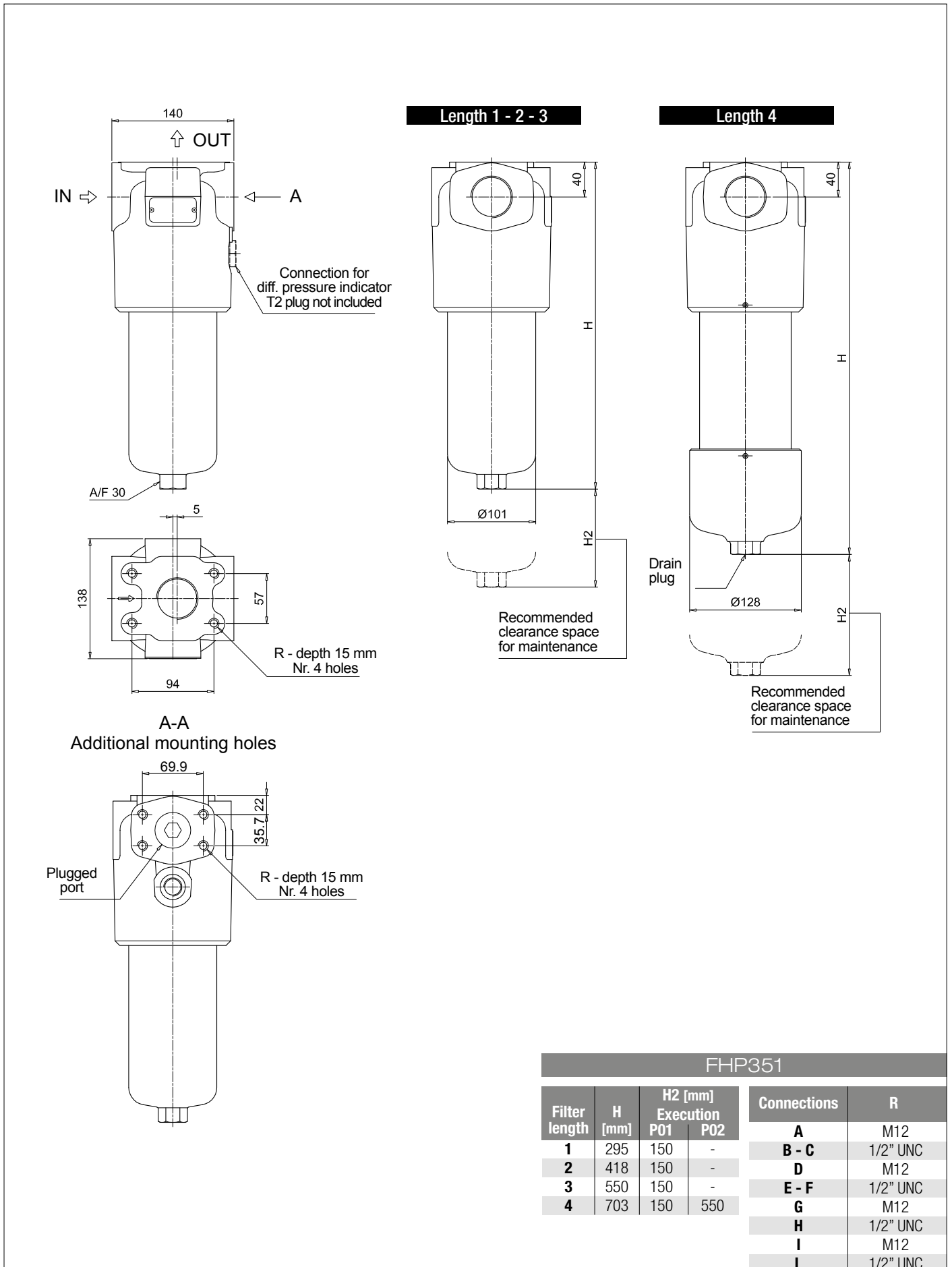
### PLUGS

See page 737

**T2** Plug (not included)



## Dimensions





## Designation & Ordering code

### COMPLETE FILTER

Series and size **FHP500** Configuration example: **FHP500** | **4** | **V** | **A** | **F1** | **A06** | **S** | **P01**

#### Length

1 | 2 | 3 | 4 | 5

#### Valves

- S** Without bypass
- B** With bypass 6 bar
- T** With check valve, without bypass
- D** With check valve, with bypass 6 bar
- V** With reverse flow, without bypass
- Z** With reverse flow, with bypass 6 bar

#### Seals

- A** NBR
- V** FPM

#### Connections

- F1** 1 1/2" SAE 3000 psi/M
- F2** 1 1/2" SAE 3000 psi/UNC
- F3** 2" SAE 3000 psi/M
- F4** 2" SAE 3000 psi/UNC + 1 1/2" NPT
- F5** 1 1/2" SAE 6000 psi/M
- F6** 1 1/2" SAE 6000 psi/UNC
- F7** 2" SAE 6000 psi/M + G 1 1/2"
- F8** 2" SAE 6000 psi/UNC + SAE 24 - 1 7/8" - 12 UN

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>N</b> 20 bar	-	•	-	-	-	-
<b>R</b> 20 bar	-	-	-	•	-	•
<b>S</b> 210 bar	•	-	•	-	•	-

Execution	Filter length				
	1	2	3	4	5
<b>P01</b> MP Filtri standard	•	•	•	•	•
<b>P02</b> Maintenance from the bottom of the housing	-	-	-	•	•
<b>P03</b> Drain plug	•	•	-	-	-
<b>Pxx</b> Customized	•	•	•	•	•

### FILTER ELEMENT

Element series and size **HP500** Configuration example: **HP500** | **4** | **A06** | **A** | **S** | **P01**

#### Element length

1 | 2 | 3 | 4 | 5

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

Seals	
<b>A</b>	NBR
<b>V</b>	FPM

Element Δp	
<b>N</b>	20 bar
<b>R</b>	20 bar
<b>S</b>	210 bar

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

### CLOGGING INDICATORS

See page 717

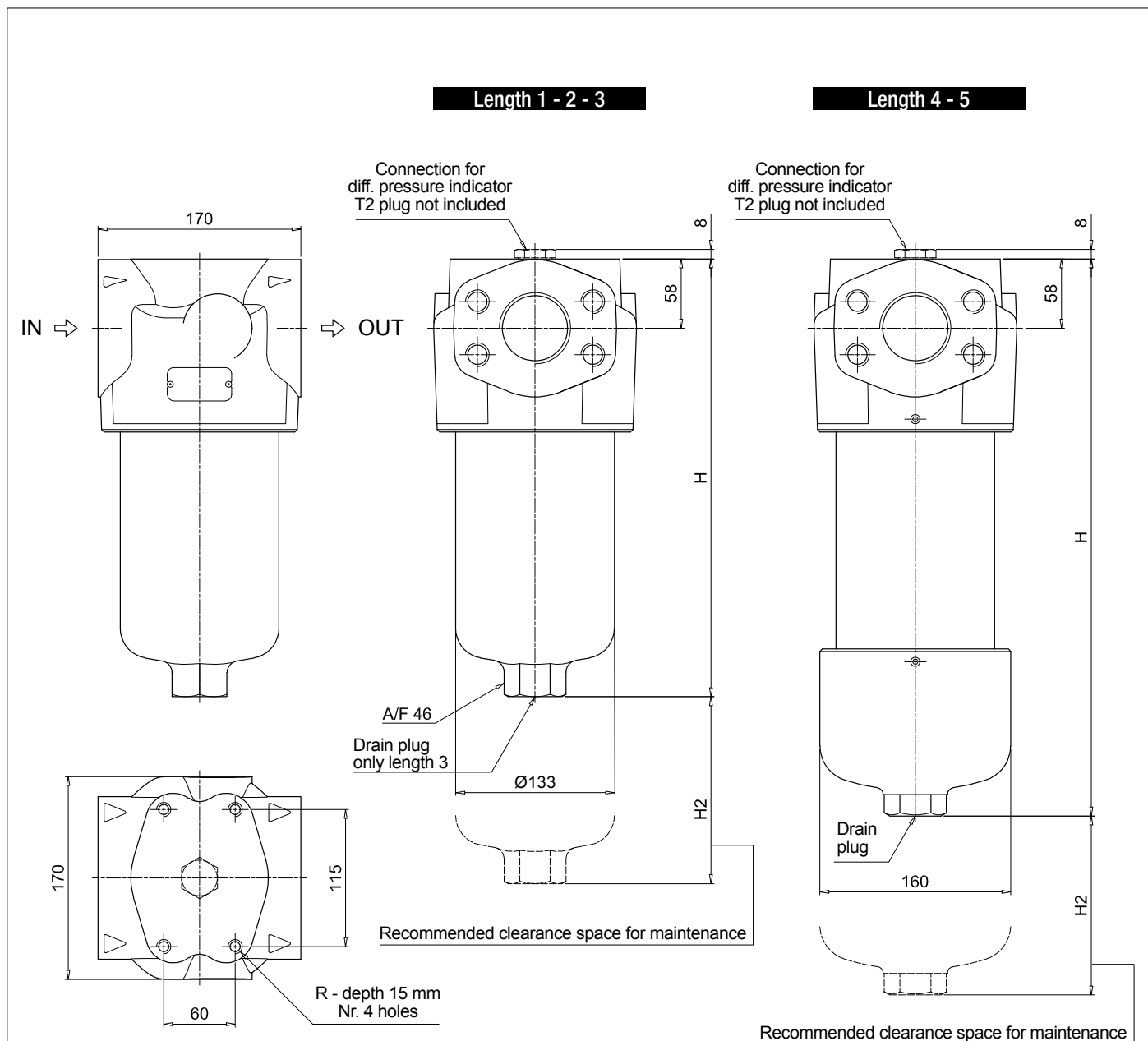
- DEA** Electrical differential pressure indicator
- DEM** Electrical differential pressure indicator
- DEU** Electrical differential pressure indicator
- DLA** Electrical / visual differential pressure indicator

- DLE** Electrical / visual differential pressure indicator
- DTA** Electronic differential pressure indicator
- DVA** Visual differential pressure indicator
- DVM** Visual differential pressure indicator

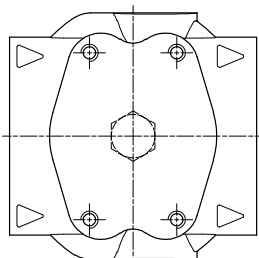
### PLUGS

See page 737

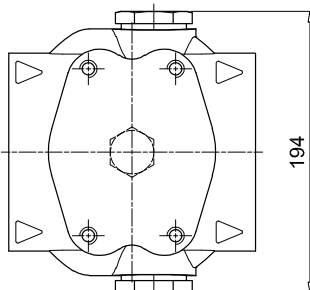
- T2** Plug (not included)



Valves S - B - T - D



Valves V - Z



FHP500

Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	330	150	-
2	420	150	-
3	496	150	-
4	654	150	480
5	820	150	650

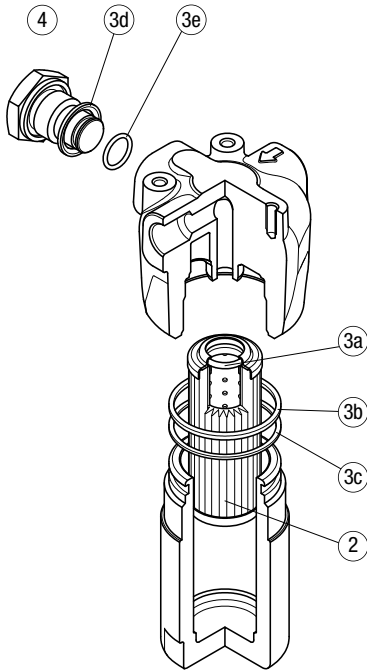
Connections R

Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC
F5	M12
F6	1/2" UNC
F7	M12
F8	1/2" UNC

# FHP SPARE PARTS

Order number for spare parts

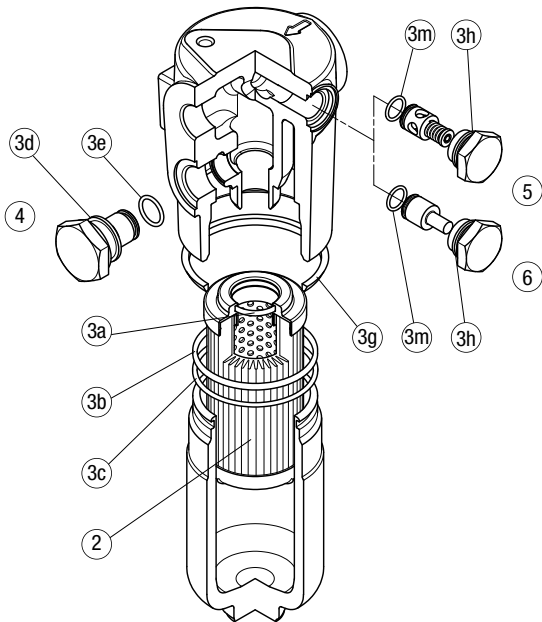
## FHP 010 - 011



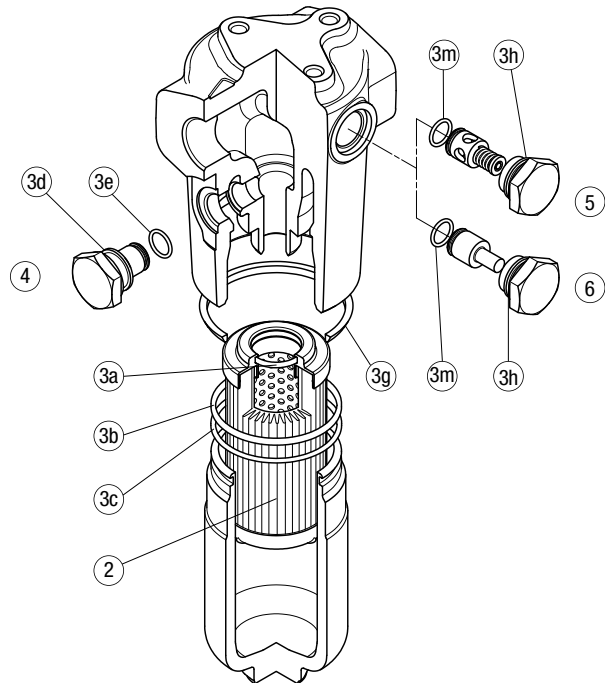
Q.ty:  
nr. 0 pcs. for version 1  
(without indicator port)  
  
nr. 1 pc. for version 2  
(with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHP 010-011</b>	See order table	02050501	02050492	T2H	T2V

## FHP 065



## FHP 135



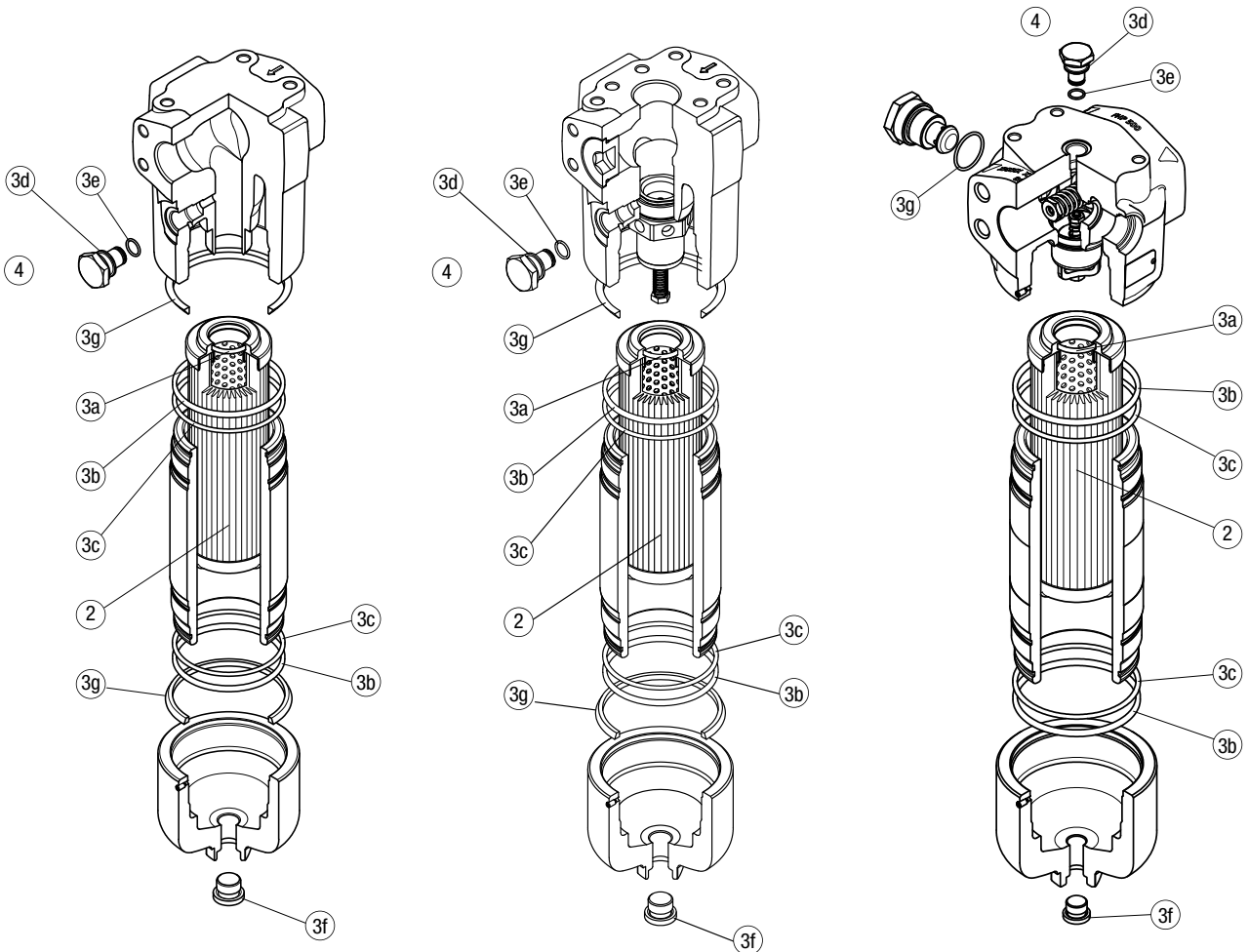
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3m)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FHP 065</b>	See order table	02050265	02050276	T2H	T2V	02001116	02001136	02001142	02001139
<b>FHP 135</b>	See order table	02050269	02050280			02001117	02001137	02001143	02001392



FHP 350

FHP 351

FHP 500



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHP 350 - 351</b>	See order table	02050272	02050283	T2H	T2V
<b>FHP 500</b>		02050330	02050331		



# FHM series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 400 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



FHM006



FHM007



FHM010



FHM050



FHM065



FHM135



FHM320



FHM500

## Description

## Technical data

### High Pressure filters

#### Manifold

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 400 l/min**

FHM is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the top of the manifold, through the proper flanged interface.

#### Available features:

Available features:

- Manifold connections up to Ø30 mm, for a maximum flow rate of 400 l/min
- ISO 4401 CETOP 3 and CETOP 5 interface, for direct mounting on the CETOP valves
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment

#### Filter housing materials

- Head  
Phosphatized cast iron: FHM 006-007-010  
Phosphatized steel: FHM 050-065-135-320-500
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

#### Pressure

- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar (not available for FHM 006, FHM 007 and FHM 010)
- Microfibre filter elements - series H: 210 bar (not available for FHM 050 and FHM 500)
- Microfibre filter elements - series S: 210 bar (only for FHM 050 and FHM 500)
- Wire mesh filter elements - series N: 20 bar (not available for FHM 006)
- Wire mesh filter elements - series H: 210 bar (not available for FHM 050 and FHM 500)
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

Manifold mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHM 006</b>		2.17	-	-	-	-		0.12	-	-	-	-
<b>FHM 007</b>		-	4.74	5.95	-	-		-	0.30	0.50	-	-
<b>FHM 010</b>		-	4.74	5.95	-	-		-	0.30	0.50	-	-
<b>FHM 050</b>		5.31	5.68	6.09	6.56	7.74		0.29	0.38	0.48	0.60	0.89
<b>FHM 065</b>		5.47	5.83	7.04	-	-		0.27	0.34	0.56	-	-
<b>FHM 135</b>		8.78	10.38	11.43	-	-		0.49	0.82	1.03	-	-
<b>FHM 320</b>		19.80	21.93	24.22	26.70	-		1.04	1.76	2.53	3.36	-
<b>FHM 500</b>		35.00	39.17	42.69	54.70	60.50		1.63	2.35	2.96	5.11	6.44

Filter series	Length	Filter element design - H Series					
		A03	A06	A10	A16	A25	M25
<b>FHM 006</b>	<b>1</b>	9	10	13	14	15	16
	<b>2</b>	13	13	15	16	16	16
<b>FHM 007</b>	<b>3</b>	15	15	16	16	17	17
	<b>2</b>	23	25	32	34	37	38
<b>FHM 010</b>	<b>3</b>	31	33	37	38	39	40

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHM 050</b>	<b>1</b>	38	37	65	67	81	101	28	36	50	52	62
	<b>2</b>	46	50	69	75	89	102	41	44	63	71	85
	<b>3</b>	57	59	76	81	93	103	51	53	71	77	90
	<b>4</b>	68	71	84	86	95	103	62	66	81	82	93
	<b>5</b>	82	83	93	95	98	105	73	75	83	89	97

Filter series	Length	Filter element design - N Series						Filter element design - H Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHM 065</b>	<b>1</b>	23	30	48	53	71	102	22	23	43	50	67
	<b>2</b>	30	45	59	64	81	103	30	34	56	62	76
	<b>3</b>	52	60	78	82	92	105	51	58	77	81	91
<b>FHM 135</b>	<b>1</b>	61	65	99	104	131	149	46	51	83	86	122
	<b>2</b>	91	96	118	119	155	167	79	92	109	111	134
	<b>3</b>	118	119	144	146	156	168	103	112	130	137	146
<b>FHM 320</b>	<b>1</b>	112	121	187	217	252	312	97	102	156	162	228
	<b>2</b>	200	214	281	293	320	328	161	181	237	241	282
	<b>3</b>	245	267	312	320	325	333	207	233	275	280	306
	<b>4</b>	267	281	315	325	336	341	232	247	279	283	309

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHM 500</b>	<b>1</b>	211	232	281	289	309	394	126	135	208	210	261
	<b>2</b>	242	262	303	308	330	397	187	206	258	266	285
	<b>3</b>	284	294	336	338	357	399	226	230	285	290	315
	<b>4</b>	302	325	346	350	361	401	251	273	314	315	341
	<b>5</b>	325	334	356	361	373	401	296	301	335	338	360

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ 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.

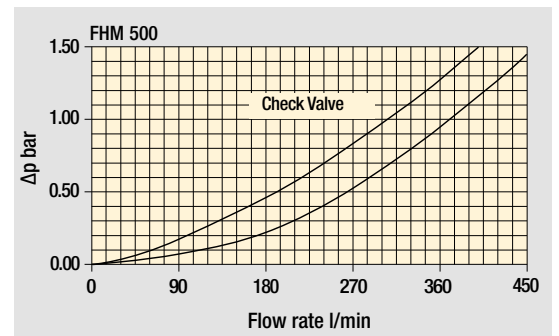
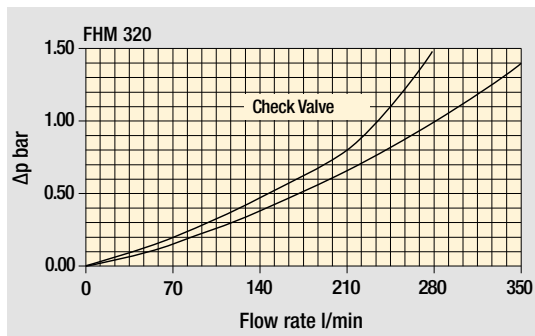
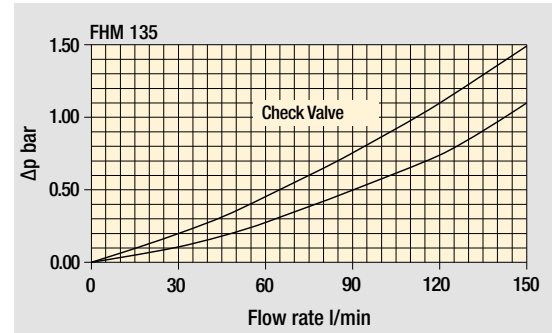
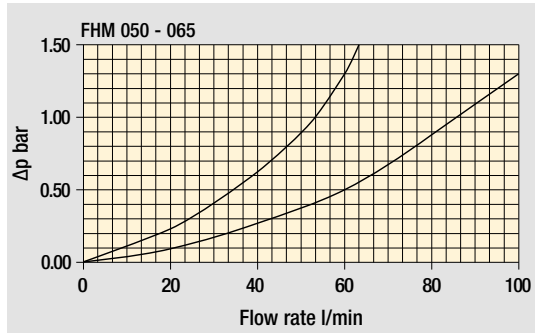
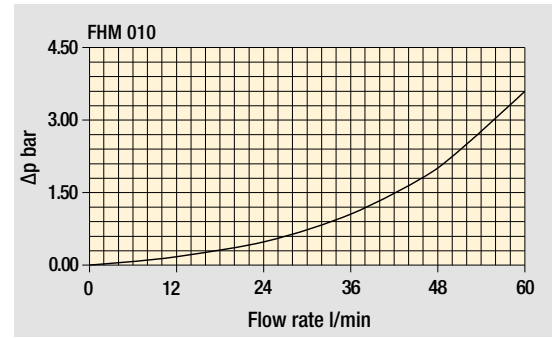
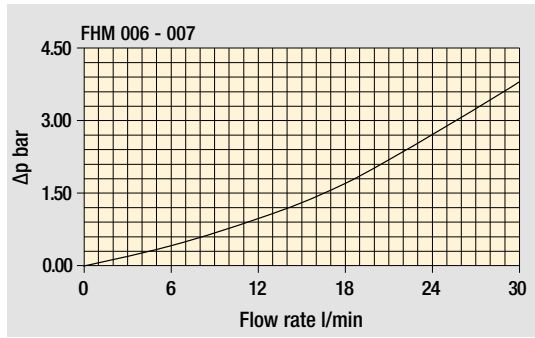
### Hydraulic symbols

Filter series	Stile S	Stile S	Stile S	Stile B	Stile T	Stile D
<b>FHM 006</b>	•	-	-	-	-	-
<b>FHM 007</b>	•	-	-	-	-	-
<b>FHM 010</b>	-	•	-	-	-	-
<b>FHM 050</b>	-	-	•	•	•	•
<b>FHM 065</b>	-	-	•	•	•	•
<b>FHM 135</b>	-	-	•	•	•	•
<b>FHM 320</b>	-	-	•	•	•	•
<b>FHM 500</b>	-	-	•	•	•	•

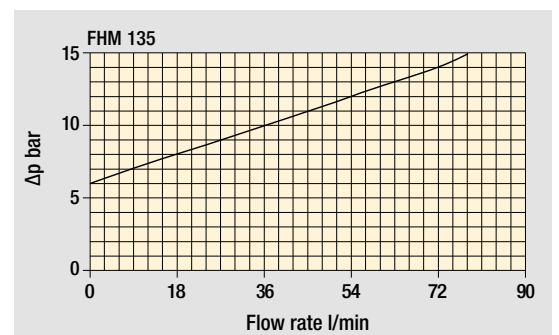
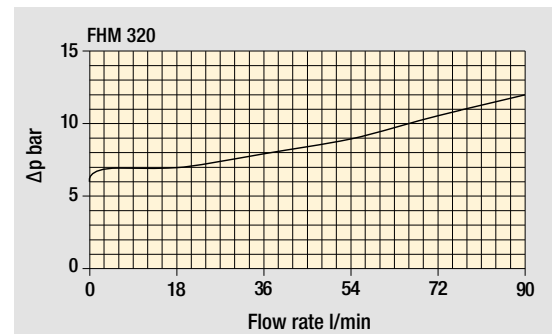
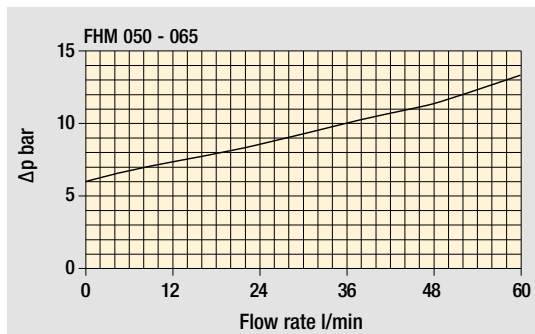
# FHM GENERAL INFORMATION

## 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.



# FHM FHM006 - FHM007 - FHM010

## Designation & Ordering code

### COMPLETE FILTER

Series and size				Configuration example: FHM010 2 S V G1 A03 H P01							
FHM006   FHM007   FHM010											
Length	FHM006	FHM007	FHM010								
1	•	-	-								
2	-	•	•								
3	-	•	•								
Valves											
S Without bypass											
Seals											
A NBR											
V FPM											
Connections											
G1 Manifold side "A"											
G2 Manifold side "B"											
Filtration rating (filter media)											
A03	Inorganic microfiber	3 µm	A16	Inorganic microfiber	16 µm						
A06	Inorganic microfiber	6 µm	A25	Inorganic microfiber	25 µm						
A10	Inorganic microfiber	10 µm	M25	Wire mesh	25 µm						
				Element Δp	H 210 bar			Execution	P01 MP Filtri standard Pxx Customized		

### FILTER ELEMENT

Element series and size				Configuration example: HP065 2 A03 A H P01											
HP011   HP065															
Element length	FHM006	FHM007	FHM010												
2	-	•	•												
3	•	•	•												
Filtration rating (filter media)															
A03	Inorganic microfiber	3 µm													
A06	Inorganic microfiber	6 µm													
A10	Inorganic microfiber	10 µm													
A16	Inorganic microfiber	16 µm													
A25	Inorganic microfiber	25 µm													
M25	Wire mesh	25 µm													
				Seals	A NBR V FPM			Element Δp	H 210 bar			Execution	P01 MP Filtri standard Pxx Customized		

### CLOGGING INDICATORS

See page 717

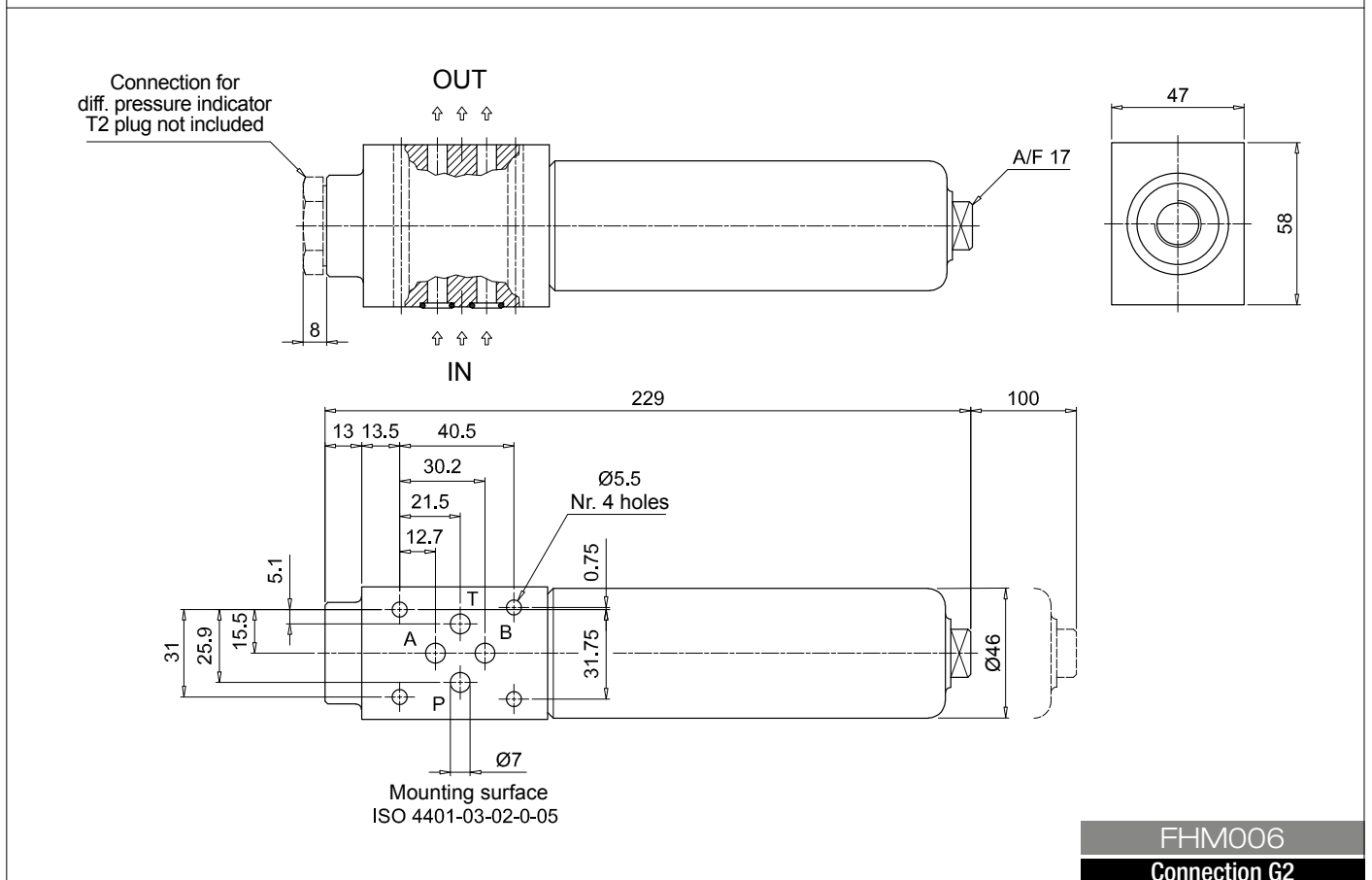
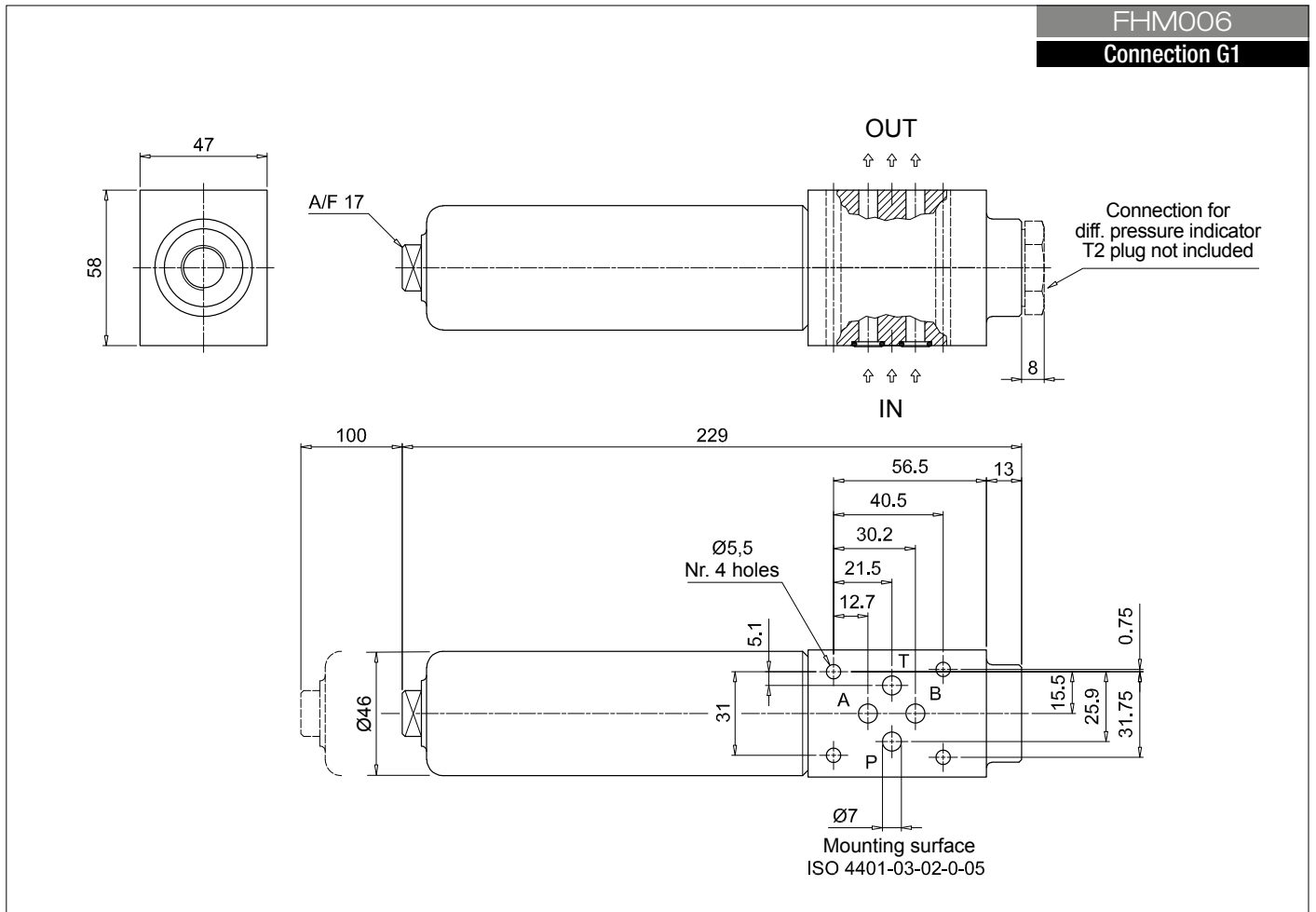
DEA	Electrical differential pressure indicator	DLE	Electrical / visual differential pressure indicator
DEM	Electrical differential pressure indicator	DTA	Electronic differential pressure indicator
DEU	Electrical differential pressure indicator	DVA	Visual differential pressure indicator
DLA	Electrical / visual differential pressure indicator	DVM	Visual differential pressure indicator

### PLUGS

See page 737

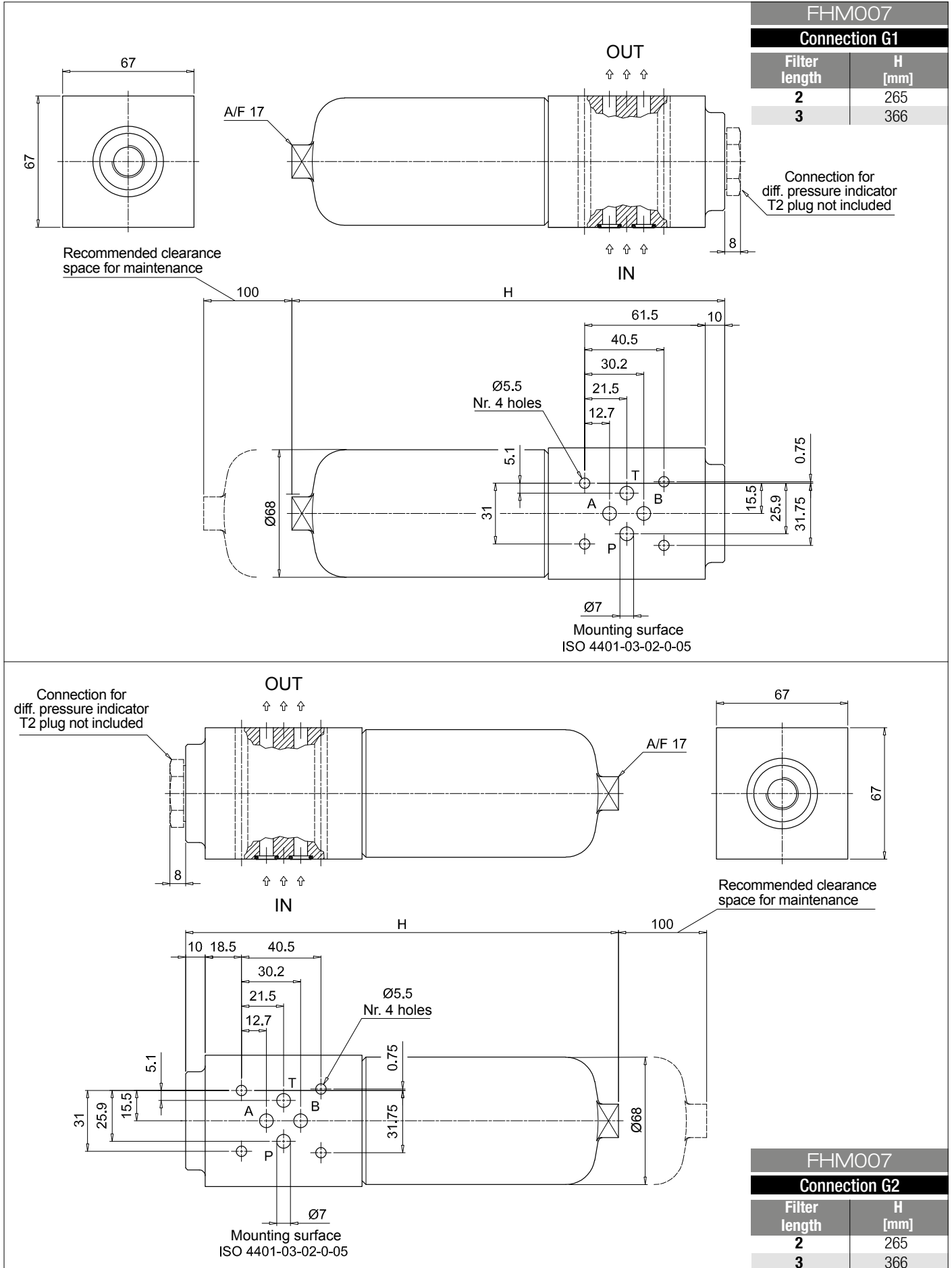
T2	Plug (not included)
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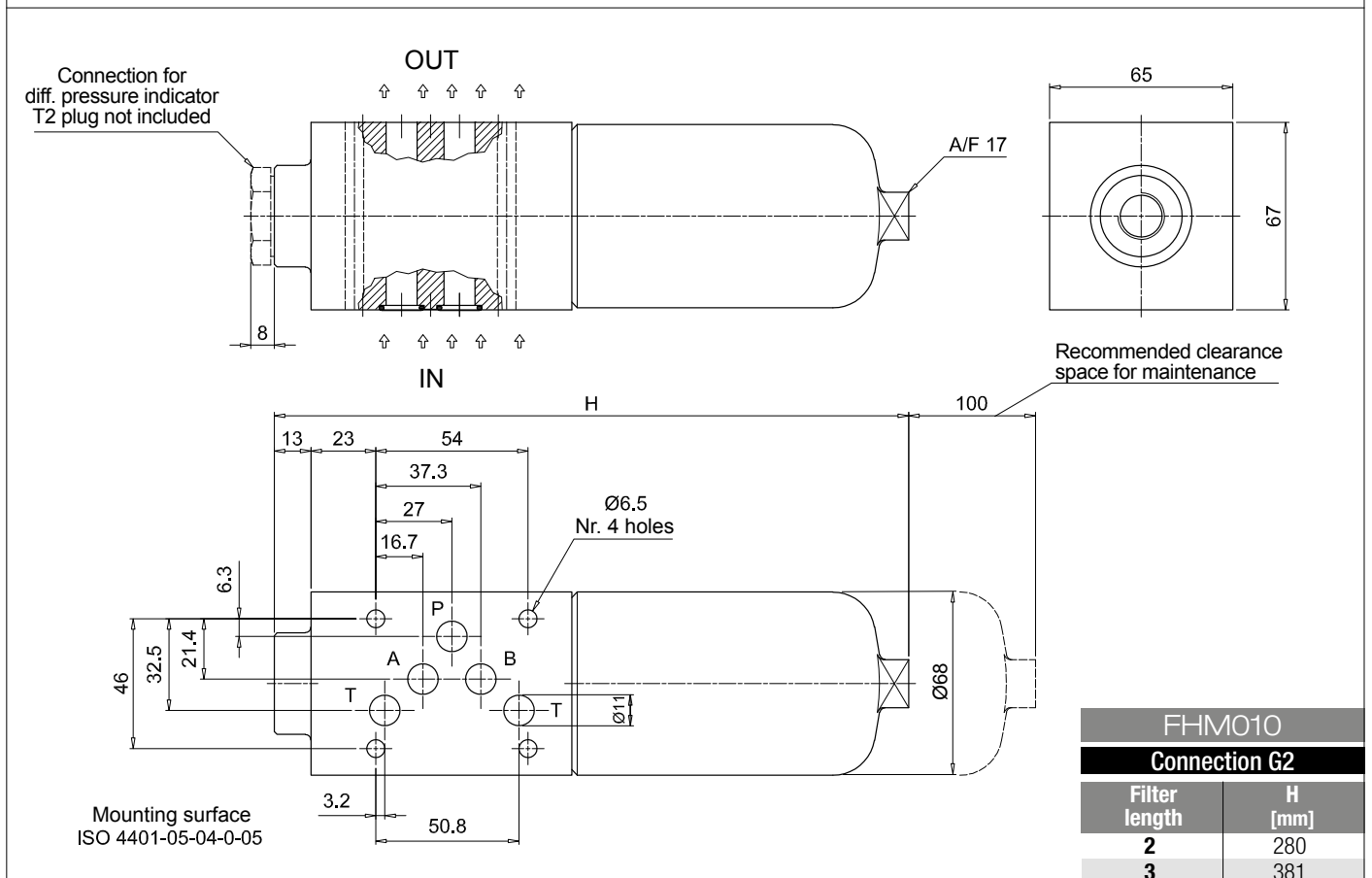
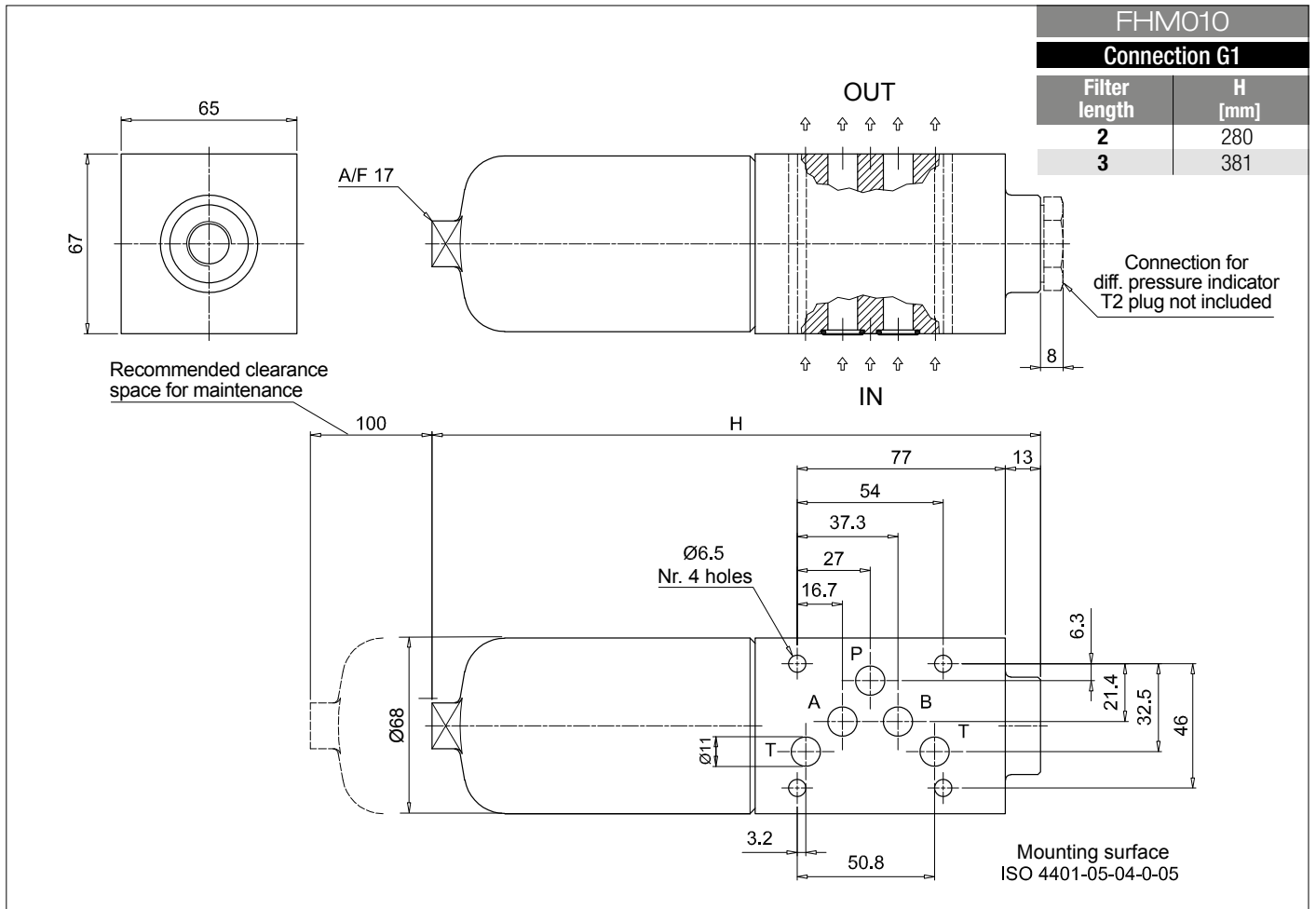




**FHM006**  
**Connection G2**

## Dimensions





# FHM FHM050 - FHM065 - FHM135

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHM135** | **3** | **S** | **A** | **F1** | **A10** | **H** | **P01**

**FHM050** | **FHM065** | **FHM135**

Length	FHM050	FHM065	FHM135
1	•	•	•
2	•	•	•
3	•	•	•
4	•	-	-
5	•	-	-

#### Valves

<b>S</b>	Without bypass
<b>B</b>	With bypass 6 bar
<b>T</b>	With check valve, without bypass
<b>D</b>	With check valve, with bypass 6 bar

#### Seals

<b>A</b>	NBR
<b>V</b>	FPM

#### Connections

<b>F1</b>	Manifold
-----------	----------

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	Valves: FHM050				FHM065-135			
	S	B	T	D	S	B	T	D
<b>N</b> 20 bar	-	•	-	•	-	•	-	•
<b>H</b> 210 bar	-	-	-	-	•	-	•	-
<b>S</b> 210 bar	•	-	•	-	-	-	-	-

#### Execution

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

### FILTER ELEMENT

Element series and size Configuration example: **HP135** | **3** | **A10** | **A** | **H** | **P01**

**HP050** | **HP065** | **HP135**

Element length	HP050	HP065	HP135
1	•	•	•
2	•	•	•
3	•	•	•
4	•	-	-
5	•	-	-

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	Seals		
	HP050	HP065	HP135
<b>N</b> 20 bar	•	•	•
<b>H</b> 210 bar	-	•	•
<b>S</b> 210 bar	•	-	-

#### Execution

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

### CLOGGING INDICATORS

See page 717

<b>DEA</b>	Electrical differential pressure indicator
<b>DEM</b>	Electrical differential pressure indicator
<b>DEU</b>	Electrical differential pressure indicator
<b>DLA</b>	Electrical / visual differential pressure indicator

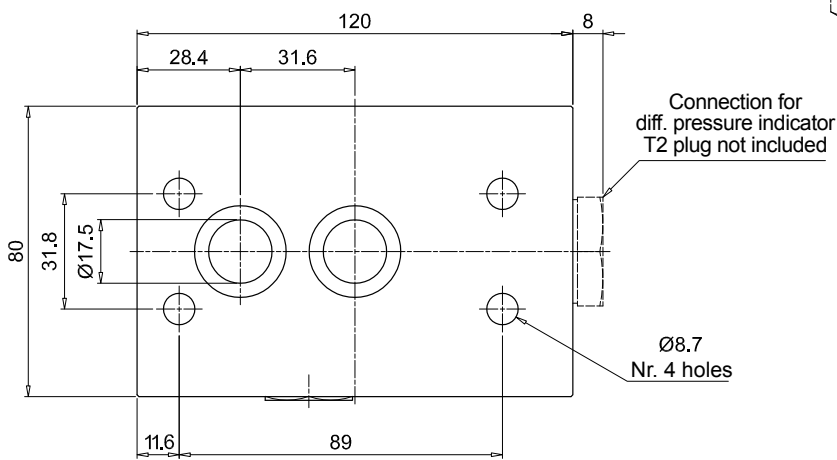
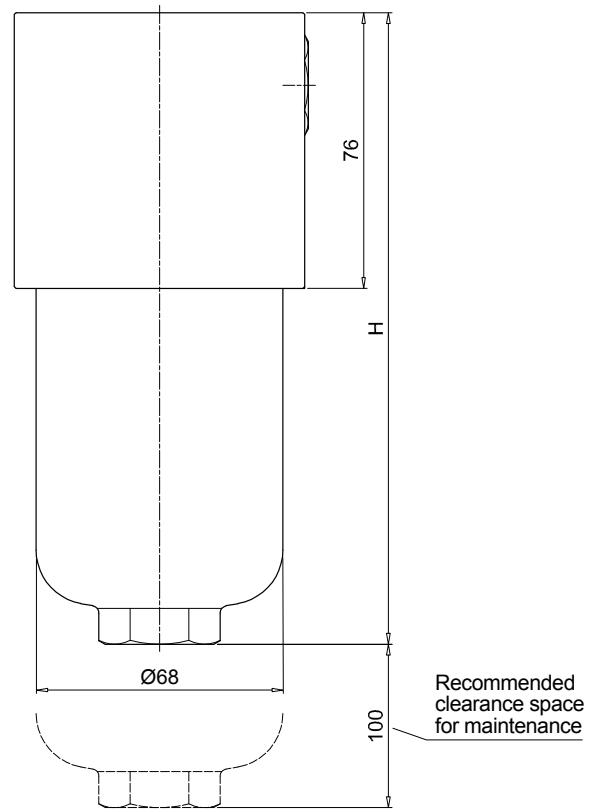
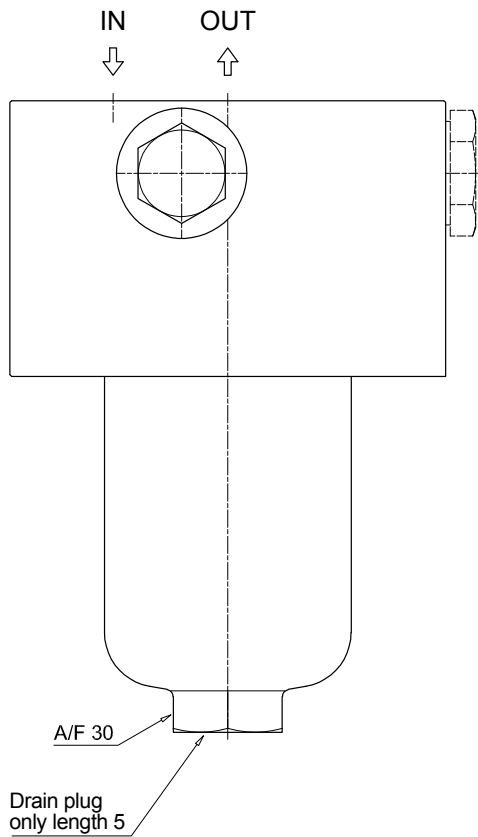
<b>DLE</b>	Electrical / visual differential pressure indicator
<b>DTA</b>	Electronic differential pressure indicator
<b>DVA</b>	Visual differential pressure indicator
<b>DVM</b>	Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b>	Plug (not included)
-----------	---------------------

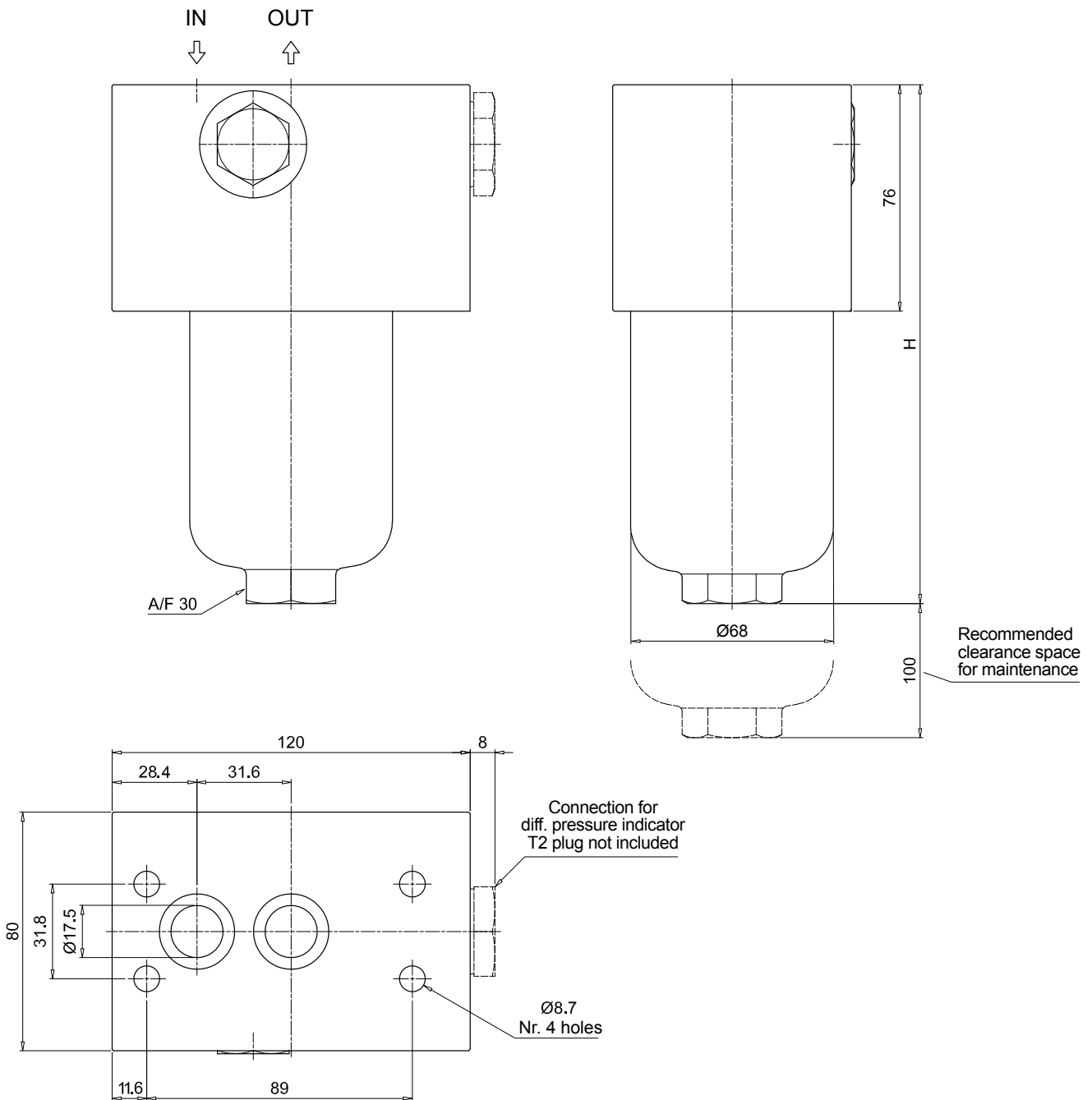
FHM050	
Filter length	H [mm]
1	154
2	191
3	233
4	281
5	403



## Dimensions

### FHM065

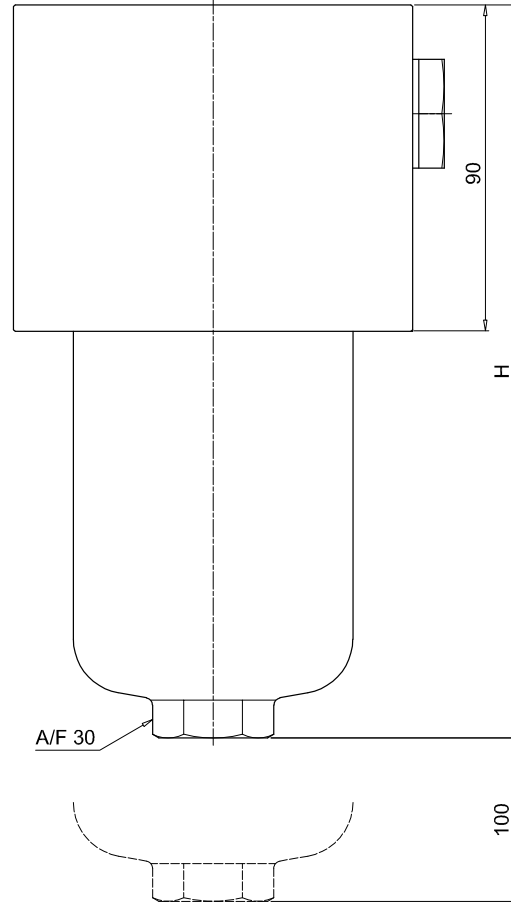
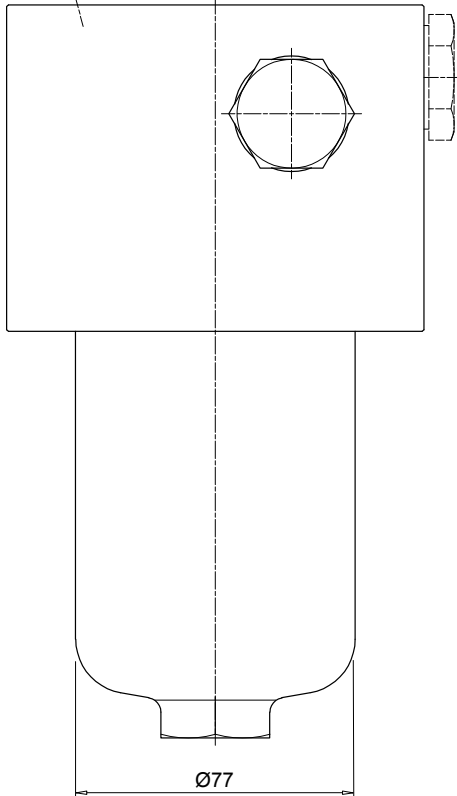
Filter length	H [mm]
<b>1</b>	162
<b>2</b>	193
<b>3</b>	295



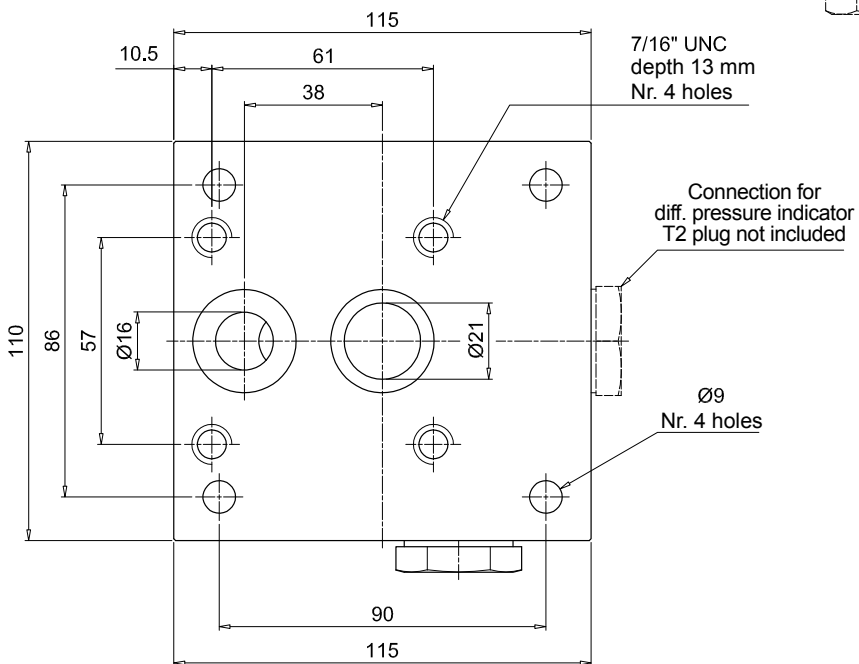
## FHM135

Filter length	H [mm]
<b>1</b>	202
<b>2</b>	315
<b>3</b>	390

IN  
OUT



Recommended clearance space for maintenance



# FHM FHM320 - FHM500

## Designation & Ordering code

### COMPLETE FILTER

Series and size **FHM320 | FHM500** Configuration example: **FHM320** **4** **D** **A** **F1** **A06** **N** **P01**

Length	FHM320	FHM500
1	•	•
2	•	•
3	•	•
4	•	•
5	-	•

Valves
<b>S</b> Without bypass
<b>B</b> With bypass 6 bar
<b>T</b> With check valve, without bypass
<b>D</b> With check valve, with bypass 6 bar

Seals
<b>A</b> NBR
<b>V</b> FPM

Connections
<b>F1</b> Manifold

Filtration rating (filter media)		
<b>A03</b> Inorganic microfiber	3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber	6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber	10 µm	<b>M25</b> Wire mesh 25 µm

Element Δp	Valves:	FHM320				FHM500				Execution	Filter length				
		S	B	T	D	S	B	T	D		1	2	3	4	5
<b>N</b> 20 bar	-	•	-	•	-	•	-	•	<b>P01</b> MP Filtri standard	•	•	•	•	•	
<b>H</b> 210 bar	•	-	•	-	-	-	-	-	<b>P02</b> Maintenance from the bottom of the housing				•	•	
<b>S</b> 210 bar	-	-	-	-	•	-	•	-	<b>Pxx</b> Customized						

### FILTER ELEMENT

Element series and size **HP320 | HP500** Configuration example: **HP320** **4** **A06** **A** **N** **P01**

Element length	HP320	HP500
1	•	•
2	•	•
3	•	•
4	•	•
5		•

Filtration rating (filter media)		
<b>A03</b> Inorganic microfiber	3 µm	
<b>A06</b> Inorganic microfiber	6 µm	
<b>A10</b> Inorganic microfiber	10 µm	
<b>A16</b> Inorganic microfiber	16 µm	
<b>A25</b> Inorganic microfiber	25 µm	
<b>M25</b> Wire mesh	25 µm	

Seals	Element Δp	HP320	HP500	Execution
<b>A</b> NBR	<b>N</b> 20 bar	•	•	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>H</b> 210 bar	•	-	<b>Pxx</b> Customized
	<b>S</b> 210 bar	-	•	

### CLOGGING INDICATORS

See page 717

<b>DEA</b> Electrical differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator

<b>DLE</b> Electrical / visual differential pressure indicator
<b>DTA</b> Electronic differential pressure indicator
<b>DVA</b> Visual differential pressure indicator
<b>DVM</b> Visual differential pressure indicator

### PLUGS

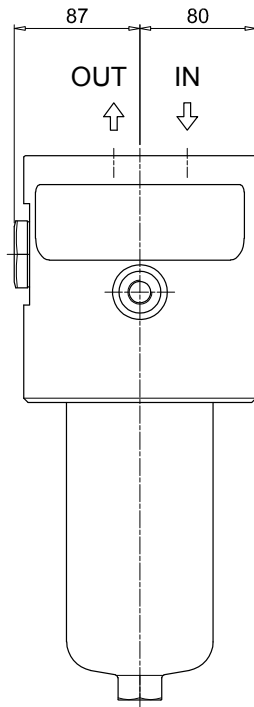
See page 737

<b>T2</b> Plug (not included)
-------------------------------

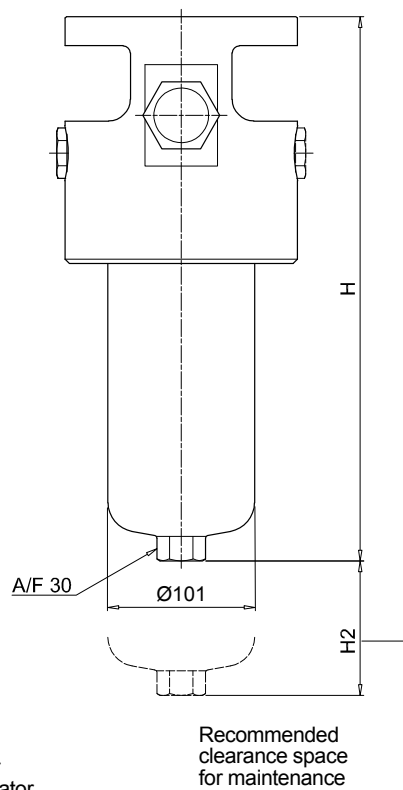


### FHM320

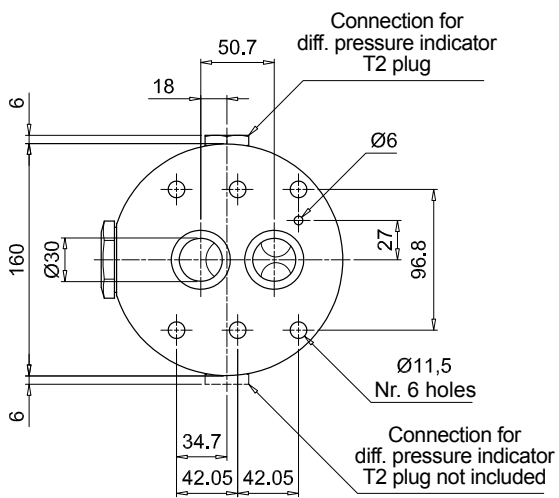
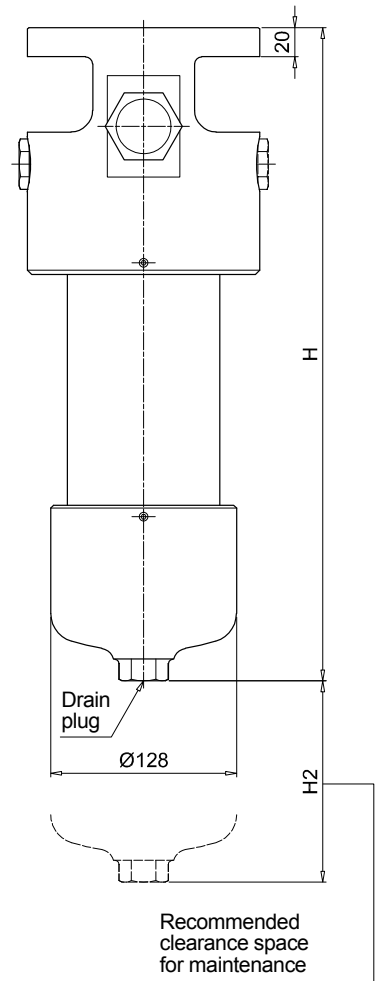
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	293	150	-
2	416	150	-
3	548	150	-
4	702	150	550



Length 1 - 2 - 3



Length 4

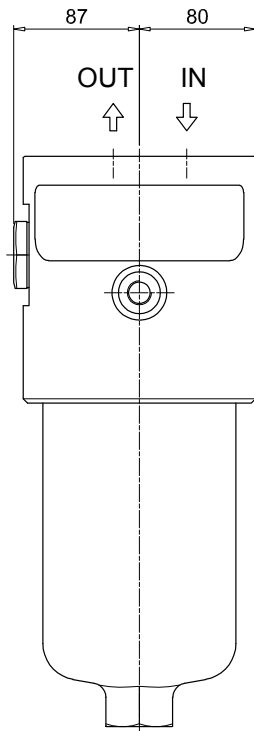


# FHM FHM320 - FHM500

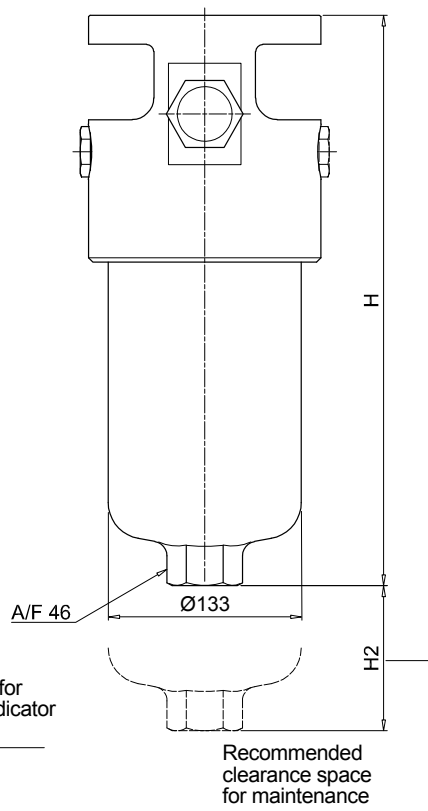
## Dimensions

### FHM500

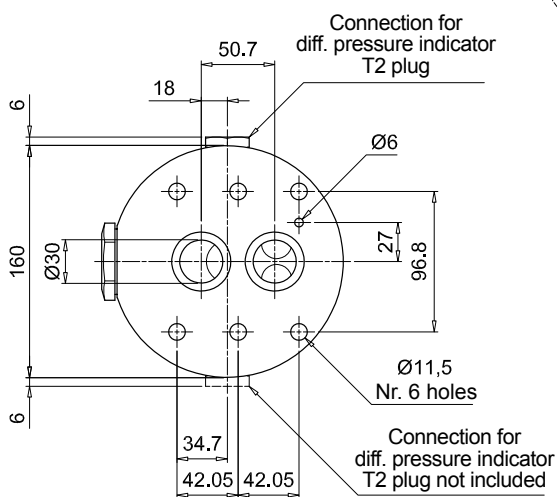
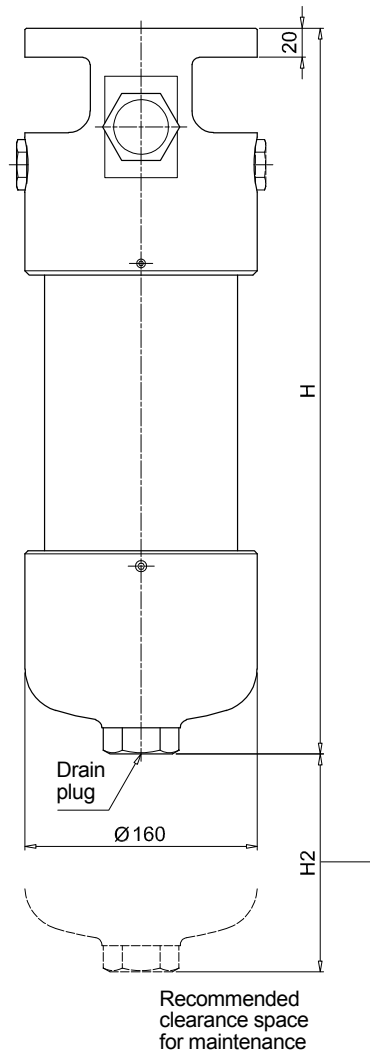
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
<b>1</b>	355	150	-
<b>2</b>	445	150	-
<b>3</b>	521	150	-
<b>4</b>	679	150	480
<b>5</b>	845	150	650



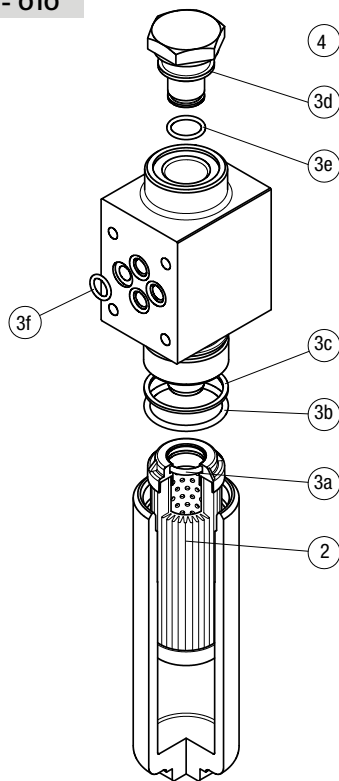
**Length 1 - 2 - 3**



**Length 4 - 5**

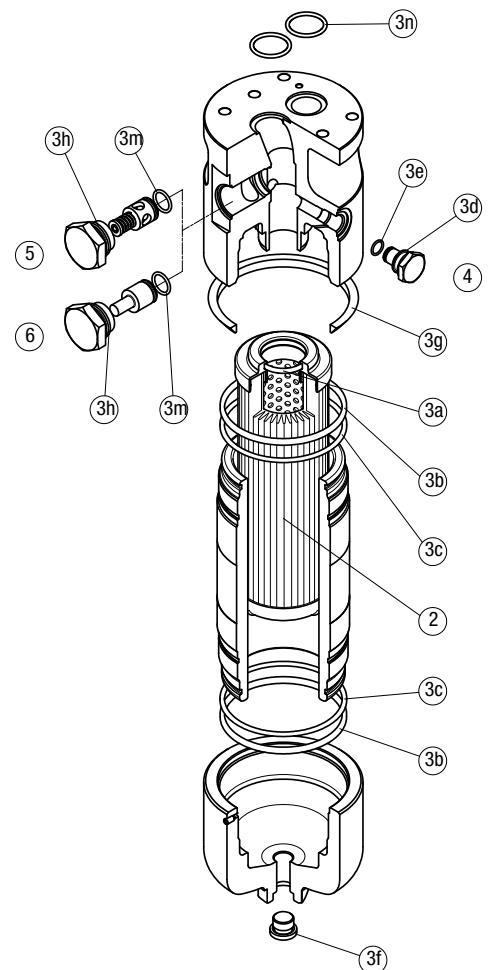


## FHM 006 - 007 - 010



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FHM 006	See order table	NBR	FPM	NBR	FPM
FHM 006	See order table	02050324	02050325		
FHM 007	See order table	02050600	02050601	T2H	T2V
FHM 010	See order table	02050320	02050321		

## FHM 050 - 065 - 135 - 320 - 500



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
FHM 050	See order table	NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
FHM 050	See order table	02050410	02050411			02001400	02001401	02001402	02001403
FHM 065	See order table	02050268	02050279			02001400	02001401	02001402	02001403
FHM 135	See order table	02050271	02050282	T2H	T2V	02001404	02001405	02001406	02001407
FHM 320	See order table	02050275	02050286			02001408	02001409	02001410	02001411
FHM 500	See order table	02050332	02050333			02001408	02001409	02001410	02001411



# FHB series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 485 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



FHB050



FHB065



FHB135



FHB320

## Description

## Technical data

### High Pressure filters

#### Manifold

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 485 l/min**

FHB is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the side of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø30 mm, for a maximum flow rate of 485 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

#### Pressure

- Working pressure: 32 MPa (320 bar)
- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series H: 210 bar (not available for FHB050)
- Microfibre filter elements - series S: 210 bar (only for FHB050)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

Manifold mounting

#### Note

FHB filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHB 050</b>		2.61	2.98	3.39	3.86	5.04		0.21	0.30	0.40	0.52	0.81
<b>FHB 065</b>		3.33	3.69	4.90	-	-		0.20	0.27	0.49	-	-
<b>FHB 135</b>		6.61	8.21	9.21	-	-		0.40	0.73	0.94	-	-
<b>FHB 320</b>		12.95	15.08	17.37	26.77	-		0.91	1.63	2.40	3.59	-

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHB 050</b>	<b>1</b>	43	42	79	81	101	131	30	40	58	60	74
	<b>2</b>	53	58	84	93	112	132	46	50	76	86	108
	<b>3</b>	67	70	94	101	119	133	59	62	87	95	115
	<b>4</b>	82	87	106	108	122	134	74	80	101	103	119
	<b>5</b>	102	104	119	122	127	136	90	92	105	113	126

Filter series	Length	Filter element design - N Series						Filter element design - H Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHB 065</b>	<b>1</b>	25	33	55	62	87	133	23	25	49	58	81
	<b>2</b>	33	51	70	76	101	134	33	38	66	75	94
	<b>3</b>	60	71	97	103	118	138	60	68	95	102	116
<b>FHB 135</b>	<b>1</b>	67	72	120	129	177	212	49	55	97	100	160
	<b>2</b>	109	116	152	154	224	250	90	110	137	140	182
	<b>3</b>	153	155	201	205	226	253	126	142	175	187	207
<b>FHB 320</b>	<b>1</b>	130	143	238	286	343	442	110	117	192	201	304
	<b>2</b>	259	281	391	409	454	468	200	230	319	325	392
	<b>3</b>	332	368	441	455	463	476	269	312	381	389	432
	<b>4</b>	368	390	446	462	481	488	311	334	388	394	437

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ 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.

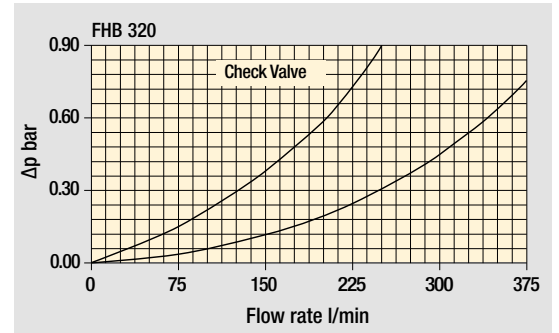
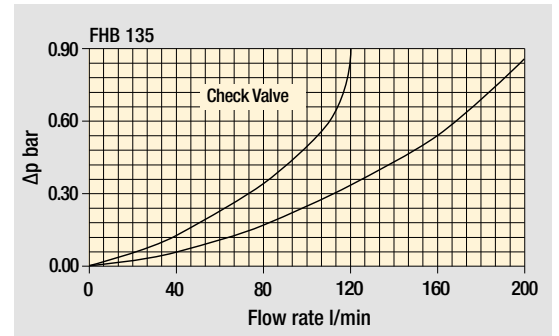
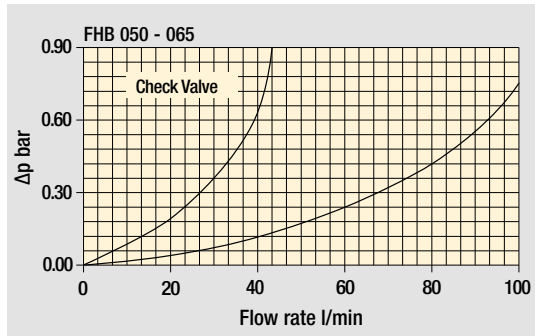
Please, contact our Sales Department for further additional information.

### Hydraulic symbols

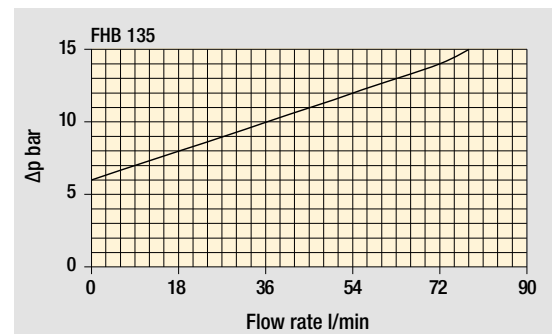
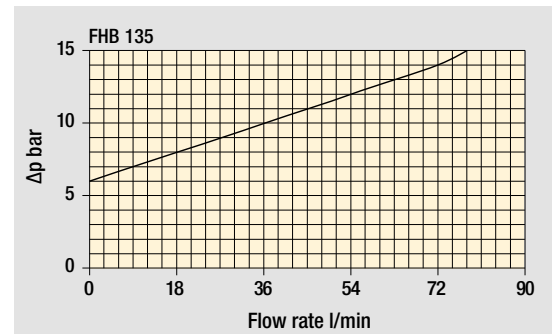
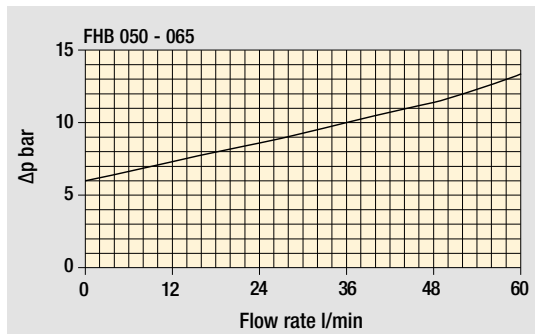
Filter series	Style S	Style B	Style T	Style D
<b>FHB 050</b>	•	•	•	•
<b>FHB 065</b>	•	•	•	•
<b>FHB 135</b>	•	•	•	•
<b>FHB 320</b>	•	•	•	•

## Pressure drop

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



### Bypass valve pressure drop



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





## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FHB050** **2** **T** **A** **F1** **A06** **S** **P01**

**Series and size**  
**FHB050**

**Length**  
**1** | **2** | **3** | **4** | **5** |

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM

**Connections**  
**F1** Manifold

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Element Δp	Valves				Execution
	S	B	T	D	
<b>N</b> 20 bar	-	•	-	•	<b>P01</b> MP Filtri standard
<b>S</b> 210 bar	•	-	•	-	<b>Pxx</b> Customized

### FILTER ELEMENT

Configuration example: **HP050** **2** **A06** **A** **S** **P01**

**Element series and size**  
**HP050**

**Element length**  
**1** | **2** | **3** | **4** | **5** |

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Seals	Element Δp	Execution	
		P01	Pxx
<b>A</b> NBR	<b>N</b> 20 bar	MP Filtri standard	Customized
<b>V</b> FPM	<b>S</b> 210 bar	MP Filtri standard	Customized

### CLOGGING INDICATORS

See page 717

**DEA** Electrical differential pressure indicator

**DEM** Electrical differential pressure indicator

**DEU** Electrical differential pressure indicator

**DLA** Electrical / visual differential pressure indicator

**DLE** Electrical / visual differential pressure indicator

**DTA** Electronic differential pressure indicator

**DVA** Visual differential pressure indicator

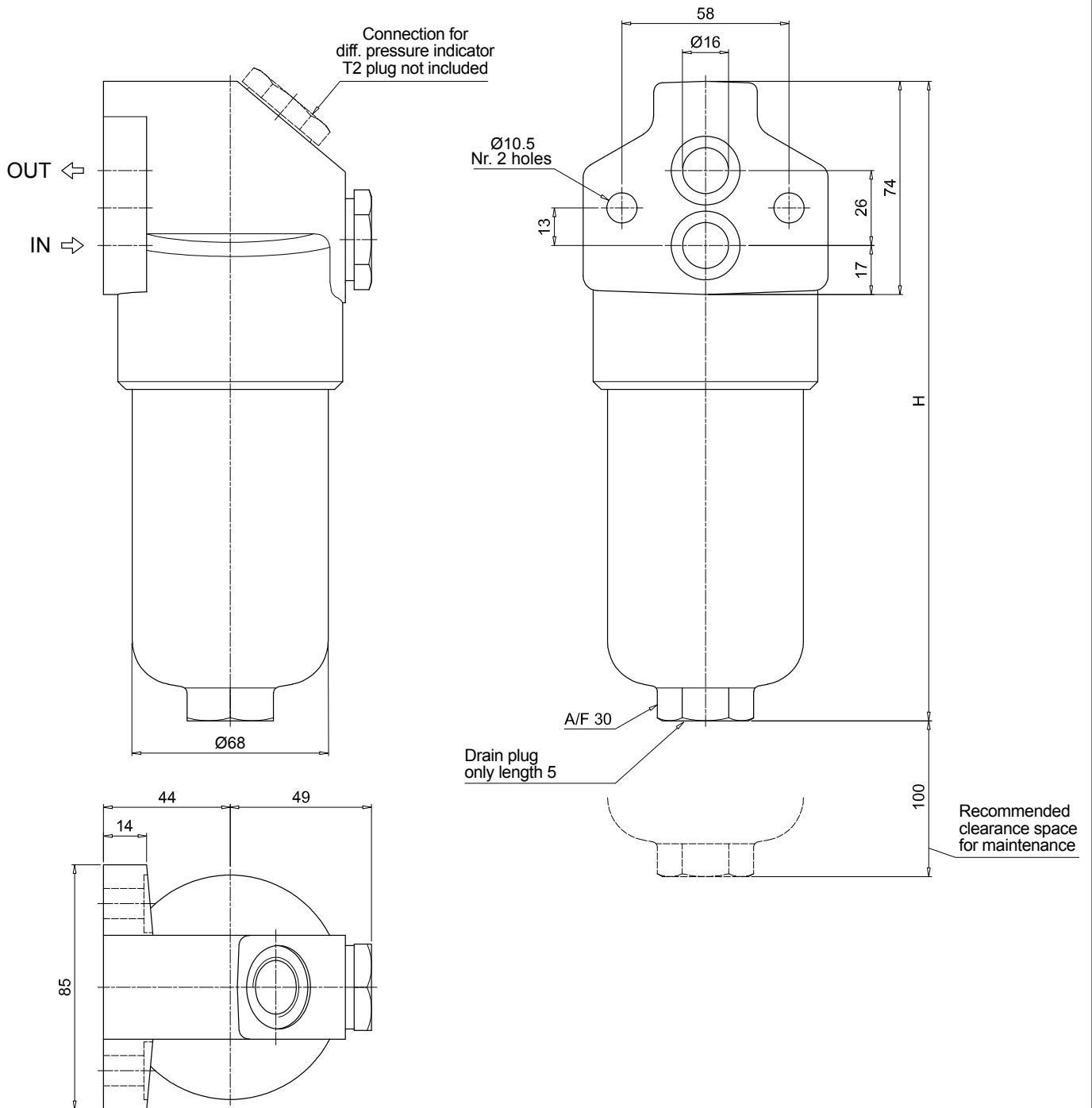
**DVM** Visual differential pressure indicator

### PLUGS

See page 737

**T2** Plug (not included)

FHB050	
Filter length	H [mm]
1	185
2	222
3	264
4	312
5	434



# FHB FHB065 - FHB135 - FHB320

## Designation & Ordering code

### COMPLETE FILTER

Series and size				Configuration example: <b>FHB320</b>   <b>4</b>   <b>S</b>   <b>A</b>   <b>F1</b>   <b>A06</b>   <b>H</b>   <b>P01</b>										
<b>FHB065</b>   <b>FHB135</b>   <b>FHB320</b>														
Length	FHB065	FHB135	FHB320											
1	•	•	•											
2	•	•	•											
3	•	•	•											
4	-	-	•											
Valves														
<b>S</b>	Without bypass													
<b>B</b>	With bypass 6 bar													
<b>T</b>	With check valve, without bypass													
<b>D</b>	With check valve, with bypass 6 bar													
Seals														
<b>A</b>	NBR													
<b>V</b>	FPM													
Connections														
<b>F1</b>	Manifold													
Filtration rating (filter media)														
<b>A03</b>	Inorganic microfiber		3 µm											
<b>A06</b>	Inorganic microfiber		6 µm											
<b>A10</b>	Inorganic microfiber		10 µm											
<b>A16</b>	Inorganic microfiber		16 µm											
<b>A25</b>	Inorganic microfiber		25 µm											
<b>M25</b>	Wire mesh		25 µm											
Element Δp				Valves				Execution						
<b>N</b>	20 bar			<b>S</b>	<b>B</b>	<b>T</b>	<b>D</b>	<b>P01</b>	<b>P02</b>	<b>Pxx</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>H</b>	210 bar			•	-	•	-	•	-	-	•	•	•	•

### FILTER ELEMENT

Element series and size				Configuration example: <b>HP320</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>H</b>   <b>P01</b>							
<b>HP065</b>   <b>HP135</b>   <b>HP320</b>											
Element length	HP065	HP135	HP320								
1	•	•	•								
2	•	•	•								
3	•	•	•								
4	-	-	•								
Filtration rating (filter media)											
<b>A03</b>	Inorganic microfiber		3 µm								
<b>A06</b>	Inorganic microfiber		6 µm								
<b>A10</b>	Inorganic microfiber		10 µm								
<b>A16</b>	Inorganic microfiber		16 µm								
<b>A25</b>	Inorganic microfiber		25 µm								
<b>M25</b>	Wire mesh		25 µm								
Seals				Element Δp				Execution			
<b>A</b>	NBR			<b>N</b>	20 bar		<b>P01</b>	MP Filtri standard			
<b>V</b>	FPM			<b>H</b>	210 bar		<b>Pxx</b>	Customized			

### CLOGGING INDICATORS

See page 717

<b>DEA</b>	Electrical differential pressure indicator
<b>DEM</b>	Electrical differential pressure indicator
<b>DEU</b>	Electrical differential pressure indicator
<b>DLA</b>	Electrical / visual differential pressure indicator

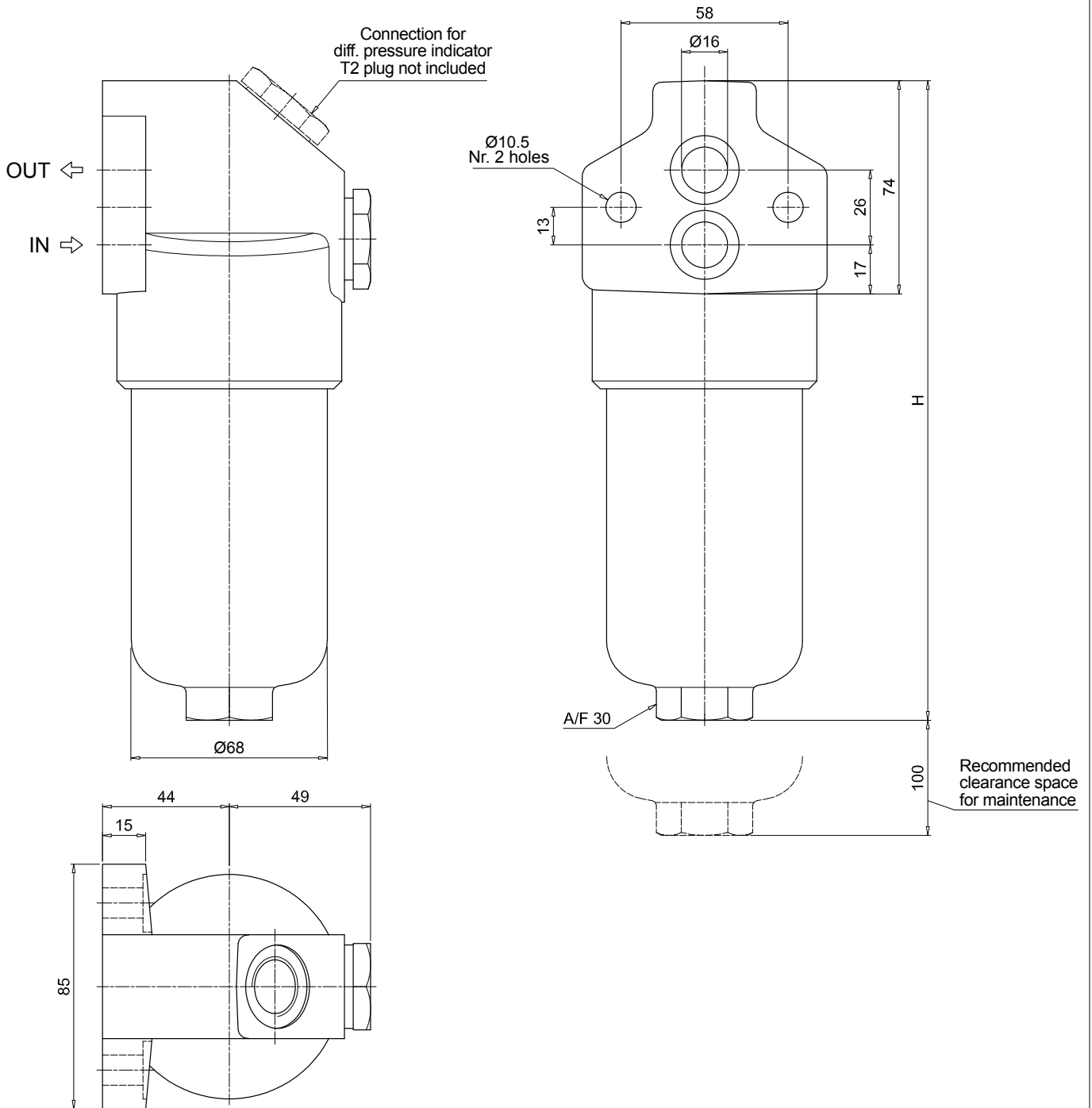
<b>DLE</b>	Electrical / visual differential pressure indicator
<b>DTA</b>	Electronic differential pressure indicator
<b>DVA</b>	Visual differential pressure indicator
<b>DVM</b>	Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b>	Plug (not included)
-----------	---------------------

FHB065	
Filter length	H [mm]
<b>1</b>	194
<b>2</b>	225
<b>3</b>	327

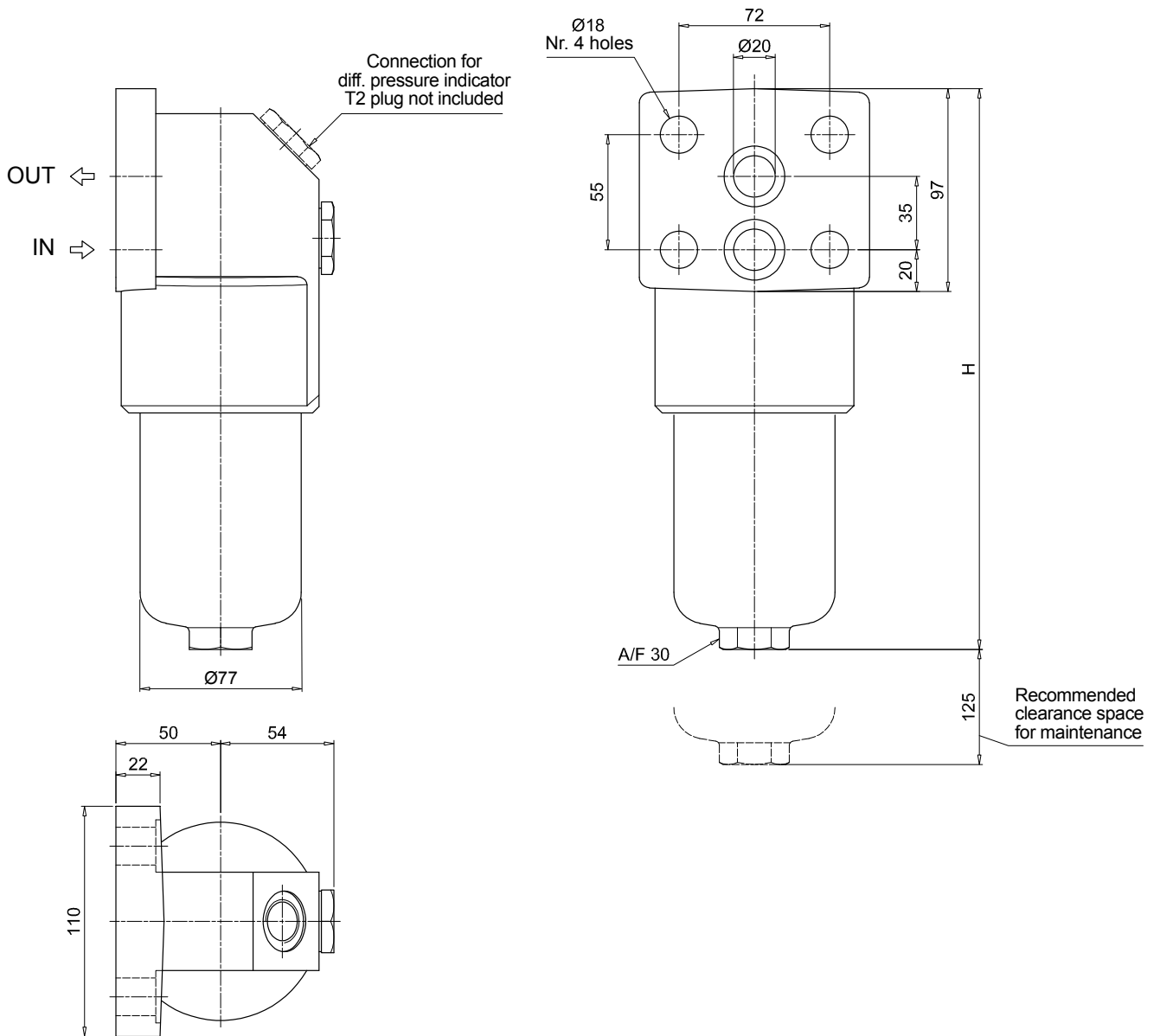


# FHB FHB065 - FHB135 - FHB320

## Dimensions

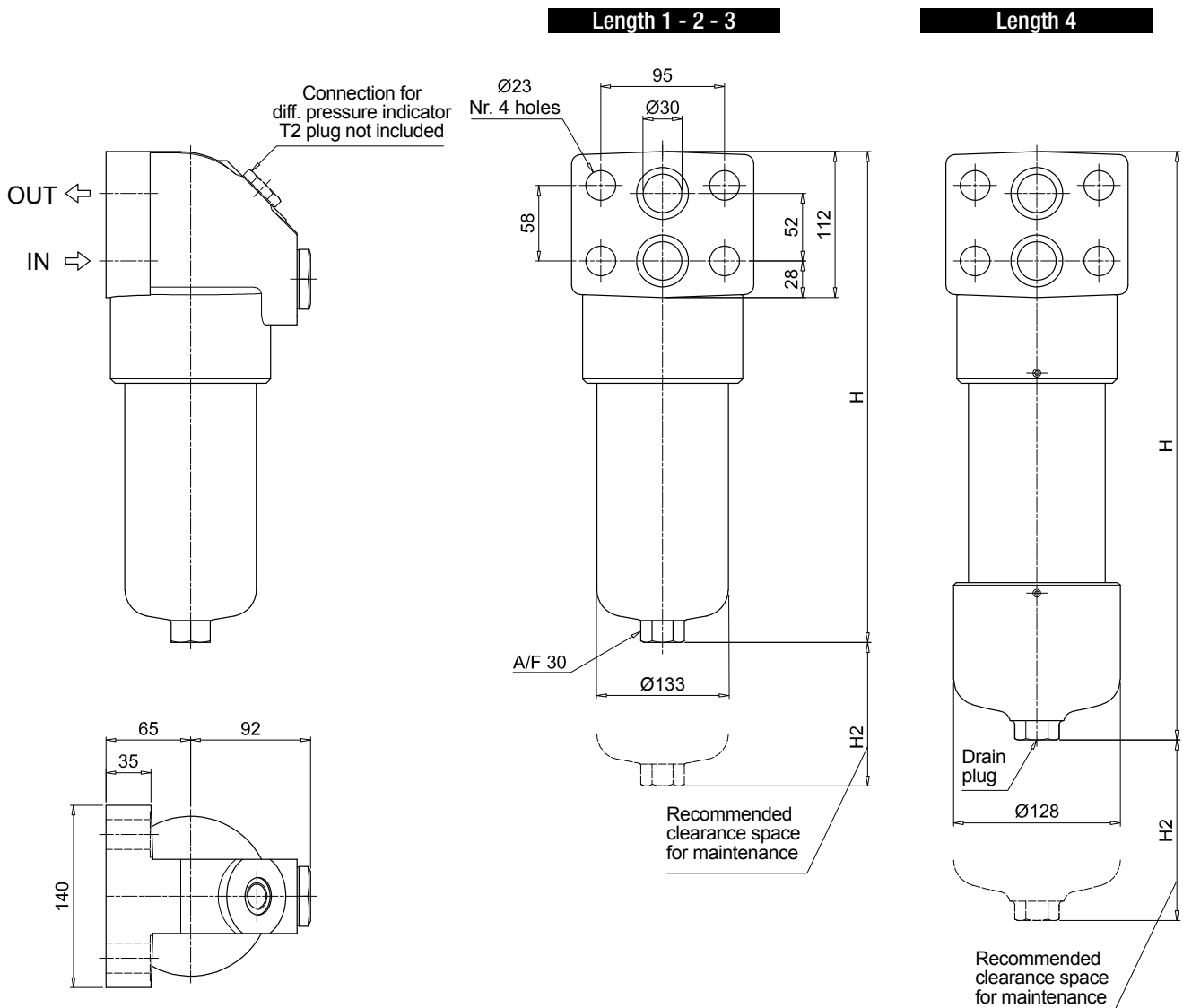
FHB135

Filter length	H [mm]
<b>1</b>	268
<b>2</b>	381
<b>3</b>	456



### FHB320

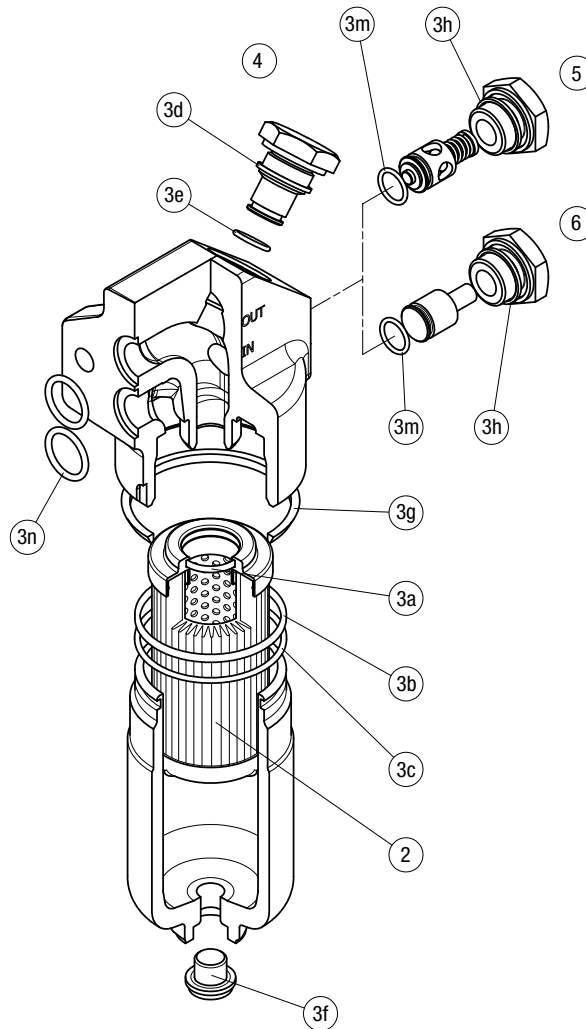
Filter length	H [mm]	H2 [mm]	
		Execution P01	Execution P02
1	301	150	-
2	424	150	-
3	556	150	-
4	709	150	550



# FHB SPARE PARTS

Order number for spare parts

FHB 050 - 065 - 135 - 320



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FHB 050</b>	See order table	02050412	02050413	T2H	T2V	02001312	02001385	02001314	02001386
<b>FHB 065</b>		02050266	02050277			02001312	02001385	02001314	02001386
<b>FHB 135</b>		02050270	02050281			02001312	02001385	02001314	02001386
<b>FHB 320</b>		02050273	02050284			02001381	02001382	02001383	02001384







# FHF 325 series

Maximum working pressure up to 35 MPa (350 bar) - Flow rate up to 550 l/min  
Filter housing according to SAE J2066 for HF4 filter elements



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



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# FHF 325 GENERAL INFORMATION

## Filter housing according to SAE J2066 for HF4 filter elements

### Description

#### High Pressure filters

#### Manifold

**Maximum working pressure up to 35 MPa (350 bar)**

**Flow rate up to 550 l/min**

FHF is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the lines of the system through the hydraulic fittings or the proper flanged interface.

#### Available features:

- 1 1/2" female threaded connections, 1 1/2" flanged connections and manifold connections up to 1 1/2", for a maximum flow rate of 550 l/min
- Base-mounting design, for ease of the replacement of the filter element
- Filter element designed in accordance with SAE J2066 HF4 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment

### Technical data

#### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Cover: Cast iron (chemical heat treatment)
- Bypass valve: Brass - Steel

#### Pressure

- Working pressure: 35 MPa (350 bar)
- Test pressure: 52.5 MPa (525 bar)
- Burst pressure: 105 MPa (1050 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 35 MPa (350 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm 10\%$
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

- FHF 325: In-line threaded connection
- FHF 325: In-line flanged connection
- FHF 325: Manifold mounting

#### Note

FHF filters are provided for vertical mounting

### Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]			
	Length	1	2	3	Length	1	2	3
<b>FHF 325</b>		23.90	32.68	41.47		3.50	5.80	8.11

# GENERAL INFORMATION FHF 325

Filter housing according to SAE J2066 for HF4 filter elements

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
FHF 325	1	302	339	348	419	500	556
	2	401	424	434	457	505	557
	3	416	451	460	469	510	559

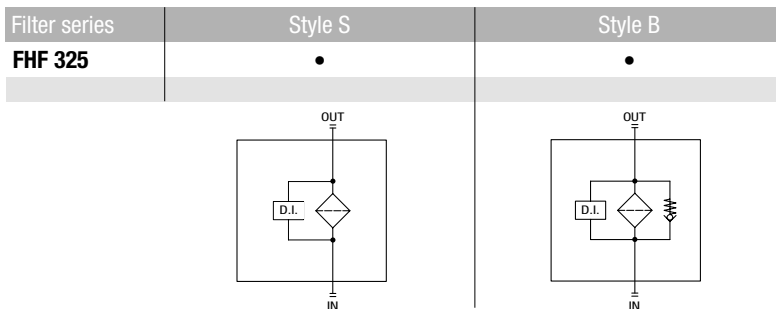
## Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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>.

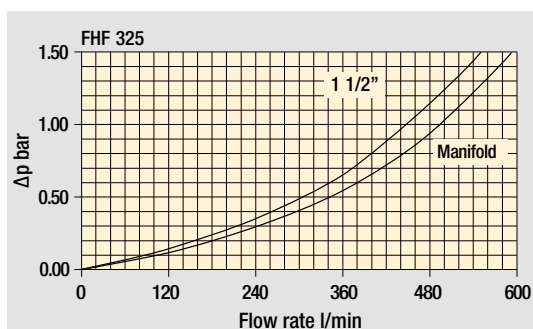
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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 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.

# FHF 325

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>FHF325</b>	Configuration example: <b>FHF325</b>	<b>2</b>	<b>S</b>	<b>A</b>	<b>H</b>	<b>7</b>	<b>A10</b>	<b>N</b>	<b>P01</b>
<b>Length</b> <b>1</b>   <b>2</b>   <b>3</b>									
<b>Valves</b> <b>S</b> Without bypass <b>B</b> With bypass 6 bar									
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM									
<b>Connections</b> <b>A</b> G 1 1/2" <b>B</b> 1 1/2" NPT <b>C</b> SAE 24 - 1 7/8" - 12 UN <b>G</b> 1 1/2" SAE 6000 psi/M <b>H</b> 1 1/2" SAE 6000 psi/UNC <b>M</b> Manifold ø1.38" <b>N</b> Manifold ø1.50"									
<b>Connection for differential pressure indicator</b> <b>7</b> With two connections plugged on both sides									
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>M25</b> Wire mesh 25 µm									
						<b>Element Δp</b> <b>N</b> 20 bar		<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized	

### FILTER ELEMENT

<b>Element series and size</b> <b>HF325</b>	Configuration example: <b>HF325</b>	<b>2</b>	<b>A10</b>	<b>A</b>	<b>N</b>	<b>P01</b>
<b>Element length</b> <b>1</b>   <b>2</b>   <b>3</b>						
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>M25</b> Wire mesh 25 µm						
						<b>Seals</b> <b>A</b> NBR <b>V</b> FPM
						<b>Element Δp</b> <b>N</b> 20 bar
						<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

### CLOGGING INDICATORS

See page 717

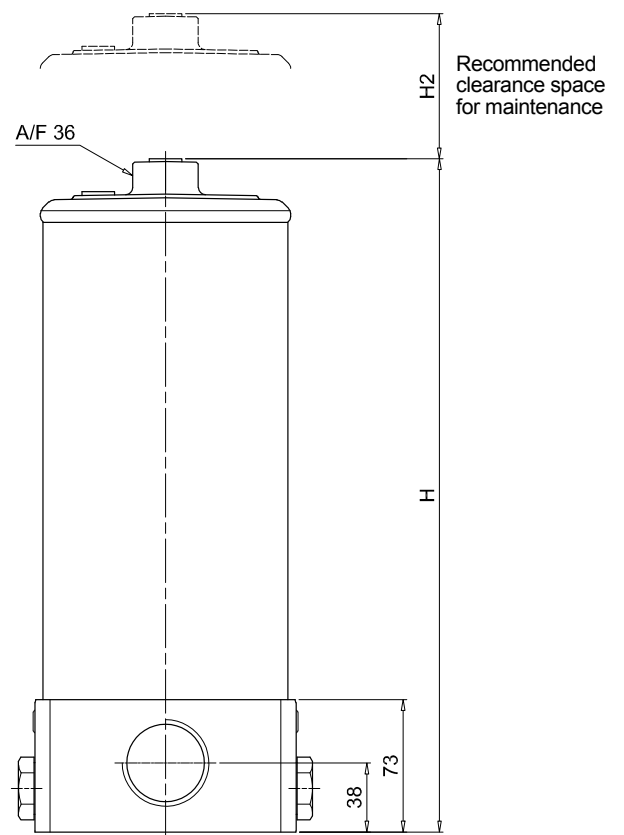
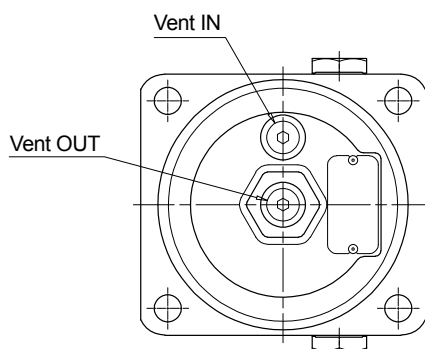
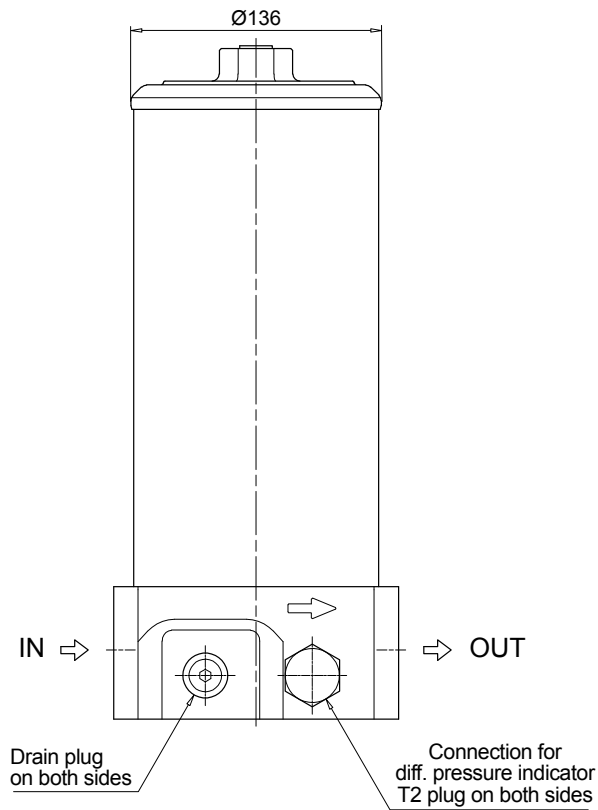
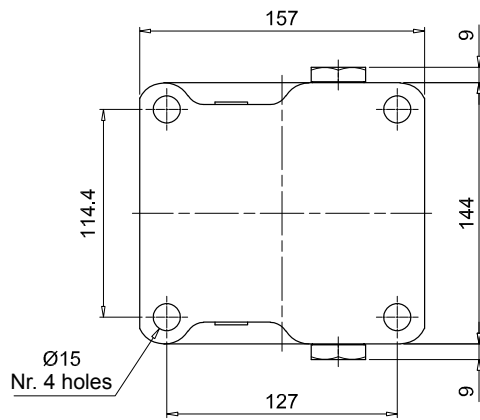
<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b> Plug (not included)
-------------------------------

FHF325		
Connection A - B - C		
Filter length	H [mm]	H2 [mm]
1	452	250
2	690	485
3	928	725



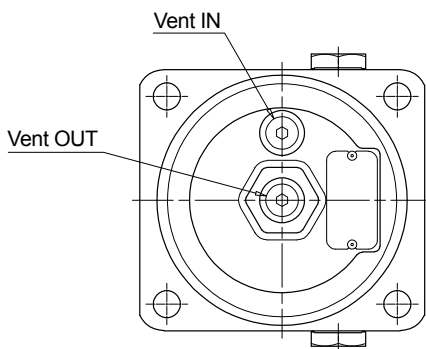
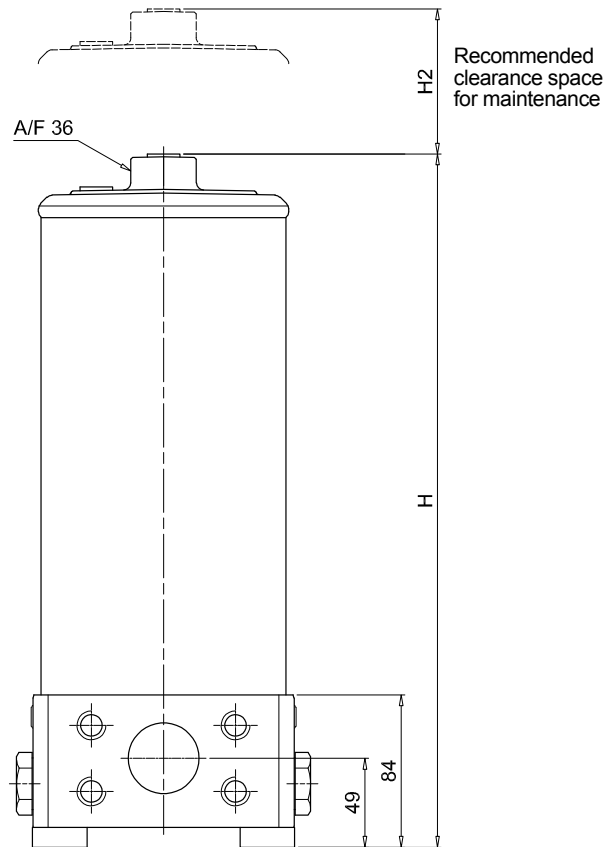
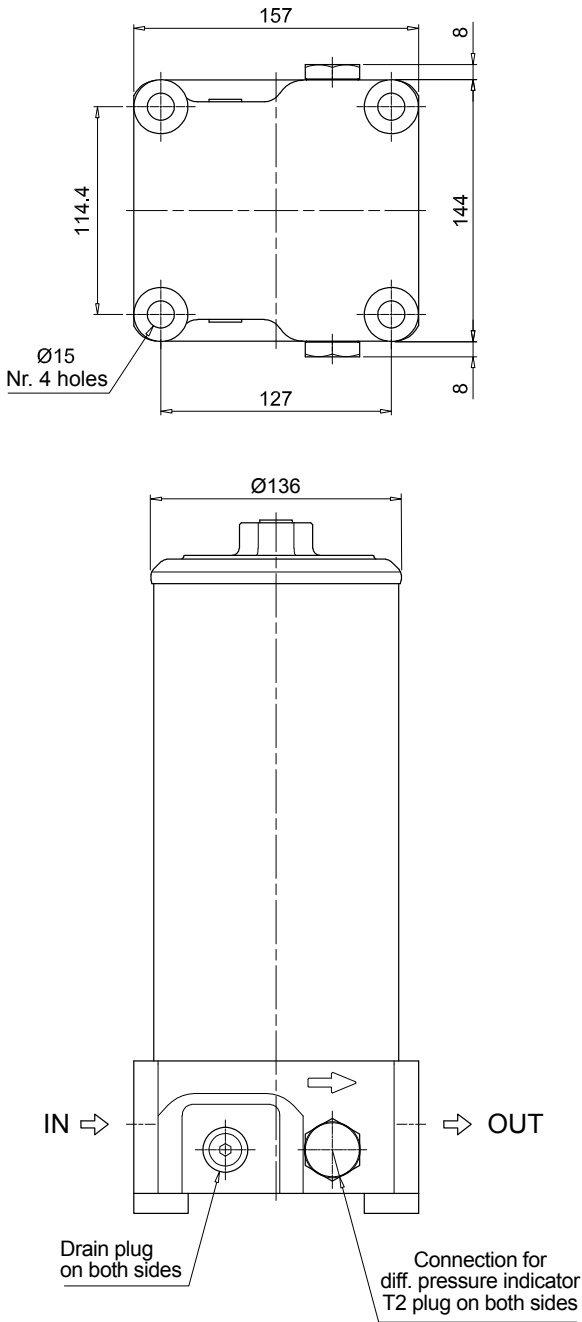
# FHF 325

## Dimensions

FHF325

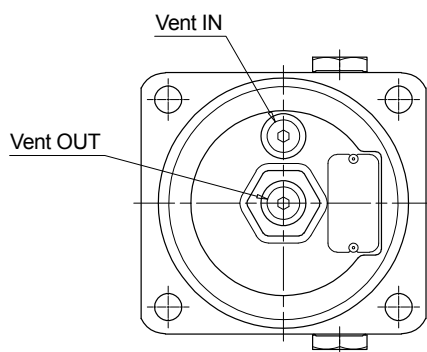
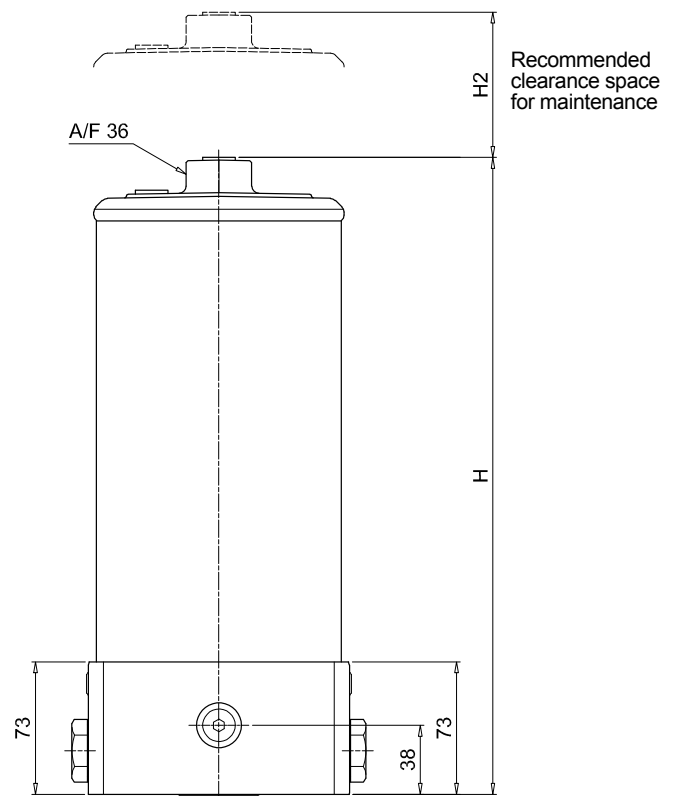
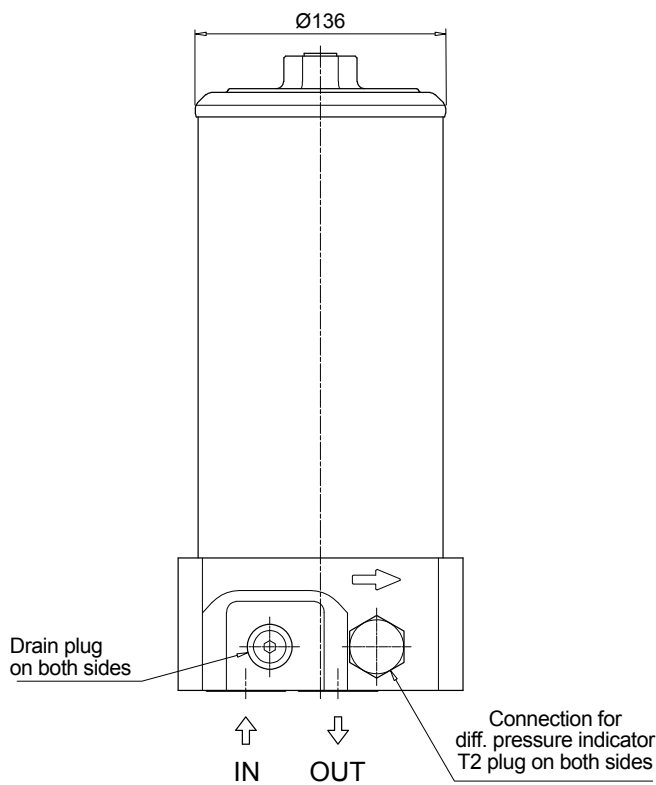
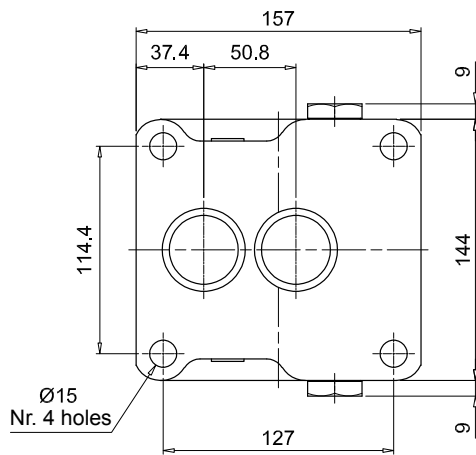
Connection G - H

Filter length	H [mm]	H2 [mm]
<b>1</b>	463	250
<b>2</b>	701	485
<b>3</b>	939	725





FHF325		
Connection M - N		
Filter length	H [mm]	H2 [mm]
<b>1</b>	452	250
<b>2</b>	690	485
<b>3</b>	928	725



# FHF 325 SPARE PARTS

Filter housing according to SAE J2066 for HF4 filter elements

Order number for spare parts

**FHF 325**  
**Connections**  
**A - B - C - G - H**

Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pc.		
Filter series	Filter element	Seal Kit code number	Indicator connection plug		
		NBR	FPM	NBR	FPM
<b>FHF 325</b> <b>A-B-C-G-H</b>	See order table	02050588	02050589	T2H	T2V

**FHF 325**  
**Connections**  
**M - N**

Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pc.		
Filter series	Filter element	Seal Kit code number	Indicator connection plug		
		NBR	FPM	NBR	FPM
<b>FHF 325</b> <b>M-N</b>	See order table	02050590	02050591	T2H	T2V





# FHD series

Maximum working pressure up to 35 MPa (350 bar) - Flow rate up to 250 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



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FHD021



FHD051



FHD326



FHD333

## Description

## Technical data

### High Pressure filters

#### Duplex

**Maximum working pressure up to 35 MPa (350 bar)**

**Flow rate up to 250 l/min**

FHD is a range of high pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4" and flanged connections up to 1 1/2", for a maximum flow rate of 345 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Balancing valve, available for FHD051, FHD326 and FHD333, to equalize the housing pressure before the switch.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Low collapse filter element "N", for use with filters provided with M25 wire mesh
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- System where shut-down causes high costs
- System where shut-down causes safety issues

#### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel

#### Pressure

- Test pressure: 52.5 MPa (525 bar)
- Burst pressure: 105 MPa (1050 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 35 MPa (350 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series R: 20 bar (not available for FHD 021)
- Microfibre filter elements - series H: 210 bar (only for FHD 021)
- Microfibre filter elements - series S: 210 bar (not available for FHD 021)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet 90°

#### Note

FHD filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]						Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHD 021</b>	-	8.0	9.0	9.9	-	-	-	0.06	0.12	0.22	-	-
<b>FHD 051</b>	-	16.9	17.5	18.5	19.8	-	-	0.31	0.41	0.53	0.83	-
<b>FHD 326</b>	43.0	50.0	54.0	-	-	-	0.88	1.60	2.37	-	-	-
<b>FHD 333</b>	-	74.0	79.0	98.0	-	-	-	1.75	2.52	3.35	-	-

Filter series	Length	Filter element design - H Series					
		A03	A06	A10	A16	A25	M25
<b>FHD 021</b>	<b>2</b>	6	8	14	16	19	26
	<b>3</b>	10	12	18	20	22	27
	<b>4</b>	13	16	21	22	24	27

Filter series	Length	Filter element design - R Series					N Series	Filter element design - S Series				
		A03	A06	A10	A16	A25		M25	A03	A06	A10	A16
<b>FHD 051</b>	<b>2</b>	39	41	51	54	59	64	35	37	48	51	58
	<b>3</b>	45	46	54	56	61	65	41	43	52	54	60
	<b>4</b>	50	52	58	58	62	65	47	49	56	56	61
	<b>5</b>	56	57	61	62	63	65	53	53	57	59	63
<b>FHD 326</b>	<b>1</b>	93	99	131	142	154	171	83	87	117	120	146
	<b>2</b>	136	141	163	166	173	176	119	128	149	151	163
	<b>3</b>	152	159	171	174	175	177	139	148	161	163	170
<b>FHD 333</b>	<b>2</b>	175	184	224	230	245	249	147	162	199	201	225
	<b>3</b>	204	217	241	245	247	252	179	196	221	224	238
	<b>4</b>	216	224	242	247	253	255	196	204	223	225	239

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ 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

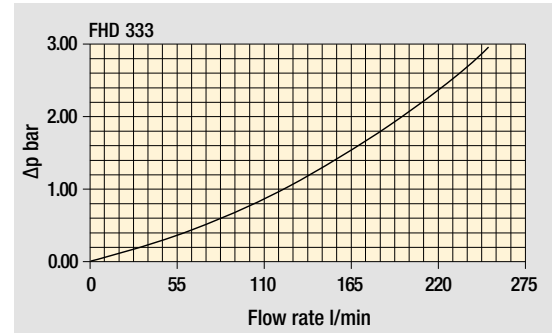
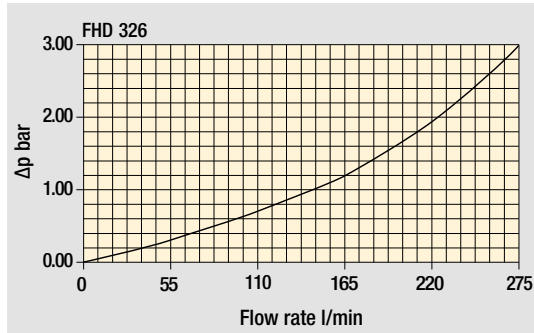
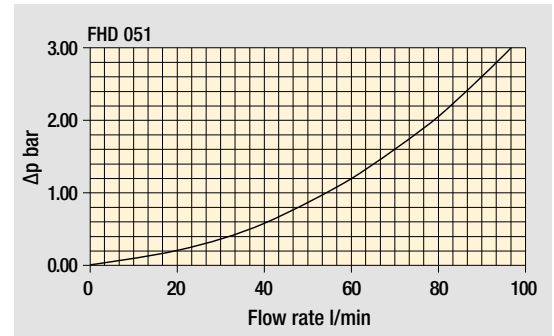
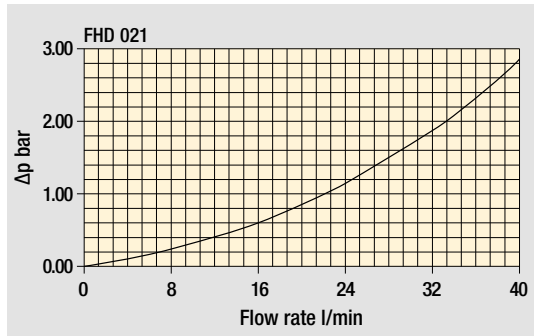
Filter series	Style S	Style B	Style B
<b>FHD 021</b>	•	-	-
<b>FHD 051</b>	•	•	-
<b>FHD 326</b>	•	-	•
<b>FHD 333</b>	•	-	•

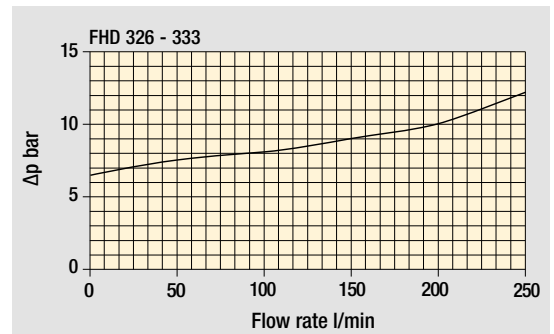
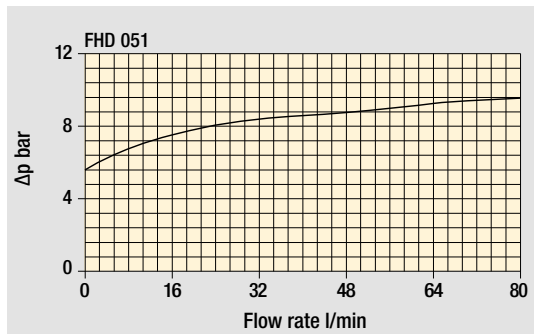
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## Pressure drop

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.





## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>FHD021</b>   <b>4</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>A06</b>   <b>H</b>   <b>P01</b>							
<b>FHD021</b>								
<b>Length</b>								
<b>2</b>   <b>3</b>   <b>4</b>								
<b>Bypass valve</b>								
<b>S</b> Without bypass								
<b>Seals</b>								
<b>A</b> NBR								
<b>V</b> FPM								
<b>Connections</b>								
<b>G1</b> G 1/2"								
<b>G2</b> 1/2" NPT								
<b>G3</b> SAE 8 - 3/4" - 16 UNF								
<b>Filtration rating (filter media)</b>								
<b>A03</b> Inorganic microfiber 3 µm								
<b>A06</b> Inorganic microfiber 6 µm								
<b>A10</b> Inorganic microfiber 10 µm								
<b>A16</b> Inorganic microfiber 16 µm								
<b>A25</b> Inorganic microfiber 25 µm								
<b>M25</b> Wire mesh 25 µm								
	Filtration rating							
	<b>Element Δp</b>	<b>Axx</b>	<b>M25</b>	<b>Execution</b>				
	<b>N</b> 20 bar	-	•	<b>P01</b> MP Filtri standard				
	<b>H</b> 210 bar	•	•	<b>Pxx</b> Customized				

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example: <b>HP011</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>H</b>   <b>P01</b>					
<b>HP011</b>						
<b>Element length</b>						
<b>2</b>   <b>3</b>   <b>4</b>						
<b>Filtration rating (filter media)</b>						
<b>A03</b> Inorganic microfiber 3 µm						
<b>A06</b> Inorganic microfiber 6 µm						
<b>A10</b> Inorganic microfiber 10 µm						
<b>A16</b> Inorganic microfiber 16 µm						
<b>A25</b> Inorganic microfiber 25 µm						
<b>M25</b> Wire mesh 25 µm						
	Filtration rating					
	<b>Seals</b>	<b>Element Δp</b>	<b>Axx</b>	<b>M25</b>	<b>Execution</b>	
	<b>A</b> NBR	<b>N</b> 20 bar	-	•	<b>P01</b> MP Filtri standard	
	<b>V</b> FPM	<b>H</b> 210 bar	•	•	<b>Pxx</b> Customized	

### CLOGGING INDICATORS

See page 717

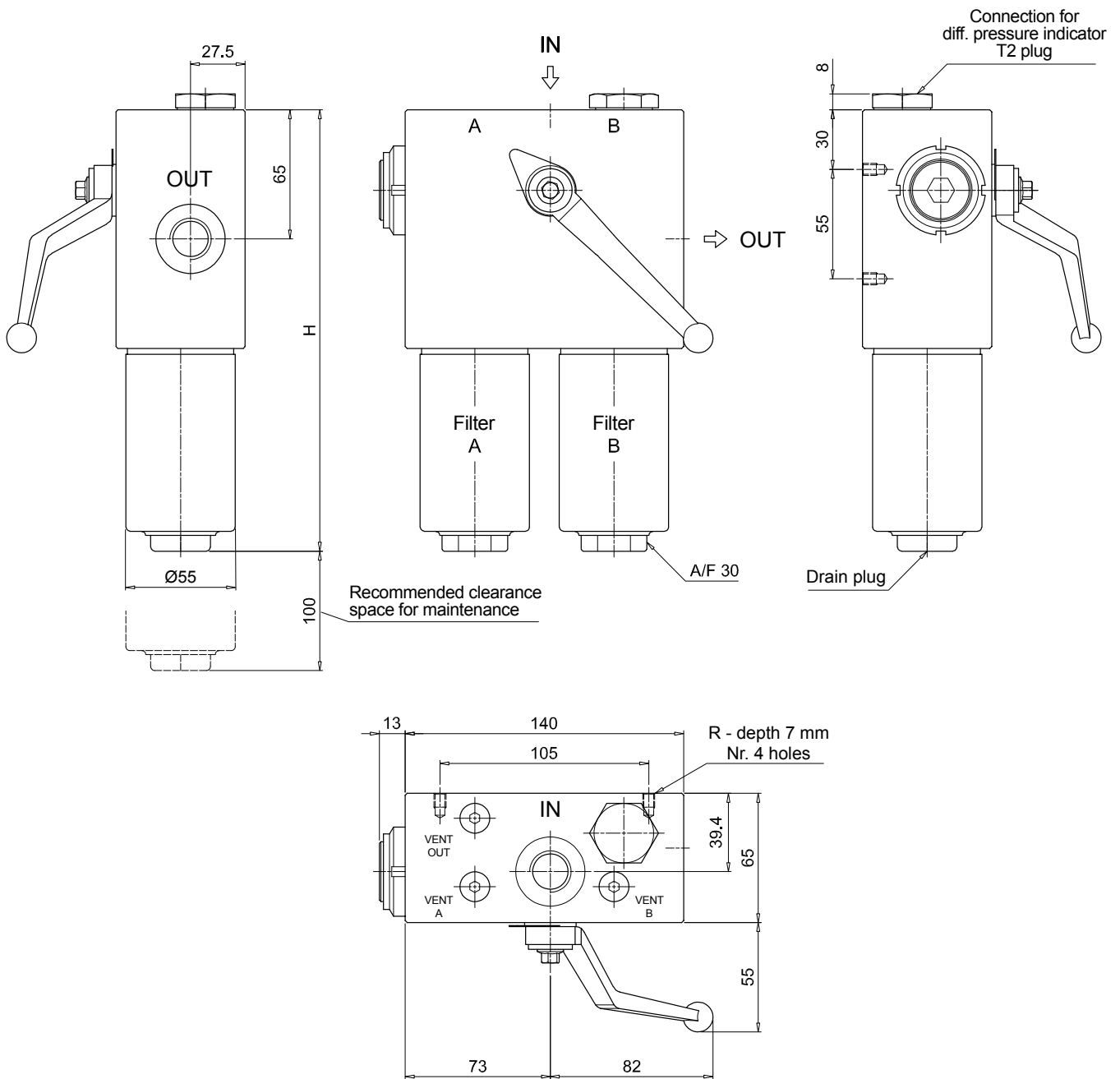
<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b> Plug (not included)
-------------------------------

FHDO21	
Filter length	H [mm]
2	172
3	222
4	272
Connections	R
G1	M6
G2 - G3	1/4" UNC



# FHD FHD051 - FHD326 - FHD333

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHD326** **3** **S** **A** **G1** **M25** **N** **P01**

**FHD051** | **FHD326** | **FHD333**

Length	FHD051	FHD326	FHD333
1	-	•	-
2	•	•	•
3	•	•	•
4	•	-	•
5	•	-	-

#### Valves

- S** Without bypass  
**B** With bypass 6 bar

#### Seals

- A** NBR  
**V** FPM

Connections	FHD051	FHD326	FHD333
<b>G1</b>	G 3/4"	G 1 1/4"	-
<b>G2</b>	3/4" NPT	-	-
<b>G3</b>	G 1/2"	1 1/4" NPT	-
<b>G4</b>	1/2" NPT	SAE 20 - 1 5/8" - 12 UN	-
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	-	-
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	-	-
<b>F1</b>	-	-	1 1/2" SAE 6000 psi/M
<b>F2</b>	-	-	1 1/2" SAE 6000 psi/UNC

#### Filtration rating (filter media)

<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Element Δp	Filtration rating		Execution
	Axx	M25	
<b>N</b> 20 bar	-	•	<b>P01</b> MP Filtri standard
<b>R</b> 20 bar	•	-	<b>Pxx</b> Customized
<b>S</b> 210 bar	•	-	

### FILTER ELEMENT

Element series and size Configuration example: **HP320** **3** **M25** **A** **N** **P01**

**HP050** | **HP320**

	FHD051	FHD326	FHD333
<b>HP050</b>	•	-	-
<b>HP320</b>	-	•	•

Element length	HP050	HP320
1	-	•
2	•	•
3	•	•
4	•	•
5	•	-

#### Filtration rating (filter media)

<b>A03</b> Inorganic microfiber	3 µm
<b>A06</b> Inorganic microfiber	6 µm
<b>A10</b> Inorganic microfiber	10 µm
<b>A16</b> Inorganic microfiber	16 µm
<b>A25</b> Inorganic microfiber	25 µm
<b>M25</b> Wire mesh	25 µm

Seals	Element Δp	Filtration rating		Execution
		Axx	M25	
<b>A</b> NBR	<b>N</b> 20 bar	-	•	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>R</b> 20 bar	•	-	<b>Pxx</b> Customized
	<b>S</b> 210 bar	•	-	

### CLOGGING INDICATORS

See page 717

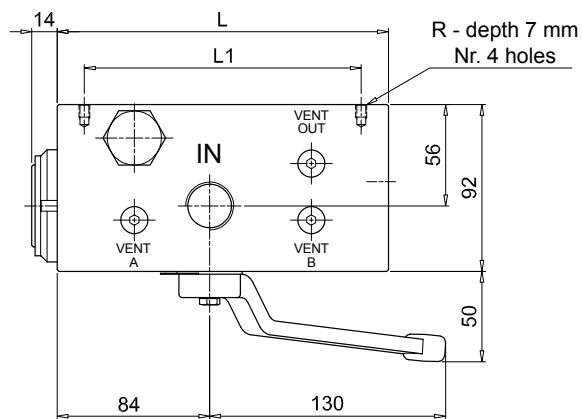
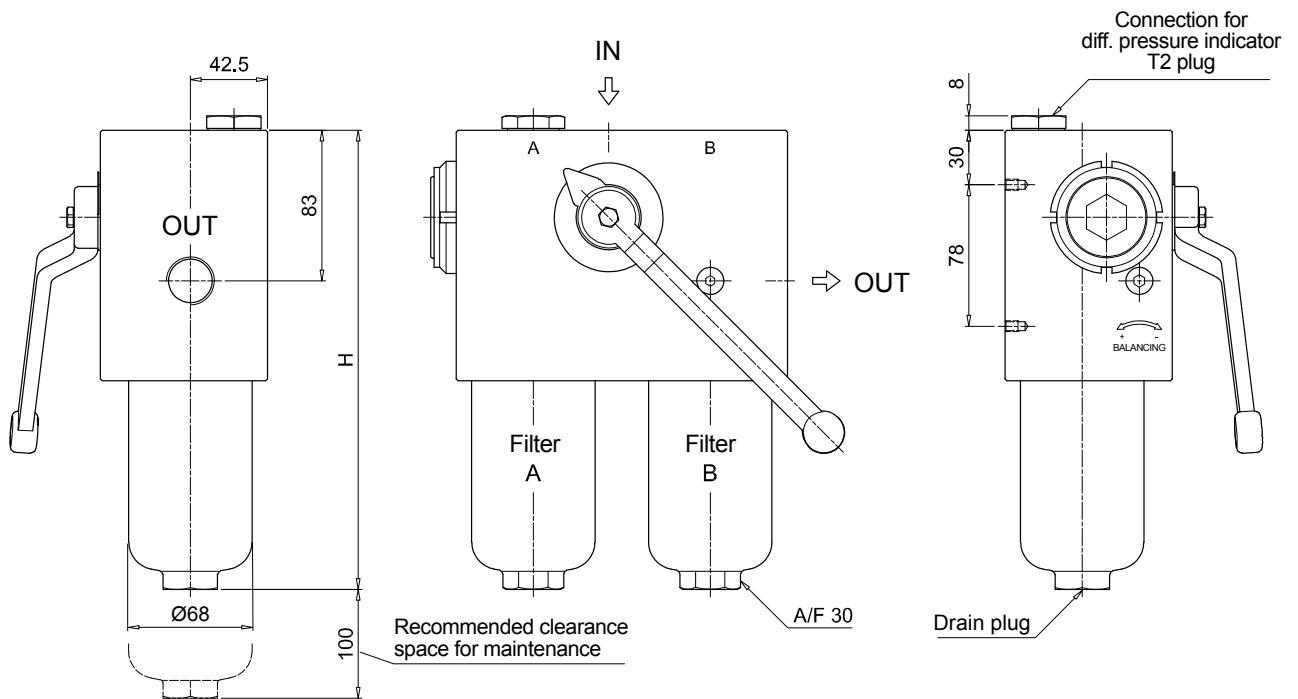
<b>DEA</b> Electrical differential pressure indicator	<b>DLE</b> Electrical / visual differential pressure indicator
<b>DEM</b> Electrical differential pressure indicator	<b>DTA</b> Electronic differential pressure indicator
<b>DEU</b> Electrical differential pressure indicator	<b>DVA</b> Visual differential pressure indicator
<b>DLA</b> Electrical / visual differential pressure indicator	<b>DVM</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>T2</b> Plug (not included)
-------------------------------

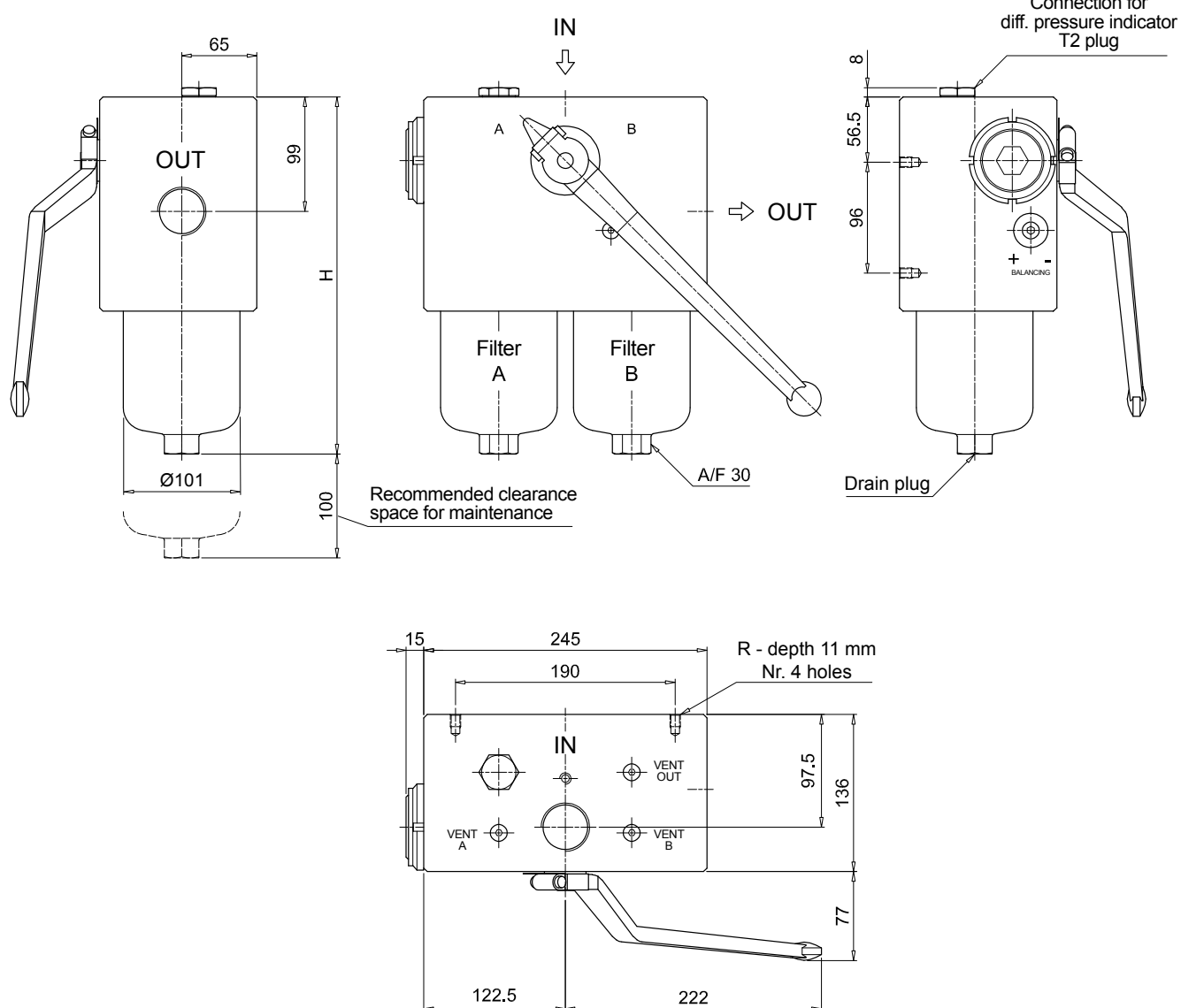
FHD051		
Filter length	H [mm]	
<b>2</b>	253	
<b>3</b>	295	
<b>4</b>	343	
<b>5</b>	465	
Connections	R	
<b>G1</b>	M6	
<b>G2</b>	1/4" UNC	
<b>G3</b>	M6	
<b>G4-G5-G6</b>	1/4" UNC	
Valves	L [mm]	L1 [mm]
<b>S</b>	168	138
<b>B</b>	182.5	152.5



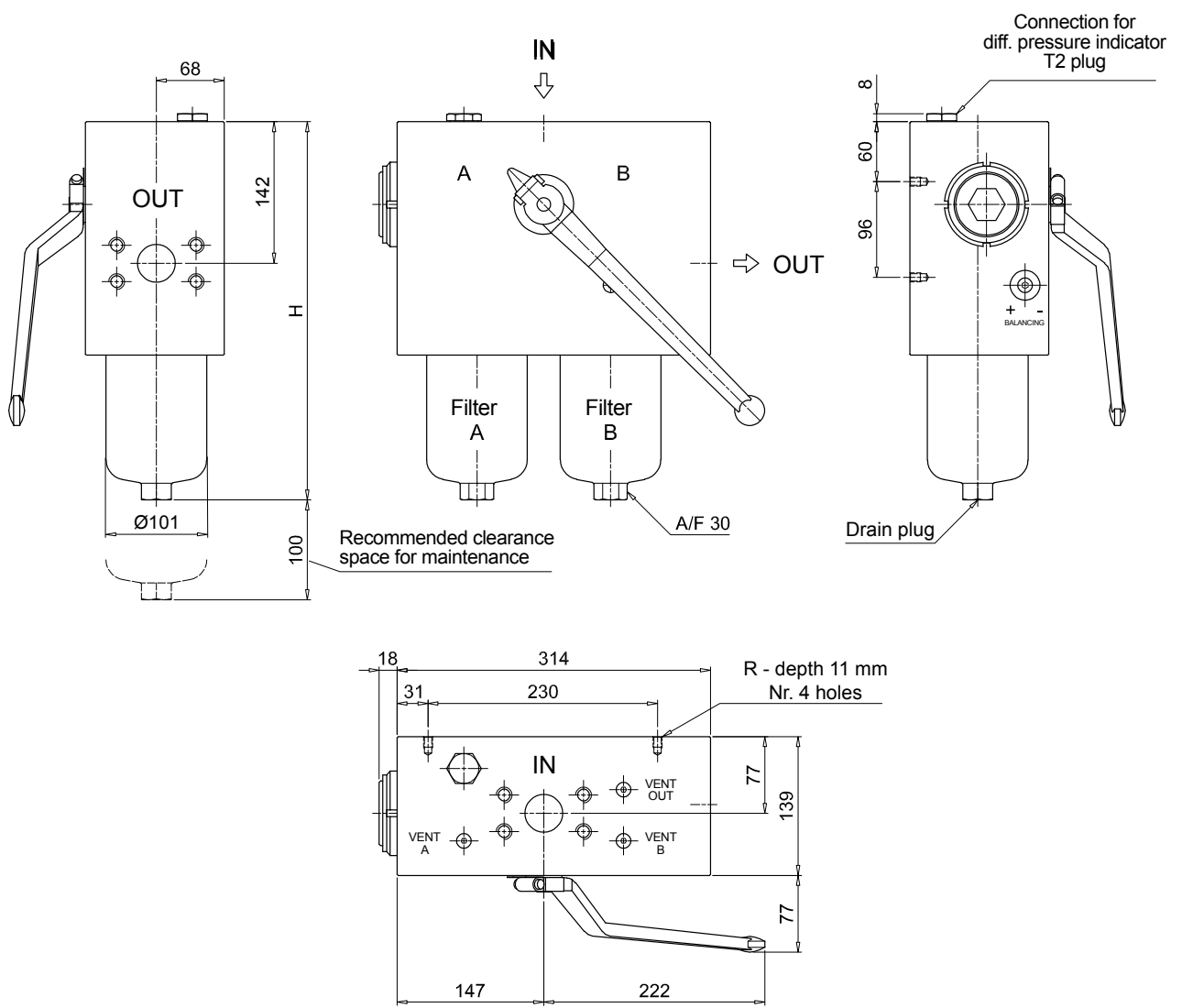
# FHD FHD051 - FHD326 - FHD333

## Dimensions

FHD326	
Filter length	H [mm]
1	309
2	432
3	564
Connections	R
G1	M10
G2 - G3	3/8" UNC



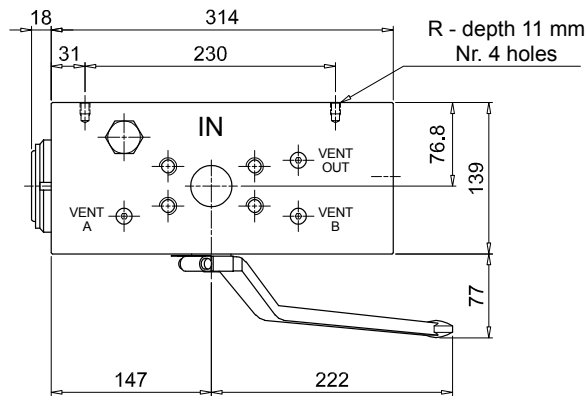
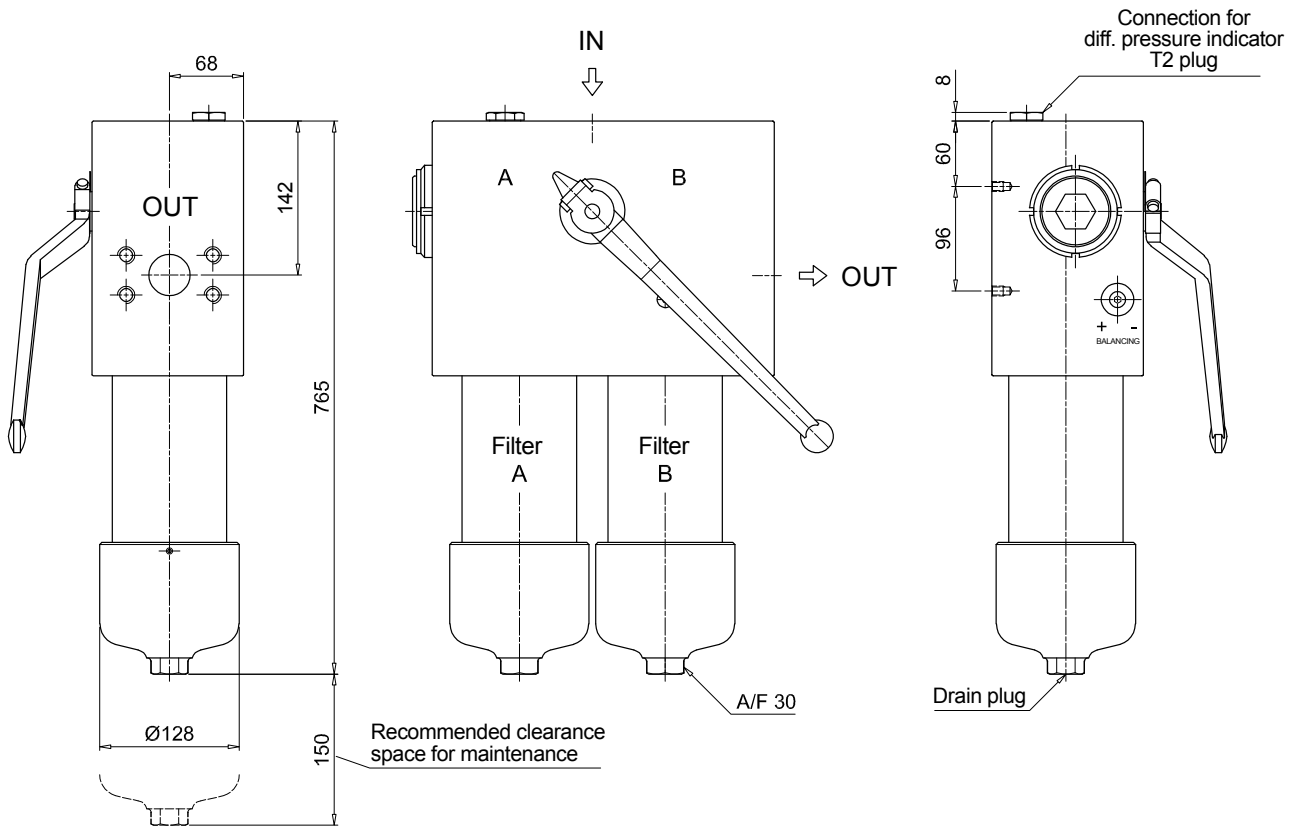
FHD333	
Length 2 - 3	
Filter length	H [mm]
2	479
3	612
Connections	R
F1	M10
F2	3/8" UNC



# FHD FHD051 - FHD326 - FHD333

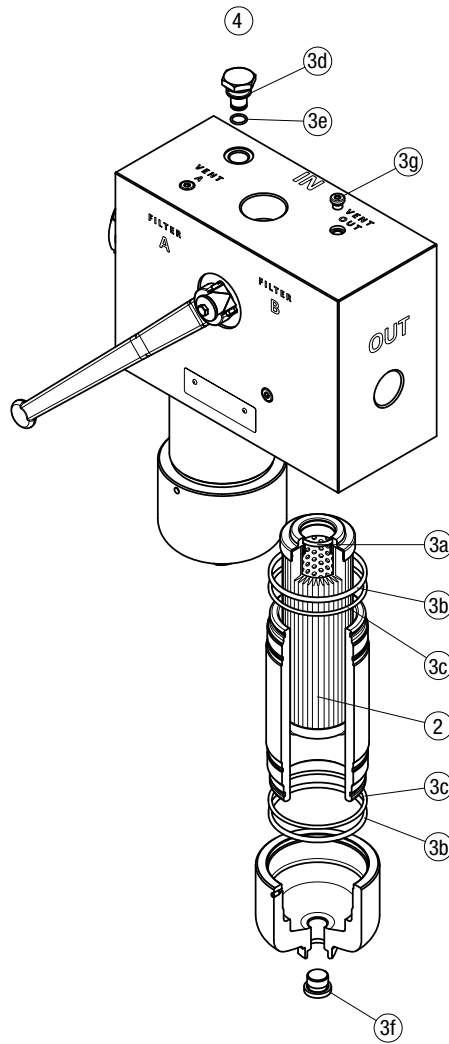
## Dimensions

FHD333	
Length 4	
Connections	R
F1	M10
F2	3/8" UNC





FHD 021 - 051 - 326 - 333



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FHD 021	See order table	NBR	FPM	NBR	FPM
FHD 051		02050511	02050512	T2H	T2V
FHD 326-333		02050420	02050421		
		02050377	02050378		



# HPB series

## BOWL KIT

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 300 l/min



### INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



HPB050



HPB150

Please scan the QR codes  
to get updated electronic version  
of the related document.



## Description

## Technical data

### High Pressure Bowl Kit

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 300 l/min**

HPB is a range of high pressure bowl kits for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly integrated in the control blocks.

#### Available features:

- Fine filtration rating, to get a good cleanliness level into the system
- Low collapse filter element "N", for use with blocks provided with bypass valve
- High collapse filter element with external support "S", for use with blocks not provided with the bypass valve

### Filter housing materials

- Housing: Phosphatized steel

### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

### Δp element type

- Microfibre / Wire mesh filter elements - series N: 20 bar
- Microfibre / Wire mesh filter elements - series S: 210 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

HPB filters are provided for vertical mounting

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>HPB 050</b>		1.10	1.50	1.90	2.40	3.50		0.30	0.45	0.60	0.80	1.20
<b>HPB 150</b>		2.90	4.90	6.30	-	-		0.45	0.85	1.10	-	-

## FILTER ASSEMBLY SIZING Flow rates [l/min]

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>HPB 050</b>	<b>1</b>	42	43	79	82	106	147	29	39	57	59	74
	<b>2</b>	52	57	85	96	121	149	45	49	76	88	114
	<b>3</b>	66	69	97	106	130	150	58	61	89	99	125
	<b>4</b>	83	89	113	115	134	152	74	80	106	108	129
	<b>5</b>	107	110	130	134	141	154	93	95	111	121	139
<b>HPB 150</b>	<b>1</b>	81	88	156	163	179	295					
	<b>2</b>	142	145	227	230	236	312					
	<b>3</b>	170	180	242	245	263	315					

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

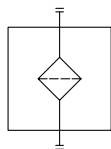
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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	Style S
<b>HPB 050</b>	•
<b>HPB 150</b>	•

### Hydraulic symbols



## Designation & Ordering code

### COMPLETE FILTER

Series and size **HPB050** Configuration example: **HPB050** **3** **A** **A10** **N** **P01**

Length  
**1** | **2** | **3** | **4** | **5** |

Seals  
**A** NBR  
**V** FPM

Filtration rating (filter media)		
<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	
<b>N</b>	20 bar
<b>S</b>	210 bar

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

### FILTER ELEMENT

Element series and size **HP050** Configuration example: **HP050** **3** **A10** **A** **N** **P01**

Element length  
**1** | **2** | **3** | **4** | **5** |

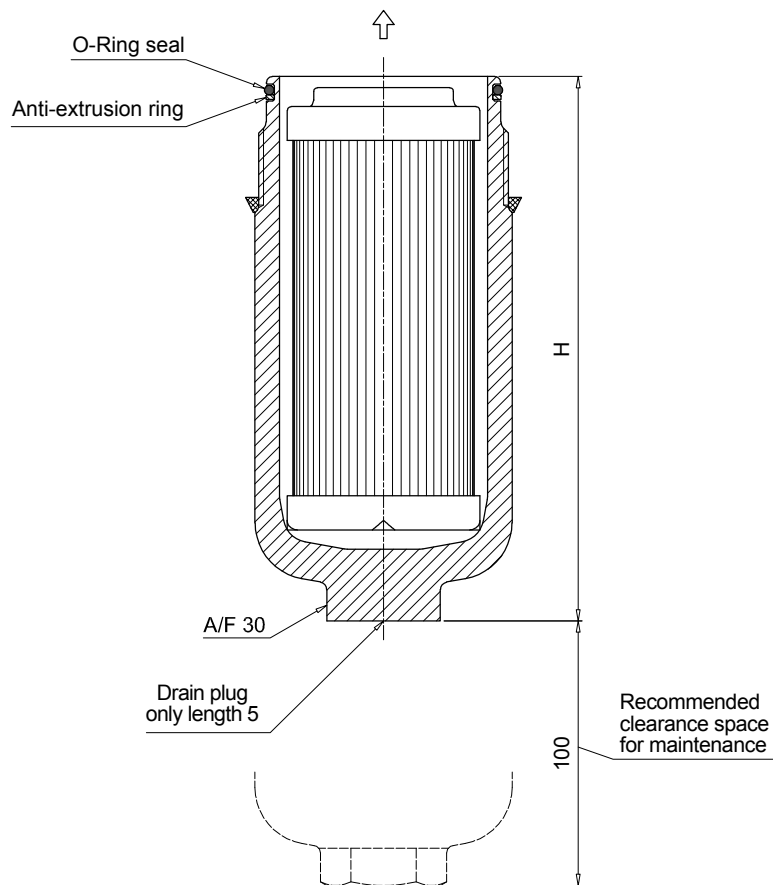
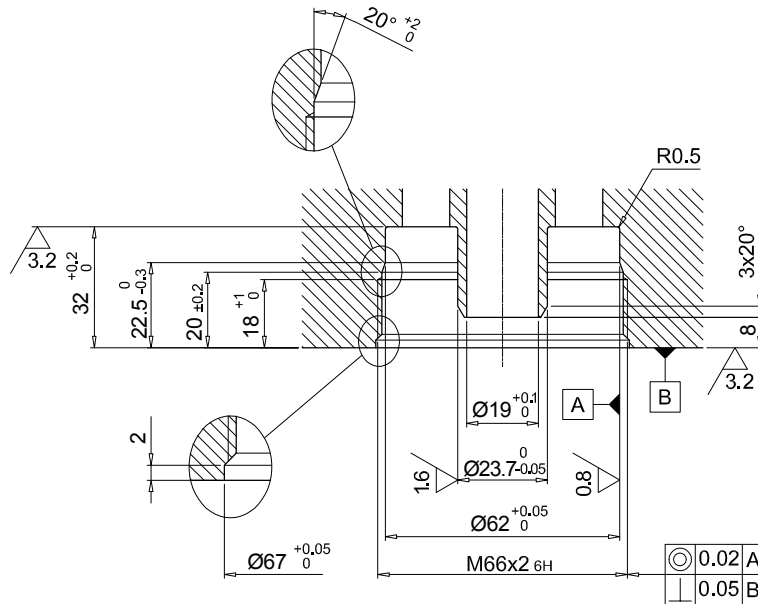
Filtration rating (filter media)		
<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Seals	
<b>A</b>	NBR
<b>V</b>	FPM

Element Δp	
<b>N</b>	20 bar
<b>S</b>	210 bar

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

HPB050	
Filter length	H [mm]
1	107
2	144
3	186
4	234
5	356



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **HPB150** **3** **A** **A10** **N** **P01**

**Series and size**  
**HPB150**

**Length**  
**1** | **2** | **3** |

**Seals**  
**A** NBR  
**V** FPM

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **HP150** **3** **A10** **A** **N** **P01**

**Element series and size**  
**HP150**

**Element length**  
**1** | **2** | **3** |

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

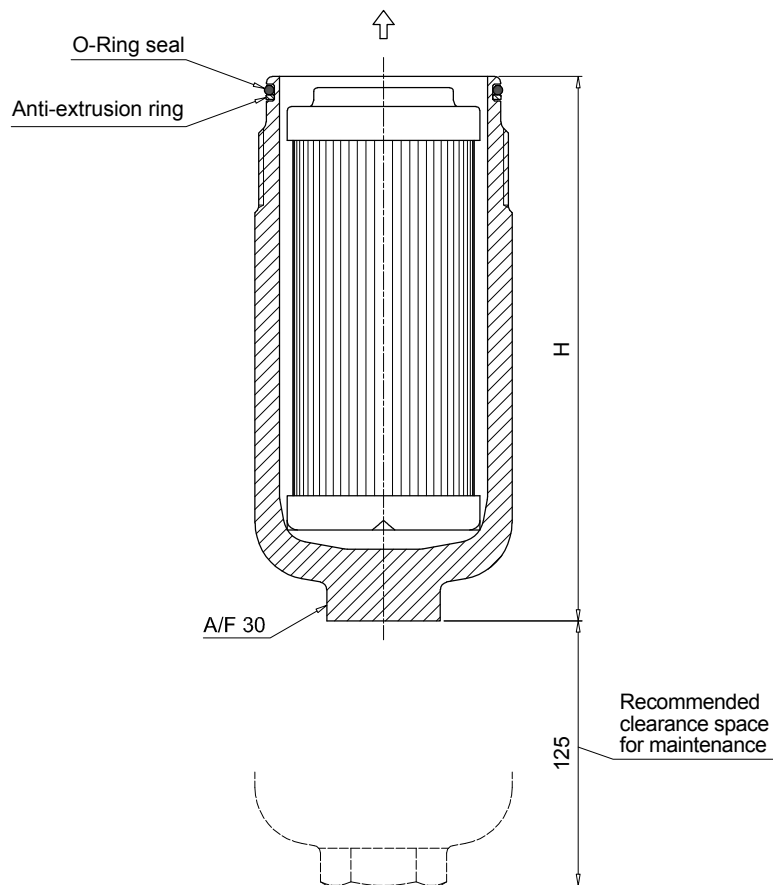
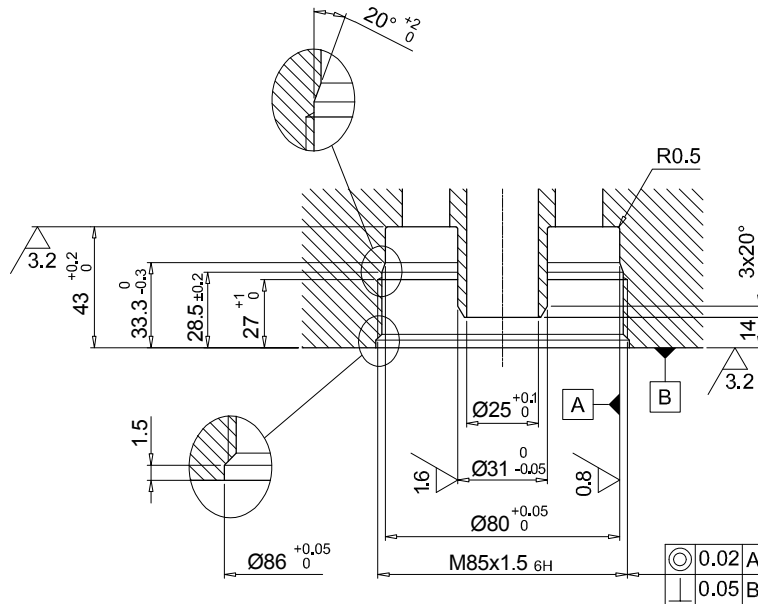
**Seals**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**P01** MP Filtri standard  
**Pxx** Customized



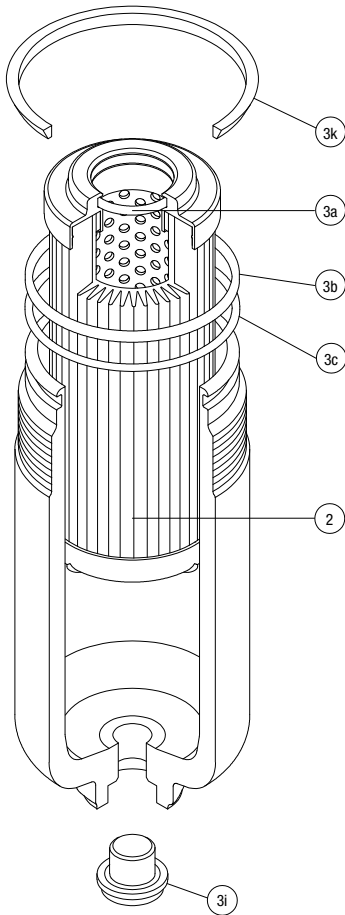
HPB150	
Filter length	H [mm]
1	161
2	271
3	346



# HPB SPARE PARTS

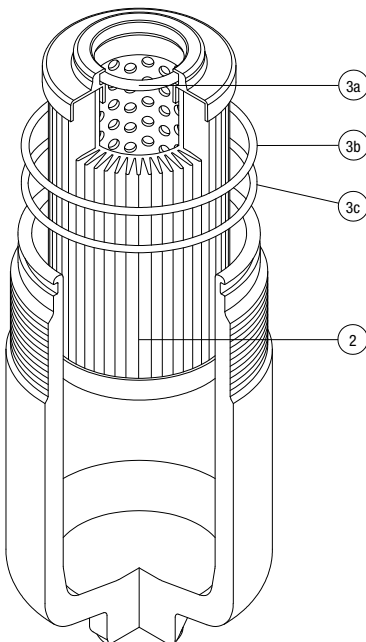
Order number for spare parts

## HPB 050



<b>Item:</b>	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3i)
<b>Filter series</b>	<b>Filter element</b>	<b>Seal Kit code number</b>
		<b>NBR</b> <b>FPM</b>
<b>HPB 050</b>	See order table	02050813                      02050823

## HPB 150



<b>Item:</b>	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3c)
<b>Filter series</b>	<b>Filter element</b>	<b>Seal Kit code number</b>
		<b>NBR</b> <b>FPM</b>
<b>HPB 150</b>	See order table	02050816                      02050826



**Stainless steel high pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406.**

**6 versions are available with operating pressures ranging from 320 bar up to 1000 bar.**

**A range of products is available to resolve all filter mounting problems, in the following configurations:**

- **FZP In-line pressure filter with threaded mount**
- **FZH In-line pressure filter with threaded mount for higher pressure**
- **FZX In-line pressure filter with threaded mount up to 1000 bar**
- **FZB Manifold side mounting**
- **FZM Manifold top mounting**
- **FZD Duplex pressure filter for continuous operation requirements**

**FZ stainless steel filters are specifically designed for applications in the:**

- **Process engineering**
- **Water hydraulics**
- **Offshore technology**
- **Marine technology**
- **High pressure hydraulics**
- **Any application in harsh or aggressive environment**

## FILTER SIZING

For the proper corrective factor Y see chapter at page 27

# Stainless steel high pressure filters



FZP	page 605
FZH	615
FZX	625
FZM	633
FZB	641
FZD	649
INDICATORS	718



# FZP series

Maximum working pressure up to 42 Mpa (420 bar) - Flow rate up to 160 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



FZP039



FZP136

Please scan the QR codes to get updated electronic version of the related document.



## Description

## Technical data

### Stainless steel high pressure filters

#### In-line

**Maximum working pressure up to 42 Mpa (420 bar)**  
**Flow rate up to 160 l/min**

FZP is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1 1/4" female threaded connections, for a maximum flow rate of 160 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZP filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>FZP 039</b>	-	-	4.5	5.1	5.6	-	-	0.19	0.26	0.34
<b>FZP 136</b>	8.3	8.3	10.2	11.5	-	0.45	0.78	1.00	-	-



Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZP 039</b>	<b>2</b>	19	25	43	50	59	19	23	41	45	55
	<b>3</b>	34	37	53	62	74	31	34	48	52	66
	<b>4</b>	42	46	63	72	81	38	41	55	71	78
<b>FZP 136</b>	<b>1</b>	63	67	102	108	136	47	53	87	89	127
	<b>2</b>	95	100	122	123	159	81	95	113	115	138
	<b>3</b>	122	124	148	150	160	106	116	135	141	151

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

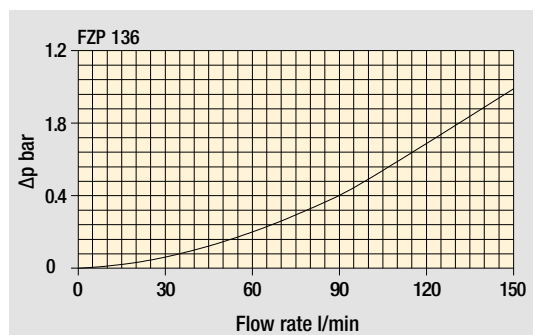
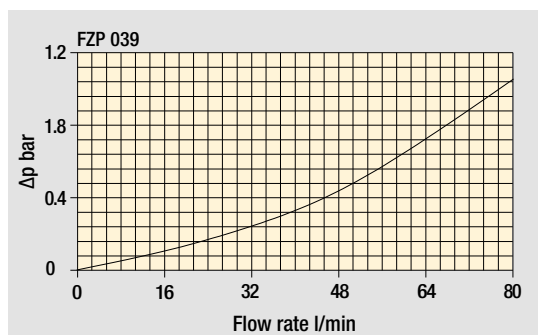
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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 S	Style B	Style T	Style D	Style V	Style Z
<b>FZP 039</b>	•	•	•	•	•	•
<b>FZP 136</b>	•	•	-	-	-	-



### Pressure drop 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.

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZP039** | **2** | **B** | **F** | **B** | **2** | **A03** | **U** | **P01**

**Series and size**  
**FZP039**

**Length**  
**2** | **3** | **4** |

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 1/2"  
**B** 1/2" NPT  
**C** SAE 8 - 3/4" - 16 UNF

**Connections for differential pressure indicators**  
**1** Without connection  
**2** With connection

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves						Execution	
	S	B	T	D	V	Z		
<b>R</b> 20 bar	-	•	-	•	-	•	<b>P01</b>	MP Filtri standard
<b>S</b> 210 bar	•	-	•	-	•	-	<b>Pxx</b>	Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•		

### FILTER ELEMENT

Configuration example: **HP039** | **2** | **A03** | **F** | **U** | **P01**

**Element series and size**  
**HP039**

**Element length**  
**2** | **3** | **4** |

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Seals	Element Δp	Valves						Execution	
		S	B	T	D	V	Z		
<b>A</b> NBR	<b>R</b> 20 bar	-	•	-	•	-	•	<b>P01</b>	MP Filtri standard
<b>V</b> FPM	<b>S</b> 210 bar	•	-	•	-	•	-	<b>Pxx</b>	Customized
<b>F</b> MFQ	<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•		

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator

**DLX** Electrical/visual differential pressure indicator

**DVX** Visual differential pressure indicator

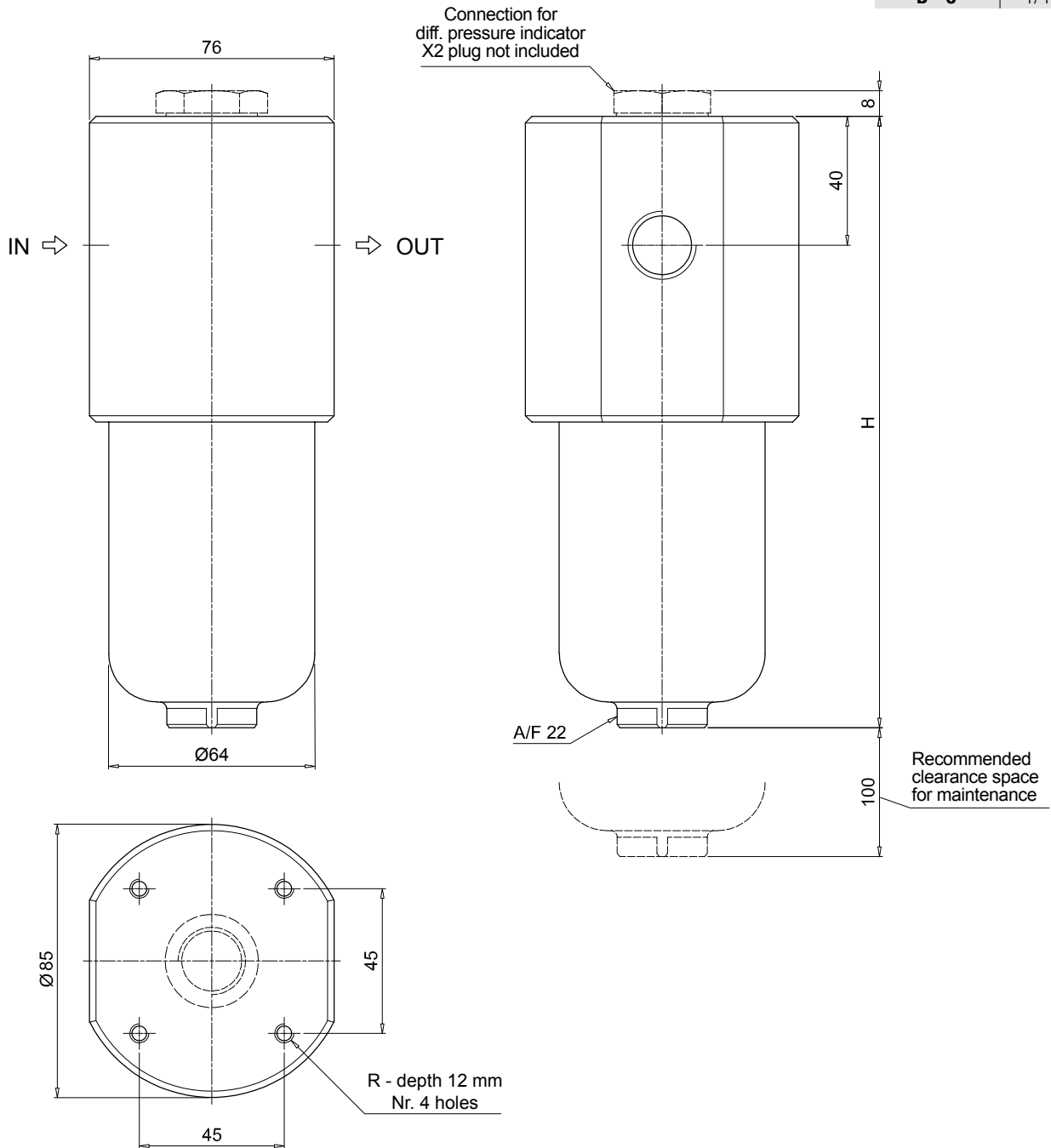
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

FZP039	
Filter length	H [mm]
2	179
3	222
4	266
Connections	R
A	M6
B - C	1/4" UNC



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZP136** | **1** | **B** | **A** | **B** | **6** | **A03** | **R** | **P01**

**Series and size**  
**FZP136**

**Length**  
**1** | **2** | **3**

**Bypass valve**  
**S** Without bypass  
**B** With bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 3/4"  
**B** 3/4" NPT  
**C** SAE 12 - 1 1/16" - 12 UN  
**D** G 1"  
**E** 1" NPT  
**F** SAE 16 - 1 5/16" - 12 UN  
**G** G 1 1/4"  
**H** 1 1/4" NPT  
**I** SAE 20 - 1 5/8" - 12 UN

**Connections for differential pressure indicators**  
**1** Without connection  
**6** With two connections on both sides

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves		Execution
	S	B	
<b>R</b> 20 bar	-	•	<b>P01</b> MP Filtri standard
<b>S</b> 210 bar	•	-	<b>Pxx</b> Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	

### FILTER ELEMENT

Configuration example: **HP135** | **1** | **A03** | **A** | **R** | **P01**

**Element series and size**  
**HP135**

**Element length**  
**1** | **2** | **3**

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves		Execution
	S	B	
<b>R</b> 20 bar	-	•	<b>P01</b> MP Filtri standard
<b>S</b> 210 bar	•	-	<b>Pxx</b> Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator

**DLX** Electrical/visual differential pressure indicator

**DVX** Visual differential pressure indicator

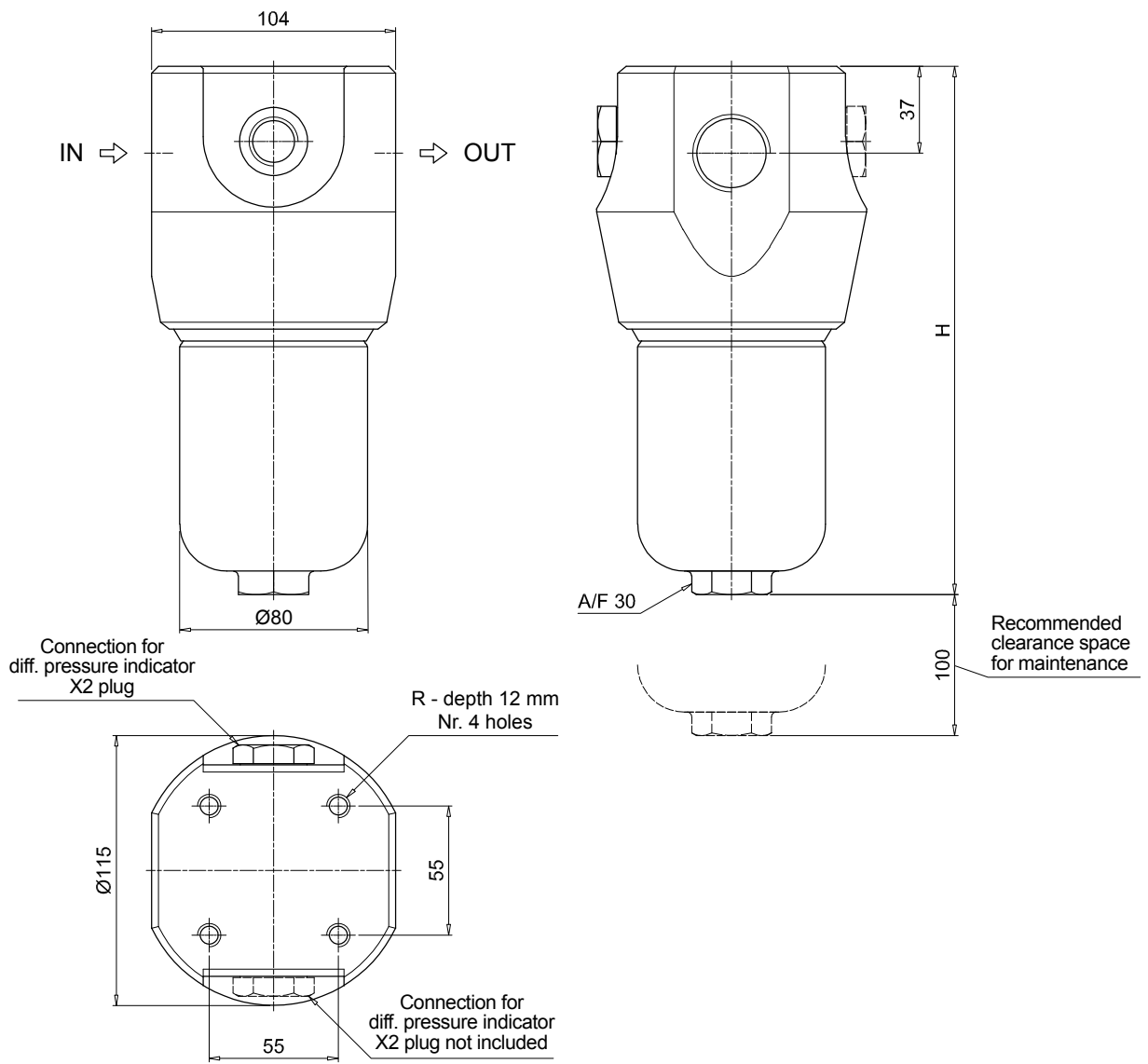
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

FZP136	
Filter length	H [mm]
<b>1</b>	222
<b>2</b>	335
<b>3</b>	410
Connections	R
<b>A</b>	M10
<b>B - C</b>	3/8" UNC
<b>D</b>	M10
<b>E - F</b>	3/8" UNC
<b>G</b>	M10
<b>H - I</b>	3/8" UNC

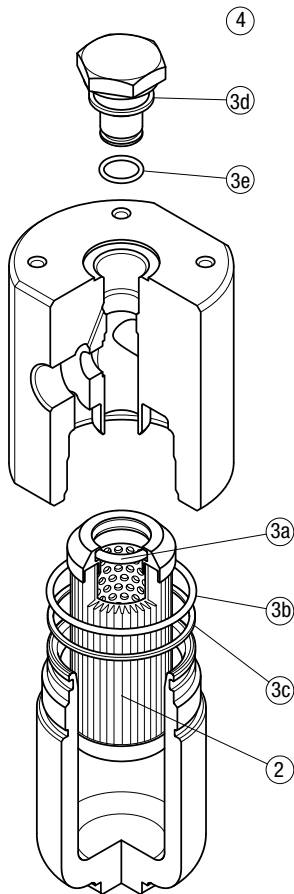


The position of the X2 plug is reversible

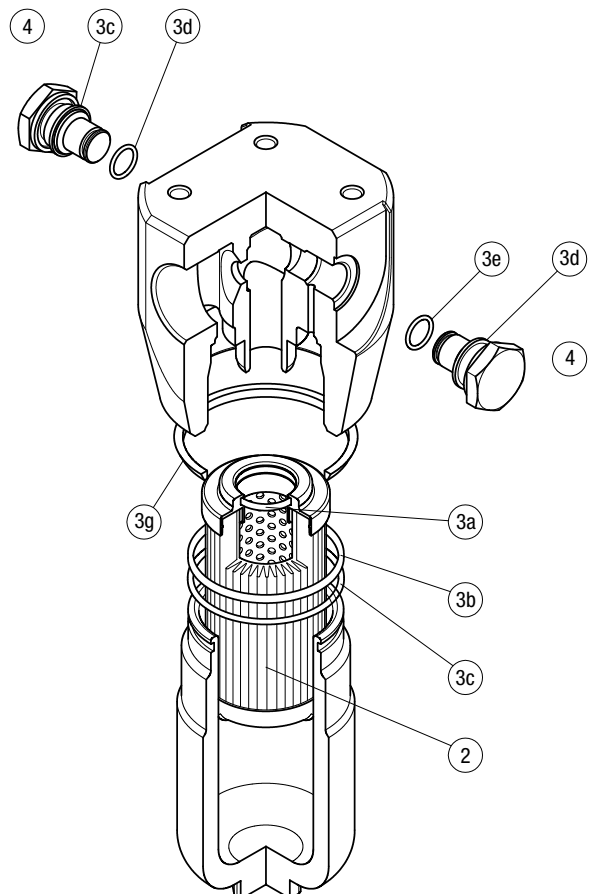
# FZP SPARE PARTS

Order number for spare parts

**FZP 039**



**FZP 136**



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		
FZP 039	See order table	NBR	FPM	NBR	FPM	
		02050299	02050300	X2H	X2V	
<b>FZP 136</b>		02050636	02050637			







# FZH series

Maximum working pressure up to 70 Mpa (700 bar) - Flow rate up to 80 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



FZH012



FZH040

Please scan the QR codes  
to get updated electronic version  
of the related document.



## Description

## Technical data

### Stainless steel high pressure filters

#### In-line

**Maximum working pressure up to 80 Mpa (700 bar)**

**Flow rate up to 80 l/min**

FZH is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 80 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar  $\pm$ 10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZH filters are provided for vertical mounting

#### $\Delta p$ element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series N-R: 20 bar.

Element series "N - R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series H-S: 210 bar.

Element series "H - S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZH 012</b>		2.1	2.2	2.7	3.3		0.10	0.12	0.15	0.20
<b>FZH 040</b>		-	4.5	5.1	5.6		-	0.19	0.26	0.34

Filter series	Length	Filter element design - N Series					Filter element design - H-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 012</b>	<b>1</b>	4	6	8	9	11	3	5	6	7	9
	<b>2</b>	7	9	17	20	26	5	7	14	17	23
	<b>3</b>	11	14	25	27	32	11	14	24	27	32
	<b>4</b>	17	20	29	31	34	13	16	26	29	33

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 040</b>	<b>2</b>	19	25	43	50	59	19	23	41	45	55
	<b>3</b>	34	37	53	62	74	31	34	48	52	66
	<b>4</b>	42	46	63	72	81	38	41	55	71	78

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ 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).

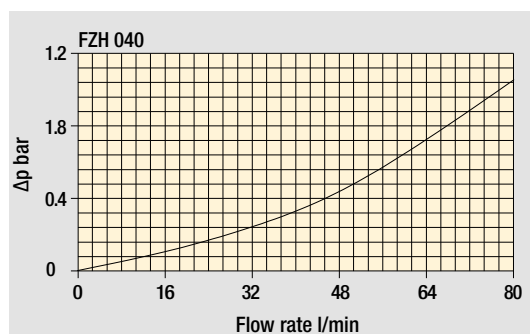
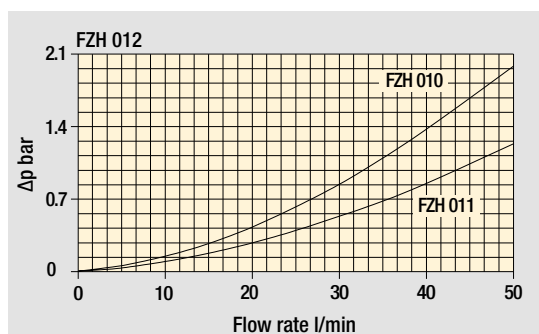
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

### Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FZH 012</b>	•	•	-	-	•	•
<b>FZH 040</b>	•	•	•	•	•	•

### Pressure drop

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.

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZH012** | **2** | **B** | **F** | **B** | **2** | **A03** | **U** | **P01**

**Filter Series and size**  
**FZH012**

**Filter length**  
**1** | **2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 1/4"  
**B** 1/4" NPT  
**C** SAE 5 - 1/2" - 20 UNF  
**D** G 3/8"  
**E** 3/8" NPT  
**F** SAE 6 - 9/16" - 18 UNF

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With connection

Filtration rating (filter media)	Valves			
	S	B	V	Z
<b>A03</b> Inorganic microfiber 3 µm	-	•	-	•
<b>A06</b> Inorganic microfiber 6 µm	-	•	-	•
<b>A10</b> Inorganic microfiber 10 µm	•	-	•	-
<b>A16</b> Inorganic microfiber 16 µm	•	•	•	•
<b>A25</b> Inorganic microfiber 25 µm	•	•	•	•

Element Δp	Valves				Execution
	S	B	V	Z	
<b>N</b> 20 bar	-	•	-	•	<b>P01</b> MP Filtri standard
<b>H</b> 210 bar	•	-	•	-	<b>Pxx</b> Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	

### FILTER ELEMENT

Configuration example: **HP011** | **2** | **A03** | **F** | **U** | **P01**

**Element series and size**  
**HP011**

**Element length**  
**1** | **2** | **3** | **4**

Filtration rating (filter media)	Valves			
	S	B	V	Z
<b>A03</b> Inorganic microfiber 3 µm	-	•	-	•
<b>A06</b> Inorganic microfiber 6 µm	-	•	-	•
<b>A10</b> Inorganic microfiber 10 µm	•	-	•	-
<b>A16</b> Inorganic microfiber 16 µm	•	•	•	•
<b>A25</b> Inorganic microfiber 25 µm	•	•	•	•

Element Δp	Valves				Execution
	S	B	V	Z	
<b>N</b> 20 bar	-	•	-	•	<b>P01</b> MP Filtri standard
<b>H</b> 210 bar	•	-	•	-	<b>Pxx</b> Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator  
**DLX** Electrical/visual differential pressure indicator

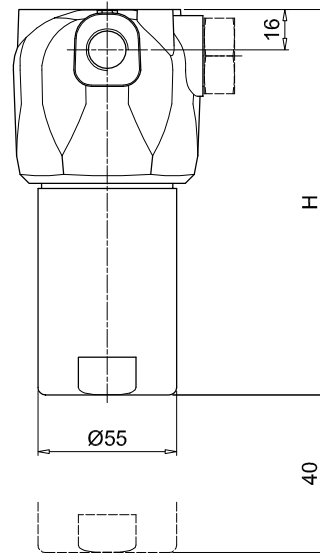
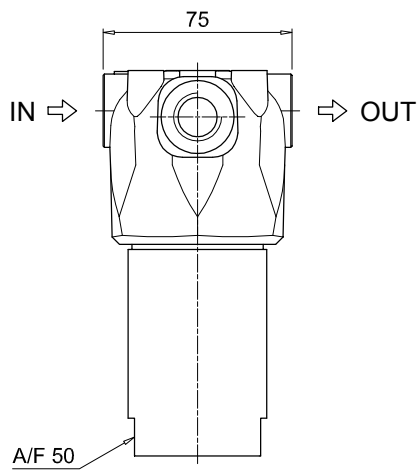
**DVX** Visual differential pressure indicator  
**DVY** Visual differential pressure indicator

### PLUGS

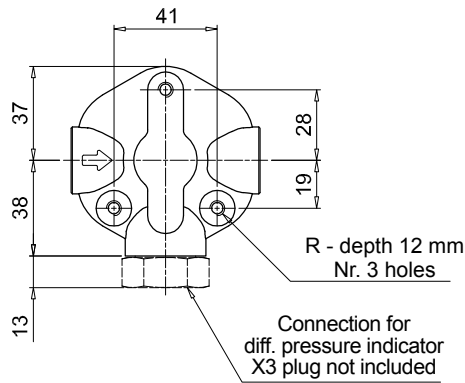
See page 737

**X2** Stainless steel plug (not included)

FZH012	
Filter length	H [mm]
<b>1</b>	93
<b>2</b>	104
<b>3</b>	154
<b>4</b>	204
Connections	R
<b>A</b>	M6
<b>B - C</b>	1/4" UNC
<b>D</b>	M6
<b>E - F</b>	1/4" UNC



Recommended clearance space for maintenance



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZH040** **2** **T** **A** **A** **2** **A03** **S** **P01**

**Filter Series and size**  
**FZH040**

**Filter length**  
**2** | **3** | **4** |

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR **F** MFQ  
**V** FPM

**Connections**  
**A** G 1/2"  
**B** 1/2" NPT  
**C** SAE 8 - 3/4" - 16 UNF

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With connection

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm

Element Δp	S	B	T	D	V	Z
<b>R</b> 20 bar	-	•	-	•	-	•
<b>S</b> 210 bar	•	-	•	-	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

**Valves**

Valves	S	B	T	D	V	Z
<b>P01</b> MP Filtri standard	-	•	-	•	-	•
<b>Pxx</b> Customized	•	-	•	-	•	-

### FILTER ELEMENT

Configuration example: **HP039** **2** **A03** **A** **S** **P01**

**Element series and size**  
**HP039**

**Element length**  
**2** | **3** | **4** |

**Filtration rating (filter media)**

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm

Element Δp	S	B	T	D	V	Z
<b>R</b> 20 bar	-	•	-	•	-	•
<b>S</b> 210 bar	•	-	•	-	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

**Valves**

Valves	S	B	T	D	V	Z
<b>P01</b> MP Filtri standard	-	•	-	•	-	•
<b>Pxx</b> Customized	•	-	•	-	•	-

**Seals**  
**A** NBR **F** MFQ  
**V** FPM

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator  
**DLX** Electrical/visual differential pressure indicator

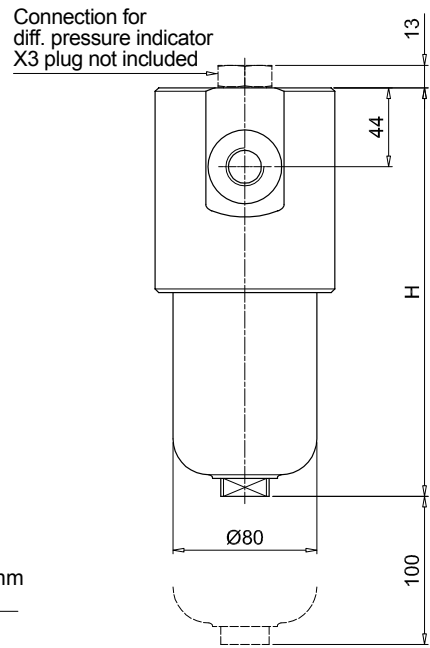
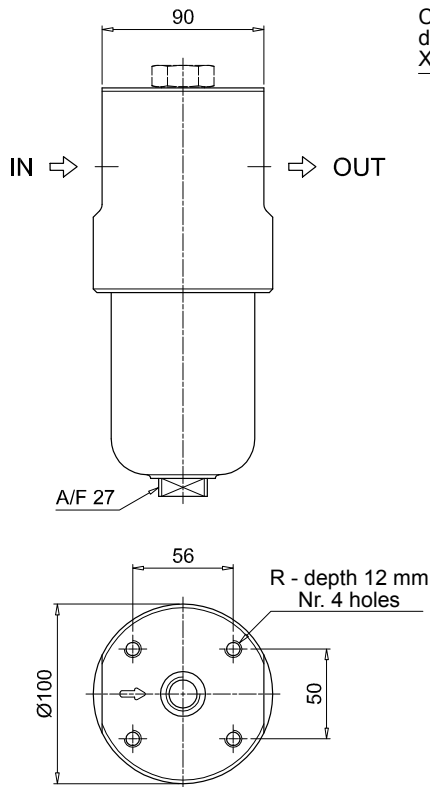
**DVX** Visual differential pressure indicator  
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

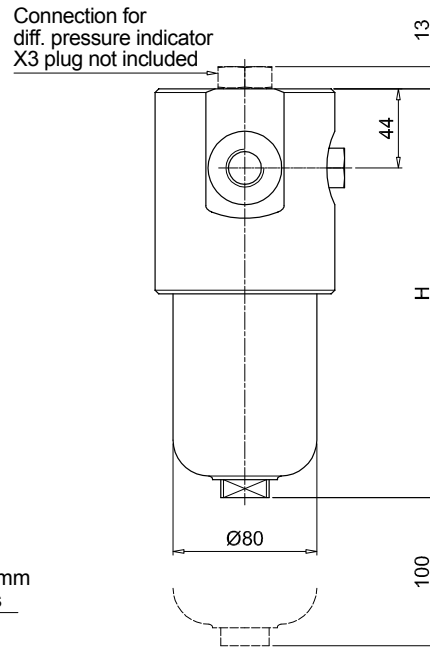
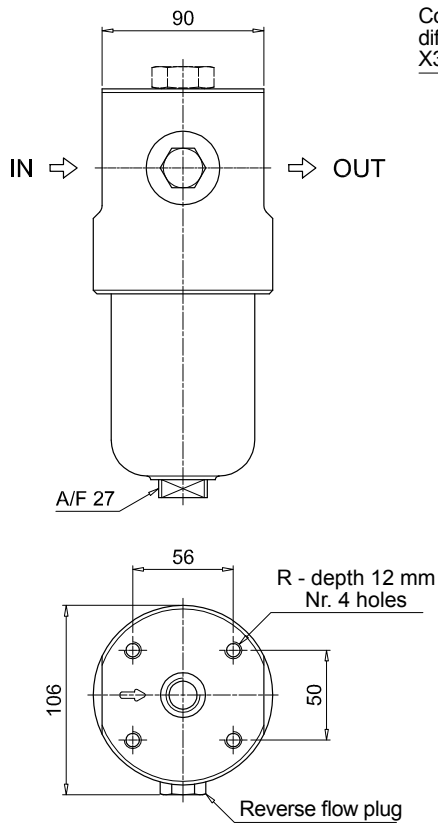
Valves S - B - T - D



Recommended clearance space for maintenance

FZH040	
Filter length	H [mm]
2	204
3	247
4	291
Connections	R
A	M10
B	3/8" UNC
C	3/8" UNC

Valves V - Z



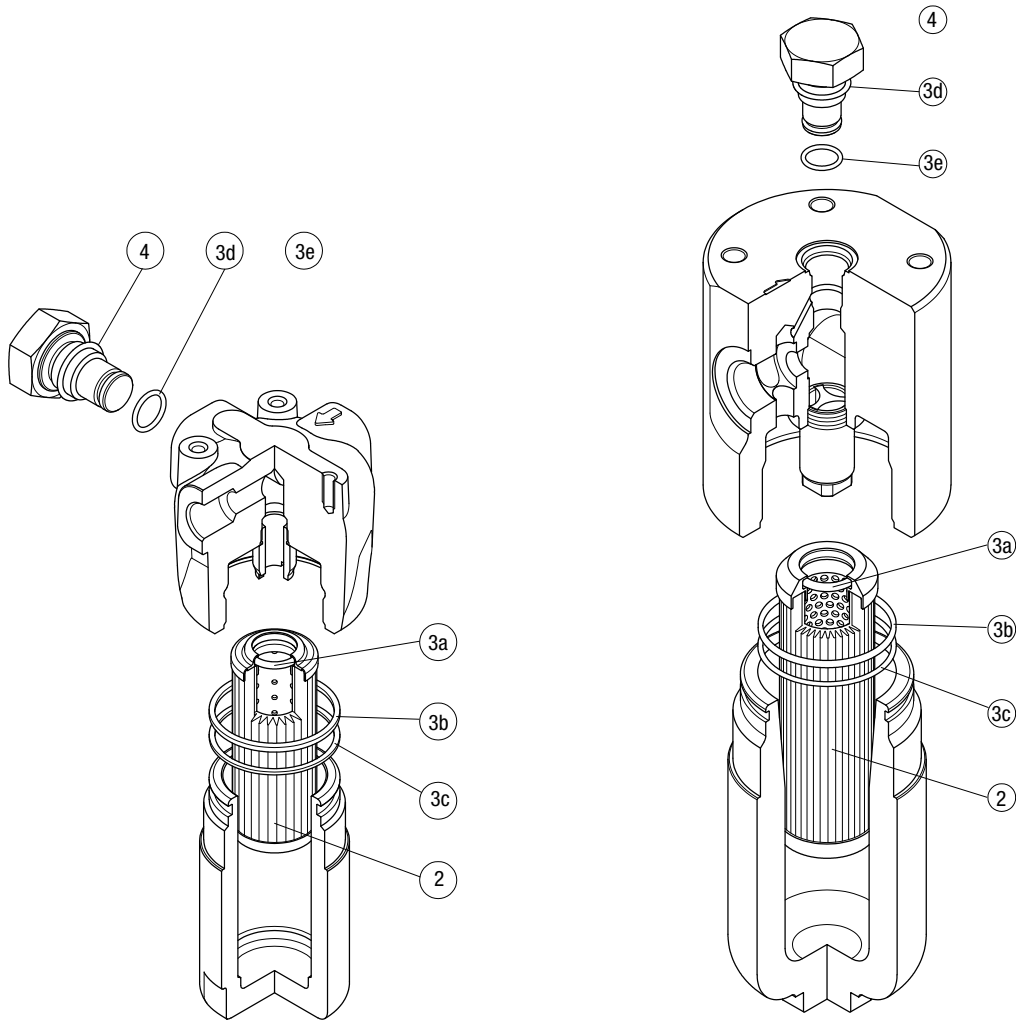
Recommended clearance space for maintenance

# FZH SPARE PARTS

Order number for spare parts

FZH 012

FZH 040



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZH 012	See order table	NBR	FPM	NBR	FPM
FZH 040	See order table	02050856	02050857	X2H	X2V
		02050860	02050861		







# FZX series

Maximum working pressure up to 100 Mpa (1000 bar) - Flow rate up to 10 l/min



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## Description

## Technical data

### Stainless steel high pressure filters

#### In-line

**Maximum working pressure up to 100 Mpa (1000 bar)**

**Flow rate up to 10 l/min**

FZX is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 10 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar  $\pm$ 10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZX filters are provided for vertical mounting

#### $\Delta p$ element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series H: 210 bar.

Element series "H":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZX 011</b>	-	-	6.5	-	-	-	-	0.15	-	-

Filter series	Length	Filter element design - H-U Series				
		A03	A06	A10	A16	A25
<b>FZX 011</b>	<b>3</b>	1.57	1.63	1.73	1.74	1.77

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

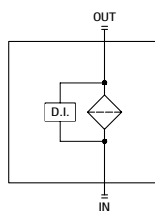
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

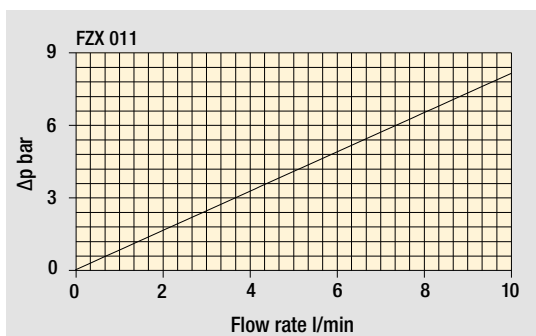
## Hydraulic symbols

Filter series	Style S
<b>FZX 011</b>	•



## Pressure drop

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.

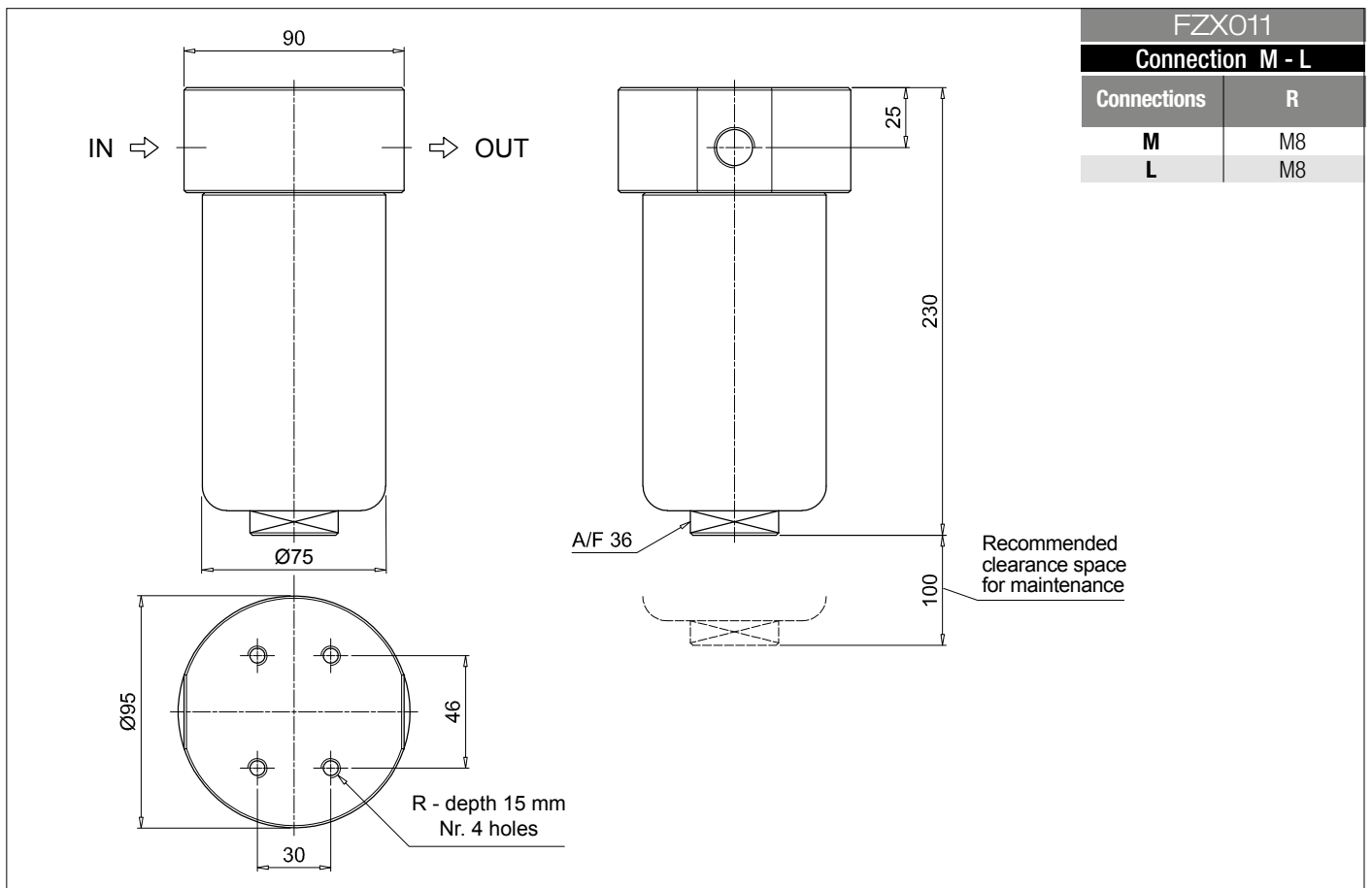
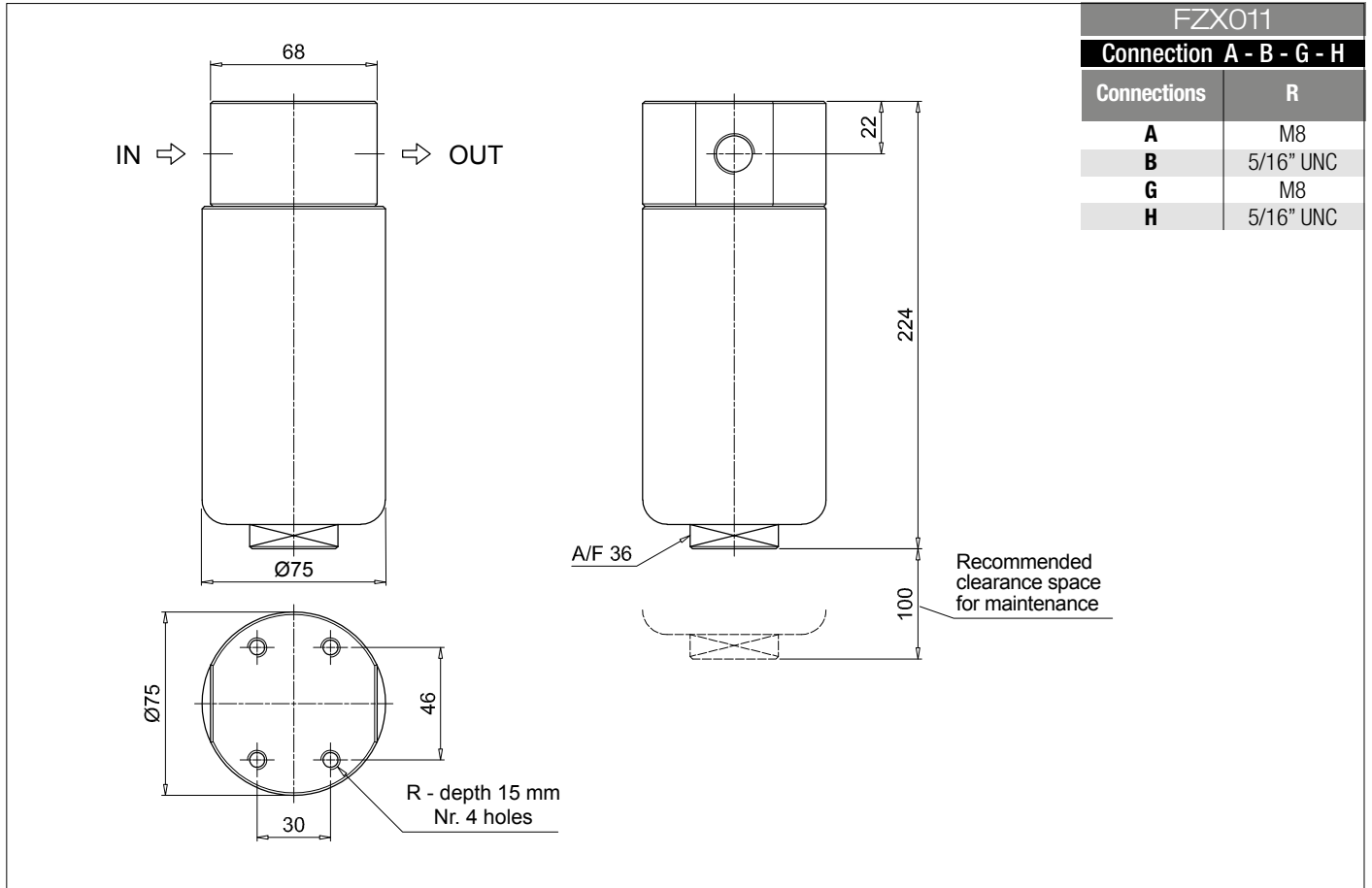
## Designation & Ordering code

### COMPLETE FILTER

Filter series and size	Configuration example:	FZX011	3	S	V	B	1	A03	U	P01
<b>FZX011</b>										
<b>Filter length</b>										
<b>3</b>										
<b>Bypass valve</b>										
<b>S Without bypass</b>										
<b>Seals</b>										
<b>A NBR</b>										
<b>V FPM</b>										
<b>F MFQ</b>										
<b>Connections</b>										
<b>700 bar</b>										
<b>A G 1/4"</b>										
<b>B 1/4" NPT</b>										
<b>G G 1/2"</b>										
<b>H 1/2" NPT"</b>										
<b>Autoclave 1000 bar</b>										
<b>M 9/16" - 18 UNF</b>										
<b>L 3/4" - 14 NPS</b>										
<b>Connection for differential pressure indicators</b>										
<b>1 Without connection</b>										
<b>Filtration rating (filter media)</b>										
<b>A03 Inorganic microfiber 3 µm</b>										
<b>A06 Inorganic microfiber 6 µm</b>										
<b>A10 Inorganic microfiber 10 µm</b>										
<b>A16 Inorganic microfiber 16 µm</b>										
<b>A25 Inorganic microfiber 25 µm</b>										
<b>Element Δp</b>										
<b>H 210 bar</b>										
<b>U 210 bar, stainless steel filter element</b>										
<b>Execution</b>										
<b>P01 MP Filtri standard</b>										
<b>Pxx Customized</b>										

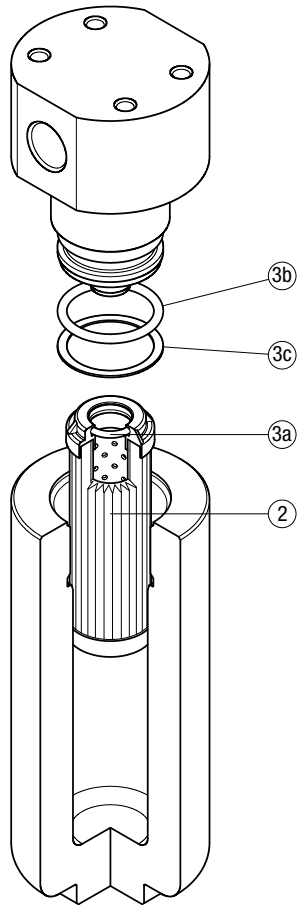
### FILTER ELEMENT

Element series and size	Example:	HP011	3	A03	V	U	P01
<b>HP011</b>							
<b>Element length</b>							
<b>3</b>							
<b>Filtration rating (filter media)</b>							
<b>A03 Inorganic microfiber 3 µm</b>							
<b>A06 Inorganic microfiber 6 µm</b>							
<b>A10 Inorganic microfiber 10 µm</b>							
<b>A16 Inorganic microfiber 16 µm</b>							
<b>A25 Inorganic microfiber 25 µm</b>							
<b>Seals</b>							
<b>A NBR</b>							
<b>V FPM</b>							
<b>F MFQ</b>							
<b>Element Δp</b>							
<b>H 210 bar</b>							
<b>U 210 bar, stainless steel filter element</b>							
<b>Execution</b>							
<b>P01 MP Filtri standard</b>							
<b>Pxx Customized</b>							



Order number for spare parts

**FZX 011**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
FZX 011	See order table	NBR	FPM
	<b>2</b>	02050643	02050644
			<b>3</b> (3a + 3c)







# FZM series

Maximum working pressure up to 32 Mpa (320 bar) - Flow rate up to 70 l/min



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## Description

## Technical data

### Stainless steel high pressure filters

#### Manifold

**Maximum working pressure up to 32 Mpa (320 bar)**  
**Flow rate up to 70 l/min**

FZM is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the top of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø15 mm, for a maximum flow rate of 70 l/min
- ISO 4401 CETOP 3 and CETOP 5 interface, for direct mounting on the CETOP valves.
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZM filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZM 039</b>	-	5.0	5.6	6.1		-	0.19	0.26	0.34	

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZM 039</b>	<b>2</b>	19	25	41	47	54	19	23	39	43	51
	<b>3</b>	33	36	50	56	65	30	33	45	49	60
	<b>4</b>	41	44	58	64	70	37	39	51	63	68

### Maximum flow rate for a complete stainless steel high pressure filter with a return drop $\Delta p = 1.5$ bar.

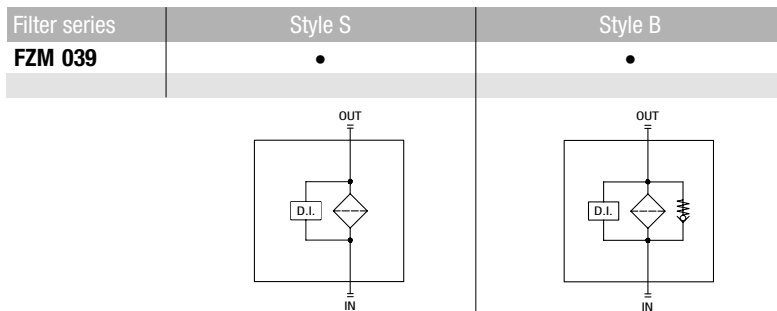
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

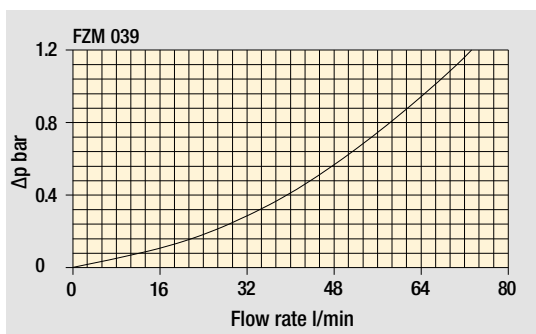
Please, contact our Sales Department for further additional information.

## Hydraulic symbols



## Pressure drop

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.

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZM039** | **2** | **S** | **A** | **M** | **1** | **A10** | **H** | **P01**

**Series and size**  
**FZM039**

**Length**  
**2** | **3** | **4** |

**Bypass valve**  
**S** Without bypass  
**B** With bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**M** Manifold

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With connection

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves		Execution
	S	B	
<b>R</b> 20 bar	-	•	<b>P01</b> MP Filtri standard
<b>S</b> 210 bar	•	-	<b>Pxx</b> Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	

### FILTER ELEMENT

Configuration example: **HP039** | **3** | **A10** | **A** | **S** | **P01**

**Element series and size**  
**HP039**

**Element length**  
**2** | **3** | **4** |

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Seals	Element Δp	Execution
<b>A</b> NBR	<b>R</b> 20 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>S</b> 210 bar	<b>Pxx</b> Customized
<b>F</b> MFQ	<b>U</b> 210 bar, stainless steel filter element	

### CLOGGING INDICATORS

See page 718

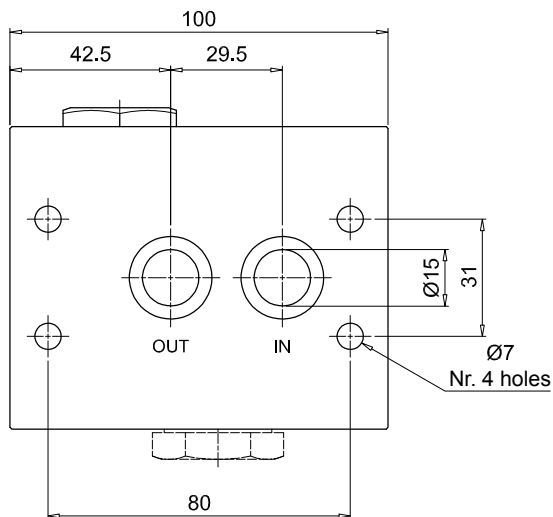
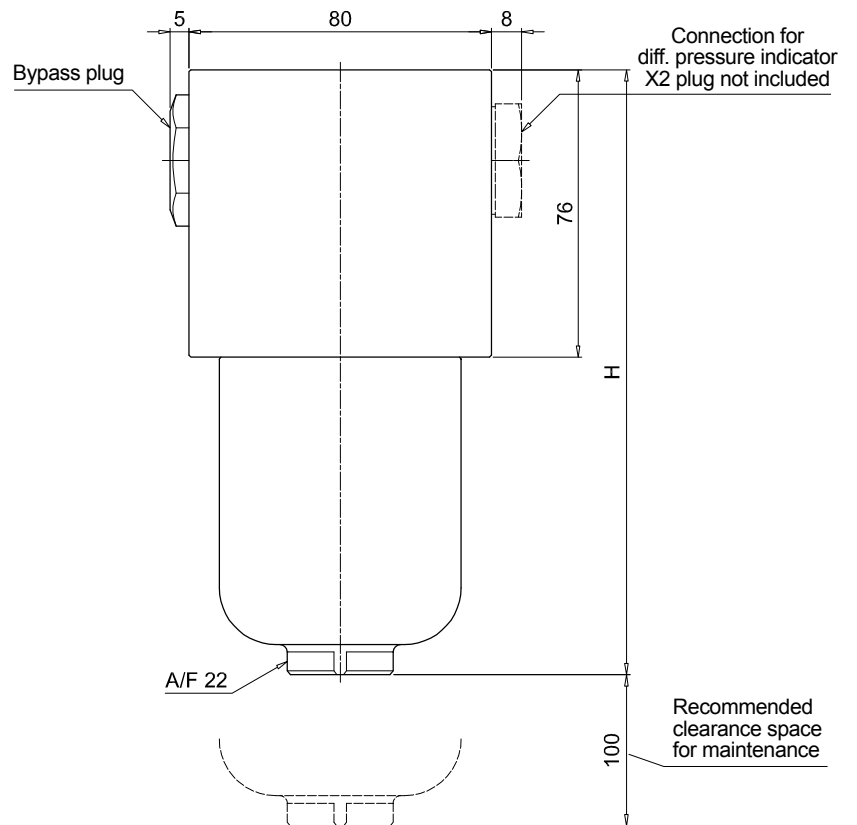
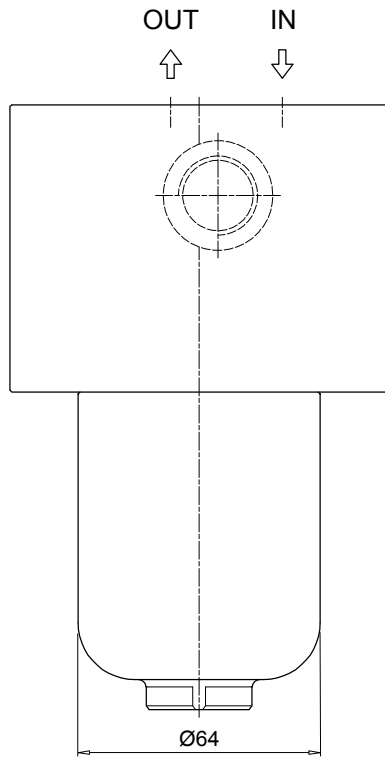
<b>DEX</b> Electrical differential pressure indicator	<b>DVX</b> Visual differential pressure indicator
<b>DLX</b> Electrical/visual differential pressure indicator	<b>DVY</b> Visual differential pressure indicator

### PLUGS

See page 737

<b>X2</b> Stainless steel plug (not included)
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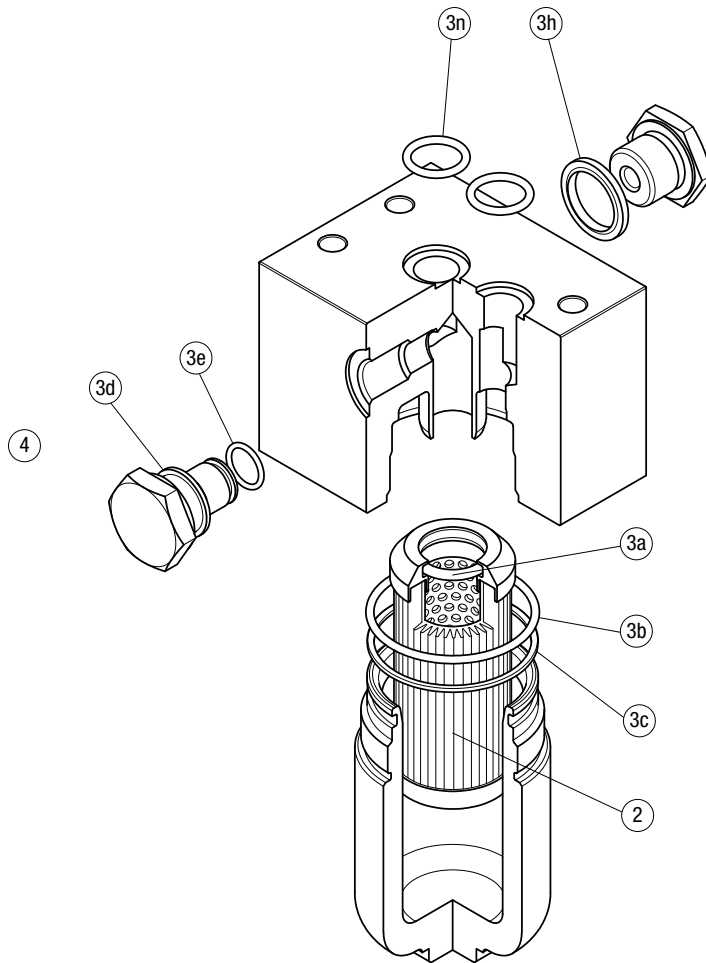
FZM039	
Filter length	H [mm]
2	160
3	203
4	247



# FZM SPARE PARTS

Order number for spare parts

## FZM 039



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZM 039	See order table	NBR	FPM	NBR	FPM
	2	3 (3a ÷ 3n)		4	
		02050651	02050652	X2H	X2V







# FZB series

Maximum working pressure up to 32 Mpa (320 bar) - Flow rate up to 70 l/min



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## Description

## Technical data

### Stainless steel high pressure filters

#### Manifold

**Maximum working pressure up to 32 Mpa (320 bar)**  
**Flow rate up to 70 l/min**

FZB is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the side of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø16 mm, for a maximum flow rate of 70 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZB filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>FZB 039</b>	-	4.6	5.2	5.7	-	0.19	0.26	0.34		

Filter series	Length	Filter element design - R Series					Filter element design - S Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZB 039</b>	<b>2</b>	18	23	39	44	52	18	22	37	40	48	18	22	37	40	48
	<b>3</b>	31	33	47	54	65	28	31	43	46	84	28	31	43	46	84
	<b>4</b>	38	41	56	63	71	34	36	48	62	68	34	36	48	62	68

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ 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>.

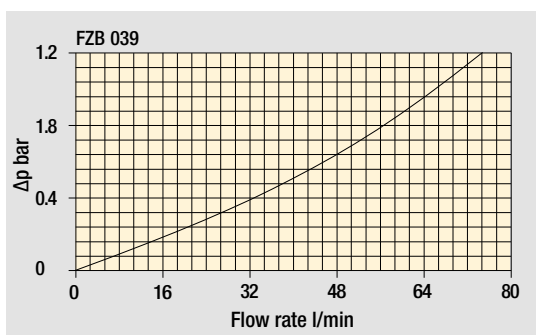
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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 S	Style B	Style T	Style D
<b>FZB 039</b>	•	•	•	•



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.

Pressure drop  
Filter housings  $\Delta p$  pressure drop

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZB039** | **2** | **T** | **A** | **F** | **2** | **A06** | **S** | **P01**

**Series and size**  
FZB039

**Length**  
2 | 3 | 4 |

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
F Manifold

**Connections for differential pressure indicators**  
**1** Without connection  
**2** With connection on the top

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves				Execution
	S	B	T	D	
<b>R</b> 20 bar	-	•	-	•	<b>P01</b> MP Filtri standard
<b>S</b> 210 bar	•	-	•	-	<b>Pxx</b> Customized
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	

### FILTER ELEMENT

Configuration example: **HP039** | **2** | **A06** | **A** | **S** | **P01**

**Element series and size**  
HP039

**Element length**  
2 | 3 | 4 |

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Seals	Element Δp	Execution
<b>A</b> NBR	<b>R</b> 20 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>S</b> 210 bar	<b>Pxx</b> Customized
<b>F</b> MFQ	<b>U</b> 210 bar, stainless steel filter element	

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator  
**DLX** Electrical/visual differential pressure indicator

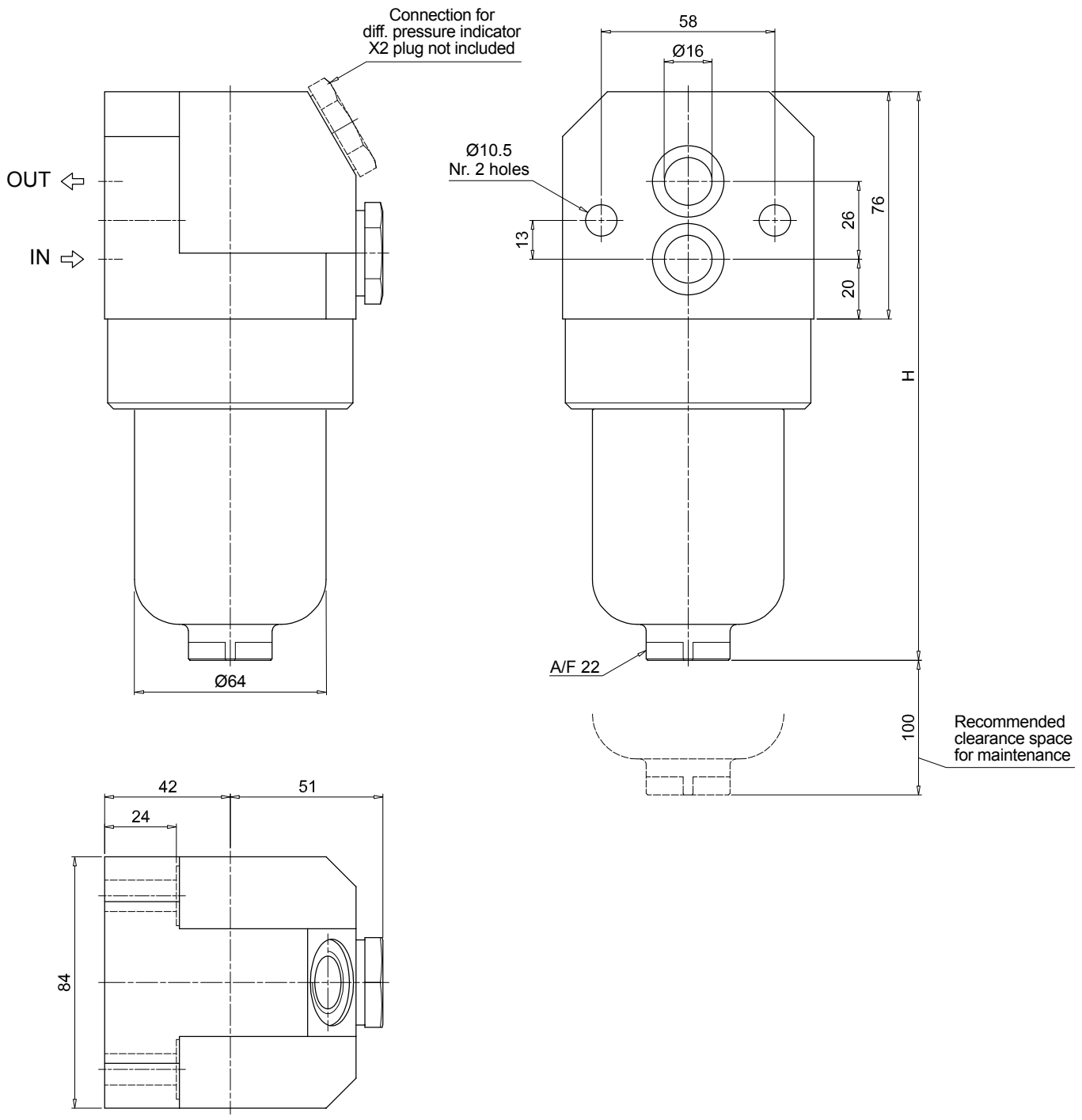
**DVX** Visual differential pressure indicator  
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

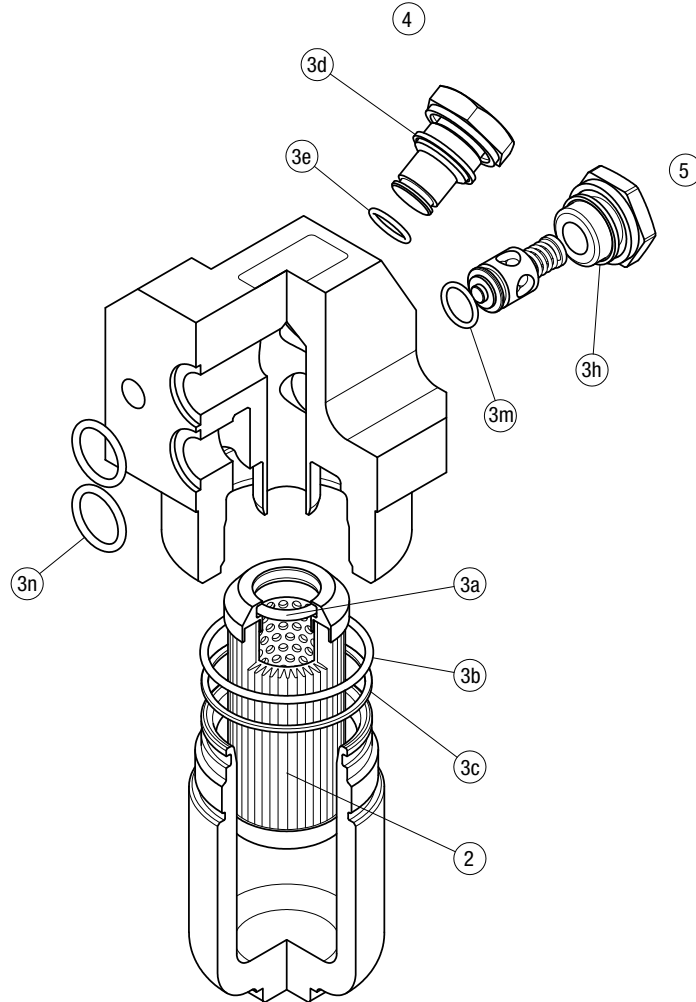
FZB039	
Filter length	H [mm]
2	190
3	233
4	277



# FZB SPARE PARTS

Order number for spare parts

## FZB 039



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly / plug		
		NBR	FPM	NBR	FPM	NBR	FPM	
<b>FZB 039</b>	See order table	02050647	02050648	X2H	X2V	02001286	02001295	







# FZD series

Maximum working pressure up to 35 Mpa (350 bar) - Flow rate up to 60 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes to get updated electronic version of the related document:



FZD010



FZD021



FZD051

## Description

## Technical data

### Stainless steel high pressure filters

#### Duplex

**Maximum working pressure up to 35 Mpa (350 bar)**  
**Flow rate up to 60 l/min**

FZD is a range of stainless steel high pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 3/4", for a maximum flow rate of 60 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Balancing valve, available for FZD051, to equalize the housing pressure before the switch.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- System where shut-down causes high costs
- System where shut-down causes safety issues

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZD filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series H-S: 210 bar.

Element series "H - S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	4
<b>FZD 010</b>	-	-	7.9	-	-	-	-	-	0.10	-	-	-
<b>FZD 021</b>	-	-	9.6	9.8	10.3	-	-	-	0.06	0.12	0.22	-
<b>FZD 051</b>	-	-	17.4	18.0	19.0	20.3	-	-	0.31	0.41	0.53	0.83

Filter series	Length	Filter element design - H Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZD 010</b>	<b>2</b>	4	5	7	8	11	4	5	7	8	11
	<b>3</b>	5	6	11	12	16	5	6	11	12	16
<b>FZD 021</b>	<b>3</b>	9	11	16	18	20	9	11	16	18	20
	<b>4</b>	10	12	17	19	21	10	12	17	19	21

Filter series	Length	Filter element design - R Series					Filter element design - S Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZD 051</b>	<b>2</b>	39	41	51	54	59	35	37	48	51	58	35	37	48	51	58
	<b>3</b>	45	46	54	56	61	41	43	52	54	60	41	43	52	54	60
	<b>4</b>	50	52	58	58	62	47	49	56	56	61	47	49	56	56	61
	<b>5</b>	56	57	61	62	63	53	53	57	59	63	53	53	57	59	63

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ 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>.

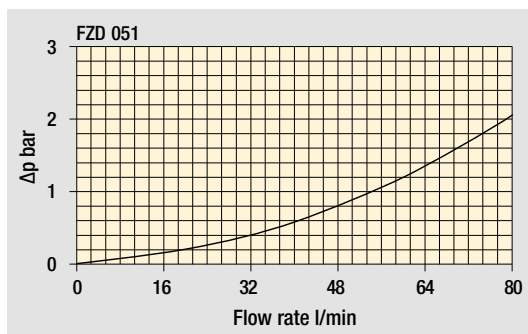
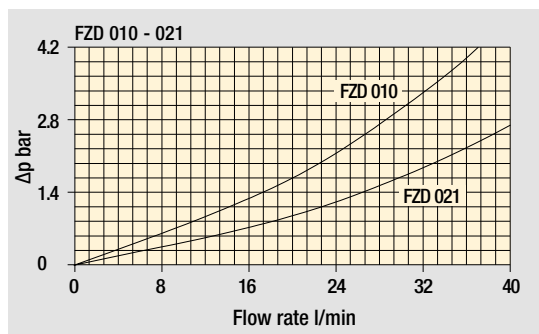
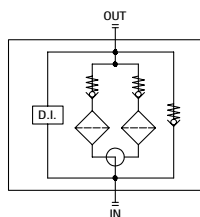
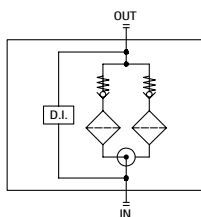
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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 S	Style B
<b>FZD 010</b>	•	-
<b>FZD 021</b>	•	-
<b>FZD 051</b>	•	•



## Pressure drop 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.

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>FZD021</b>   <b>4</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>A06</b>   <b>H</b>   <b>P01</b>											
FZD010		FZD021											
<b>Length</b>		FZD010	FZD021										
<b>2</b>		•	•										
<b>3</b>		-	•										
<b>4</b>		-	•										
<b>Bypass valve</b>													
<b>S</b> Without bypass													
<b>Seals</b>													
<b>A</b> NBR													
<b>V</b> FPM													
<b>Connections</b>		FZD010	FZD021										
<b>G1</b>		G 3/8"	G 1/2"										
<b>G2</b>		3/8" NPT	1/2" NPT										
<b>G3</b>		-	SAE 8 - 3/4" - 16 UNF										
<b>Filtration rating (filter media)</b>													
<b>A03</b>	Inorganic microfiber	3 µm											
<b>A06</b>	Inorganic microfiber	6 µm											
<b>A10</b>	Inorganic microfiber	10 µm											
<b>A16</b>	Inorganic microfiber	16 µm											
<b>A25</b>	Inorganic microfiber	25 µm											
		<b>Element Δp</b>					<b>Execution</b>						
		<b>H</b> 210 bar					<b>P01</b> MP Filtri standard						
		<b>U</b> 210 bar, stainless steel filter element					<b>Pxx</b> Customized						

### FILTER ELEMENT

Element series and size		Configuration example: <b>HP011</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>H</b>   <b>P01</b>											
FZD010		FZD021											
<b>HP010</b>		•	-										
<b>HP011</b>		-	•										
<b>Element length</b>		HP010	HP011										
<b>2</b>		•	•										
<b>3</b>		-	•										
<b>4</b>		-	•										
<b>Filtration rating (filter media)</b>													
<b>A03</b>	Inorganic microfiber	3 µm											
<b>A06</b>	Inorganic microfiber	6 µm											
<b>A10</b>	Inorganic microfiber	10 µm											
<b>A16</b>	Inorganic microfiber	16 µm											
<b>A25</b>	Inorganic microfiber	25 µm											
		<b>Seals</b>		<b>Element Δp</b>					<b>Execution</b>				
		<b>A</b> NBR		<b>H</b> 210 bar					<b>P01</b> MP Filtri standard				
		<b>V</b> FPM		<b>U</b> 210 bar, stainless steel filter element					<b>Pxx</b> Customized				

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator

**DVX** Visual differential pressure indicator

**DLX** Electrical/visual differential pressure indicator

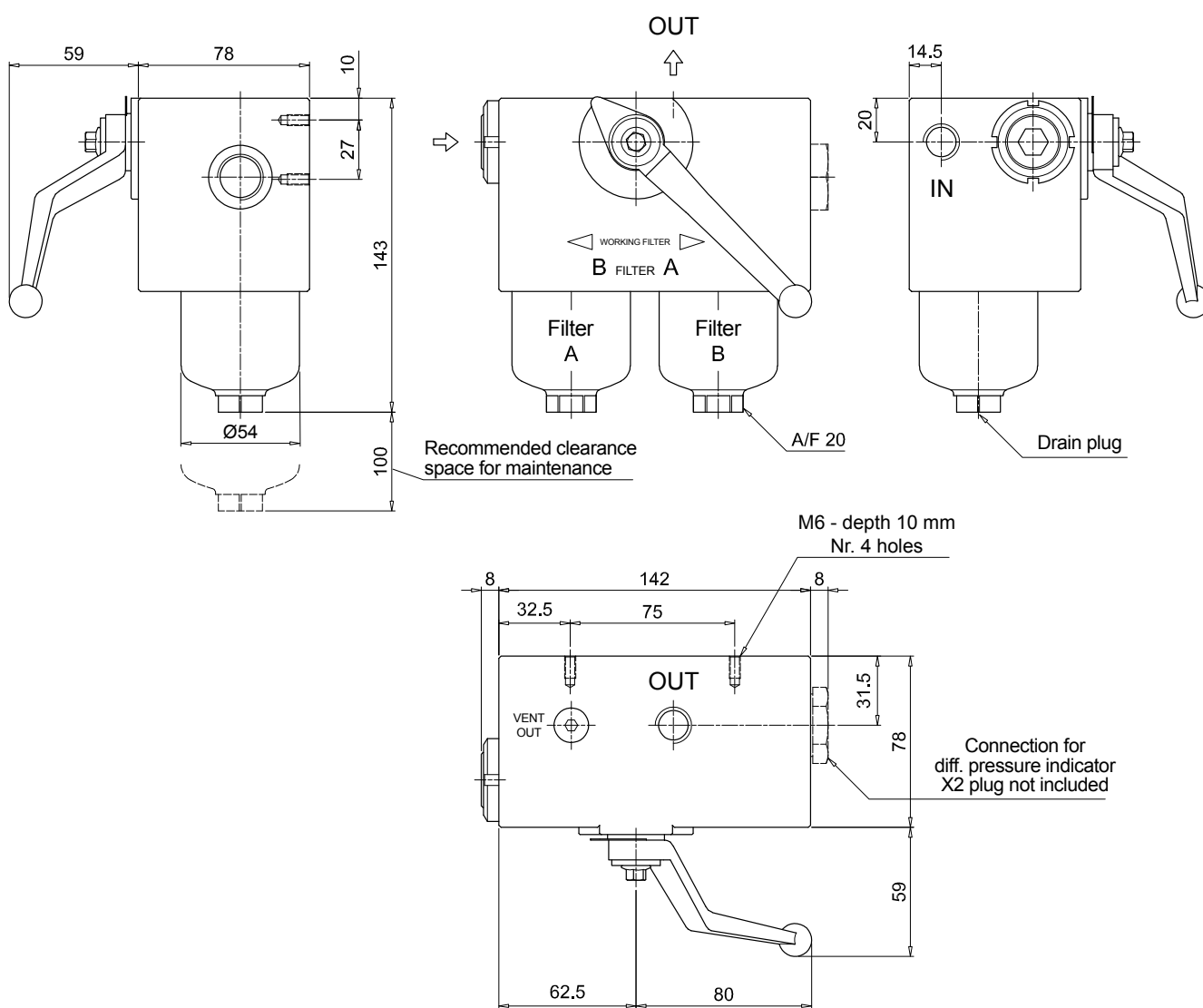
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

FZD010



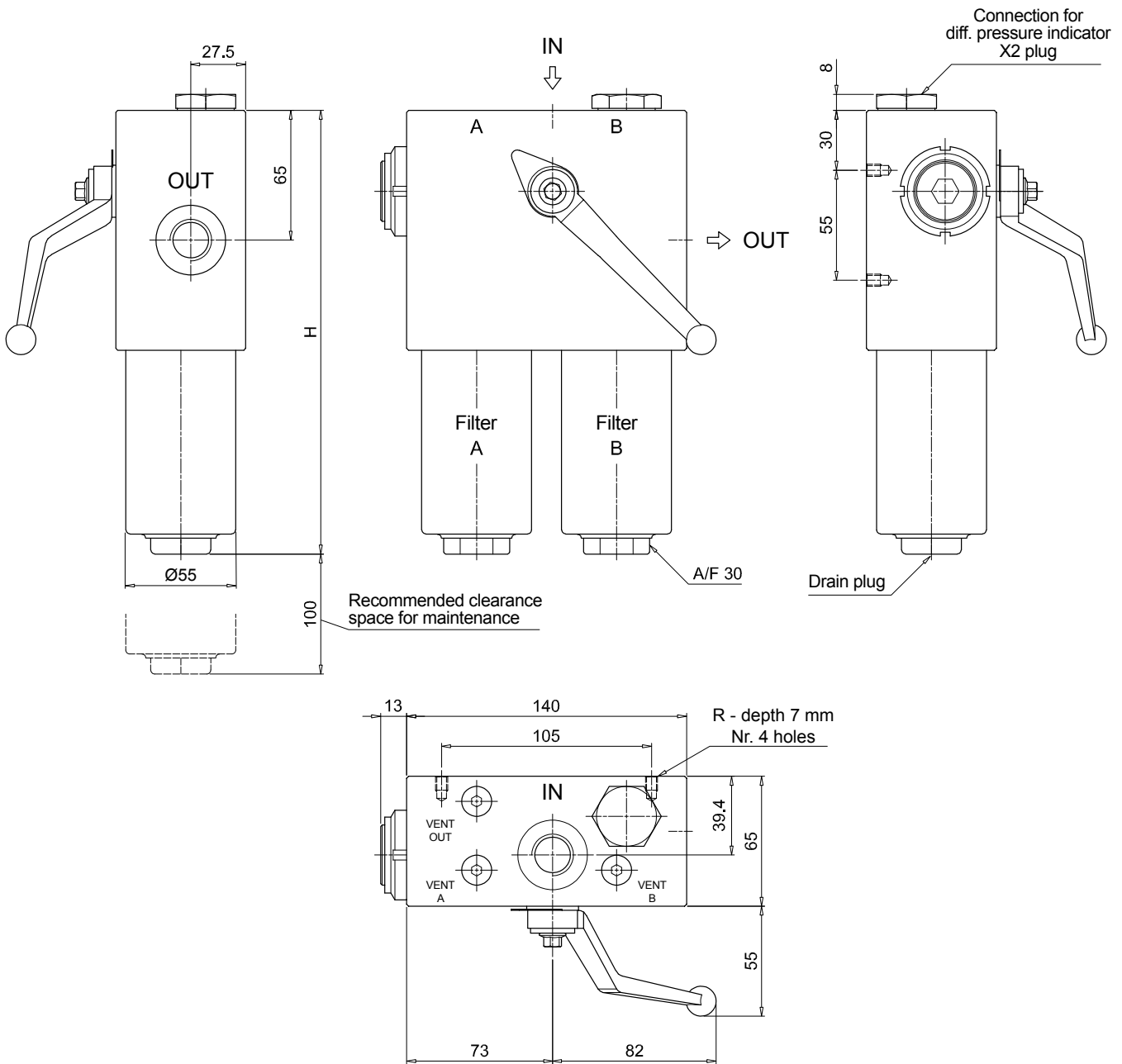
## Dimensions

### FZD021

Filter length	H [mm]
<b>2</b>	172
<b>3</b>	222
<b>4</b>	272

Connections	R
<b>G1</b>	M6
<b>G2 - G3</b>	1/4" UNC







## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>FZD051</b>	Configuration example: <b>FZD051</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>G3</b>   <b>A03</b>   <b>U</b>   <b>P01</b>							
<b>Length</b> <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>								
<b>Bypass valve</b> <b>S</b> Without bypass <b>B</b> With bypass 6 bar								
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM								
<b>Connections</b> <b>G1</b> G 3/4" <b>G2</b> 3/4" NPT <b>G3</b> G 1/2" <b>G4</b> 1/2" NPT <b>G5</b> SAE 8 - 3/4" - 16 UNF <b>G6</b> SAE 12 - 1 1/16" - 12 UN								
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm								
	<b>Element Δp</b>		<b>Valves</b>		<b>Execution</b>			
	<b>R</b> 20 bar	<b>S</b> 210 bar	<b>S</b> -	<b>B</b> •	<b>P01</b> MP Filtri standard			
	<b>S</b> 210 bar		•	-	<b>Pxx</b> Customized			
	<b>U</b> 210 bar, stainless steel filter element		•	•				

### FILTER ELEMENT

<b>Element series and size</b> <b>HP050</b>	Configuration example: <b>HP050</b>   <b>3</b>   <b>A03</b>   <b>A</b>   <b>U</b>   <b>P01</b>					
<b>Element length</b> <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>						
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm						
	<b>Seals</b>		<b>Element Δp</b>		<b>Execution</b>	
	<b>A</b> NBR	<b>R</b> 20 bar	<b>P01</b> MP Filtri standard			
	<b>V</b> FPM	<b>S</b> 210 bar	<b>Pxx</b> Customized			
		<b>U</b> 210 bar, stainless steel filter element				

### CLOGGING INDICATORS

See page 718

**DEX** Electrical differential pressure indicator  
**DLX** Electrical/visual differential pressure indicator

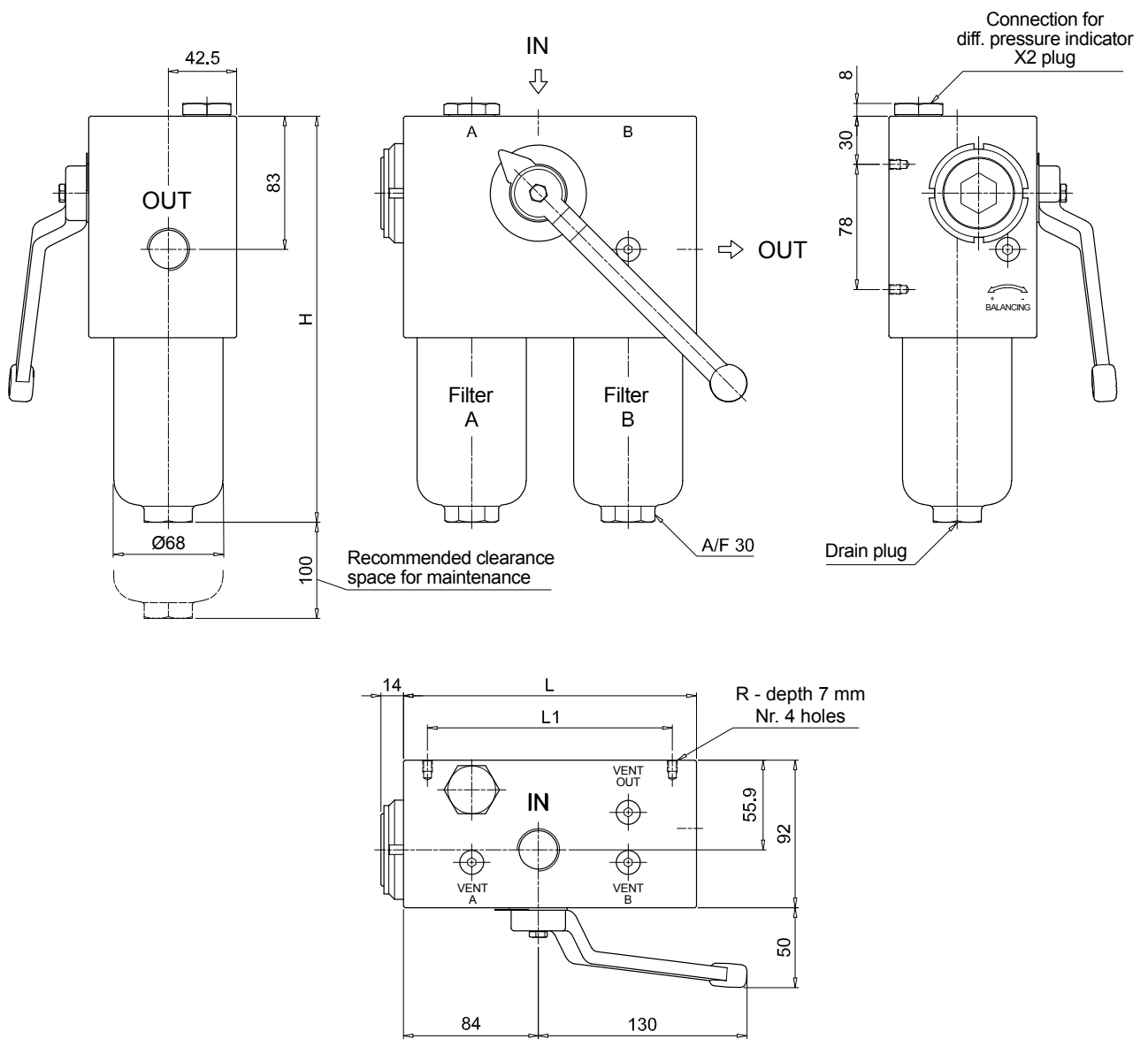
**DVX** Visual differential pressure indicator  
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

FZD051		
Filter length	H [mm]	
2	253	
3	295	
4	343	
5	465	
Connections	R	
G1	M6	
G2	1/4" UNC	
G3	M6	
G4-G5-G6	1/4" UNC	
Valves	L [mm]	L1 [mm]
S	168	138
B	182.5	152.5

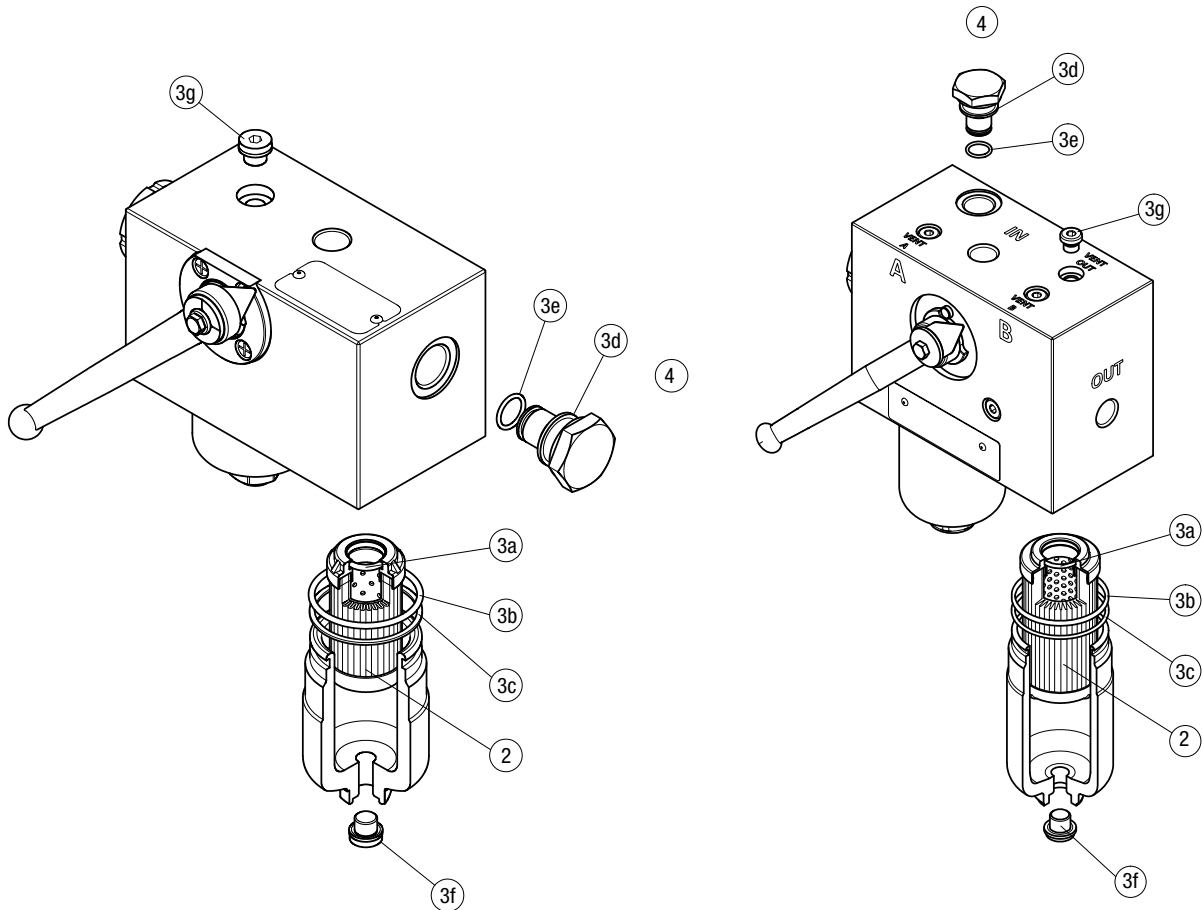


# FZD SPARE PARTS

Order number for spare parts

FZD 010

FZD 021 - FZD 051



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZD 010	See order table	NBR	FPM	NBR	FPM
		02050613	02050655		
<b>FZD 021</b>		02050796	02050797	X2H	X2V
<b>FZD 051</b>		02050800	02050801		



MP Filtri knows how to manage it thanks to our

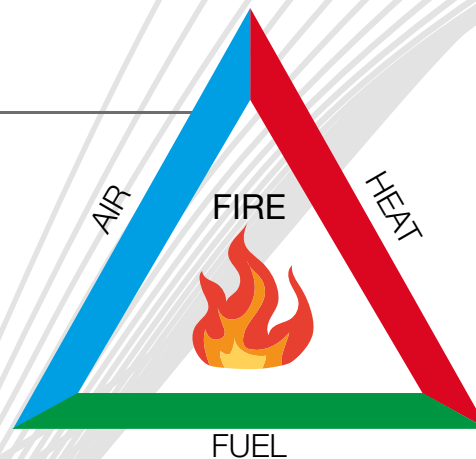


## ATEX CERTIFIED PRODUCTS

Standard ATEX Directive 2014/34/EU and UK Regulation S.I. 2016 No. 1107 (as amended)

### FIRE TRIANGLE

According to the legislation, each appliance used in explosive atmospheres must ensure adequate ATEX protection, that is, it must present the precautions necessary to ensure it is removed at least one of the components of the triangle of fire.



**zerospark<sup>®</sup>**  
**THE ANTI-STATIC FILTERS**

zerospark<sup>®</sup> filter element  
is the default concept for all MP Filtri ATEX filters

### FILTER SIZING

For the proper corrective factor Y see chapter at page 28

# Filters for potentially explosive atmosphere



FMMX050	page 663
FZP	671
FZH	681
FZX	691
INDICATORS	719



### THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.

Quality and efficiency are fundamental for MP Filtri: this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

+

**zerospark®**  
THE ANTI-STATIC FILTERS

### THE Z CONCEPT FOR OUR FILTERS

Zerospark® is a specialist solution designed to solve the problem of electrostatic discharge inside hydraulic filters. Caused by the electrical charge build-up due to the passage of oil through the filters, this can result in damage to filter elements, oils and circuit components. It can even cause fire hazards in environments where flammable materials are present.



FMMX 050 ATEX series 

with  + 

HPX 050 Filter Element

- ◆ **Protects the machine from improper use of non-original products.**
- ◆ **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only MP Filtri filter elements can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

The products identified as FMMX 050 are protected by:

- ◆ Italian Patent n° 102014902261205
- ◆ Canadian Patent n° 2,937,258
- ◆ European Patent n° 3 124 092 B1
- ◆ US Patent n° 20170030384 A1



# FMMX 050 series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 154 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



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to get updated electronic version  
of the related document.



# FMMX 050 GENERAL INFORMATION

## Description

## Technical data

### Filters for potentially explosive atmosphere

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**  
**Flow rate up to 154 l/min**

FMMX is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:




- Female threaded connections up to 1 1/4", for a maximum flow rate of 250 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "N", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators
- MYclean interface connection for the filter element, to protect the product against non-original spare parts

#### Common applications:

- Agricultural machines
- Mobile machines




#### Filter with:

NBR seal in configuration **zerospark+**

   **II 3G Ex h IIC T6 Gc X**  
**II 3D Ex h IIIC T85°C Dc X**

FPM seal in configuration

**zerospark+**

   **II 3G Ex h IIC T6... T4 Gc X**  
**II 3D Ex h IIIC T85°C...T115°C Dc X**

#### Filter housing materials

- Head: Painted cast iron, black RAL 9005
- Housing: Phosphatized steel
- Bypass valve: Steel

#### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfiber filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Connections

In-line Inlet/Outlet

#### Note

FMMX filters are provided for vertical mounting

#### Temperature

Seals	Ambient Temperature	Max fluid Temperature	Temperature Class	Max surface temperature
NBR	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
FPM	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
	-15 °C ÷ +95 °C	+95 °C	T5	T100 °C
	-15 °C ÷ +110 °C	+110 °C	T4	T115 °C

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FMMX 050</b>		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FMMX 050</b>	<b>1</b>	42	43	79	82	106	147
	<b>2</b>	52	57	85	96	121	149
	<b>3</b>	66	69	97	106	130	150
	<b>4</b>	83	89	113	115	134	152
	<b>5</b>	107	110	130	134	141	154

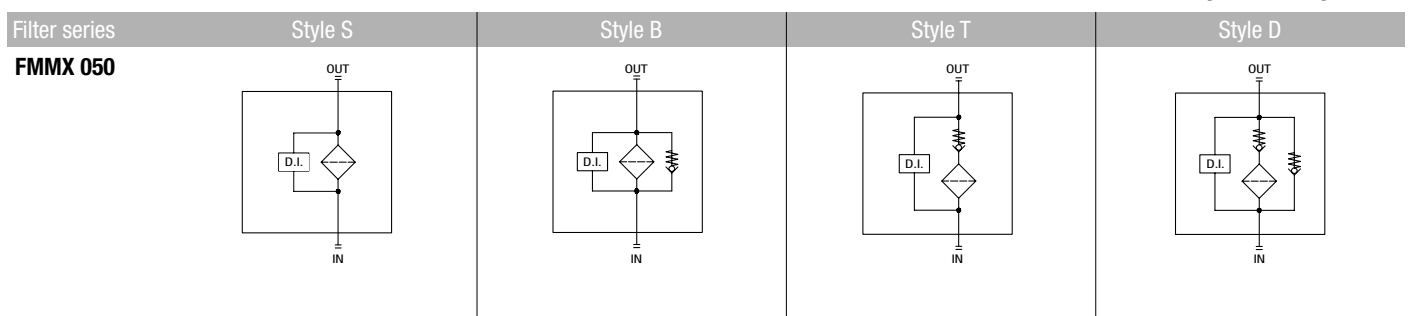
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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>.

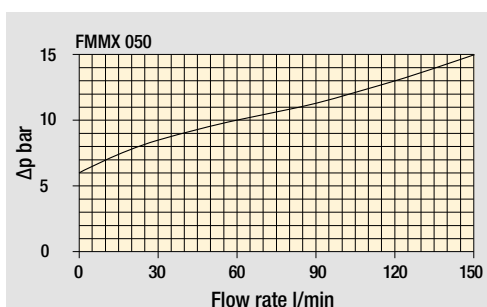
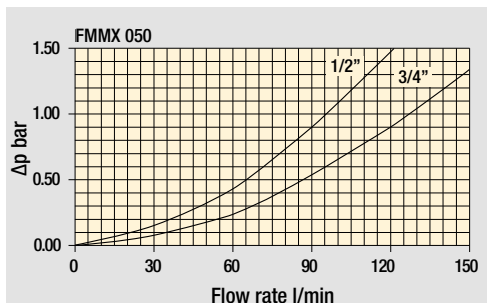
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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.

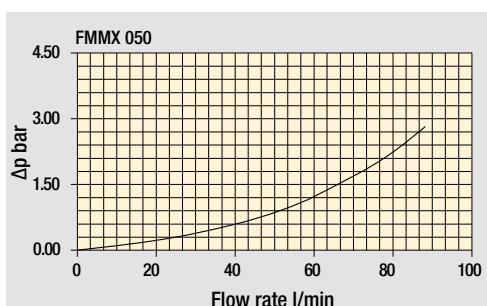
### Hydraulic symbols



Pressure drop  
Filter housings  
 $\Delta p$  pressure drop



Bypass valve  
pressure drop



Filter housing  
with check valve

Valves

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.

# FMMX 050

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FMMX050** | **3** | **B** | **A** | **G** | **A10** | **N** | **Z01** | **EX**

**Series and size**  
**FMMX050** Filter featuring **MYCLEAN** Filter Element

**Length**  
**1** | **2** | **3** | **4** | **5**

**Valves**  
**B** With bypass 6 bar  
**D** With check valve, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM

**Connections**  
**A** M18x1.5 - ISO 6149      **E** 1/2" NPT  
**B** M22x1.5 - ISO 6149      **F** 3/4" NPT  
**C** G 1/2"                      **G** SAE 8 - 3/4" - 16 UNF  
**D** G 3/4"                      **H** SAE 12 - 1 1/16" - 12 UN

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm  
**M25** Wire mesh 25 µm

**Element Δp**  
**N** 20 bar

**Executions**  
**zerospark**  
**Z01** Upper connection for clogging indicator  
**Z02** Without connection for clogging indicator  
**Z03** Frontal connection for clogging indicator  
**Zxx** Customized

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Configuration example: **HPX050** | **3** | **A10** | **A** | **N** | **Z01**

**Element series and size**  
**HPX050** Filter Element with **MYCLEAN** feature

**Element length**  
**1** | **2** | **3** | **4** | **5**

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm  
**M25** Wire mesh 25 µm

**Seals**  
**A** NBR  
**V** FPM

**Element Δp**  
**N** 20 bar

**Execution**  
**zerospark**  
**Z01** MP Filtri standard  
**Zxx** Customized

### CLOGGING INDICATORS

See page 719

**DEH** Electrical differential pressure indicator 420 bar  
**DVA** Visual differential pressure indicator

**DVM** Visual differential pressure indicator

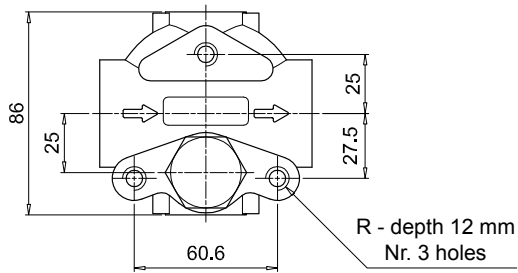
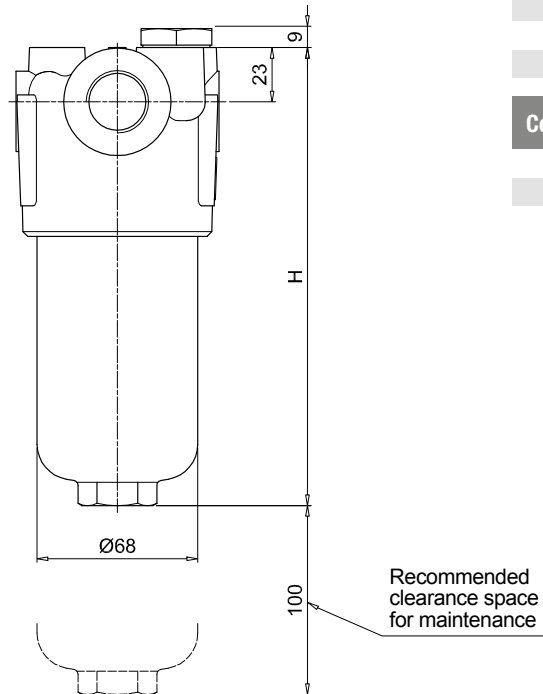
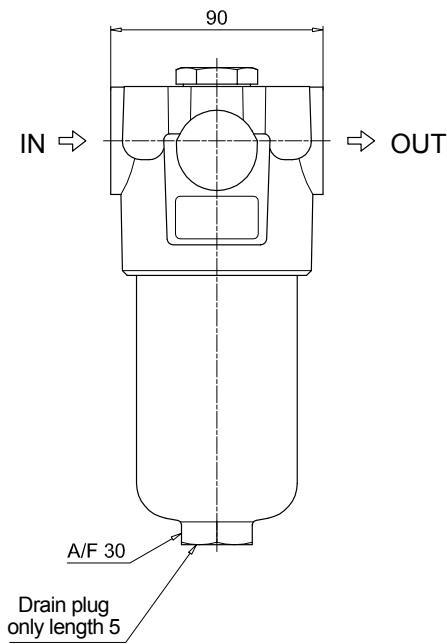
### PLUGS

See page 737

**T2** Plug

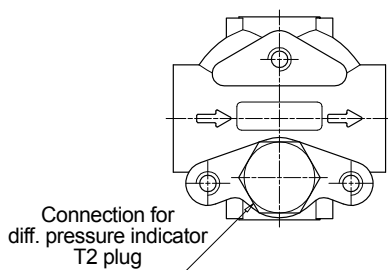
# FMMX 050

## Dimensions

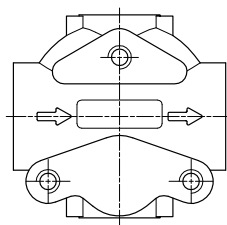


FMMX050	
Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407
Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC

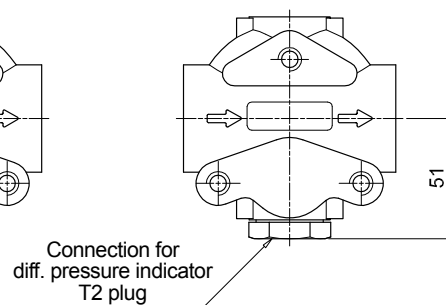
Execution P01



Execution P02



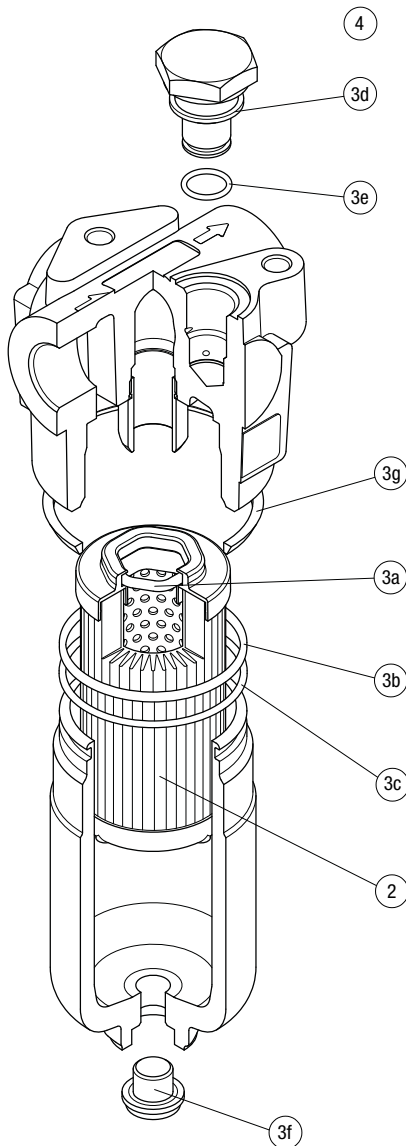
Execution P03



# FMMX 050 SPARE PARTS

Order number for spare parts

## FMMX 050



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FMMX 050	See order table	NBR	FPM	NBR	FPM
	2	3 (3a ÷ 3g)		4	
		02050864	02050865	T2H	T2V







# FZP series

Maximum working pressure up to 42 Mpa (420 bar) - Flow rate up to 160 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



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## Description

## Technical data

### Filters for potentially explosive atmosphere

#### In-line

**Maximum working pressure up to 42 Mpa (420 bar)**  
**Flow rate up to 160 l/min**

FZP is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1 1/4" female threaded connections, for a maximum flow rate of 160 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

### Seals

- Standard NBR series A
- Optional FPM series V
- Optional MFQ series F

### Bypass valve

Opening pressure 6 bar  $\pm$ 10%

### Note

FZP filters are provided for vertical mounting

### $\Delta p$ element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":




- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Syntetic

### Temperature




Seals	Ambient Temperature	Max fluid Temperature	Temperature Class	Max surface temperature
NBR	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
FPM / MFQ	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
	-15 °C ÷ +95 °C	+95 °C	T5	T100 °C
	-15 °C ÷ +110 °C	+110 °C	T4	T115 °C

### Filter with:

NBR seal in configuration **zerospark<sup>+</sup>**

   II 3G Ex h IIC T6 Gc X  
 II 3D Ex h IIIC T85°C Dc X

FPM / MFQ seal in configuration **zerospark<sup>+</sup>**

   II 3G Ex h IIC T6... T4 Gc X  
 II 3D Ex h IIIC T85°C...T115°C Dc X

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>FZP 039</b>	-	4.5	5.1	5.6	-	0.19	0.26	0.34	-	-
<b>FZP 136</b>	8.3	10.2	11.5	-	0.45	0.78	1.00	-	-	-

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZP 039</b>	<b>2</b>	19	25	43	50	59	19	23	41	45	55
	<b>3</b>	34	37	53	62	74	31	34	48	52	66
	<b>4</b>	42	46	63	72	81	38	41	55	71	78
<b>FZP 136</b>	<b>1</b>	63	67	102	108	136	47	53	87	89	127
	<b>2</b>	95	100	122	123	159	81	95	113	115	138
	<b>3</b>	122	124	148	150	160	106	116	135	141	151

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ 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.

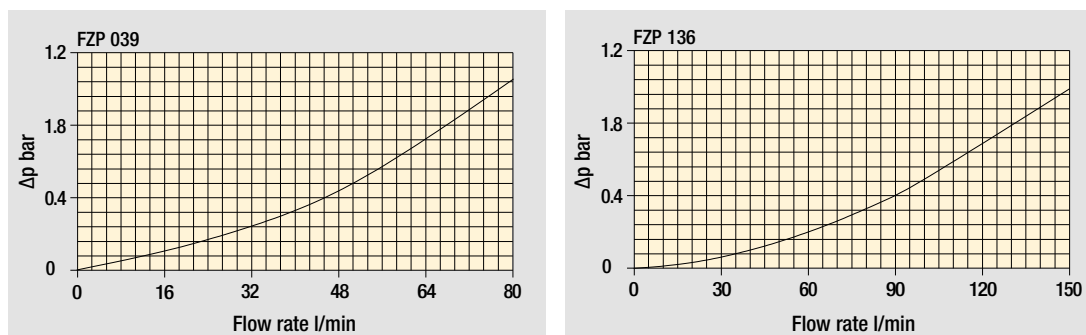
### Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FZP 039</b>	•	•	•	•	•	•
<b>FZP 136</b>	•	•	-	-	-	-

### Pressure drop

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.

## Designation & Ordering code

### COMPLETE FILTER

Filter series and size **FZP039** Configuration example: **FZP039** **2** **B** **F** **B** **2** **A03** **U** **Z01** **EX**

**Filter length**  
**2** | **3** | **4** |

**Valves**  
**S** Without bypass      **D** With reverse flow, with bypass 6 bar  
**B** With bypass 6 bar      **V** With reverse flow, without bypass  
**T** With reverse flow, without bypass      **Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 1/2"  
**B** 1/2" NPT  
**C** SAE 8 - 3/4" - 16 UNF

**Connections for differential pressure indicator**  
**1** Without connection  
**2** With connection

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	S	B	T	D	V	Z
<b>R</b> 20 bar	-	•	-	•	-	•
<b>S</b> 210 bar	•	-	•	-	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

**Valves**

**Execution**  
**zerospark\***  
**Z01** MP Filtri standard  
**Zxx** Customized

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Element series and size **HP039** Configuration example: **HP039** **2** **A03** **F** **U** **Z01**

**Element length**  
**2** | **3** | **4** |

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Element Δp**  
**R** 20 bar  
**S** 210 bar  
**U** 210 bar, stainless steel filter element

**Execution**  
**zerospark\***  
**Z01** MP Filtri standard  
**Zxx** Customized

### CLOGGING INDICATORS

See page 719

**DEH** Electrical differential pressure indicator  
**DVX** Visual differential pressure indicator

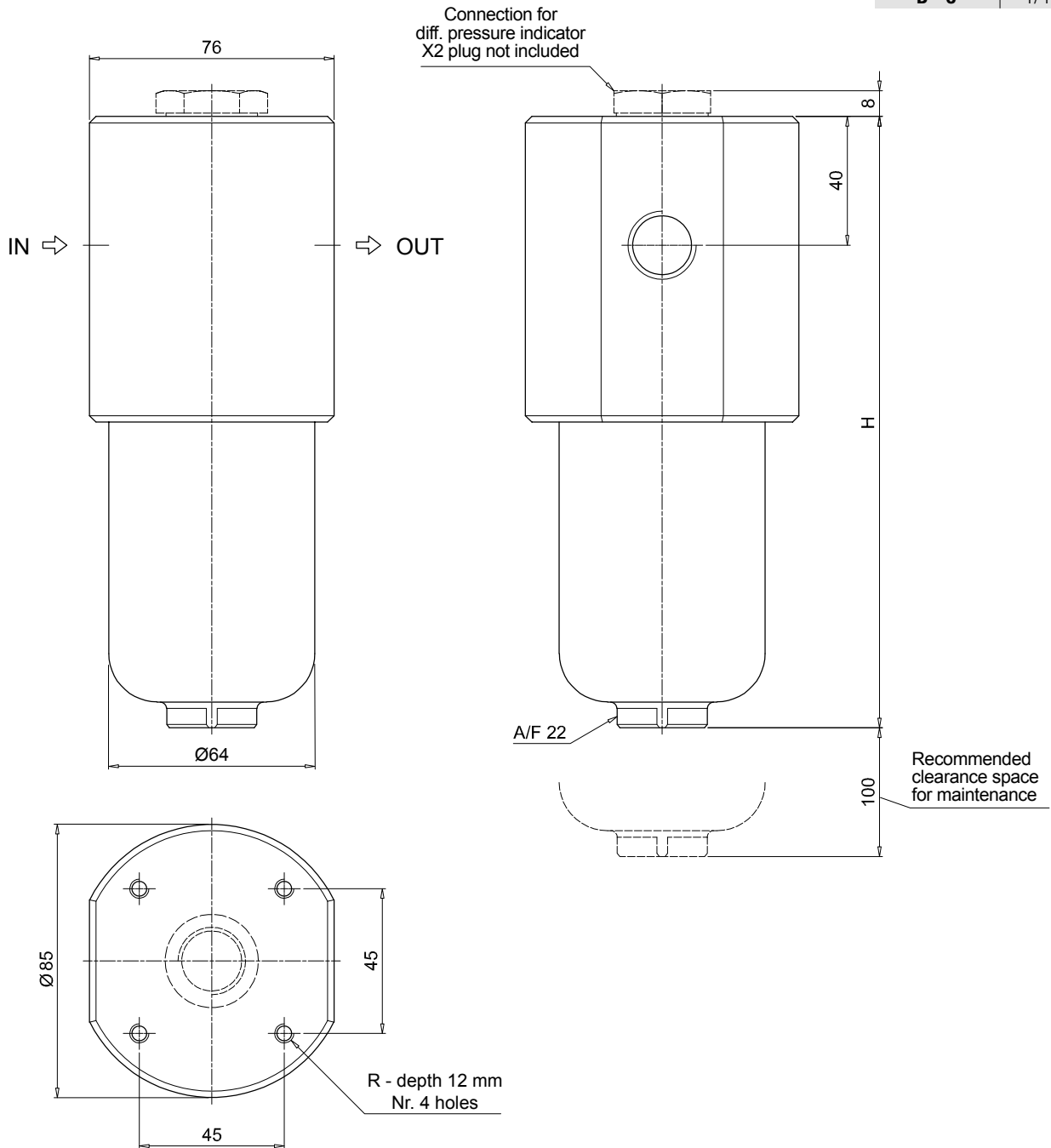
**DVY** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

FZP039	
Filter length	H [mm]
2	179
3	222
4	266
Connections	R
A	M6
B - C	1/4" UNC



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZP136** | **1** | **B** | **A** | **B** | **6** | **A03** | **R** | **Z01** | **EX**

**Filter series and size**  
**FZP136**

**Filter length**  
**1** | **2** | **3**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 3/4"      **G** G 1 1/4"  
**B** 3/4" NPT    **H** 1 1/4" NPT  
**C** SAE 12 - 1 1/16" - 12 UN    **I** SAE 20 - 1 5/8" - 12 UN  
**D** G 1"  
**E** 1" NPT  
**F** SAE 16 - 1 5/16" - 12 UN

**Connections for differential pressure indicator**  
**1** Without connection  
**6** With two connections on both sides

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves	
	S	B
<b>R</b> 20 bar	-	•
<b>S</b> 210 bar	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•

**Execution**  
**zerospark+**  
**Z01** MP Filtri standard  
**Zxx** Customized

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Configuration example: **HP135** | **1** | **A03** | **A** | **R** | **Z01**

**Element series and size**  
**HP135**

**Element length**  
**1** | **2** | **3**

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

Element Δp	Valves	
	S	B
<b>R</b> 20 bar	-	•
<b>S</b> 210 bar	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•

**Execution**  
**zerospark+**  
**Z01** MP Filtri standard  
**Zxx** Customized

### CLOGGING INDICATORS

See page 719

**DEH** Electrical differential pressure indicator

**DVY** Visual differential pressure indicator

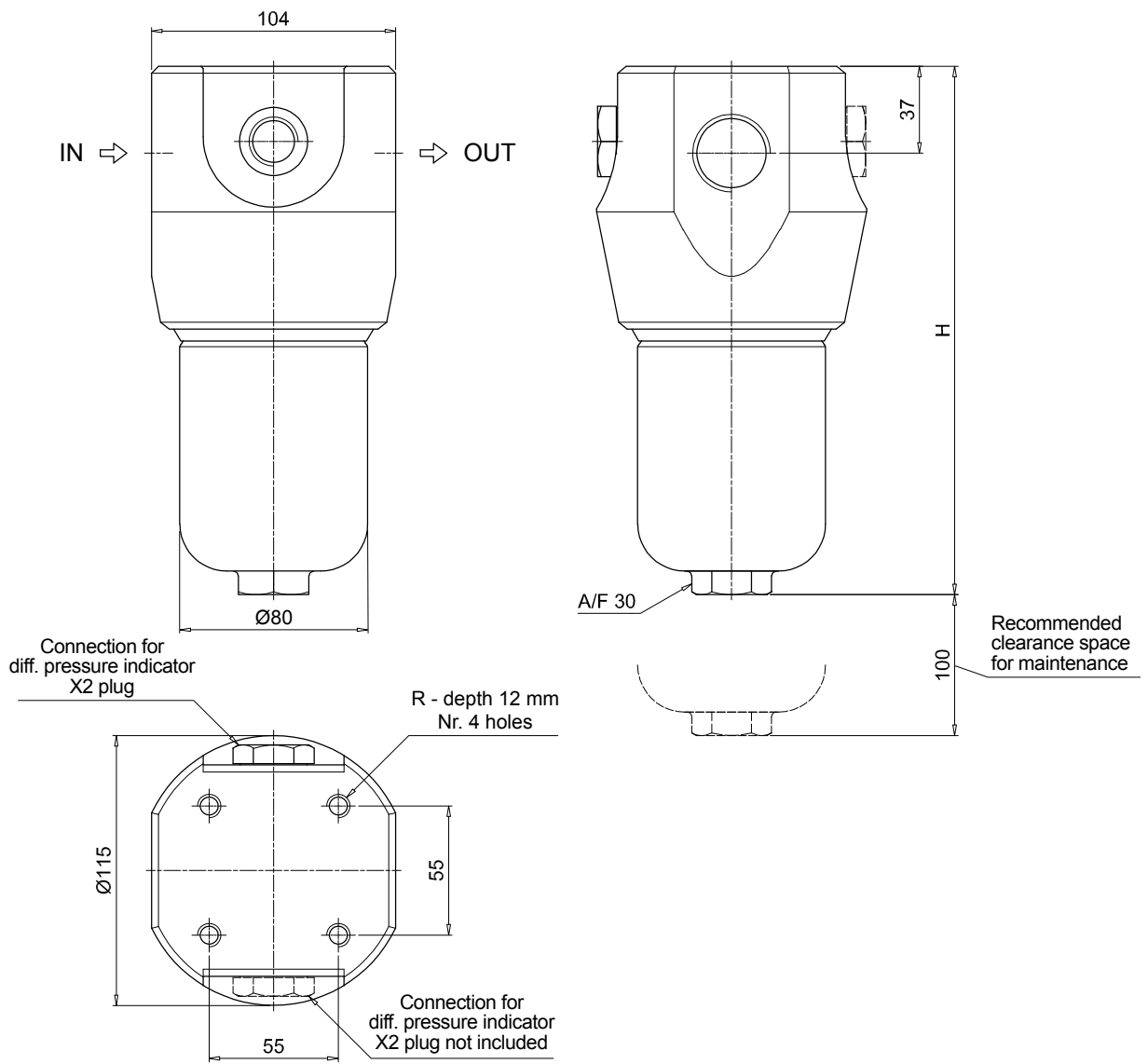
**DVX** Visual differential pressure indicator

### PLUGS

See page 737

**X2** Stainless steel plug (not included)

FZP136	
Filter length	H [mm]
<b>1</b>	222
<b>2</b>	335
<b>3</b>	410
Connections	R
<b>A</b>	M10
<b>B - C</b>	3/8" UNC
<b>D</b>	M10
<b>E - F</b>	3/8" UNC
<b>G</b>	M10
<b>H - I</b>	3/8" UNC



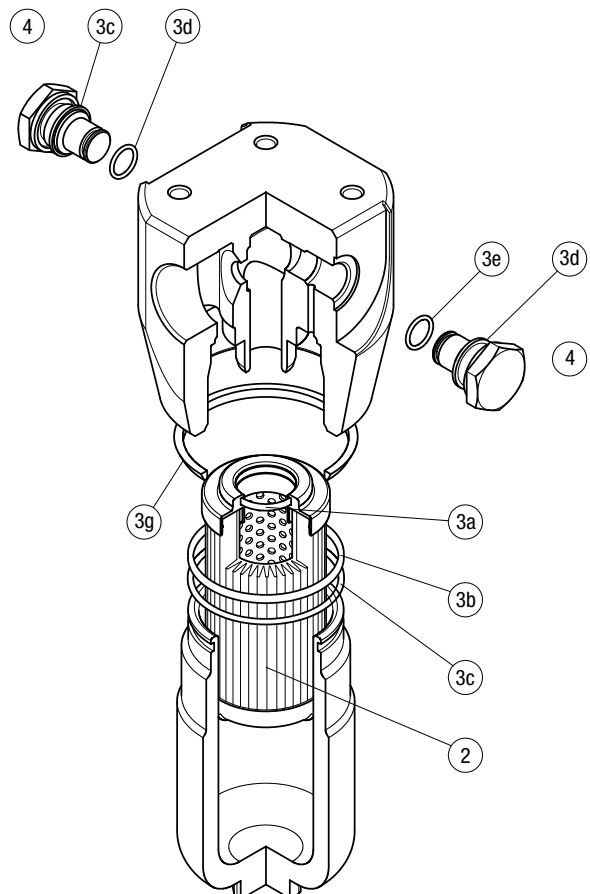
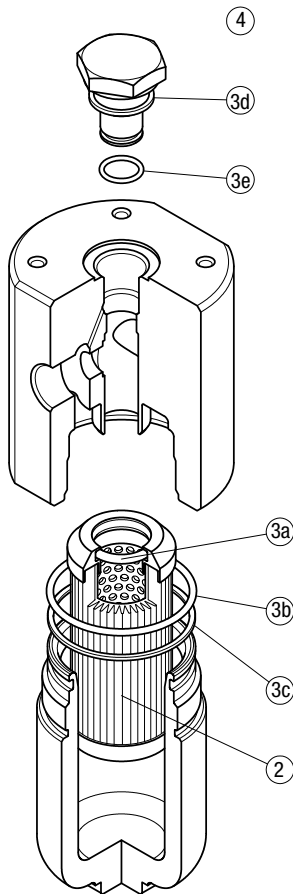
The position of the X2 plug is reversible

# FZP SPARE PARTS

Order number for spare parts

FZP 039

FZP 136



Item:	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		
FZP 039	See order table	NBR	FPM	NBR	FPM	
		02050299	02050300	X2H	X2V	
<b>FZP 136</b>		02050636	02050637			







# FZH series

Maximum working pressure up to 70 Mpa (700 bar) - Flow rate up to 80 l/min



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## Description

## Technical data

### Filters for potentially explosive atmosphere

#### In-line

**Maximum working pressure up to 80 Mpa (700 bar)**

**Flow rate up to 80 l/min**

FZH is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 80 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A
- Optional FPM series V
- Optional MFQ series F

#### Bypass valve

Opening pressure 6 bar  $\pm$ 10%

#### Note

FZH filters are provided for vertical mounting

#### $\Delta p$ element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series N-R: 20 bar.

Element series "N - R":

- End cap: Polyamide
- Core tube: Tinned steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series H-S: 210 bar.

Element series "H - S":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

#### Temperature

Seals	Ambient Temperature	Max fluid Temperature	Temperature Class	Max surface temperature
NBR	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
FPM / MFQ	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
	-15 °C ÷ +95 °C	+95 °C	T5	T100 °C
	-15 °C ÷ +110 °C	+110 °C	T4	T115 °C

#### Filter with:

NBR seal in configuration **zerospark<sup>+</sup>**



II 3G Ex h IIC T6 Gc X  
II 3D Ex h IIIC T85°C Dc X

FPM / MFQ seal in configuration **zerospark<sup>+</sup>**



II 3G Ex h IIC T6... T4 Gc X  
II 3D Ex h IIIC T85°C...T115°C Dc X

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZH 012</b>		2.1	2.2	2.7	3.3		0.10	0.12	0.15	0.20
<b>FZH 040</b>		-	4.5	5.1	5.6		-	0.19	0.26	0.34

Filter series	Length	Filter element design - N Series					Filter element design - H-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 012</b>	<b>1</b>	4	6	8	9	11	3	5	6	7	9
	<b>2</b>	7	9	17	20	26	5	7	14	17	23
	<b>3</b>	11	14	25	27	32	11	14	24	27	32
	<b>4</b>	17	20	29	31	34	13	16	26	29	33

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 040</b>	<b>2</b>	19	25	43	50	59	19	23	41	45	55
	<b>3</b>	34	37	53	62	74	31	34	48	52	66
	<b>4</b>	42	46	63	72	81	38	41	55	71	78

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ 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.

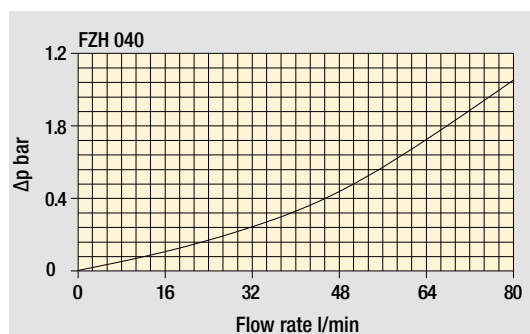
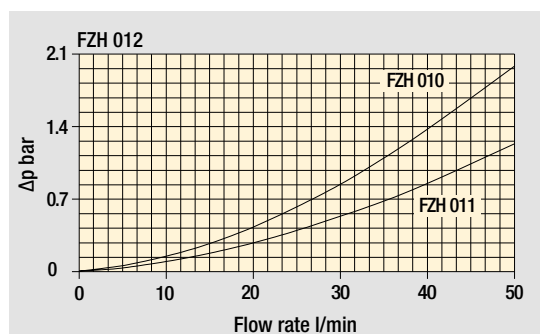
### Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FZH 012</b>	•	•	-	-	•	•
<b>FZH 040</b>	•	•	•	•	•	•

### Pressure drop

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.

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZH012** | **2** | **B** | **F** | **B** | **2** | **A03** | **U** | **Z01** | **EX**

**Filter Series and size**  
**FZH012**

**Filter length**  
**1** | **2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Connections**  
**A** G 1/4"  
**B** 1/4" NPT  
**C** SAE 5 - 1/2" - 20 UNF  
**D** G 3/8"  
**E** 3/8" NPT  
**F** SAE 6 - 9/16" - 18 UNF

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With connection

Filtration rating (filter media)	Element Δp	Valves			
		S	B	V	Z
<b>A03</b> Inorganic microfiber 3 μm	<b>N</b> 20 bar	-	•	-	•
<b>A06</b> Inorganic microfiber 6 μm	<b>H</b> 210 bar	•	-	•	-
<b>A10</b> Inorganic microfiber 10 μm	<b>U</b> 210 bar, stainless steel filter element	•	•	•	•
<b>A16</b> Inorganic microfiber 16 μm					
<b>A25</b> Inorganic microfiber 25 μm					

**Execution**  
**zerospark+**  
**Z01** MP Filtri standard  
**Zxx** Customized

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Configuration example: **HP011** | **2** | **A03** | **F** | **U** | **Z01**

**Element series and size**  
**HP011**

**Element length**  
**1** | **2** | **3** | **4**

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 μm  
**A06** Inorganic microfiber 6 μm  
**A10** Inorganic microfiber 10 μm  
**A16** Inorganic microfiber 16 μm  
**A25** Inorganic microfiber 25 μm

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Element Δp**  
**N** 20 bar  
**H** 210 bar  
**U** 210 bar, stainless steel filter element

**Execution**  
**zerospark+**  
**Z01** MP Filtri standard  
**Zxx** Customized

### CLOGGING INDICATORS

**DEZ** Electrical differential pressure indicator

**DVZ** Visual differential pressure indicator

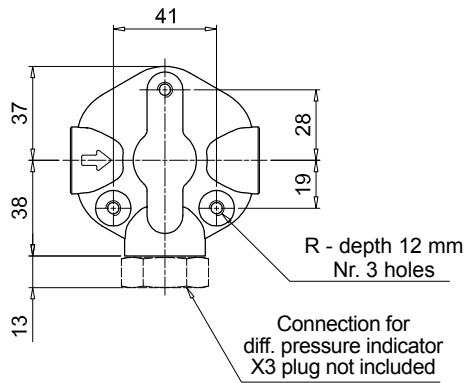
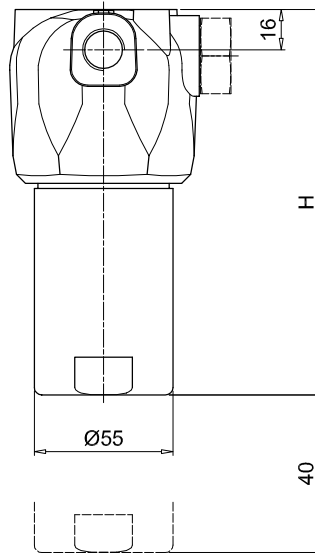
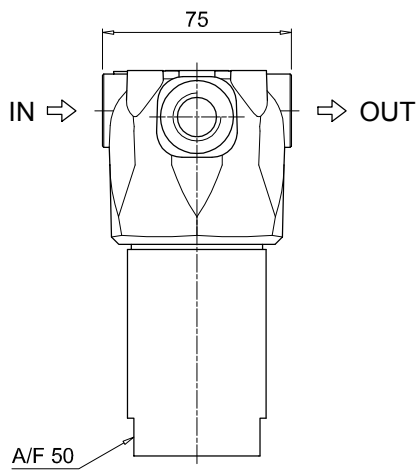
See page 719

### PLUGS

**X3** Stainless steel plug (not included)

See page 737

FZH012	
Filter length	H [mm]
<b>1</b>	93
<b>2</b>	104
<b>3</b>	154
<b>4</b>	204
Connections	R
<b>A</b>	M6
<b>B - C</b>	1/4" UNC
<b>D</b>	M6
<b>E - F</b>	1/4" UNC



## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FZH040** | **2** | **T** | **A** | **A** | **2** | **A03** | **S** | **Z01** | **EX**

**Filter Series and size**  
**FZH040**

**Filter length**  
**2** | **3** | **4**

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

**Seals**  
**A** NBR      **F** MFQ  
**V** FPM

**Connections**  
**A** G 1/2"  
**B** 1/2" NPT  
**C** SAE 8 - 3/4" - 16 UNF

**Connection for differential pressure indicator**  
**1** Without connection  
**2** With connection

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>R</b> 20 bar	-	•	-	•	-	•
<b>S</b> 210 bar	•	-	•	-	•	-
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

**Execution**  
**zerospark®**  
**Z01** MP Filtri standard  
**Zxx** Customized

**Certifications**  
**EX** ATEX certifications

### FILTER ELEMENT

Configuration example: **HP039** | **2** | **A03** | **A** | **S** | **Z01**

**Element series and size**  
**HP039**

**Element length**  
**2** | **3** | **4**

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm

**Seals**  
**A** NBR  
**V** FPM  
**F** MFQ

**Element Δp**  
**R** 20 bar  
**S** 210 bar  
**U** 210 bar, stainless steel filter element

**Execution**  
**zerospark®**  
**Z01** MP Filtri standard  
**Zxx** Customized

### CLOGGING INDICATORS

See page 719

**DVZ** Visual differential pressure indicator

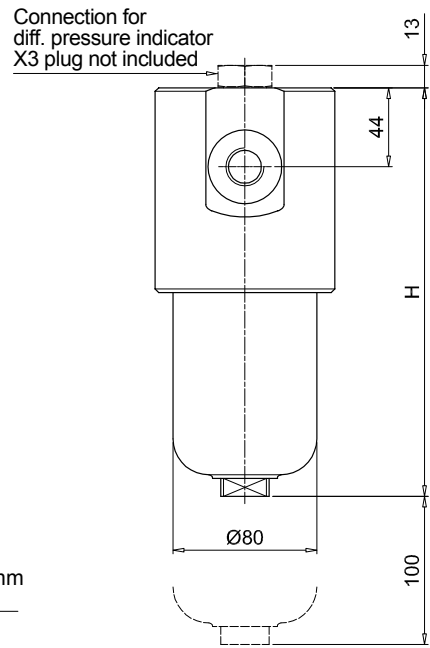
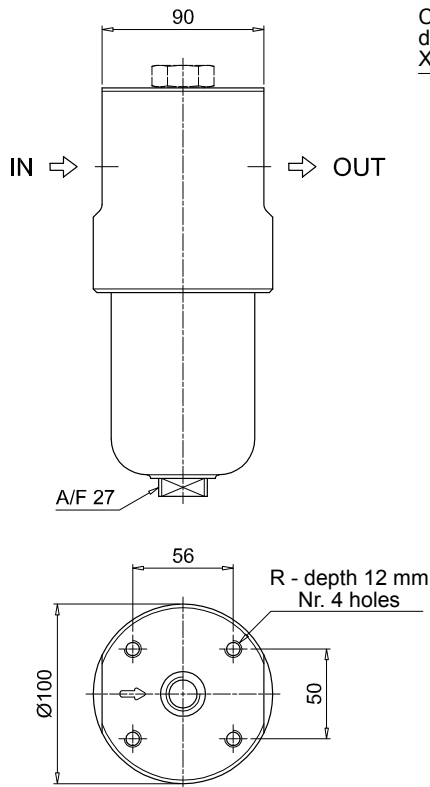
### PLUGS

See page 737

**X3** Stainless steel plug (not included)



Valves S - B - T - D



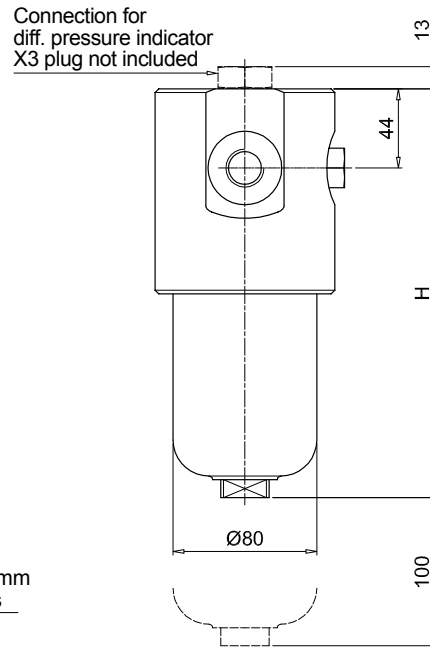
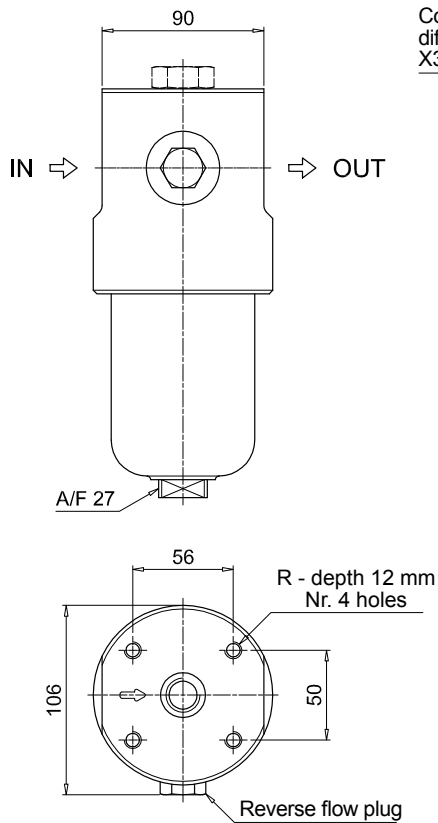
Recommended clearance space for maintenance

FZH040

Filter length	H [mm]
2	204
3	247
4	291

Connections	R
A	M10
B	3/8" UNC
C	3/8" UNC

Valves V - Z



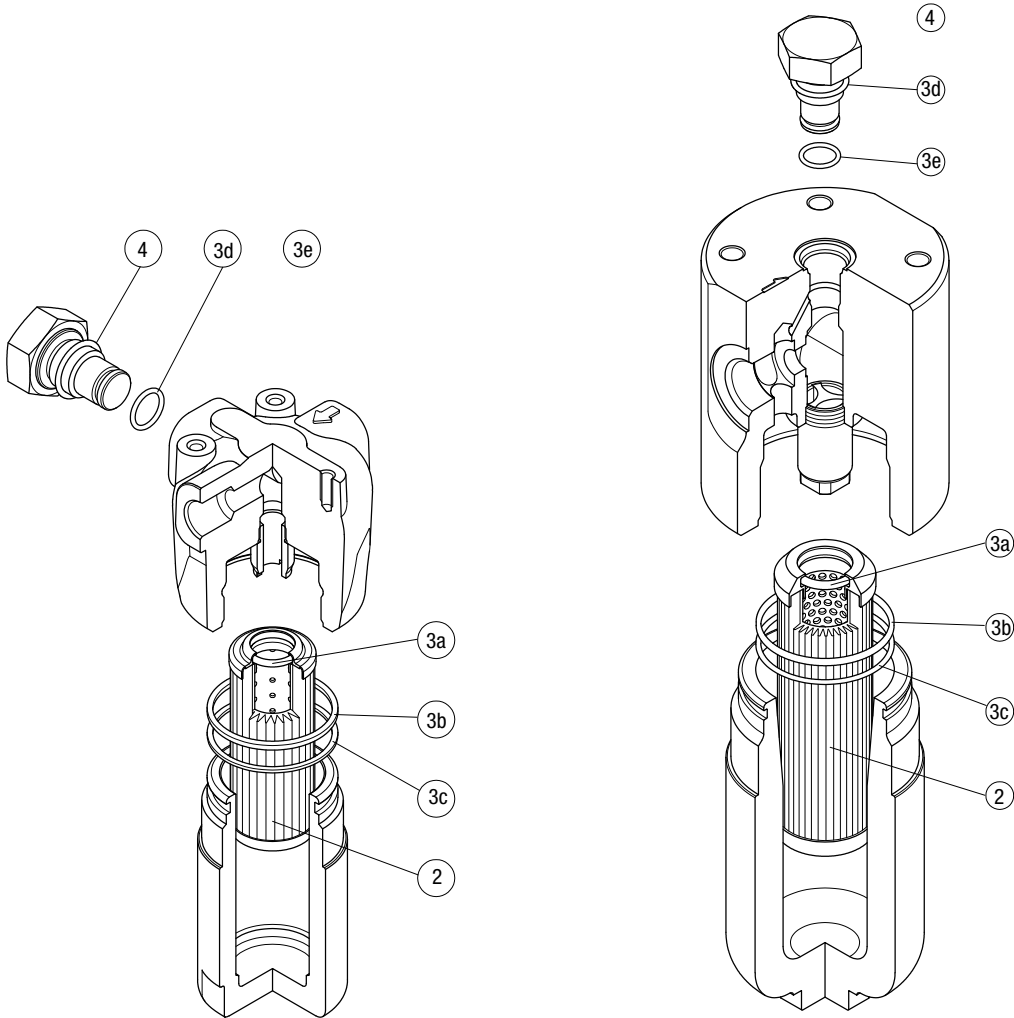
Recommended clearance space for maintenance

# FZH SPARE PARTS

Order number for spare parts

FZH 012

FZH 040



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZH 012	See order table	NBR	FPM	NBR	FPM
FZH 040	See order table	02050856	02050857	X2H	X2V
		02050860	02050861		





# FZX series

Maximum working pressure up to 100 Mpa (1000 bar) - Flow rate up to 10 l/min



## INSTALLATION, SERVICE AND MAINTENANCE MANUAL AND SAFETY INSTRUCTIONS



Please scan the QR codes  
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of the related document.



## Description

## Technical data

### Filters for potentially explosive atmosphere

#### In-line

**Maximum working pressure up to 100 Mpa (1000 bar)**  
**Flow rate up to 10 l/min**

FZX is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 10 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A
- Optional FPM series V
- Optional MFQ series F

#### Bypass valve

Opening pressure 6 bar  $\pm$ 10%

#### Note

FZX filters are provided for vertical mounting

#### $\Delta p$ element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series H: 210 bar.

Element series "H":

- End cap: Tinned steel
- Core tube: Tinned steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":




- End cap: Stainless steel
- Core tube: Stainless steel
- External support: Stainless steel
- Internal support: Stainless steel
- Media/Support/Pre-filter: Microfibre/Synthetic

#### Temperature




Seals	Ambient Temperature	Max fluid Temperature	Temperature Class	Max surface temperature
NBR	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
FPM / MFQ	-15 °C ÷ +80 °C	+80 °C	T6	T85 °C
	-15 °C ÷ +95 °C	+95 °C	T5	T100 °C
	-15 °C ÷ +110 °C	+110 °C	T4	T115 °C

#### Filter with:

NBR seal in configuration **zerospark<sup>®</sup>**

   II 3G Ex h IIC T6 Gc X  
 II 3D Ex h IIIC T85°C Dc X

FPM / MFQ seal in configuration **zerospark<sup>®</sup>**

   II 3G Ex h IIC T6... T4 Gc X  
 II 3D Ex h IIIC T85°C...T115°C Dc X

## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>FZX 011</b>	-	-	6.5	-	-	-	-	0.15	-	-

Filter series	Length	Filter element design - H-U Series				
		A03	A06	A10	A16	A25
<b>FZX 011</b>	<b>3</b>	1.57	1.63	1.73	1.74	1.77

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

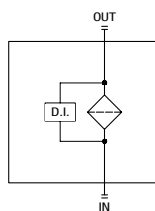
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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.

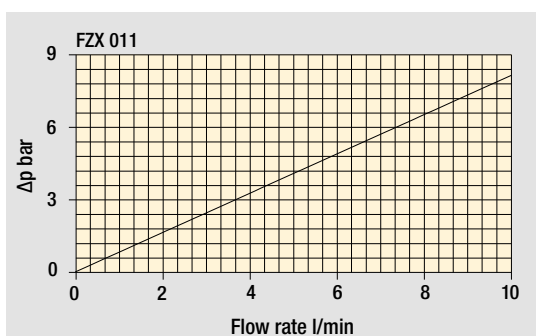
## Hydraulic symbols

Filter series	Style S
<b>FZX 011</b>	•



## Pressure drop

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.

## Designation & Ordering code

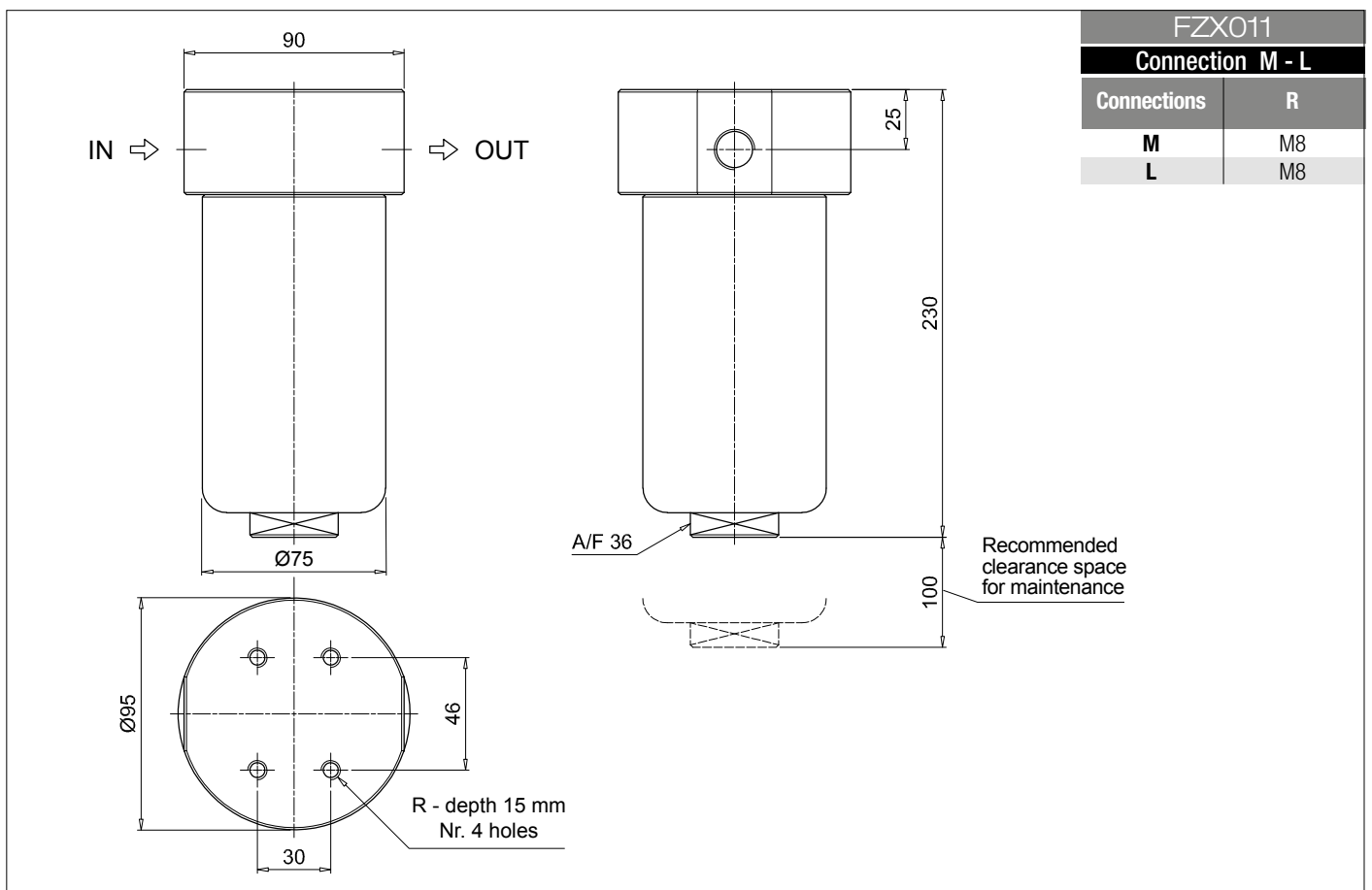
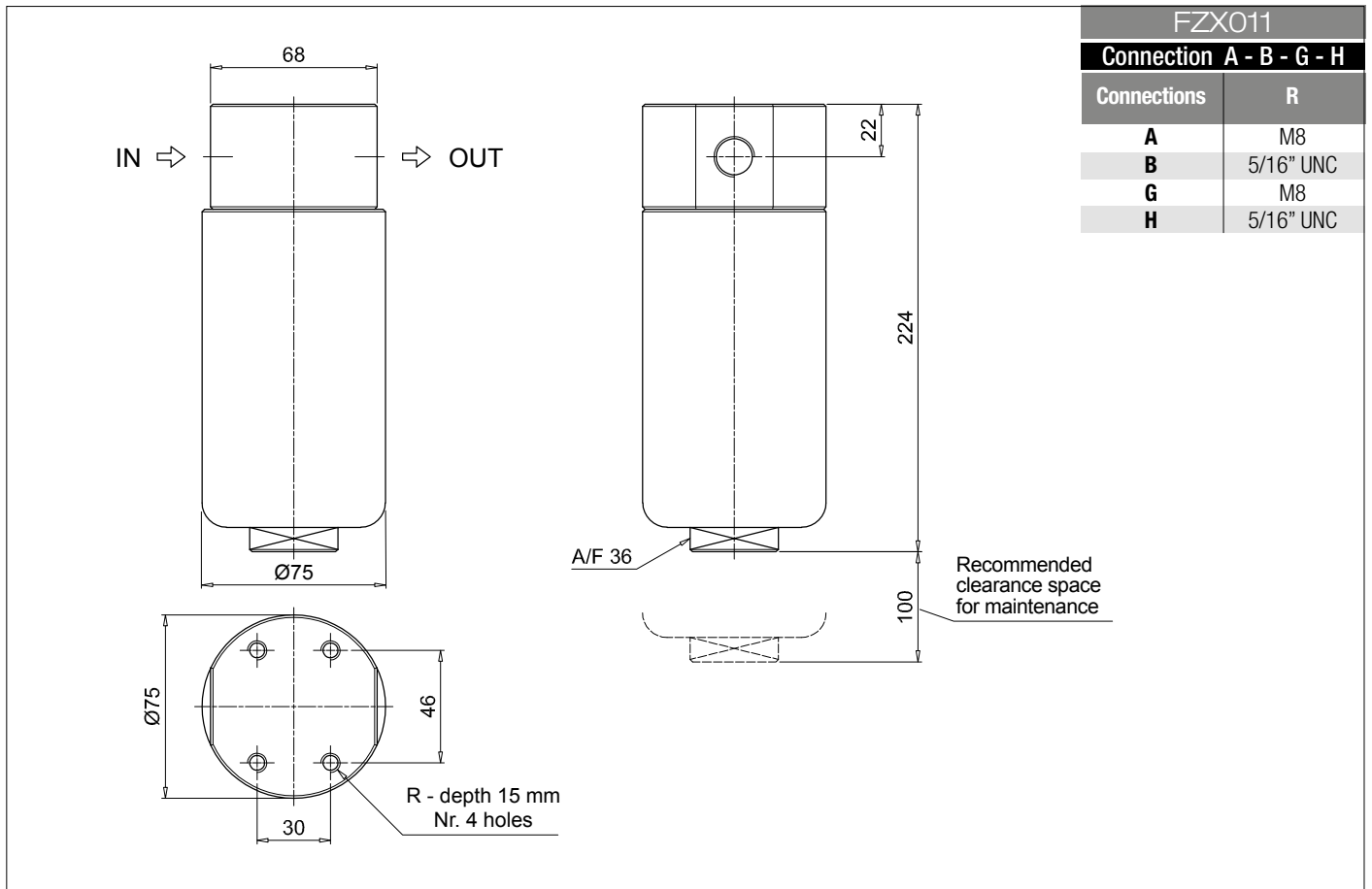
### COMPLETE FILTER

<b>Filter series and size</b>	Configuration example: <b>FZX011</b>	<b>3</b>	<b>S</b>	<b>V</b>	<b>B</b>	<b>1</b>	<b>A03</b>	<b>U</b>	<b>Z01</b>	<b>EX</b>
<b>FZX011</b>										
<b>Filter length</b>										
<b>3</b>										
<b>Bypass valve</b>										
<b>S Without bypass</b>										
<b>Seals</b>										
<b>A NBR</b>										
<b>V FPM</b>										
<b>F MFQ</b>										
<b>Connections</b>										
<b>700 bar</b>										
<b>A G 1/4"</b>										
<b>B 1/4" NPT</b>										
<b>G G 1/2"</b>										
<b>H 1/2" NPT"</b>										
<b>Autoclave 1000 bar</b>										
<b>M 9/16" - 18 UNF</b>										
<b>L 3/4" - 14 NPS</b>										
<b>Connection for differential pressure indicator</b>										
<b>1 Without connection</b>										
<b>Filtration rating (filter media)</b>										
<b>A03 Inorganic microfiber 3 µm</b>										
<b>A06 Inorganic microfiber 6 µm</b>										
<b>A10 Inorganic microfiber 10 µm</b>										
<b>A16 Inorganic microfiber 16 µm</b>										
<b>A25 Inorganic microfiber 25 µm</b>										
<b>Element Δp</b>										
<b>H 210 bar</b>										
<b>U 210 bar, stainless steel filter element</b>										
<b>Execution</b>										
<b>zerospark®</b>										
<b>Z01 MP Filtri standard</b>										
<b>Zxx Customized</b>										
<b>Certifications</b>										
<b>EX ATEX certifications</b>										

### FILTER ELEMENT

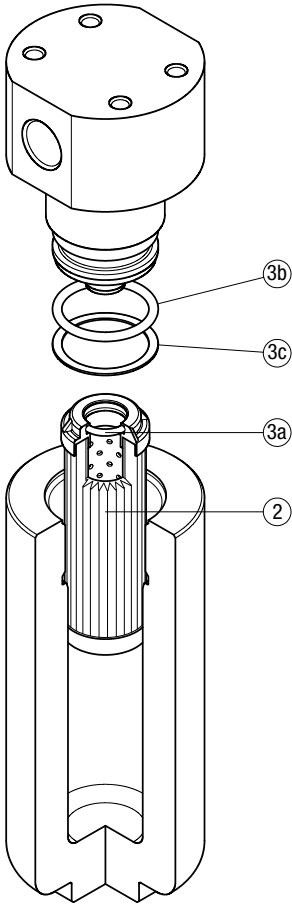
<b>Element series and size</b>	Example: <b>HP011</b>	<b>3</b>	<b>A03</b>	<b>V</b>	<b>U</b>	<b>Z01</b>
<b>HP011</b>						
<b>Element length</b>						
<b>3</b>						
<b>Filtration rating (filter media)</b>						
<b>A03 Inorganic microfiber 3 µm</b>						
<b>A06 Inorganic microfiber 6 µm</b>						
<b>A10 Inorganic microfiber 10 µm</b>						
<b>A16 Inorganic microfiber 16 µm</b>						
<b>A25 Inorganic microfiber 25 µm</b>						
<b>Seals</b>						
<b>A NBR</b>						
<b>V FPM</b>						
<b>F MFQ</b>						
<b>Element Δp</b>						
<b>H 210 bar</b>						
<b>U 210 bar, stainless steel filter element</b>						
<b>Execution</b>						
<b>zerospark®</b>						
<b>Z01 MP Filtri standard</b>						
<b>Zxx Customized</b>						





Order number for spare parts

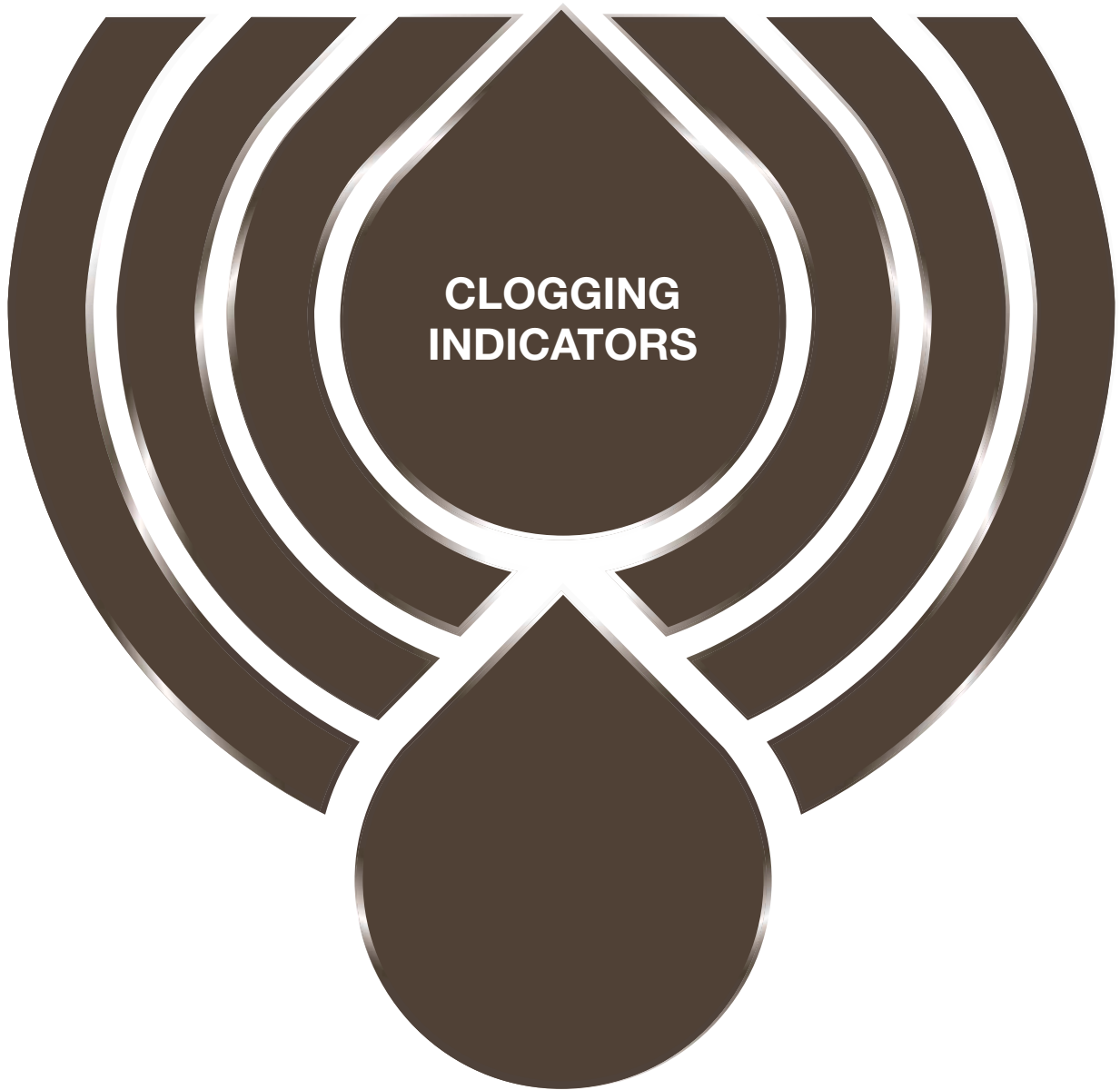
**FZX 011**



Item:		Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series		Filter element	Seal Kit code number	
FZX 011		See order table	NBR	FPM
		<b>2</b>	<b>3</b> (3a ÷ 3c)	
			02050643	02050644







**CLOGGING  
INDICATORS**

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:

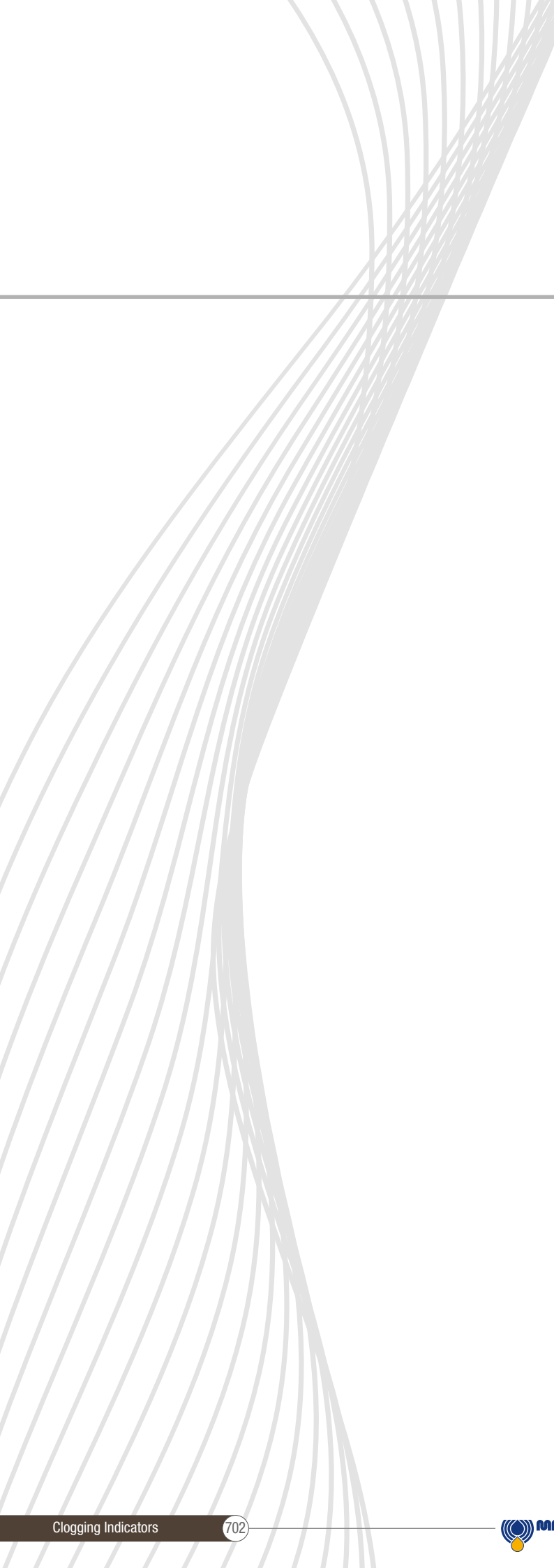
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

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.

In the following pages you can find a reference guide about the types of clogging indicators available in the different families of MP Filtri's Hydraulic Filtration range of products.

# Clogging Indicators







# DESIGNATION, ORDERING CODES & TECHNICAL DATA

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# QUICK REFERENCE GUIDE

## Ordering codes

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators	
SUCTION FILTERS	<b>ELIXIR®</b> SFEX060-080-110-160	VVB20P01 VVS20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
	With bypass valve 0.3 bar	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540	WA20P01 WR20P01	VEA21xA50P01 VEA21xA50P01UL	VLA21xA51P01 VLA21xA52P01 VLA21xA53P01 VLA21xA71P01
RETURN FILTERS	<b>ELIXIR®</b> RFEX060-080-110-160	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
	With bypass 1.75 bar	<b>ELIXIR®</b> RFEX060-080-110-160	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
	Without bypass	MDH 250	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01 DVS12HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01 DES12HA10P01 DES12HA30P01 DES12HA80P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
	With bypass 1.75 bar	MDH 250	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01 DVS25HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01 DES25HA10P01 DES25HA30P01 DES25HA80P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
	With bypass 3 bar	MPFX MPTX MPF MPT MPH	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
	With bypass 1.75 bar	MPFX MPTX MPF MPT	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
	With bypass 3 bar	MPH			
	With bypass 2.5 bar	MPLX	DVA20xP01	DEA20xA50P01 DEA20xA50P01UL	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01
	With bypass 4.5 bar	FRI	DVM20xP01	DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20xA50P01UL	DLE20xA50P01 DLE20xF50P01 DTA20xF70P01
	With bypass 2.4 bar				

# QUICK REFERENCE GUIDE

Ordering codes

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators	
RETURN / SUCTION FILTERS	MRSX 116 - 165 - 166 Suction line	VVB20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
		VVS20P01			
	With bypass valve 2.5 bar	MRSX 116 - 165 - 166 Return line	BVA25P01	BEA20HA50P01 BEA20HA50P01UL	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
			BVR25P01 BVP20HP01 BVQ20HP01	BEM20HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	
	With bypass valve 2.5 bar	LMP 124 MULTIPORT	BVA25P01	BEA20HA50P01 BEA20HA50P01UL	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
			BVR25P01	BEM20HA41P01	
			BVP20HP01	BET25HF10P01 BET25HF30P01 BET25HF50P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01
			BVQ20HP01	DEA20xA50P01	
			DVA20xP01	DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01	
			DVM20xP01	DEU20xA50P01UL	
Suction line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	WB20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
		VVS20P01			
Return line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 MST 050 - 070 - 100 - 150	BVA14P01	BEA15HA50P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
		BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01UL BEM15HA41P01		
In-line	MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DVA12xP01	DEA12xA50P01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DLE20xF50P01 DLE20xF50P01	
		DVM12xP01	DEM12xAxxP01 DEU20xA50P01UL		DTA12xF70P01 DTA20xF70P01

# QUICK REFERENCE GUIDE

## Ordering codes

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators		
LOW & MEDIUM PRESSURE FILTERS	ELIXIR® LFEX060-080-110-160	DVS25HP01	DES25HA10P01 DES25HA30P01 DES25HA80P01			
	With bypass valve 3.5 bar	LMP 110 LMP 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	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	
		LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD		DEU20xA50P01UL	DTA20xF70P01	
	With bypass valve 2.5 bar	LPH 630	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	
				DEU20xA50P01UL	DTA20xF70P01	
	With bypass valve 1.75 bar	LPH 630	DVA12xP01 DVM12xP01 DVS12HP01	DEA12xA50P01 DEM12xx10P01 DEM12xx20P01 DEM12xx30P01 DEM12xx35P01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DTA12xF70P01	
	HIGH PRESSURE FILTERS	ELIXIR® LFEX060-080-110-160	DVS40HP01	DES40HA10P01 DES40HA30P01 DES40HA80P01		
		Without bypass valve	LMP 110 LMP 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 LPH 630	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01
					DEU50xA50P01UL	DTA50xF70P01
		With bypass valve 6 bar	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 351 - 500 FMMX 050 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01
				DEU50xA50P01UL		
Without bypass valve		FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 351 - 500 FMMX 050 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA70xP01 DVA95xP01 DVM70xP01 DVM95xP01	DEA70xA50P01 DEA95xA50P01 DEM70xx10P01 DEM70xx20P01 DEM70xx30P01 DEM70xx35P01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLA95xA51P01 DLA95xA52P01 DLA95xA71P01 DLE70xA50P01 DLE70xF50P01 DLE95xA50P01 DLE95xF50P01	
				DEU70xA50P01UL	DTA70xF70P01 DTA95xF70P01	
				DEM95xx10P01 DEM95xx20P01 DEM95xx30P01 DEM95xx35P01		

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
STAINLESS STEEL HIGH PRESSURE FILTERS	With bypass valve 6 bar	FZH 012 - 040	DVZ50xP01	DEZ50xA50P01 DLZ50xA51P01 DLZ50xA52P01
	Without bypass valve	FZH 012 - 040	DVZ70xP01 DVZ95xP01	DEZ70xA50P01 DEZ95xA50P01 DLZ70xA51P01 DLZ70xA52P01 DLZ95xA51P01 DLZ95xA52P01
	With bypass valve 6 bar	FZP 039 - 136 FZB 039 FZM 039 FZD 051	DVX50xP01 DYY50xP01	DEX50xA50P01 DLX50xA51P01 DLX50xA52P01
	Without bypass valve	FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVX95xP01 DYY70xP01 DYY95xP01	DEX70xA50P01 DEX95xA50P01 DLX70xA51P01 DLX70xA52P01 DLX95xA51P01 DLX95xA52P01
FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE	With bypass valve 6 bar	FMMX 050	DVA50xP01 DVM50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01
	Without bypass valve	FMMX 050	DVA70xP01 DVA95xP01 DVM70xP01 DVM95xP01	DEH70xA48P01 DEH70xA49P01 DEH70xA70P01 DEH95xA48P01 DEH95xA49P01 DEH95xA70P01
	With bypass valve 6 bar	FZP 039 - 136	DVX50xP01 DYY50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01
	Without bypass valve	FZP 039 - 136	DVX70xP01 DVX95xP01 DYY70xP01 DYY95xP01	DEH70xA48P01 DEH70xA49P01 DEH70xA70P01 DEH95xA48P01 DEH95xA49P01 DEH95xA70P01
	With bypass valve 6 bar	FZH 012 - 040	DVZ50xP01	
	Without bypass valve	FZH 012 - 040	DVZ70xP01 DVZ95xP01	

Suitable indicator types

**V ACUUM 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.

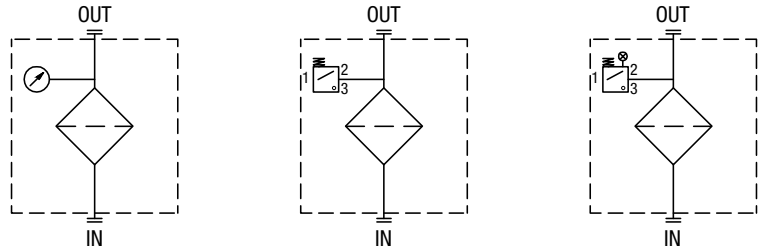
Standard items are produced with R 1/4" EN 10226 connection.

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

Vacuum indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "V".

Example:

**V** VVB20P01



**B BAROMETRIC (PRESSURE) INDICATORS**

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

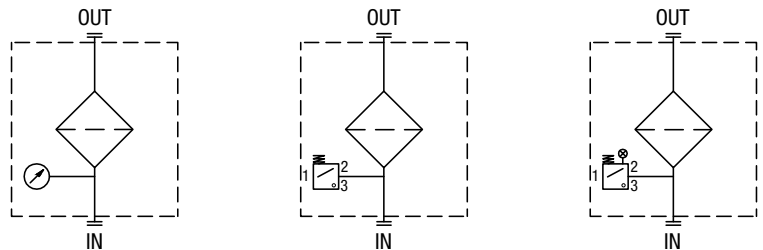
They measure the pressure upstream of the filter element.

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

Barometric (pressure) indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "B".

Example:

**B** BVA14P01



**D DIFFERENTIAL PRESSURE INDICATORS**

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

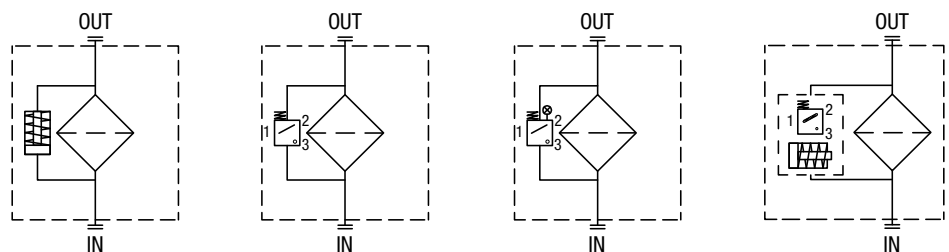
They measure the pressure upstream and downstream of the filter element (differential pressure).

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

Also available in Stainless Steel models. Differential pressure indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "D".

Example:

**D** DVA20xP01



## Designation & Ordering code

### VACUUM INDICATORS

Series	Configuration example 1:	VE	A	21	V	A	50	P01	EX
<b>VE</b> Electrical vacuum indicator	Configuration example 2:	VL	B	21	A	A	71	P01	
<b>VL</b> Electrical/Visual vacuum indicator	Configuration example 3:	VV	R	20				P01	
<b>VV</b> Vacuum gauge									

Type VE - VL	Type VV	SF2	SFEX
<b>A</b> Connection EN 10226 - R1/4"	<b>A</b> Axial connection EN 10226 - R1/4"	•	-
<b>B</b> Connection EN 10226 - R1/8"	<b>B</b> Axial connection EN 10226 - R1/8"	-	•
	<b>R</b> Radial connection EN 10226 - R1/4"	•	-
	<b>S</b> Radial connection EN 10226 - R1/8"	-	•

Vacuum setting	VE	VL	VV
<b>20</b> -0.16 bar	-	-	•
<b>21</b> -0.21 bar	•	•	-

Seals	VEA - VLA	VEB - VLB
<b>A</b> NBR	•	•
<b>V</b> FPM	•	-

Thermostat	VE	VL
<b>A</b> Without	•	•

Electrical connections	VE	VL
<b>50</b> Connection EN 175301-803	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	•
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	•
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vac	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	•

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

Certifications	VEA21A	VEA21V	VEB	VL	VV
Without	•	•	•	•	•
<b>EX</b> ATEX certification	•	•	•	-	-
<b>UL</b> UL certification	•	-	-	-	-

## Designation & Ordering code

### BAROMETRIC (PRESSURE) INDICATORS

Series	Configuration example 1:	BE	A	15	H	A	41	P01	EX
<b>BE</b> Electrical pressure indicator	Configuration example 2:	BL	A	20	H	A	71	P01	
<b>BL</b> Electrical/Visual pressure indicator	Configuration example 3:	BV	R	14				P01	
<b>BV</b> Visual pressure indicator	Configuration example 4:	BV	P	20	H			P01	

Type	BE	BL	BV
<b>A</b> Standard type	•	•	<b>A</b> Axial connection pressure gauge
<b>M</b> With wired electrical connection	•	-	<b>R</b> Radial connection pressure gauge
<b>T</b> With thermal switch	•	-	<b>P</b> Visual indicator with automatic reset
			<b>Q</b> Visual indicator with manual reset

Pressure setting	BEA-BEM	BET	BLA	BVA-BVR	BVP-BVQ
<b>14</b> 1.4 bar	-	-	-	•	-
<b>15</b> 1.5 bar	•	-	•	-	-
<b>20</b> 2.0 bar	•	•	•	-	•
<b>25</b> 2.5 bar	-	•	-	•	-

Seals	BE	BLA	BVA-BVR	BVP-BVQ
<b>H</b> HNBR	•	•	-	•

Thermostat	BEA-BEM	BET	BLA
<b>A</b> Without thermostat	•	-	•
<b>F</b> With thermostat	-	•	-

Electrical connections	BEA	BEM	BET	BL
<b>10</b> Connection AMP Superseal series 1,5	-	-	•	-
<b>30</b> Connection Deutsch DT-04-2-P	-	-	•	-
<b>41</b> Connection via four-core cable	-	•	-	-
<b>50</b> Connection EN 175301-803	•	-	-	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	-	•
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	-	•
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vac	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•

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

Certifications	BEA	BEM-BET	BL	BV
Without	•	•	•	•
<b>EX</b> ATEX certification	•	-	-	-
<b>UL</b> UL certification	•	-	-	-



## DIFFERENTIAL PRESSURE INDICATORS

Series		Configuration example 1:								
<b>DE</b> Electrical differential pressure indicator		DE	M	20	H	F	50	P01		
<b>DL</b> Electrical/Visual differential pressure indicator		Configuration example 2:	DE	U	50	H	A	50	P01	UL
<b>DT</b> Electrical differential pressure indicator		Configuration example 3:	DL	E	20	V	A	71	P01	
<b>DV</b> Visual differential pressure indicator		Configuration example 4:	DT	A	20	H	F	70	P01	
		Configuration example 5:	DV	M	20	V		P01		

Type	DE	DL	DT	DV		
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset		
<b>M</b> With wired electrical connection	•	-	-	<b>M</b> With manual reset		
<b>U</b> Standard type 210 bar, UL certified	-	-	-	<b>S</b> With automatic reset		
<b>E</b> For high power supply	-	•	-			
<b>S</b> Compact version	•	-	-			

Pressure setting	DE	DL	DT	DV
<b>12</b> 1.2 bar	•	•	•	•
<b>20</b> 2.0 bar	•	•	•	•
<b>25</b> 2.5 bar	•	-	-	•
<b>40</b> 4.0 bar	•	-	-	•
<b>50</b> 5.0 bar	•	•	•	•
<b>70</b> 7.0 bar	•	•	•	•
<b>95</b> 9.5 bar	•	•	•	•

Seals	DEA	DEM	DES	DL	DT	DVA	DVM	DVS
<b>H</b> HNBR	•	•	•	•	•	•	•	•
<b>V</b> FPM	•	•	-	•	•	•	•	-

Thermostat	DEA	DEM	DES	DLA	DLE	DT
<b>A</b> Without thermostat	•	•	•	•	•	-
<b>F</b> With thermostat	-	•	-	-	•	•

Electrical connections	DEA	DEM	DES	DLA	DLE	DT
<b>10</b> Connection AMP Superseal series 1.5	-	•	•	-	-	-
<b>20</b> Connection AMP Timer Junior	-	•	-	-	-	-
<b>30</b> Connection Deutsch DT-04-2-P	-	•	•	-	-	-
<b>35</b> Connection Deutsch DT-04-3-P	-	•	-	-	-	-
<b>50</b> Connection EN 175301-803	•	-	-	-	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	-	•	-	-
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	-	•	-	-
<b>70</b> Connection IEC 61076-2-101 D (M12)	-	-	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•	-	-
<b>80</b> Connection Stud #10-32 UNF	-	-	•	-	-	-

Option	P01	Pxx
MP Filtri standard	•	-
Customized	-	•

Certifications	DEU	OTHERS
Without	-	•
<b>UL</b> UL certification	•	-

## PLUGS

Series	DEA	DEM	DES	DL	DT	DVA	DVM	DVS	Configuration example	
<b>T2</b> Plug	•	•	-	•	•	•	•	-	T2	H
<b>T4</b> Plug	-	-	•	-	-	-	-	•		

Seals	T2	T4
<b>A</b> NBR	-	•
<b>H</b> HNBR	•	-
<b>V</b> FPM	•	-

## Designation & Ordering code

### VACUUM INDICATORS

Series	Configuration example 1:							
<b>VE</b> Electrical vacuum indicator	VE	A	21	V	A	50	P01	EX
<b>VL</b> Electrical/Visual vacuum indicator	Configuration example 2:							
	VL	B	21	A	A	71	P01	
<b>VV</b> Vacuum gauge	Configuration example 3:							
	VV	R	20				P01	

Type VE - VL	Type VV
<b>A</b> Connection EN 10226 - R1/4"	<b>A</b> Axial connection EN 10226 - R1/4"
<b>B</b> Connection EN 10226 - R1/8"	<b>B</b> Axial connection EN 10226 - R1/8"
	<b>R</b> Radial connection EN 10226 - R1/4"
	<b>S</b> Radial connection EN 10226 - R1/8"

Vacuum setting	VE	VL	VV
<b>20</b> -0.16 bar	-	-	•
<b>21</b> -0.21 bar	•	•	-

Seals	VEA - VLA	VEB - VLB
<b>A</b> NBR	•	•
<b>V</b> FPM	•	-

Thermostat	VE	VL
<b>A</b> Without thermostat	•	•

Electrical connections	VE	VL
<b>50</b> Connection EN 175301-803	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	•
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	•
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vac	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	•

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

Certifications	VEA21A	VEA21V	VEB	VL	VV
Without	•	•	•	•	•
<b>EX</b> ATEX certification	•	•	•	-	-
<b>UL</b> UL certification	•	-	-	-	-

### BAROMETRIC (PRESSURE) INDICATORS

Series	Configuration example 1:							
<b>BE</b> Electrical pressure indicator	BE	M	15	H	A	41	P01	EX
<b>BL</b> Electrical/Visual pressure indicator	Configuration example 2:							
	BL	A	20	H	A	71	P01	
<b>BV</b> Visual pressure indicator	Configuration example 3:							
	BV	R	14				P01	
	Configuration example 4:							
	BV	P	20	H			P01	

Type	BE	BL	BV
<b>A</b> Standard type	•	•	<b>A</b> Axial connection pressure gauge
<b>M</b> With wired electrical connection	•	-	<b>R</b> Radial connection pressure gauge
<b>T</b> With thermal switch	•	-	<b>P</b> Visual indicator with automatic reset
			<b>Q</b> Visual indicator with manual reset

Pressure setting	BEA-BEM	BET	BLA	BVA-BVR	BVP-BVQ
<b>14</b> 1.4 bar	-	-	-	•	-
<b>15</b> 1.5 bar	•	-	•	-	-
<b>20</b> 2.0 bar	•	•	•	-	•
<b>25</b> 2.5 bar	-	•	-	•	-

Seals	BE	BLA	BVP-BVQ
<b>H</b> HNBR	•	•	•

Thermostat	BEA-BEM	BET	BLA
<b>A</b> Without thermostat	•	-	•
<b>F</b> With thermostat	-	•	-

Electrical connections	BEA	BEM	BET	BL
<b>10</b> Connection AMP Superseal series 1.5	-	-	•	-
<b>30</b> Connection Deutsch DT-04-2-P	-	-	•	-
<b>41</b> Connection via four-core cable	-	•	-	-
<b>50</b> Connection EN 175301-803	•	-	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	-	•
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	-	•
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vac	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•

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

Certifications	BEA	BEM-BET	BL	BV
Without	•	•	•	•
<b>EX</b> ATEX certification	•	-	-	-
<b>UL</b> UL certification	•	-	-	-

**DIFFERENTIAL PRESSURE INDICATORS**

Series		Configuration example 1:						
<b>DE</b> Electrical differential pressure indicator		DE	M	12	H	F	50	P01
<b>DL</b> Electrical/Visual differential pressure indicator		Configuration example 2:						
<b>DT</b> Electronic differential pressure indicator		DE	U	50	H	A	50	P01
<b>DV</b> Visual differential pressure indicator		Configuration example 3:						
		DL	E	20	V	A	71	P01
		Configuration example 4:						
		DT	A	50	H	F	70	P01
		Configuration example 5:						
		DV	M	70	V			P01

Type	DE	DL	DT	DV
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset
<b>M</b> With wired electrical connection	•	-	-	<b>M</b> With manual reset
<b>U</b> Standard type 210 bar, UL certified	•	-	-	
<b>E</b> For high power supply	-	•	-	

Pressure setting	
<b>12</b>	1.2 bar
<b>20</b>	2.0 bar
<b>50</b>	5.0 bar
<b>70</b>	7.0 bar
<b>95</b>	9.5 bar

Seals	
<b>H</b>	HNBR
<b>V</b>	FPM

Thermostat	DEA	DEM	DLA	DLE	DT
<b>A</b> Without thermostat	•	•	•	•	-
<b>F</b> With thermostat	-	•	-	•	•

Electrical connections	DEA	DEM	DLA	DLE	DT
<b>10</b> Connection AMP Superseal series 1.5	-	•	-	-	-
<b>20</b> Connection AMP Timer Junior	-	•	-	-	-
<b>30</b> Connection Deutsch DT-04-2-P	-	•	-	-	-
<b>35</b> Connection Deutsch DT-04-3-P	-	•	-	-	-
<b>50</b> Connection EN 175301-803	•	-	-	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	•	-	-
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	•	-	-
<b>70</b> Connection IEC 61076-2-101 D (M12)	-	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	•	-	-

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

Certifications	DEU	OTHERS
Without	-	•
<b>UL</b> UL certification	•	-

**PLUGS**

Series	Configuration example
<b>T2</b> Plug	T2 H

Seals	
<b>H</b>	HNBR
<b>V</b>	FPM

## Designation & Ordering code

### VACUUM INDICATORS

Series	Configuration example 1:	VE	B	21	A	A	50	P01	P01
<b>VE</b> Electrical vacuum indicator	Configuration example 2:	VL	B	21	A	A	71	P01	
<b>VL</b> Electrical/Visual vacuum indicator	Configuration example 3:	VV	S	20				P01	
<b>VV</b> Vacuum gauge									

Type VE - VL	Type VV
<b>B</b> Connection EN 10226 - R1/8"	<b>B</b> Axial connection EN 10226 - R1/8"
	<b>S</b> Radial connection EN 10226 - R1/8"

Vacuum setting	VE	VL	VV
<b>20</b> -0.16 bar	-	-	•
<b>21</b> -0.21 bar	•	•	-

Seals	VE	VL
<b>A</b> NBR	•	•

Thermostat	VE	VL
<b>A</b> Without thermostat	•	•

Electrical connections	VE	VL
<b>50</b> Connection EN 175301-803	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	•
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	•
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vac	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	•

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

Certifications	VEA21A	VEA21V	VEB	VL	VV
Without	•	•	•	•	•
<b>EX</b> ATEX certification	•	•	•	-	-
<b>UL</b> UL certification	•	-	-	-	-

### BAROMETRIC (PRESSURE) INDICATORS

Series	Configuration example 1:	BE	M	15	H	A	41	P01	P01
<b>BE</b> Electrical pressure indicator	Configuration example 2:	BL	A	20	H	A	71	P01	
<b>BL</b> Electrical/Visual pressure indicator	Configuration example 3:	BV	R	14				P01	
<b>BV</b> Visual pressure indicator	Configuration example 4:	BV	P	20	H			P01	

Type	BE	BL	BV
<b>A</b> Standard type	•	•	<b>A</b> Axial connection pressure gauge
<b>M</b> With wired electrical connection	•	-	<b>R</b> Radial connection pressure gauge
			<b>P</b> Visual indicator with automatic reset
			<b>Q</b> Visual indicator with manual reset

Pressure setting	BEA-BEM	BLA	BVA-BVR	BVP-BVQ
<b>14</b> 1.4 bar	-	-	•	-
<b>15</b> 1.5 bar	•	•	-	-
<b>20</b> 2 bar	•	•	-	•
<b>25</b> 2.5 bar	-	-	•	-

Seals	BE	BLA	BVA-BVR	BVP-BVQ
<b>H</b> HNBR	•	•	-	•

Thermostat	BEA-BEM	BLA	BV
<b>A</b> Without thermostat	•	•	-

Electrical connections	BEA	BEM	BL
<b>10</b> Connection AMP Superseal series 1.5	-	-	-
<b>30</b> Connection Deutsch DT-04-2-P	-	-	-
<b>41</b> Connection via four-core cable	-	•	-
<b>50</b> Connection EN 175301-803	•	-	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	•
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	•
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vac	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	•

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

Certifications	BEA	BEM-BET	BL	BV
Without	•	•	•	•
<b>EX</b> ATEX certification	•	-	-	-
<b>UL</b> UL certification	•	-	-	-

## DIFFERENTIAL PRESSURE INDICATORS

Series		Configuration example 1:						
<b>DE</b> Electrical differential pressure indicator		DE	M	12	H	F	50	P01
<b>DL</b> Electrical/Visual differential pressure indicator		Configuration example 2:						
<b>DT</b> Electronic differential pressure indicator		DE	U	50	H	A	50	P01
<b>DV</b> Visual differential pressure indicator		Configuration example 3:						
		DL	E	20	V	A	71	P01
		Configuration example 4:						
		DT	A	50	H	F	70	P01
		Configuration example 5:						
		DV	M	70	V			P01

Type	DE	DL	DT	DV
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset
<b>M</b> With wired electrical connection	•	-	-	<b>M</b> With manual reset
<b>U</b> Standard type 210 bar, UL certified	•	-	-	
<b>E</b> For high power supply	-	•	-	

Pressure setting	
<b>12</b>	1.2 bar
<b>20</b>	2.0 bar
<b>50</b>	5.0 bar
<b>70</b>	7.0 bar
<b>95</b>	9.5 bar

Seals	
<b>H</b>	HNBR
<b>V</b>	FPM

Thermostat	DEA	DEM	DLA	DLE	DT
<b>A</b> Without thermostat	•	•	•	•	-
<b>F</b> With thermostat	-	•	-	•	•

Electrical connections	DEA	DEM	DLA	DLE	DT
<b>10</b> Connection AMP Superseal series 1.5	-	•	-	-	-
<b>20</b> Connection AMP Timer Junior	-	•	-	-	-
<b>30</b> Connection Deutsch DT-04-2-P	-	•	-	-	-
<b>35</b> Connection Deutsch DT-04-3-P	-	•	-	-	-
<b>50</b> Connection EN 175301-803	•	-	-	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	•	-	-
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	•	-	-
<b>70</b> Connection IEC 61076-2-101 D (M12)	-	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	•	-	-

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

Certifications	DEU	OTHERS
Without	-	•
<b>UL</b> UL certification	•	-

## PLUGS

Series	Configuration example
<b>T2</b> Plug	T2 H

Seals	
<b>H</b>	HNBR
<b>V</b>	FPM

# CLOGGING INDICATORS LOW & MEDIUM PRESS. FILTERS

## Designation & Ordering code

### DIFFERENTIAL PRESSURE INDICATORS

Series	Configuration example 1:	DE	M	20	H	F	50	P01	
<b>DE</b> Electrical differential pressure indicator	Configuration example 2:	DE	U	50	H	A	50	P01	UL
<b>DL</b> Electrical/Visual differential pressure indicator	Configuration example 3:	DL	E	50	V	A	71	P01	
<b>DT</b> Electronic differential pressure indicator	Configuration example 4:	DT	A	20	H	F	70	P01	
<b>DV</b> Visual differential pressure indicator	Configuration example 5:	DV	M	50	V			P01	

Type	DE	DL	DT	DV
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset
<b>M</b> With wired electrical connection	•	-	-	<b>M</b> With manual reset
<b>U</b> Standard type 210 bar, UL certified	•	-	-	<b>S</b> With automatic reset
<b>E</b> For high power supply	-	•	-	
<b>S</b> Compact version	•	-	-	

Pressure setting	DEA	DEM	DEU	DES	DLA	DLE	DTA	DVA	DVM	DVS
<b>12</b> 1.2 bar	•	•	-	•	•	•	•	•	•	•
<b>20</b> 2.0 bar	•	•	•	-	•	•	•	•	•	-
<b>25</b> 2.5 bar	-	-	-	•	-	-	-	-	-	•
<b>40</b> 4.0 bar	-	-	-	•	-	-	-	-	-	•
<b>50</b> 5.0 bar	•	•	•	-	•	•	•	•	•	-
<b>70</b> 7.0 bar	•	•	•	-	•	•	•	•	•	-
<b>95</b> 9.5 bar	•	•	-	-	•	•	•	•	•	-

Seals
<b>H</b> HNBR
<b>V</b> FPM

Thermostat	DEA	DEM	DLA	DLE	DT
<b>A</b> Without thermostat	•	•	•	•	-
<b>F</b> With thermostat	-	•	-	•	•

Electrical connections	DEA	DEM	DES	DLA	DLE	DT
<b>10</b> Connection AMP Superseal series 1.5	-	•	•	-	-	-
<b>20</b> Connection AMP Timer Junior	-	•	-	-	-	-
<b>30</b> Connection Deutsch DT-04-2-P	-	•	•	-	-	-
<b>35</b> Connection Deutsch DT-04-3-P	-	•	-	-	-	-
<b>50</b> Connection EN 175301-803	•	-	-	-	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	-	•	-	-
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	-	•	-	-
<b>70</b> Connection IEC 61076-2-101 D (M12)	-	-	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•	-	-
<b>80</b> Connection Stud #10-32 UNF	-	-	•	•	-	-

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

Certifications	DEU	OTHERS
Without	-	•
<b>UL</b> UL certification	•	-

### PLUGS

Series	DEA	DEM	DES	DL	DT	DVA	DVM	DVS	Configuration example	T2	H
<b>T2</b> Plug	•	•	-	•	•	•	•	-			
<b>T4</b> Plug	-	-	•	-	-	-	-	•			

Seals	T2	T4
<b>A</b> NBR	-	•
<b>H</b> HNBR	•	-
<b>V</b> FPM	•	-

## DIFFERENTIAL PRESSURE INDICATORS

Series	Configuration example 1:							
<b>DE</b> Electrical differential pressure indicator	DE	M	12	H	F	50	P01	
<b>DL</b> Electrical/Visual differential pressure indicator	Configuration example 2: DE U 50 H A 50 P01 UL							
<b>DT</b> Electronic differential pressure indicator	Configuration example 3: DL E 20 V A 71 P01							
<b>DV</b> Visual differential pressure indicator	Configuration example 4: DT A 50 H F 70 P01							
	Configuration example 5: DV M 70 V P01							

Type	DE	DL	DT	DV
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset
<b>M</b> With wired electrical connection	•	-	-	<b>M</b> With manual reset
<b>U</b> Standard type 210 bar, UL certified	•	-	-	
<b>E</b> For high power supply	-	•	-	

Pressure setting	DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM
<b>12</b> 1.2 bar	•	•	-	•	•	•	•	•
<b>20</b> 2.0 bar	•	•	•	•	•	•	•	•
<b>50</b> 5.0 bar	•	•	•	•	•	•	•	•
<b>70</b> 7.0 bar	•	•	•	•	•	•	•	•
<b>95</b> 9.5 bar	•	•	-	•	•	•	•	•

Seals	H	V
<b>H</b> HNBR	•	-
<b>V</b> FPM	-	•

Thermostat	DEA	DEM	DLA	DLE	DT
<b>A</b> Without thermostat	•	•	•	•	-
<b>F</b> With thermostat	-	•	-	•	•

Electrical connections	DEA	DEM	DLA	DLE	DT
<b>10</b> Connection AMP Superseal series 1.5	-	•	-	-	-
<b>20</b> Connection AMP Timer Junior	-	•	-	-	-
<b>30</b> Connection Deutsch DT-04-2-P	-	•	-	-	-
<b>35</b> Connection Deutsch DT-04-3-P	-	•	-	-	-
<b>50</b> Connection EN 175301-803	•	-	-	•	-
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc	-	-	•	-	-
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc	-	-	•	-	-
<b>70</b> Connection IEC 61076-2-101 D (M12)	-	-	-	-	•
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	•	-	-

Option	P01	Pxx
<b>P01</b> MP Filtri standard	•	-
<b>Pxx</b> Customized	-	•

Certifications	DEU	OTHERS
Without	-	•
<b>UL</b> UL certification	•	-

## PLUGS

Series	Configuration example	
<b>T2</b> Plug	T2	H

Seals	H	V
<b>H</b> HNBR	•	-
<b>V</b> FPM	-	•

# CLOGGING INDICATORS

## STAINLESS STEEL HIGH PRESSURE FILTERS

Designation & Ordering code

### DIFFERENTIAL PRESSURE INDICATORS

Series					Configuration example 1:								
<b>DE</b>	Electrical differential pressure indicator				DE	Z	50	H	A	50	P01		
<b>DL</b>	Electrical / Visual differential pressure indicator				DL	X	70	V	A	52	P01		
<b>DV</b>	Visual differential pressure indicator												
Type					DE	DL	DV						
<b>X</b>	Stainless steel standard type 420 bar				•	•	•						
<b>Y</b>	Stainless steel optional type 420 bar				-	-	•						
<b>Z</b>	Stainless steel 700 bar (only for FZH)				•	•	•						
Pressure setting													
<b>12</b>	1.2 bar												
<b>20</b>	2.0 bar												
<b>50</b>	5.0 bar												
<b>70</b>	7.0 bar												
<b>95</b>	9.5 bar												
Seals					DEX	DEZ	DL	DV					
<b>H</b>	HNBR				•	•	•	•					
<b>V</b>	FPM				•	•	•	•					
<b>F</b>	MFQ				-	•	-	-					
Thermostat					DEX	DEZ	DL	DV					
<b>A</b>	Without thermostat				•	•	•	-					
Electrical connections					DEX	DEZ		DL					
<b>50</b>	Connection EN 175301-803				•	•	•	-					
<b>51</b>	Connection EN 175301-803, transparent base with lamps 24 Vdc				-	-	-	•					
<b>52</b>	Connection EN 175301-803, transparent base with lamps 110 Vdc				-	-	-	•					
											<b>Option</b>		
											<b>P01</b> MP Filtri standard		
											<b>Pxx</b> Customized		

### PLUGS

Series		Configuration example	
<b>X2</b>	Stainless Steel plug 420 bar	X2	H
<b>X3</b>	Stainless Steel plug 700 bar (only for FZH)		
Seals			
<b>H</b>	HNBR		
<b>V</b>	FPM		
<b>F</b>	MFQ		



## FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Designation & Ordering code

### DIFFERENTIAL PRESSURE INDICATORS

Series	Configuration example 1:						
<b>DE</b> Electrical differential pressure indicator	DE	H	50	F	A	48	P01
<b>DV</b> Visual differential pressure indicator	Configuration example 2:						
	DV	X	70	V			P01

Type	DE	DV
<b>A</b> With automatic reset	-	•
<b>M</b> With manual reset	-	•
<b>H</b> Stainless steel hazardous area 420 bar	•	-
<b>X</b> Stainless steel standard type 420 bar	-	•
<b>Y</b> Stainless steel optional type 420 bar	-	•

Pressure setting	DEH	DV
<b>12</b> 1.2 bar	-	•
<b>20</b> 2.0 bar	•	•
<b>50</b> 5.0 bar	•	•
<b>70</b> 7.0 bar	•	•
<b>95</b> 9.5 bar	-	•

Seals	DEH	DV
<b>H</b> HNBR	-	•
<b>V</b> FPM	•	•
<b>F</b> MFQ	•	-

Thermostat	DEH
<b>A</b> Without thermostat	•

Electrical connections	DEH
<b>48</b> Connection via three-core cable - fitting M20x1.5	•
<b>49</b> Connection via four-core cable - fitting 1/2" NPT	•
<b>70</b> Connection IEC 61076-2-101 D (M12)	•

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

### PLUGS

Series	Configuration example
<b>T2</b> Plug	X2 H
<b>X2</b> Stainless Steel plug 420 bar	
<b>X3</b> Stainless Steel plug 700 bar (only for FZH)	

Seals
<b>H</b> HNBR
<b>V</b> FPM
<b>F</b> MFQ

# VACUUM INDICATORS

## Technical data

VE*50 (EX)	
<b>Electrical Vacuum Indicator</b> Connection: EN 175301-803	
R	Ordering code
EN 10226 - R1/4"	VE A 21 x A 50 P01 VE A 21 x A 50 P01 EX
EN 10226 - R1/8"	VE B 21 A A 50 P01 VE B 21 A A 50 P01 EX

A/F 27  
Max tightening torque:  
**25 N·m**

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: VEA: NBR/FPM  
VEB: NBR

**Technical data**

- Vacuum setting: 0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc  
4 A / 30 Vdc  
5 A / 125 Vac  
4 A / 250 Vac

- CE certification
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X

**Certification:** ATEX, IECEx  
- Certification included in EX version

VEA50 UL	
<b>Electrical Vacuum Indicator</b> Connection: EN 175301-803	
R	Ordering code
EN 10226 - R1/4"	VE A 21 A A 50 P01 UL

A/F 27  
Max tightening torque:  
**25 N·m**

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: VEA: NBR/FPM  
VEB: NBR

**Technical data**

- Vacuum setting: 0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc  
4 A / 30 Vdc  
5 A / 125 Vac  
4 A / 250 Vac

- CE certification
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X

**Certification:** UL  
- Certification included in EX version

VL*51 - VL*52 - VL*53	
<b>Electrical/Visual Vacuum Indicator</b> Connection: EN 175301-803	
51: Transparent base with lamps 24 Vdc 52: Transparent base with lamps 110 Vdc 53: Transparent base with lamps 230 Vac	
R	Ordering code
EN 10226 - R1/4"	VL A 21 x A xx P01
EN 10226 - R1/8"	VL B 21 A A xx P01

A/F 27  
Max tightening torque:  
**25 N·m**

**Hydraulic symbol**

**Electrical symbol**

**Materials**

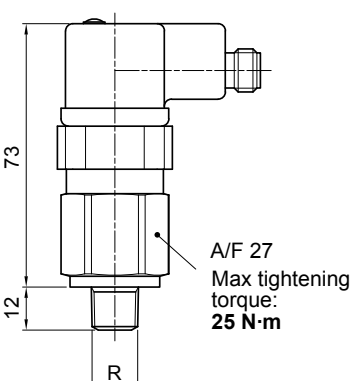
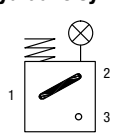
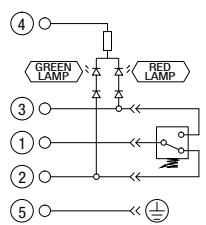
- Body: Brass
- Base: Transparent polyamide
- Contacts: Brass - Polyamide
- Seal: VLA: NBR/FPM  
VLB: NBR

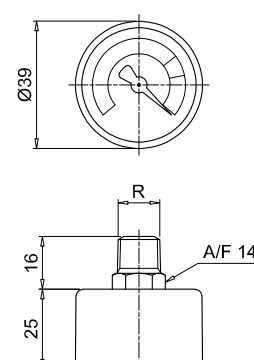

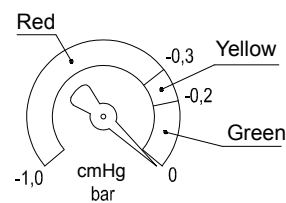
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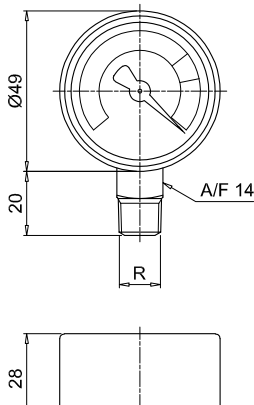

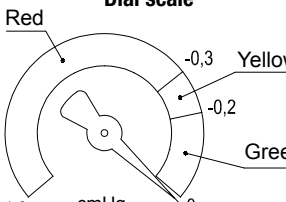
- Vacuum setting: 0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: EN 175301-803
- Type: 51                      52                      53
- Lamps: 24 Vdc            110 Vdc            230 Vac
- Resistive load: 1 A / 24 Vdc    1 A / 110 Vdc    1 A / 230 Vac

VL*71	
<b>Electrical/Visual Vacuum Indicator</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	
Connections	Indicator code
EN 10226 - R1/4"	VL A 21 x A 71 P01
EN 10226 - R1/8"	VL B 21 A A 71 P01
	
<b>Hydraulic symbol</b> 	
<b>Electrical symbol</b> 	
<b>Materials</b> - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: VLA: NBR/FPM VL B: NBR	
<b>Technical data</b> - Vacuum setting: 0.21 bar ±10% - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529	
<b>Electrical data</b> - Electrical connection: IEC 61076-2-101 D (M12) - Lamps: 24 Vdc (black base) - Resistive load: 0.4 A / 24 Vdc	

VVA - VVB									
<b>Axial Vacuum Gauge</b>									
R	Ordering code								
EN 10226 - R1/4"	VVA 20 P01								
EN 10226 - R1/8"	VVB 20 P01								
									
<b>Hydraulic symbol</b> 									
<b>Dial scale</b> 									
<b>Conversion to SI units</b> <table border="1" style="margin: auto;"> <thead> <tr style="background-color: #cccccc;"> <th>[cmHg]</th> <th>[bar]</th> </tr> </thead> <tbody> <tr> <td>-12</td> <td>-0.16</td> </tr> <tr> <td>-18</td> <td>-0.24</td> </tr> <tr> <td>-76</td> <td>-1.01</td> </tr> </tbody> </table>		[cmHg]	[bar]	-12	-0.16	-18	-0.24	-76	-1.01
[cmHg]	[bar]								
-12	-0.16								
-18	-0.24								
-76	-1.01								
<b>Materials</b> - Case: Black plastic - Window: Clear plastic - Dial: White plastic - Pointer: Black plastic - Pressure connection: Cu-alloy - Pressure element: Bourdon tube Cu-alloy soft soldered, C type - Movement: Cu-alloy									
<b>Technical data</b> - Max working pressure: Steady: -0.7 bar Fluctuating: -0.6 bar Short time: -1.0 bar - Working temperature: Ambienti from -40 °C to +60 °C Fluid max + 60 °C Storage from -40 °C to +60 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Accuracy: Class 2.5 according to EN 13190 - Degree of protection: IP31 according to EN 60529									

VVR - VVS										
<b>Radial Vacuum Gauge</b>										
R	A/F	Ordering code								
EN 10226 - R1/4"	14	VVR 20 P01								
EN 10226 - R1/8"	11	VVS 20 P01								
										
<b>Hydraulic symbol</b> 										
<b>Dial scale</b> 										
<b>Conversion to SI units</b> <table border="1" style="margin: auto;"> <thead> <tr style="background-color: #cccccc;"> <th>[cmHg]</th> <th>[bar]</th> </tr> </thead> <tbody> <tr> <td>-12</td> <td>-0.16</td> </tr> <tr> <td>-18</td> <td>-0.24</td> </tr> <tr> <td>-76</td> <td>-1.01</td> </tr> </tbody> </table>			[cmHg]	[bar]	-12	-0.16	-18	-0.24	-76	-1.01
[cmHg]	[bar]									
-12	-0.16									
-18	-0.24									
-76	-1.01									
<b>Materials</b> - Case: Black plastic - Window: Clear plastic - Dial: White plastic - Pointer: Black plastic - Pressure connection: Cu-alloy - Pressure element: Bourdon tube Cu-alloy soft soldered, C type - Movement: Cu-alloy										
<b>Technical data</b> - Max working pressure: Steady: -0.7 bar Fluctuating: -0.6 bar Short time: -1.0 bar - Working temperature: Ambienti from -40 °C to +60 °C Fluid max + 60 °C Storage from -40 °C to +60 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Accuracy: Class 2.5 according to EN 13190 - Degree of protection: IP31 according to EN 60529										

# BAROMETRIC (PRESSURE) INDICATORS

## Dimensions

BEA*50 (EX)	
<b>Electrical Pressure Indicator</b> Connection EN 175301-803	
Settings	Ordering code
1.5 bar ±10%	BE A 15 HA 50 P01 BE A 15 HA 50 P01 EX
2.0 bar ±10%	BE A 20 HA 50 P01 BE A 20 HA 50 P01 EX

A/F 27  
Max tightening torque: **25 N·m**

EN 10226 - R1/8"

**Hydraulic symbol**

**Electrical symbol**

- Certification: ATEX, IECEx
- Certification included in EX version

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load:
  - 5 A / 14 Vdc
  - 4 A / 30 Vdc
  - 5 A / 125 Vac
  - 4 A / 250 Vac
- CE certification
- Available Atex product: I M1 Ex ia I Ma  
II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X

BEA*50 UL	
<b>Electrical Pressure Indicator</b> Connection EN 175301-803	
Settings	Ordering code
1.5 bar ±10%	BE A 15 HA 50 P01 UL
2.0 bar ±10%	BE A 20 HA 50 P01 UL

A/F 27  
Max tightening torque: **25 N·m**

EN 10226 - R1/8"

**Hydraulic symbol**

**Electrical symbol**

- Certification: UL
- Certification included in EX version

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load:
  - 5 A / 14 Vdc
  - 4 A / 30 Vdc
  - 5 A / 125 Vac
  - 4 A / 250 Vac
- CE certification
- Available Atex product: I M1 Ex ia I Ma  
II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X

BEM*41	
<b>Electrical Pressure Indicator</b> Connection via four-core cable	
Settings	Ordering code
1.5 bar ±10%	BE M 15 HA 41 P01
2.0 bar ±10%	BE M 20 HA 41 P01

A/F 27  
Max tightening torque: **25 N·m**

EN 10226 - R1/8"

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree of protection: IP67 according to EN 60529

**Electrical data**

- Electrical connection: Four-core cable
- Resistive load:
  - 5 A / 14 Vdc
  - 4 A / 30 Vdc
  - 5 A / 125 Vac
  - 4 A / 250 Vac
- CE certification
- On request this indicator can be provided with main connectors in use for wirings.

BET*F10	
<b>Electrical Pressure Indicator</b> Connection AMP Superseal series 1.5	
Settings	Ordering code
2.0 bar $\pm 10\%$	BET 20 H F 10 P01
2.5 bar $\pm 10\%$	BET 25 H F 10 P01

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

BET*F30	
<b>Electrical Pressure Indicator</b> Deutsch DT-04-2-P	
Settings	Ordering code
2.0 bar $\pm 10\%$	BET 20 H F 30 P01
2.5 bar $\pm 10\%$	BET 25 H F 30 P01

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

BET*F50	
<b>Electrical Pressure Indicator</b> Connection EN 175301-803	
Settings	Ordering code
2.0 bar $\pm 10\%$	BET 20 H F 50 P01
2.5 bar $\pm 10\%$	BET 25 H F 50 P01

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

# BAROMETRIC (PRESSURE) INDICATORS

## Dimensions

BL*51 - BL*52 - BL*53	
<b>Electrical/Visual Pressure Indicator</b> Connection: EN 175301-803	
51: Transparent base with lamps 24 Vdc 52: Transparent base with lamps 110 Vdc 53: Transparent base with lamps 230 Vac	
Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 H A xx P01
2.0 bar $\pm 10\%$	BL A 20 H A xx P01
<b>Hydraulic symbol</b> 	
<b>Electrical symbol</b> 	
<b>Materials</b> - Body: Brass - Base: Transparent polyamide - Contacts: Silver - Seal: HNBR	
<b>Technical data</b> - Max working pressure: 40 bar - Proof pressure: 60 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529	
<b>Electrical data</b> - Electrical connection: EN 175301-803 - Type: 51                      52                      53 - Lamps: 24 Vdc              110 Vdc              230 Vac - Resistive load: 1 A / 24 Vdc    1 A / 110 Vdc    1 A / 230 Vac	

BL*71	
<b>Electrical/Visual Pressure Indicator</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	
Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 H A 71 P01
2.0 bar $\pm 10\%$	BL A 20 H A 71 P01
<b>Hydraulic symbol</b> 	
<b>Electrical symbol</b> 	
<b>Materials</b> - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR	
<b>Technical data</b> - Max working pressure: 40 bar - Proof pressure: 60 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529	
<b>Electrical data</b> - Electrical connection: IEC 61076-2-101 D (M12) - Lamps: 24 Vdc (black base) - Resistive load: 0.4 A / 24 Vdc	

BVA	
<b>Axial Pressure Gauge</b>	
Settings	Ordering code
1.4 bar $\pm 10\%$	BV A 14 P01
2.5 bar $\pm 10\%$	BV A 25 P01
<b>Hydraulic symbol</b> 	
<b>Dial scale</b> BV A 14 P01 	
<b>Hydraulic symbol</b> 	
<b>Dial scale</b> BV A 25 P01 	
<b>Materials</b> - Case: Painted Steel - Window: Clear plastic - Dial: Painted Steel - Pointer: Black plastic - Pressure connection: Brass - Pressure element: Bourdon tube Cu-alloy soft soldered, C type	
<b>Technical data</b> - Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar - Working temperature: Ambient from -40 °C to +60 °C Fluid max +60 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Accuracy: Class 2.5 according to EN 13190 - Degree of protection: IP31 according to EN 60529	

<b>BVR</b>	
<b>Radial Pressure Gauge</b>	
Settings	Ordering code
1.4 bar ±10%	BV R 14 P01
2.5 bar ±10%	BV R 25 P01
<p style="text-align: center;"><b>Hydraulic symbol</b></p>	
<p style="text-align: center;"><b>Dial scale</b></p> <p style="text-align: center;">BV R 14 P01</p> <p style="text-align: center;">BV R 25 P01</p>	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Case: Painted Steel</li> <li>- Window: Clear plastic</li> <li>- Dial: Painted Steel</li> <li>- Pointer: Black plastic</li> <li>- Pressure connection: Brass</li> <li>- Pressure element: Bourdon tube Cu-alloy soft soldered, C type</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar</li> <li>- Working temperature: Ambient from -40 °C to +60 °C Fluid max +60 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943</li> <li>- Accuracy: Class 2.5 according to EN 13190</li> <li>- Degree of protection: IP31 according to EN 60529</li> </ul>	

<b>BVP - BVQ</b>	
<b>Visual Pressure Indicator</b>	
BVP - Automatic reset BVQ - Manual reset	
Setting	Ordering code
1.5 bar ±10%	BV P 15 H P01
	BV Q 15 H P01
2.0 bar ±10%	BV P 20 H P01
	BV Q 20 H P01
<p style="text-align: center;"><b>Hydraulic symbol</b></p>	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Cover / internal parts: Nylon</li> <li>- Caps: VMQ</li> <li>- Seal: HNBR</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Reset: BVP - Automatic reset BVQ - Manual reset</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943</li> <li>- Degree of protection: IP45 according to EN 60529</li> </ul>	
<p style="text-align: center;"><b>Signals</b></p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  Absence of pressure (no indicator)             </div> <div style="text-align: center;">  Presence of pressure (green button rises gradually)             </div> <div style="text-align: center;">  Clogged filter element (red button risen)             </div> </div>	

# DIFFERENTIAL PRESSURE INDICATORS

## Dimensions

DEA*50	
<b>Electrical Differential Pressure Indicator</b> Connection: EN 175301-803	
Settings	Ordering code
1.2 bar ±10%	DE A 12 x A 50 P01
2.0 bar ±10%	DE A 20 x A 50 P01
5.0 bar ±10%	DE A 50 x A 50 P01
7.0 bar ±10%	DE A 70 x A 50 P01
9.5 bar ±10%	DE A 95 x A 50 P01

A/F 30  
Max tightening torque: **65 N·m**

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

DEH*48	
<b>Hazardous Area</b> <b>Electrical Differential Pressure Indicator</b> Connection via three-core cable - fitting M20x1.5	
Settings	Ordering code
2.0 bar ±10%	DE H 20 x A 48 P01
5.0 bar ±10%	DE H 50 x A 48 P01
7.0 bar ±10%	DE H 70 x A 48 P01

A/F 25  
Max tightening torque: **100 N·m**

M20 x 1.5

min. 110

88

flexible cable ≈ 5000 to A

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: AISI 316L
- Contacts: Rhodium
- Seal: FPM - MFQ

**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -60 °C to +125 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Temperature class: T4 (135 °C) and T6 (85 °C)
- Degree of protection: IP 66/67/68 according to EN 60529
- Connection type: Three-core cable, fitting M20x1.5
- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)

**Electrical data**

- Connection via three-core cable - fitting M20x1.5
- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac
- Electrical Ratings:  $U_i = 30 \text{ Vdc} / I_i = 250 \text{ mA} / P_i = 1.3 \text{ W}$
- Available ATEX product: II 1 GD Ex ia IIC T6 Ga -60°C ≤ Ta ≤ 80°C  
Ex ia IIC T4 Ga -60°C ≤ Ta ≤ 125°C  
II 2 GD Ex db IIC T6\* Gb Ex tb IIIC T85°C\* Db  
(Tamb : = -60°C to +70°C)\* IP66/67  
\* alternative T/Class and ambients T4, T135°C  
(Tamb = -60°C to +120°C)

**Certification / Approvals:**  
ATEX, IECEx, EAC TR CU, INMETRO  
- Certification included as standard

DEH*49	
<b>Hazardous Area</b> <b>Electrical Differential Pressure Indicator</b> Connection via four-core cable - fitting 1/2" NPT	
Settings	Ordering code
2.0 bar ±10%	DE H 20 x A 49 P01
5.0 bar ±10%	DE H 50 x A 49 P01
7.0 bar ±10%	DE H 70 x A 49 P01

A/F 25  
Max tightening torque: **100 N·m**

1/2" NPT

min. 110

88

flexible cable ≈ 5000 to A

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: AISI 316L
- Contacts: Rhodium
- Seal: FPM - MFQ

**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -60 °C to +120 °C : ATEX, IECEx, EAC TR CU, INMETRO  
From -60 °C to +105 °C : UL/CSA
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Temperature class: T4 (135 °C) and T6 (85 °C)
- Degree of protection: IP 66/67/68 according to EN 60529
- Connection type: Four-core cable, fitting 1/2" NPT
- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)

**Electrical data**

- Connection via four-core cable - fitting 1/2" NPT
- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac
- Max voltage: 150 Vac/dc
- Power: 20 W
- Available ATEX product: II 1 GD Ex ia IIC T6 Ga -60°C ≤ Ta ≤ 80°C  
Ex ia IIC T4 Ga -60°C ≤ Ta ≤ 125°C  
II 2 GD Ex db IIC T6\* Gb Ex tb IIIC T85°C\* Db  
(Tamb : = -60°C to +70°C)\* IP66/67  
\* alternative T/Class and ambients T4, T135°C  
(Tamb = -60°C to +120°C)

**Certification / Approvals:**  
ATEX, IECEx, EAC TR CU, INMETRO, UL/CSA Class I Division 1 Groups A-D, UL/CSA Class II Division 1 Groups E-G  
- Certification included as standard



DEH*70		Hydraulic symbol	Materials
<b>Hazardous Area</b> <b>Electrical Differential Pressure Indicator</b> Connection IEC 61076-2-101 D (M12)			
Settings	Ordering code		
2.0 bar ±10%	DE H 20 x A 70 P01	<b>Electrical symbol</b> 	<b>Technical data</b> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -60 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Temperature class: T6 (85 °C) - Degree of protection: IP 66/67 according to EN 60529 - Connection type: IEC 61076-2-101 D (M12) - Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)
5.0 bar ±10%	DE H 50 x A 70 P01		
7.0 bar ±10%	DE H 70 x A 70 P01		
		<b>Electrical data</b> - Connection IEC 61076-2-101 D (M12) - Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vdc - Electrical Ratings: <i>U<sub>i</sub></i> = 30 Vdc <i>I<sub>i</sub></i> = 250 mA <i>P<sub>i</sub></i> = 1.3 W - Available ATEX product: II 1 GD Ex ia IIC T6 Ga -60°C ≤ Ta ≤ 80°C Ex ia IIC T4 Ga -60°C ≤ Ta ≤ 125°C II 2 GD Ex db IIC T6* Gb Ex tb IIIC T85°C* Db (Tamb = -60°C to +70°C)* IP66/67 * alternative T/Class and ambients T4, T135°C (Tamb = -60°C to +120°C)	

DEM*F10		Hydraulic symbol	Materials
<b>Electrical Differential Pressure Indicator</b> Connection: AMP Superseal series 1.5			
Settings	Ordering code		
1.2 bar ±10%	DE M 12 x F 10 P01	<b>Electrical symbol</b> 	<b>Technical data</b> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529
2.0 bar ±10%	DE M 20 x F 10 P01		
5.0 bar ±10%	DE M 50 x F 10 P01		
7.0 bar ±10%	DE M 70 x F 10 P01		
9.5 bar ±10%	DE M 95 x F 10 P01		
		<b>Electrical data</b> - Electrical connection: AMP Superseal series 1.5 - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")	

DEM*F20		Hydraulic symbol	Materials
<b>Electrical Differential Pressure Indicator</b> AMP Time junior			
Settings	Ordering code		
1.2 bar ±10%	DE M 12 x F 20 P01	<b>Electrical symbol</b> 	<b>Technical data</b> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529
2.0 bar ±10%	DE M 20 x F 20 P01		
5.0 bar ±10%	DE M 50 x F 20 P01		
7.0 bar ±10%	DE M 70 x F 20 P01		
9.5 bar ±10%	DE M 95 x F 20 P01		
		<b>Electrical data</b> - Electrical connection: AMP Time junior - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")	

# DIFFERENTIAL PRESSURE INDICATORS

## Dimensions

DEM*F30	
<b>Electrical Differential Pressure Indicator</b> Deutsch DT-04-2-P	
Settings	Ordering code
1.2 bar ±10%	DE M 12 x F 30 P01
2.0 bar ±10%	DE M 20 x F 30 P01
5.0 bar ±10%	DE M 50 x F 30 P01
7.0 bar ±10%	DE M 70 x F 30 P01
9.5 bar ±10%	DE M 95 x F 30 P01

A/F 28  
Max tightening torque: 65 N·m

flexible cable: 240 to "A"

**Hydraulic symbol**

**Electrical symbol**

Thermal lockout

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

DEM*F35	
<b>Electrical Differential Pressure Indicator</b> Deutsch DT-04-3-P	
Settings	Ordering code
1.2 bar ±10%	DE M 12 x F 35 P01
2.0 bar ±10%	DE M 20 x F 35 P01
5.0 bar ±10%	DE M 50 x F 35 P01
7.0 bar ±10%	DE M 70 x F 35 P01
9.5 bar ±10%	DE M 95 x F 35 P01

A/F 28  
Max tightening torque: 65 N·m

flexible cable: 240 to "A"

**Hydraulic symbol**

**Electrical symbol**

Thermal lockout

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (option "F")

DEM*A10	
<b>Electrical Differential Pressure Indicator</b> Connection: AMP Superseal series 1.5	
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 10 P01
2.0 bar ±10%	DE M 20 x A 10 P01
5.0 bar ±10%	DE M 50 x A 10 P01
7.0 bar ±10%	DE M 70 x A 10 P01
9.5 bar ±10%	DE M 95 x A 10 P01

A/F 28  
Max tightening torque: 65 N·m

flexible cable: 290 to "A"

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

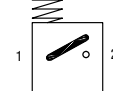
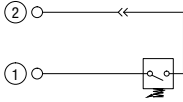
**Technical data**

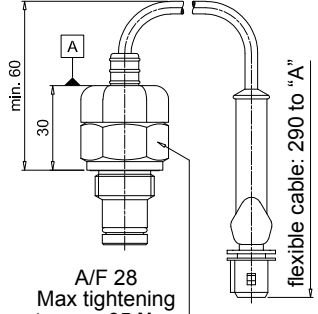
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)

DEM*A20	
<b>Electrical Differential Pressure Indicator</b> AMP Time junior	
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 20 P01
2.0 bar ±10%	DE M 20 x A 20 P01
5.0 bar ±10%	DE M 50 x A 20 P01
7.0 bar ±10%	DE M 70 x A 20 P01
9.5 bar ±10%	DE M 95 x A 20 P01



A/F 28  
Max tightening torque: **65 N·m**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

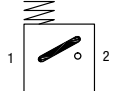
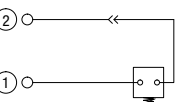
**Technical data**

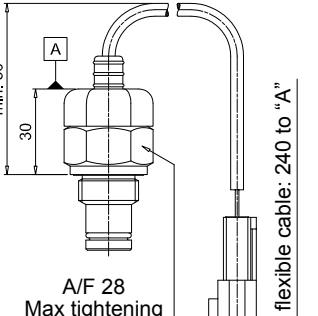
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)

DEM*A30	
<b>Electrical Differential Pressure Indicator</b> Deutsch DT-04-2-P	
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 30 P01
2.0 bar ±10%	DE M 20 x A 30 P01
5.0 bar ±10%	DE M 50 x A 30 P01
7.0 bar ±10%	DE M 70 x A 30 P01
9.5 bar ±10%	DE M 95 x A 30 P01



A/F 28  
Max tightening torque: **65 N·m**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

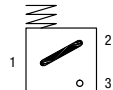
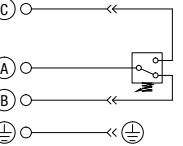
**Technical data**

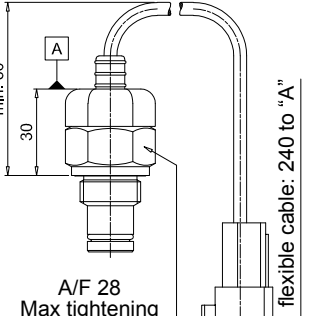
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)

DEM*A35	
<b>Electrical Differential Pressure Indicator</b> Deutsch DT-04-3-P	
Settings	Ordering code
1.2 bar ±10%	DE M 12 x A 35 P01
2.0 bar ±10%	DE M 20 x A 35 P01
5.0 bar ±10%	DE M 50 x A 35 P01
7.0 bar ±10%	DE M 70 x A 35 P01
9.5 bar ±10%	DE M 95 x A 35 P01



A/F 28  
Max tightening torque: **65 N·m**

**Materials**

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact

# DIFFERENTIAL PRESSURE INDICATORS

## Dimensions

DES*10	
<b>Electrical Differential Pressure Indicator</b> AMP Superseal series 1.5	
Settings	Ordering code
1.2 bar $\pm 10\%$	DE S 12 H A 10 P01
2.5 bar $\pm 10\%$	DE S 25 H A 10 P01
4.0 bar $\pm 10\%$	DE S 40 H A 10 P01

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 16 bar
- Proof pressure: 24 bar
- Burst pressure: 48 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids

- Degree protection: IP67 according to EN 60529

**Electrical data**

- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 24 Vdc
- Switching type: Normally open contacts (NC on request)

DES*30	
<b>Electrical Differential Pressure Indicator</b> Deutsch DT-04-2-P	
Settings	Ordering code
1.2 bar $\pm 10\%$	DE S 12 H A 30 P01
2.5 bar $\pm 10\%$	DE S 25 H A 30 P01
4.0 bar $\pm 10\%$	DE S 40 H A 30 P01

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 16 bar
- Proof pressure: 24 bar
- Burst pressure: 48 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids

- Degree protection: IP67 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 24 Vdc
- Switching type: Normally open contacts (NC on request)

DES*80	
<b>Electrical Differential Pressure Indicator</b> Stud #10-32 UNF	
Settings	Ordering code
1.2 bar $\pm 10\%$	DE S 12 H A 80 P01
2.5 bar $\pm 10\%$	DE S 25 H A 80 P01
4.0 bar $\pm 10\%$	DE S 40 H A 80 P01

**Hydraulic symbol**

**Electrical symbol**

**Materials**

- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

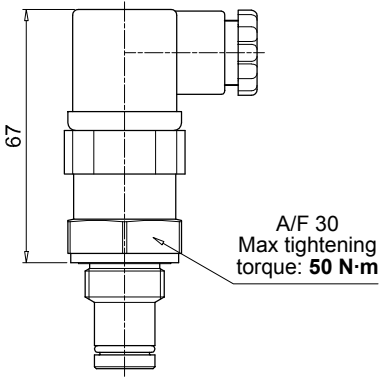
- Max working pressure: 16 bar
- Proof pressure: 24 bar
- Burst pressure: 48 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids

- Degree protection: IP67 according to EN 60529

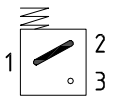
**Electrical data**

- Electrical connection: Stud #10-32 UNF
- Resistive load: 0.2 A / 24 Vdc
- Switching type: Normally open contacts (NC on request)

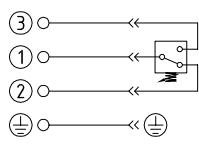
DEU*50 UL	
<b>Electrical Differential Pressure Indicator</b> Connection EN 175301-803	
Settings	Ordering code
2.0 bar ±10%	DE U 20 H A 50 P01 UL
5.0 bar ±10%	DE U 50 H A 50 P01 UL
7.0 bar ±10%	DE U 70 H A 50 P01 UL



**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: Brass
- Base: Black Polyamide
- Contacts: Silver
- Seal: HNBR

**Technical data**

- Max working pressure: 210 bar
- Proof pressure: 220 bar
- Burst pressure: 880 bar
- Working temperature: From -25 °C to +85 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

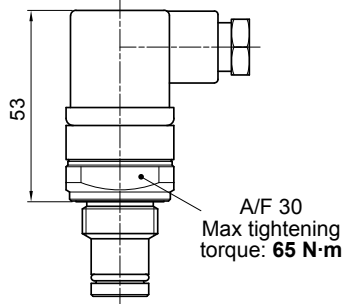
**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 3 A / 30 Vdc  
3 A / 125 Vac  
3 (3) A / 250 Vac

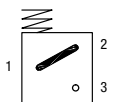
**UL**

- Certification: UL
- Certification included in EX version

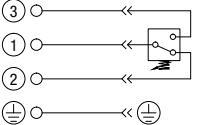
DEX*50	
<b>Electrical Differential Pressure Indicator</b> Connection: EN 175301-803	
Settings	Ordering code
1.2 bar ±10%	DE X 12 x A 50 P01
2.0 bar ±10%	DE X 20 x A 50 P01
5.0 bar ±10%	DE X 50 x A 50 P01
7.0 bar ±10%	DE X 70 x A 50 P01
9.5 bar ±10%	DE X 95 x A 50 P01



**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: AISI 316L
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

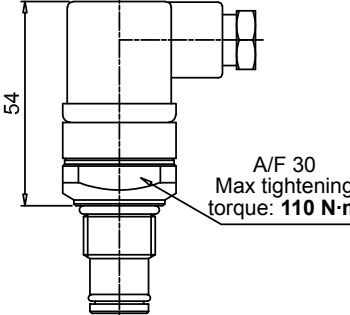
**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

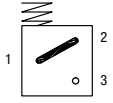
**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

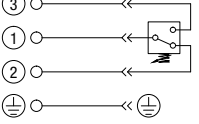
DEZ*50	
<b>Electrical Differential Pressure Indicator</b> Connection: EN 175301-803	
Settings	Ordering code
1.2 bar ±10%	DE Z 12 x A 50 P01
2.0 bar ±10%	DE Z 20 x A 50 P01
5.0 bar ±10%	DE Z 50 x A 50 P01
7.0 bar ±10%	DE Z 70 x A 50 P01
9.5 bar ±10%	DE Z 95 x A 50 P01



**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: AISI 316L
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

**Technical data**

- Max working pressure: 700 bar
- Proof pressure: 1050 bar
- Burst pressure: 2100 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

# DIFFERENTIAL PRESSURE INDICATORS

## Dimensions

DLA*51 - DLA*52	
<b>Electrical/Visual Differential Pressure Indicator</b> Connection: EN 175301-803	
<b>51:</b> Transparent base with lamps 24 Vdc <b>52:</b> Transparent base with lamps 110 Vdc	
Settings	Ordering code
1.2 bar ±10%	DL A 12 x A xx P01
2.0 bar ±10%	DL A 20 x A xx P01
5.0 bar ±10%	DL A 50 x A xx P01
7.0 bar ±10%	DL A 70 x A xx P01
9.5 bar ±10%	DL A 95 x A xx P01
<p><b>Hydraulic symbol</b></p>	
<p><b>Electrical symbol</b></p>	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent polyamide</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943</li> <li>- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Type: 51 52</li> <li>- Lamps: 24 Vdc 110 Vdc</li> <li>- Resistive load: 1 A / 24 Vdc 1 A / 110 Vdc</li> </ul>	

DLA*71	
<b>Electrical/Visual Differential pressure indicator</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	
Settings	Ordering code
1.2 bar ±10%	DL A 12 x A 71 P01
2.0 bar ±10%	DL A 20 x A 71 P01
5.0 bar ±10%	DL A 50 x A 71 P01
7.0 bar ±10%	DL A 70 x A 71 P01
9.5 bar ±10%	DL A 95 x A 71 P01
<p><b>Hydraulic symbol</b></p>	
<p><b>Electrical symbol</b></p>	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black polyamide</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Lamps: 24 Vdc (black base)</li> <li>- Resistive load: 0.4 A / 24 Vdc</li> </ul>	

DLE*A50	
<b>Electrical/Visual Differential Pressure Indicator</b> Without term. Connections: EN 175301-803	
Settings	Ordering code
1.2 bar ±10%	DL E 12 x A 50 P01
2.0 bar ±10%	DL E 20 x A 50 P01
5.0 bar ±10%	DL E 50 x A 50 P01
7.0 bar ±10%	DL E 70 x A 50 P01
9.5 bar ±10%	DL E 95 x A 50 P01
<p><b>Hydraulic symbol</b></p>	
<p><b>Electrical symbol</b></p>	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black polyamide</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connections: EN 175301-803</li> <li>- Resistive load: 5 A / 250 Vac</li> <li>- Available the connector with lamps</li> </ul>	

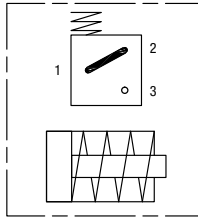
**DLE\*F50**

**Electrical/Visual Differential Pressure Indicator**  
With term. Connections: EN 175301-803

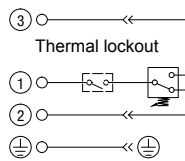
Settings	Ordering code
1.2 bar ±10%	DL E 12 x F 50 P01
2.0 bar ±10%	DL E 20 x F 50 P01
5.0 bar ±10%	DL E 50 x F 50 P01
7.0 bar ±10%	DL E 70 x F 50 P01
9.5 bar ±10%	DL E 95 x F 50 P01

A/F 32  
Max tightening torque: 95 N·m

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

### Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

### Electrical data

- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vdc
- Thermal lockout setting: +30 °C

**DLX\*51 - DLX\*52**

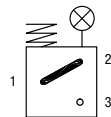
**Electrical/Visual Differential Pressure Indicator**  
Connection: EN 175301-803

**51:** Transparent base with lamps 24 Vdc  
**52:** Transparent base with lamps 110 Vdc

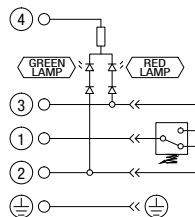
Settings	Ordering code
1.2 bar ±10%	DL X 12 x A 5x P01
2.0 bar ±10%	DL X 20 x A 5x P01
5.0 bar ±10%	DL X 50 x A 5x P01
7.0 bar ±10%	DL X 70 x A 5x P01
9.5 bar ±10%	DL X 95 x A 5x P01

A/F 30  
Max tightening torque: 65 N·m

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: AISI 316L
- Base: Transparent polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

### Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

### Electrical data

- Electrical connection: EN 175301-803
- Type: 51      52
- Lamps: 24 Vdc      110 Vdc
- Resistive load: 1 A / 24 Vdc      1 A / 110 Vdc

**DLZ\*51 - DLZ\*52**

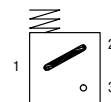
**Electrical/Visual Differential Pressure Indicator**  
Connection: EN 175301-803

**51:** Transparent base with lamps 24 Vdc  
**52:** Transparent base with lamps 110 Vdc

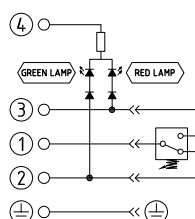
Settings	Ordering code
1.2 bar ±10%	DL Z 12 x A 5x P01
2.0 bar ±10%	DL Z 20 x A 5x P01
5.0 bar ±10%	DL Z 50 x A 5x P01
7.0 bar ±10%	DL Z 70 x A 5x P01
9.5 bar ±10%	DL Z 95 x A 5x P01

A/F 30  
Max tightening torque: 110 N·m

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: AISI 316L
- Base: Transparent polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

### Technical data

- Max working pressure: 700 bar
- Proof pressure: 1050 bar
- Burst pressure: 2100 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

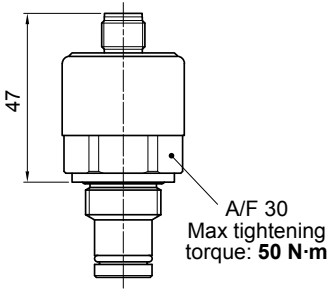
### Electrical data

- Electrical connection: EN 175301-803
- Type: 51      52
- Lamps: 24 Vdc      110 Vdc
- Resistive load: 1 A / 24 Vdc      1 A / 110 Vdc

# DIFFERENTIAL PRESSURE INDICATORS

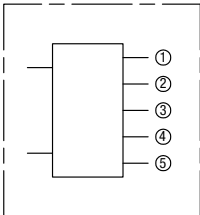
## Dimensions

DTA*F70	
<b>Electronic Differential Pressure Indicator</b> Connection: IEC 61076-2-101 D (M12)	
Settings	Ordering code
1.2 bar ±10%	DT A 12 x F 70 P01
2.0 bar ±10%	DT A 20 x F 70 P01
5.0 bar ±10%	DT A 50 x F 70 P01
7.0 bar ±10%	DT A 70 x F 70 P01
9.5 bar ±10%	DT A 95 x F 70 P01



47  
A/F 30  
Max tightening torque: 50 N·m

**Hydraulic symbol**



**Electrical symbol**

①	○	+24 Vdc
②	○	4 ÷ 20 mA
③	○	75% - N.O. Digital output
④	○	100% - N.O. Digital output
⑤	○	0 Vdc

**Materials**

- Body: Brass
- Internal parts: Brass - Polyamide
- Contacts: Silver
- Seal: HNBR - FPM

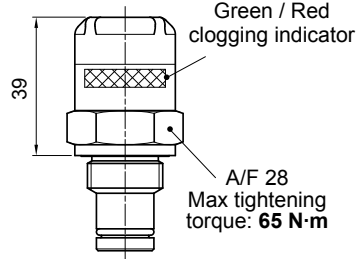
**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

**Electrical data**

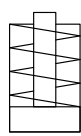
- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

DVA	
<b>Visual Differential Pressure Indicator</b>	
Settings	Ordering code
1.2 bar ±10%	DV A 12 x P01
2.0 bar ±10%	DV A 20 x P01
5.0 bar ±10%	DV A 50 x P01
7.0 bar ±10%	DV A 70 x P01
9.5 bar ±10%	DV A 95 x P01



39  
Green / Red  
clogging indicator  
A/F 28  
Max tightening torque: 65 N·m

**Hydraulic symbol**



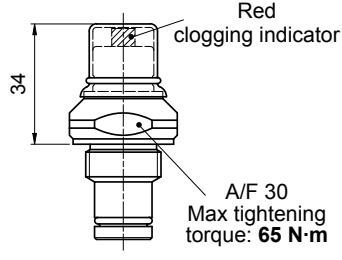
**Materials**

- Body: Brass
- Internal parts: Brass - Polyamide
- Seal: HNBR - FPM

**Technical data**

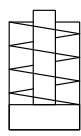
- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

DVM	
<b>Visual Differential Pressure Indicator</b>	
Settings	Ordering code
1.2 bar ±10%	DV M 12 x P01
2.0 bar ±10%	DV M 20 x P01
5.0 bar ±10%	DV M 50 x P01
7.0 bar ±10%	DV M 70 x P01
9.5 bar ±10%	DV M 95 x P01



34  
Red  
clogging indicator  
A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



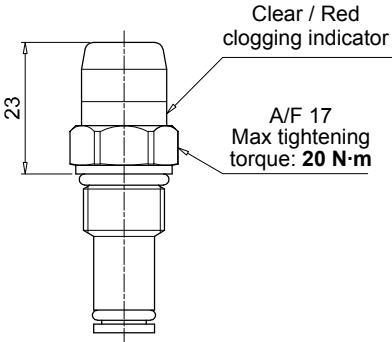
**Materials**

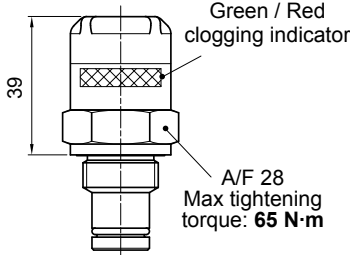
- Body: Brass
- Internal parts: Brass - Polyamide
- Seal: HNBR - FPM

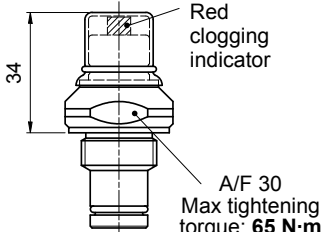
**Technical data**

- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529



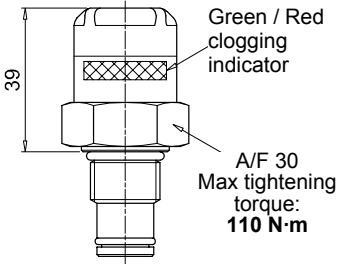
DVS		Hydraulic symbol	<b>Materials</b> - Body: Brass - Internal parts: Brass - Polyamide - Seal: HNBR
<b>Visual Differential Pressure Indicator</b>			
Settings	Ordering code		
1.2 bar ±10%	DV S 12 H P01		
2.5 bar ±10%	DV S 25 H P01		
4.0 bar ±10%	DV S 40 H P01		
			

DVX		Hydraulic symbol	<b>Materials</b> - Body: AISI 316L - Internal parts: AISI 316L - Polyamide - Seal: HNBR - MFQ
<b>Visual Differential Pressure Indicator</b>			
Settings	Ordering code		
1.2 bar ±10%	DV X 12 x P01		
2.0 bar ±10%	DV X 20 x P01		
5.0 bar ±10%	DV X 50 x P01		
7.0 bar ±10%	DV X 70 x P01		
9.5 bar ±10%	DV X 95 x P01		
			

DVY		Hydraulic symbol	<b>Materials</b> - Body: AISI 316L - Internal parts: AISI 316L - Polyamide - Seal: HNBR - MFQ
<b>Visual Differential Pressure Indicator</b>			
Settings	Ordering code		
1.2 bar ±10%	DV Y 12 x P01		
2.0 bar ±10%	DV Y 20 x P01		
5.0 bar ±10%	DV Y 50 x P01		
7.0 bar ±10%	DV Y 70 x P01		
9.5 bar ±10%	DV Y 95 x P01		
			

# DIFFERENTIAL PRESSURE INDICATORS

## Dimensions

DVZ		Hydraulic symbol	Materials
<b>Visual Differential Pressure Indicator</b>			
Settings	Ordering code	Technical data	
1.2 bar ±10%	DV Z 12 x P01	- Reset: Automatic reset - Max working pressure: 700 bar - Proof pressure: 1050 bar - Burst pressure: 2100 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529	
2.0 bar ±10%	DV Z 20 x P01		
5.0 bar ±10%	DV Z 50 x P01		
7.0 bar ±10%	DV Z 70 x P01		
9.5 bar ±10%	DV Z 95 x P01		
			

T2	
<b>Plug</b>	
Seal	Ordering code
HNBR	T2 H
FPM	T2 V

**Materials**

- Body: Phosphatized steel
- Seal: HNBR / FPM

A/F 30  
Max tightening torque: 50 N·m

T4	
<b>Plug</b>	
Seal	Ordering code
NBR	T4 A

**Materials**

- Body: Anodized aluminium
- Seal: NBR

A/F 19  
Max tightening torque: 20 N·m

X2	
<b>Stainless Steel plug 420 bar</b>	
Seal	Ordering code
HNBR	X2 H
FPM	X2 F
MFQ	X2 Q

**Materials**

- Body: AISI 316L
- Seal: HNBR / FPM / MFQ

A/F 30  
Max tightening torque: 50 N·m

X3	
<b>Stainless Steel plug 700 bar (only for FZH)</b>	
Seal	Ordering code
HNBR	X3 H
FPM	X3 F
MFQ	X3 Q

**Materials**

- Body: AISI 316L
- Seal: HNBR / FPM / MFQ

A/F 30  
Max tightening torque: 110 N·m



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