

HYDRAULIC FILTRATION PRODUCTS

RETURN FILTERS



PASSION TO PERFORM





A WORLDWIDE LEADER IN THE FIELD OF HYDRAULIC FILTRATION EQUIPMENT.

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

MARKET LEADER



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



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

WORLDWIDE PRESENCE

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

The Group boasts **8** business branches



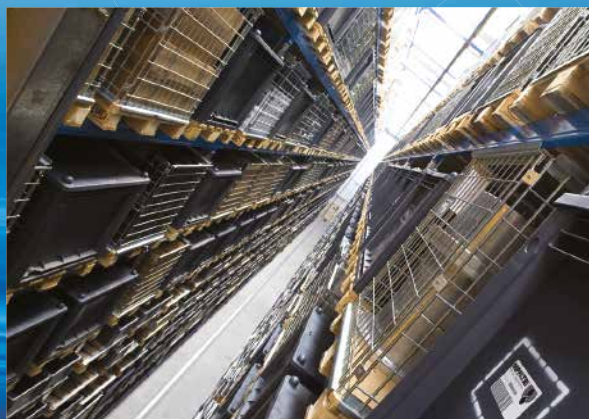
TECHNOLOGY

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



AND PRODUCTION

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





SUCTION FILTERS

Flow rates
up to 875 l/min

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

RETURN FILTERS

Flow rates
up to 3000 l/min

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

RETURN / SUCTION FILTERS

Flow rates
up to 300 l/min

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

SPIN-ON FILTERS

Flow rates
up to 365 l/min

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

LOW & MEDIUM PRESSURE FILTERS

Flow rates
up to 3000 l/min

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

HIGH PRESSURE FILTERS

Flow rates
up to 750 l/min

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

PRODUCT RANGE

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

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

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

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



STAINLESS STEEL HIGH PRESSURE FILTERS

Flow rates up to 150 l/min
Pressure from 320 bar
up to 1000 bar

Mounting:

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

CONTAMINATION MONITORING PRODUCTS

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

MOBILE FILTRATION UNITS

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

POWER TRANSMISSION PRODUCTS

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

ACCESSORIES

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

HYDRAULIC FILTRATION PRODUCTS

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28	page	SUCTION FILTERS			up to Q_{max}
					l/min gpm
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39	SF2 250 - 350	Semi-submerged positive head suction filter, low flow rate			160 42
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57	CLOGGING INDICATORS				

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125	MPF	Tank top semi-immersed filter, standard filter element disassembly	8	116	750 198
153	MPT	Tank top semi-immersed filter, easy filter element disassembly	8	116	300 79
171	MFB	Bowl assembly	8	116	500 132
179	MPH	Tank top semi-immersed filter, standard filter element disassembly	10	145	3000 793
203	MPI	Tank top semi-immersed filter, standard filter element disassembly	10	145	3000 793
215	FRI	Tank top semi-immersed filter, easy filter element disassembly, it can be used also as in-line filter	20	290	1500 396
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238	CLOGGING INDICATORS				
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250	page	RETURN / SUCTION FILTERS		up to P_{max}	up to Q_{max}
			bar	psi	l/min gpm
253	MRSX	Unique TANK TOP filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	10	145	300 79
265	LMP 124 MULTIPORT	Unique IN-LINE filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	80	1160	200 53
273	CLOGGING INDICATORS				

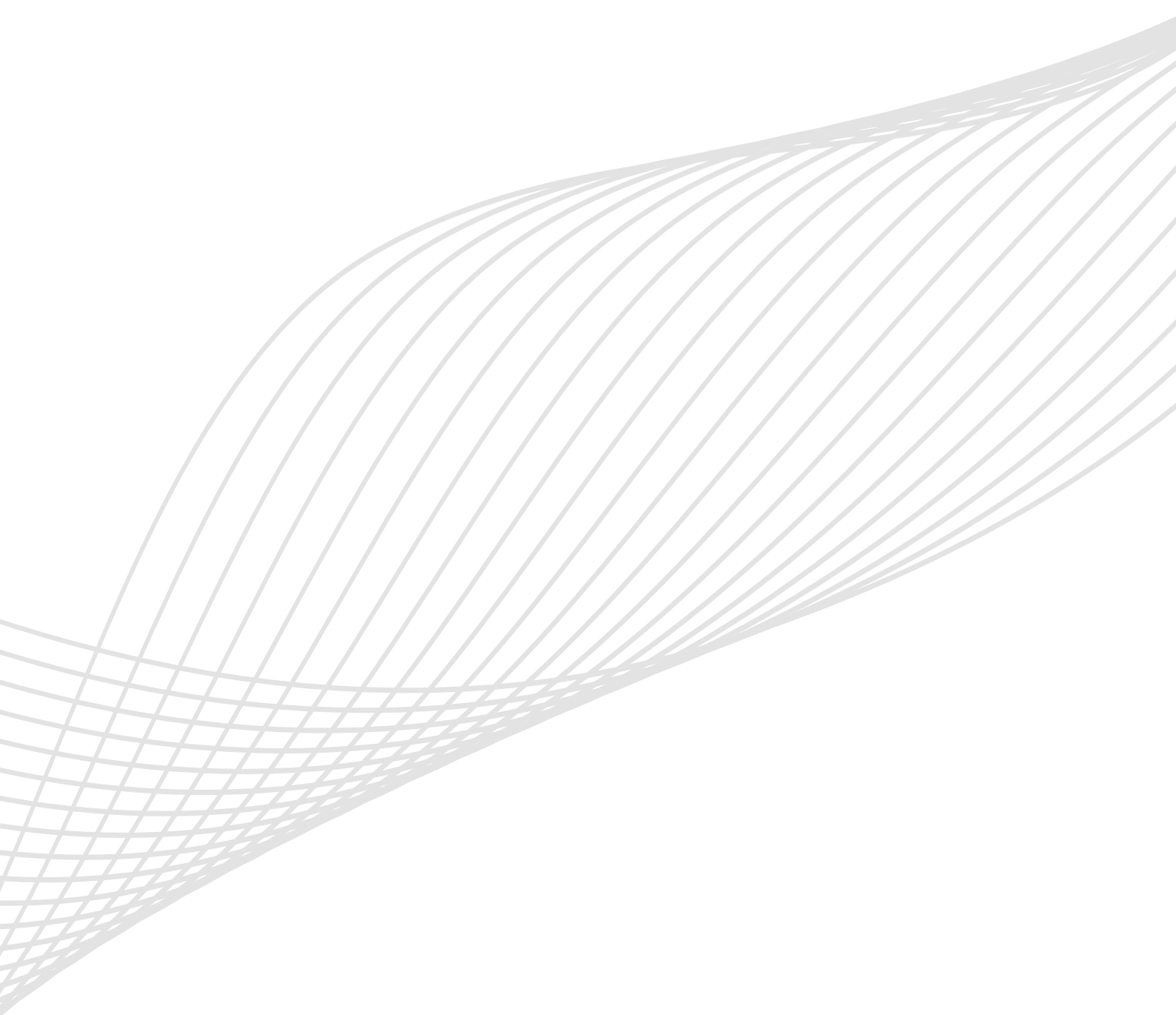
286	page	SPIN-ON FILTERS		up to P_{max}	up to Q_{max}
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289	MPS	Low pressure filter, available with single cartridge (CS) for in-line or flange mounting or with two cartridge on the same axis on the opposite sides	12	174	365 96
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		bar	psi	l/min	gpm	
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341	LMP 210 - 211	In-line low & medium pressure filter, low flow rate	60	870	330	87
351	LMP 400 - 401 & 430 - 431	In-line low & medium pressure filter, high flow rate	60	870	740	195
363	LMP 950 - 951	In-line filter, available with 2 and up to 6 different heads	30	435	2400	634
371	LMP 952 - 953 - 954	In-line low pressure filter specifically designed to be mounted in series	25	363	3000	793
383	LMD 211	In-line duplex medium pressure filter	60	870	330	87
391	LMD 400 - 401 & 431	In-line duplex low pressure filter	16	232	590	156
407	LMD 951	In-line duplex filter, available with 2 up to 6 different heads	16	232	1200	317
415	Filter elements designed according to DIN 24550					
417	LDP - LDD	In-line and duplex medium pressure filter	60	870	330	87
427	LMP 900 - 901	In-line low pressure filter	30	435	2000	528
435	LMP 902 - 903	In-line filter specifically designed to be mounted in series	20	290	3000	793
444	CLOGGING INDICATORS					

page	HIGH PRESSURE FILTERS	up to P _{max}		up to Q _{max}		
		bar	psi	l/min	gpm	
453	FMP 039	Filter high pressure, low flow rate applications	110	1595	80	21
461	FMP	Filter high pressure, high flow rate applications	320	4641	475	125
473	FHP	Typical high pressure filter for mobile applications, high flow rate	420	6092	750	198
489	FMM	Typical high pressure filter for mobile applications, low flow rate	420	6092	250	66
499	FHA 051	Filter optimized for use in high pressure operating systems, low flow rate	560	8122	140	37
507	FHM	High pressure filter with intermediate manifold construction	320	4641	450	119
525	FHB	High pressure for block mounting	320	4641	485	128
539	FHF 325	In-line manifold top mounting	350	5076	500	132
549	FHD	In-line duplex high pressure filter	350	5076	345	91
562	CLOGGING INDICATORS					

page	STAINLESS STEEL HIGH PRESSURE FILTERS	up to P _{max}		up to Q _{max}		
		bar	psi	l/min	gpm	
573	FZP	In-line pressure filter with threaded mount	420	6092	150	40
583	FZH	In-line pressure filter with threaded mount for higher pressure	700	10153	50	13
593	FZX	In-line pressure filter with threaded mount up to 1000 bar	1000	14504	10	3
601	FZM	Manifold top mounting	320	4641	70	18
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617	FZD	Duplex pressure filter for continuous operation requirements	350	5076	90	24
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CONTAMINATION MANAGEMENT

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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 deriving 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.

- CINEMATIC 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.

Cinematic 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 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



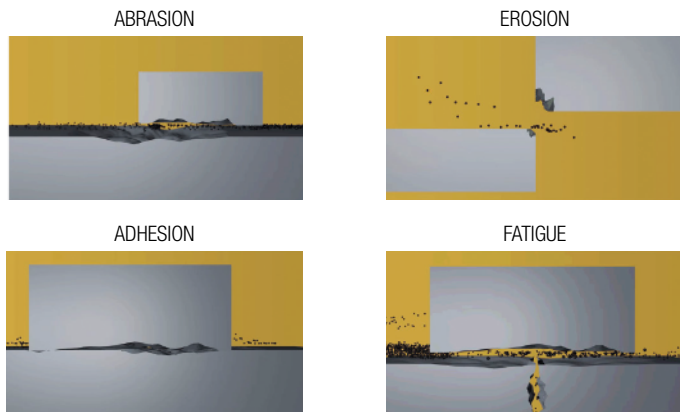
Solid contamination mainly causes surface damage and component wear.

- 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 stem performance, failures.

- 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
Maintenance activities, spare parts, machine stop costs
- ENERGY AND EFFICIENCY
Efficiency and performance reduction due to friction, drainage, cavitation.



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.

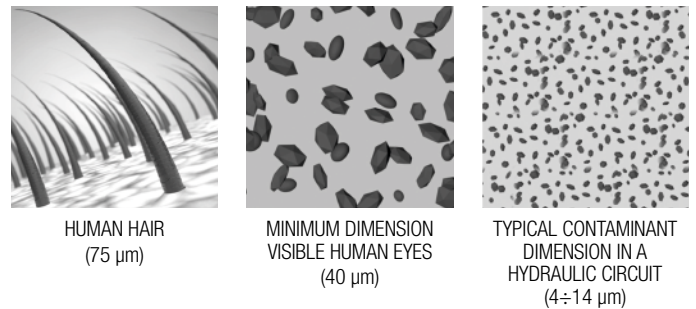
4 MEASURING THE SOLID CONTAMINATION LEVEL

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?



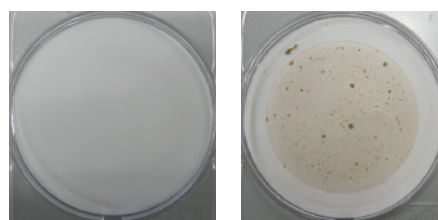
Contamination level analysis is significant only if performed with a uniform and repeatable method, conducted with standard test methods and suitably calibrated equipment.

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.



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 Automatic Particle Counters (APC).

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 code refers to the number of particles of the same size or greater than 4, 6 or 14 μm in a 1 ml fluid.

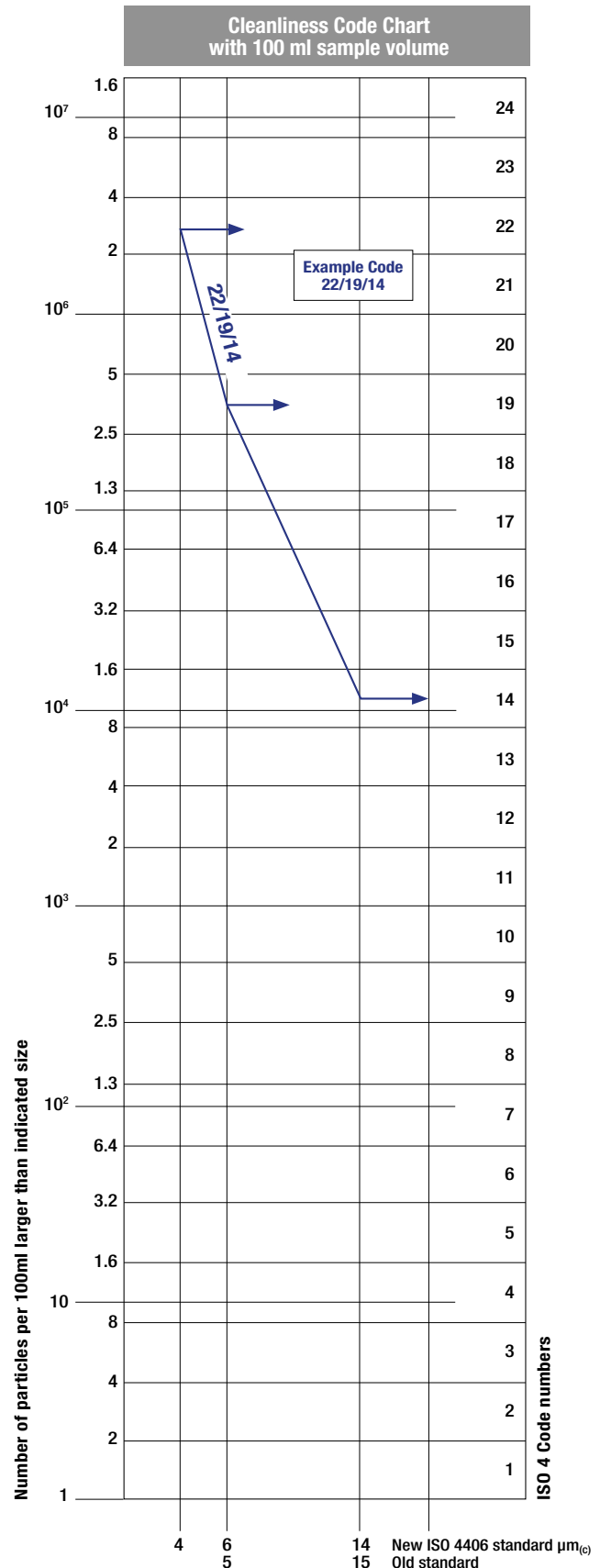
Class	Number of particles per ml	
	Over	Up to
28	1 300 000	2 500 000
27	640 000	1 300 000
26	320 000	640 000
25	160 000	320 000
24	80 000	160 000
23	40 000	80 000
22	20 000	40 000
21	10 000	20 000
20	5 000	10 000
19	2 500	5 000
18	1 300	2 500
17	640	1 300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	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 4406:2017 Cleanliness Code System

Microscope counting examines the particles differently to APCs and the code is given with two scale numbers only.

These are at 5 μm and 15 μm equivalent to the 6 $\mu\text{m}_{(c)}$ and 14 $\mu\text{m}_{(c)}$ of APCs.



- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - SAE AS 4059-1 and SAE AS 4059-2

Classification example according to SAE AS 4059-1 and SAE AS 4059-2

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).

It can be made a differential measurement (Table 1) or a cumulative measurement (Table 2)

Table 1 - Class for differential measurement

Class	Dimension of contaminant				
	6÷14 µm _(c)	14÷21 µm _(c)	21÷38 µm _(c)	38÷70 µm _(c)	>70 µm _(c)
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
- Class 6

Table 2 - Class for cumulative measurement

Class	Dimension of contaminant					
	>4 µm _(c) A	>6 µm _(c) B	>14 µm _(c) C	>21 µm _(c) D	>38 µm _(c) E	>70 µm _(c) F
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
- Class from 2F to 4E

- 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 100ml volume at various size intervals (differential counts) rather than using cumulative counts as in ISO 4406:1999. 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 APC's.

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)

Maximum Contamination Limits per 100 ml					
Class	5÷15	15÷25	25÷50	50÷100	>100
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_(c) = 42 000 particles
 - 15÷25 µm_(c) = 2 200 particles
 - 25÷50 µm_(c) = 150 particles
 - 50÷100 µm_(c) = 18 particles
 - > 100 µm_(c) = 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



COMPARISON PHOTOGRAPHS

1 graduation = 10µm



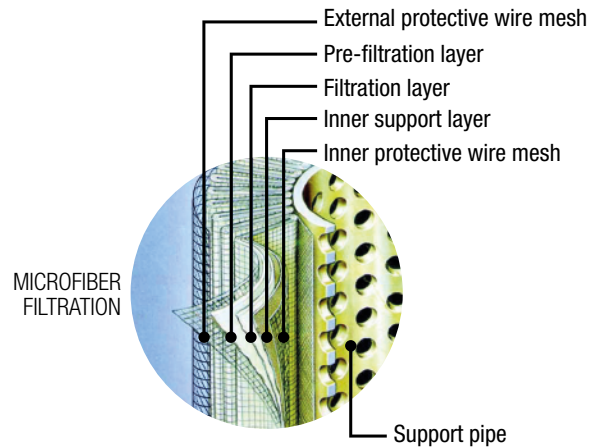
ISO 4406:1999	Class 16/14/11	Class 22/20/17
SAE AS4059E Table 1	Class 5	Class 11
NAS 1638	Class 5	Class 11
SAE AS4059E Table 2	Class 6A/5B/5C	Class 12A/11B/11C

CONTAMINATION MANAGEMENT

- CLEANLINESS CODE COMPARISON

Although ISO 4406:2017 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 4406:2017	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



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.

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

5 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.



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 (β 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 μm	A03
7 $\mu\text{m}_{(c)}$	6 μm	A06
10 $\mu\text{m}_{(c)}$	10 μm	A10
16 $\mu\text{m}_{(c)}$	18 μm	A16
21 $\mu\text{m}_{(c)}$	25 μm	A25

6 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 $\beta_{x(c)} \geq 1.000$	$\beta_{20(c)} > 1000$	$\beta_{15(c)} > 1000$	$\beta_{10(c)} > 1000$	$\beta_{7(c)} > 1000$	$\beta_{7(c)} > 1000$	$\beta_{5(c)} > 1000$

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

7 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 ÷ 125 μm .

They can be equipped with a magnetic column 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 ÷ 25 μm .

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.

8 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 (ΔP)**

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.

9 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.

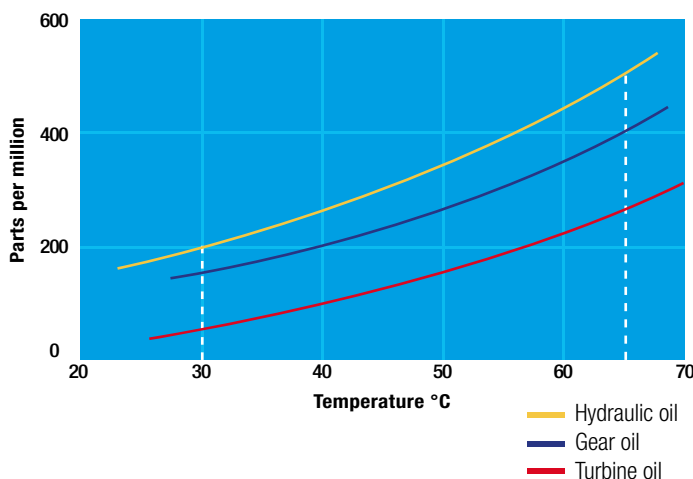
10 WATER IN HYDRAULIC AND LUBRICATING FLUIDS

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.

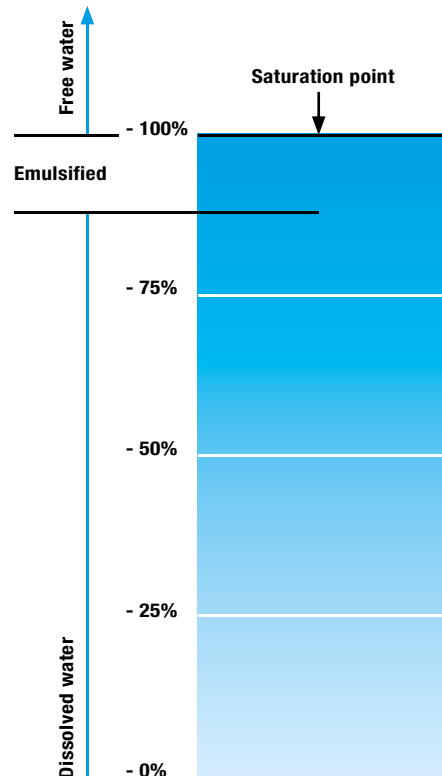
However, even water in solution can cause damage and therefore every reasonable effort should be made to keep saturation levels as low as possible. There is no such thing as too little water. As a guideline, we recommend maintaining saturation levels below 50% in all equipment.

TYPICAL WATER SATURATION LEVEL FOR NEW OILS

Examples:

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

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



CONTAMINATION MANAGEMENT

Water absorber

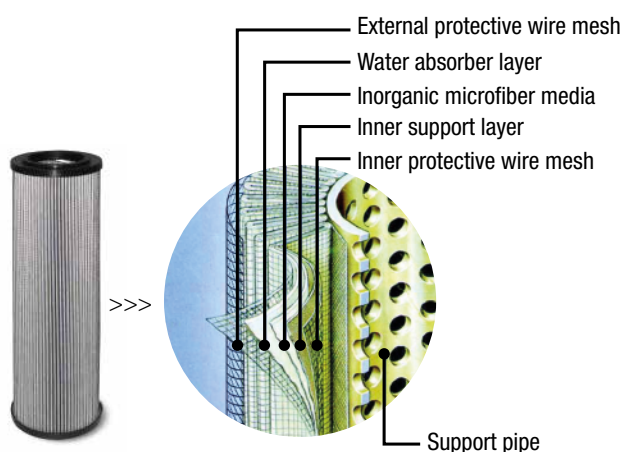
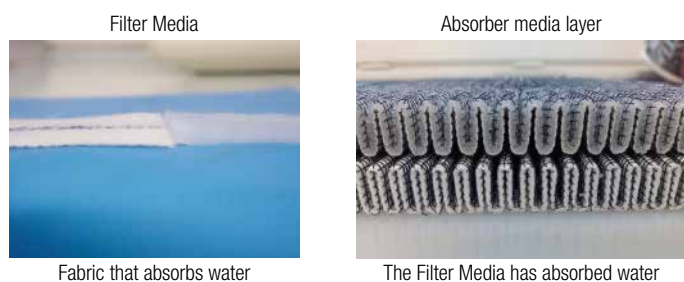
Water is present everywhere, during storage, handling and servicing.

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

Product availability:

LOW & MEDIUM PRESSURE FILTERS - LMP Series

LMP 210	LMP 900
LMP 211	LMP 901
LMP 400	LMP 902
LMP 401	LMP 903
LMP 430	LMP 950
LMP 431	LMP 951

FILTER SIZING

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CORRECTIVE FACTOR	24

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

FOR EXAMPLE, THE MAXIMUM TOTAL PRESSURE DROP ALLOWED BY A NEW AND CLEAN RETURN FILTER HAVE TO BE IN THE RANGE 0.4 ÷ 0.6 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop Δpc of the housing is proportional to the fluid density (kg/dm³); all the graphs in the catalogue are referred to mineral oil with density of 0.86 kg/dm³.

The filter element pressure drop Δpe is proportional to its viscosity (mm²/s), the corrective factor Y have to be used in case of an oil viscosity different than 30 mm²/s (cSt).

Sizing data for single filter element, head at top

Δpc = Filter housing pressure drop [bar]

Δpe = Filter element pressure drop [bar]

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

Q = flow rate (l/min)

V1 reference oil viscosity = 30 mm²/s (cSt)

V2 = operating oil viscosity in mm²/s (cSt)

Filter element pressure drop calculation with an oil viscosity different than 30 mm²/s (cSt)

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

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

Verification formula

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

Maximum total pressure drop (Δp max) allowed by a new and clean filter

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

Generic filter calculation example

Application data:

Tank top return filter

Pressure Pmax = 10 bar

Flow rate Q = 120 l/min

Viscosity V2 = 46 mm²/s (cSt)

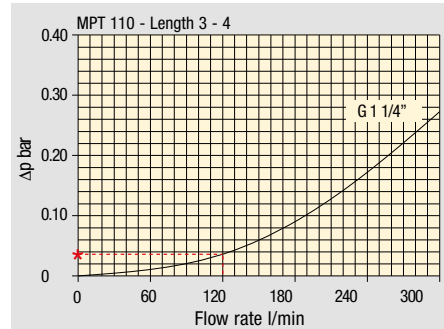
Oil density = 0.86 kg/dm³

Required filtration efficiency = 25 μm with absolute filtration

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

Calculation:

Δpc = 0.03 bar (see graphic below)



Filter housings Δp pressure drop. The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

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

Filter element	Absolute filtration H Series					Nominal filtration N Series			
	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90	
Type									
Return filters									
MF 020	2	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	3	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
MF 030 MFX 030	1	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
	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

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

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

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

FILTER SIZING Corrective factor

Corrective factor Y to be used for the filter element pressure drop calculation. The values depend to the filter size and length and to the filter media.
Reference oil viscosity 30 mm²/s

Return filters

Filter element	Absolute filtration H Series					Nominal filtration N Series			
	Type	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	0.42	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04
MR 100	1	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	2	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	3	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	4	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	5	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MR 250	1	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	2	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	3	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	4	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MR 630	1	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	2	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	3	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	4	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	5	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MR 850	1	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	2	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	3	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	4	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

Return / Suction filters

Filter element	Absolute filtration								
	Type	A10	A16	A25					
RSX 116	1	5.12	4.33	3.85					
	2	2.22	1.87	1.22					
RSX 165	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	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	2.80	2.36	1.14	0.91	0.85	0.05

Low & Medium pressure filters

Filter element	Absolute filtration N-W Series					Nominal filtration N Series			
	Type	A03	A06	A10	A16	A25	P10	P25	M25
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	4.15	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
CU 210	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
DN	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
CU 400	2	3.13	2.55	1.46	1.22	0.78	0.75	0.64	0.19
	3	2.15	1.70	0.94	0.78	0.50	0.40	0.34	0.10
	4	1.60	1.28	0.71	0.61	0.40	0.34	0.27	0.08
	5	1.00	0.83	0.47	0.34	0.20	0.24	0.19	0.06
	6	0.82	0.58	0.30	0.27	0.17	0.22	0.18	0.05
	CU 900	1	0.86	0.63	0.32	0.30	0.21	-	-
CU 950	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
MR 630	7	0.88	0.78	0.36	0.34	0.16	0.12	0.96	0.47

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 mm²/s

High pressure filters

Filter element	Absolute filtration N - R Series					Nominal filtration N Series	
	Type	A03	A06	A10	A16	A25	M25
HP 011	1	332.71	250.07	184.32	152.36	128.36	-
	2	220.28	165.56	74.08	59.13	37.05	-
	3	123.24	92.68	41.48	33.08	20.72	-
	4	77.76	58.52	28.37	22.67	16.17	-
HP 039	2	70.66	53.20	25.77	20.57	14.67	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
HP 050	1	31.75	30.30	13.16	12.3	7.29	1.60
	2	24.25	21.26	11.70	9.09	4.90	1.40
	3	17.37	16.25	8.90	7.18	3.63	1.25
	4	12.12	10.75	6.10	5.75	3.08	1.07
	5	7.00	6.56	3.60	3.10	2.25	0.80
HP 065	1	58.50	43.46	23.16	19.66	10.71	1.28
	2	42.60	25.64	16.22	13.88	7.32	1.11
	3	20.50	15.88	8.18	6.81	3.91	0.58
HP 135	1	20.33	18.80	9.71	8.66	4.78	2.78
	2	11.14	10.16	6.60	6.38	2.22	1.11
	3	6.48	6.33	3.38	3.16	2.14	1.01
HP 150	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
HP 320	1	10.88	9.73	5.02	3.73	2.54	1.04
	2	4.40	3.83	1.75	1.48	0.88	0.71
	3	2.75	2.11	1.05	0.87	0.77	0.61
	4	2.12	1.77	0.98	0.78	0.55	0.47
HP 500	1	4.44	3.67	2.30	2.10	1.65	0.15
	2	3.37	2.77	1.78	1.68	1.24	0.10
	3	2.22	1.98	1.11	1.09	0.75	0.08
	4	1.81	1.33	0.93	0.86	0.68	0.05
	5	1.33	1.15	0.77	0.68	0.48	0.04

Filter element	Absolute filtration N Series					Nominal filtration N Series	
	Type	A03	A06	A10	A16	A25	M25
HF 320	1	3.65	2.95	2.80	1.80	0.90	0.38
	2	2.03	1.73	1.61	1.35	0.85	0.36
	3	1.84	1.42	1.32	1.22	0.80	0.35

Suction filters

Filter element	Nominal filtration N Series	
	P10	P25
SF 250	65	21

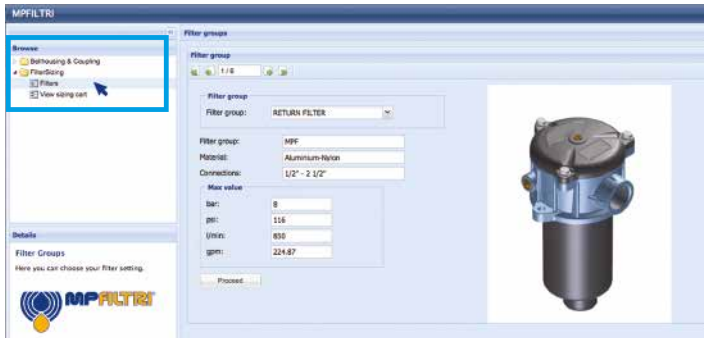
Stainless steel high pressure filters

Filter element	Absolute filtration N Series					
	Type	A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36
	2	220.28	165.56	74.08	59.13	37.05
	3	123.24	92.68	41.48	33.08	20.72
	4	77.76	58.52	28.37	22.67	16.17
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
HP 050	1	31.75	30.30	13.16	12.3	7.29
	2	24.25	21.26	11.70	9.09	4.90
	3	17.37	16.25	8.90	7.18	3.63
	4	12.12	10.75	6.10	5.75	3.08
	5	7.00	6.56	3.60	3.10	2.25
HP 135	1	20.33	18.80	9.71	8.66	4.78
	2	11.14	10.16	6.60	6.38	2.22
	3	6.48	6.33	3.38	3.16	2.14

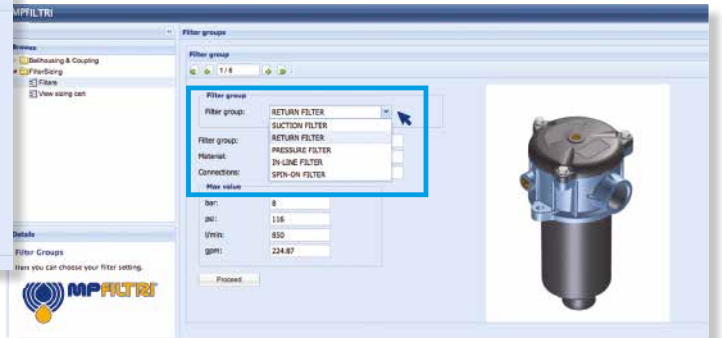
Filter element	Absolute filtration H - U Series					
	Type	A03	A06	A10	A16	A25
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57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

FILTER SIZING Selection Software

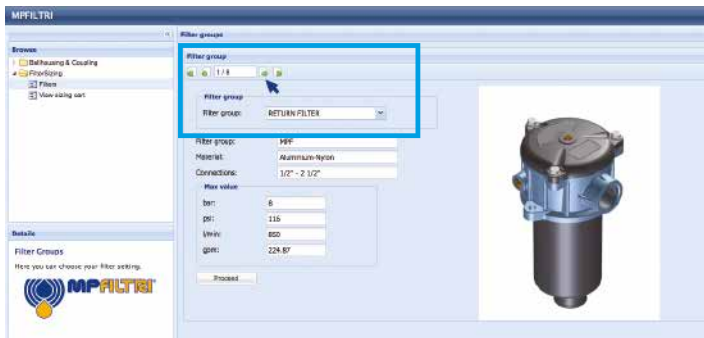
Step 1 Select "FILTERS"



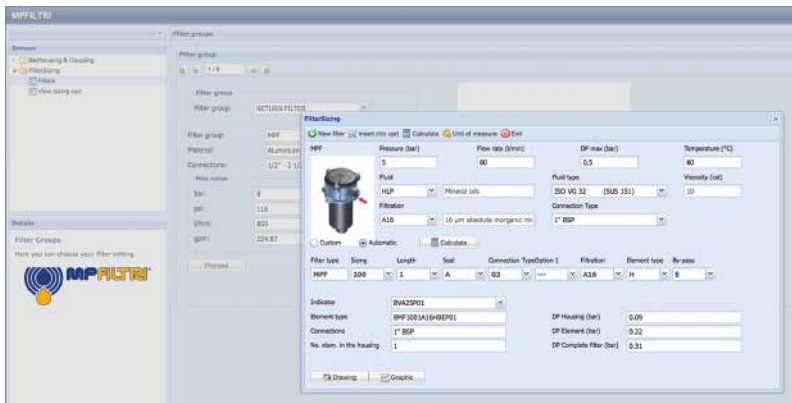
Step 2 Choose filter group (Return Filter, Pressure Filter, etc.)



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



Step 4 Push "PROCEED"



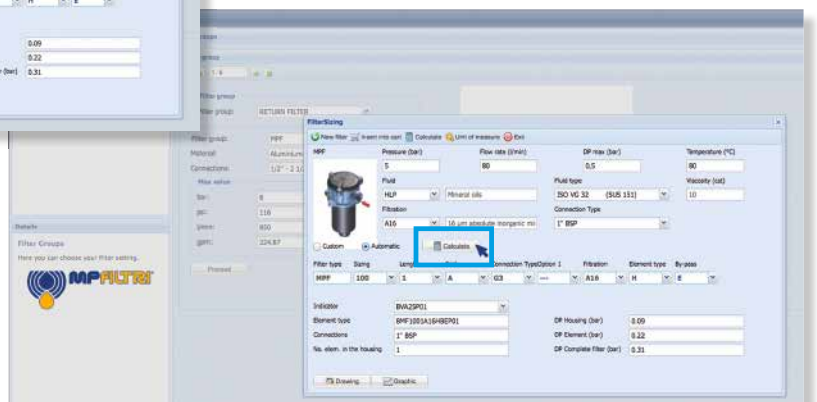
Step 5

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


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

Step 6

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



Step 7

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

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 column as option**
- **MPI semi-immersed filter element specifically designed to be mounted directly on the oil tank; magnetic column 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 24

Return filters



MPFX	page 63
MPLX	91
MPTX	99
MFBX	117
MPF	125
MPT	153
MFB	171

MPH	page 179
MPI	203
FRI	215
RF2	231
INDICATORS	238
ACCESSORIES	248



THE NEW FILTER CONCEPT

MPFX
MPTX
MFBX
MFX
series

NEW FILTER ELEMENT WITH EXCLUSIVE INTERFACE CONNECTION

- **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.



Filter element featuring our UNIQUE end cap with polygonal design.



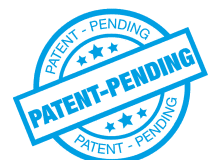
UNIQUE polygonal spigot fitting within the filter bowl.

The products identified as MPFX, MPTX, MFBX and MFX are protected by Italian Patent n° 102015000040473 and by one or more of the following patent applications:

European Patent Pending: n° 16181725.9

US Patent Pending: n° 15/224,337

Canadian Patent Pending: n° 2,937,258



MPFX series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 750 l/min



Description

Return filter

Maximum working pressure up to 800 kPa (8 bar)

Flow rate up to 750 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 750 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 meet any reservoir surface flatness and roughness
- O-ring or Flat seal, to meet any reservoir surface flatness and roughness
- 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

Technical data

Filter housing materials

- Head: Aluminium

- Cover

Nylon: MPFX 030-100-104-110

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

- Bowl: Nylon

Bypass valve

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

- Opening pressure 300 kPa (3 bar) \pm 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

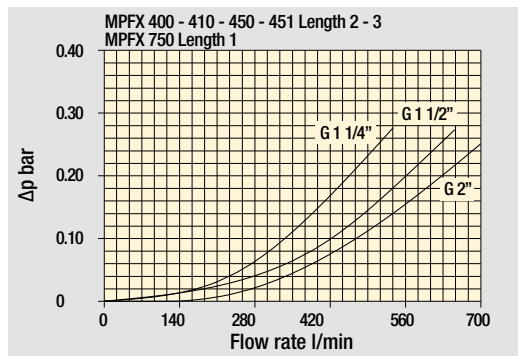
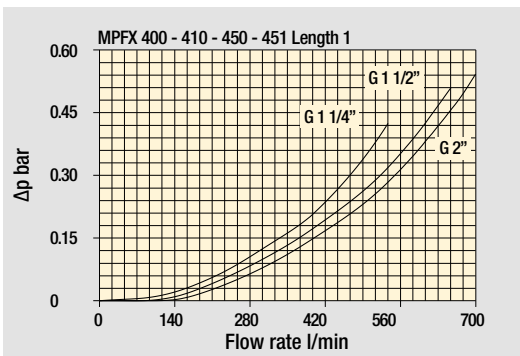
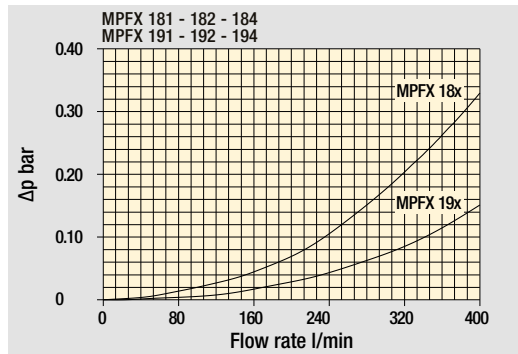
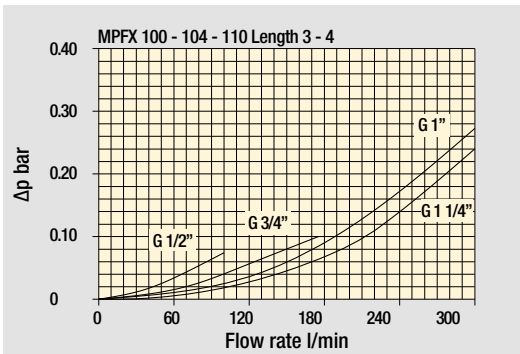
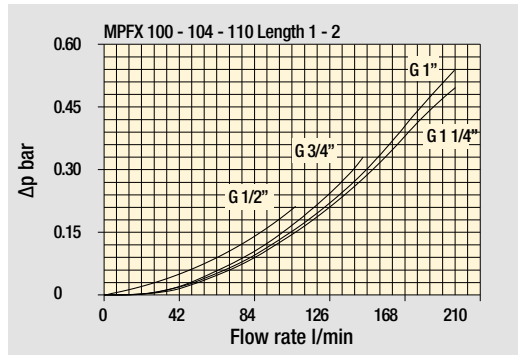
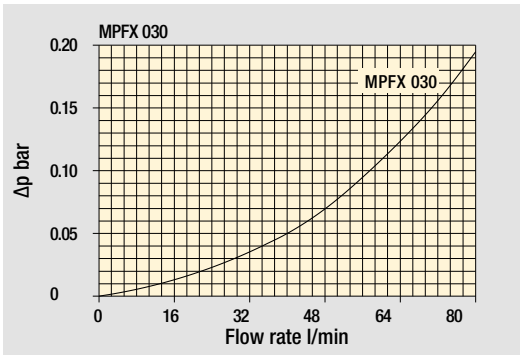
MPFX filters are provided for vertical mounting



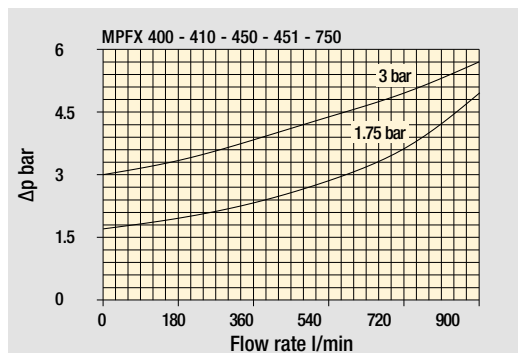
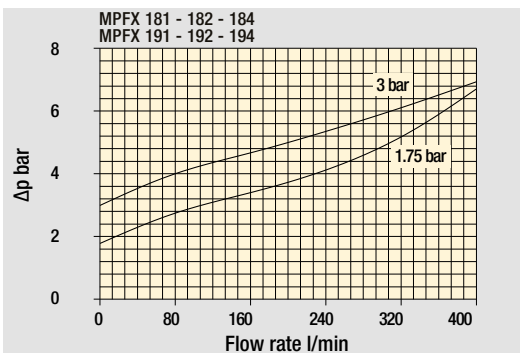
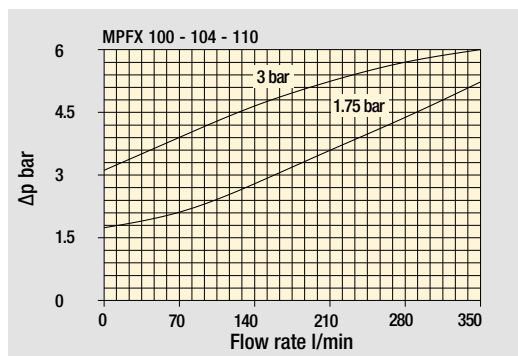
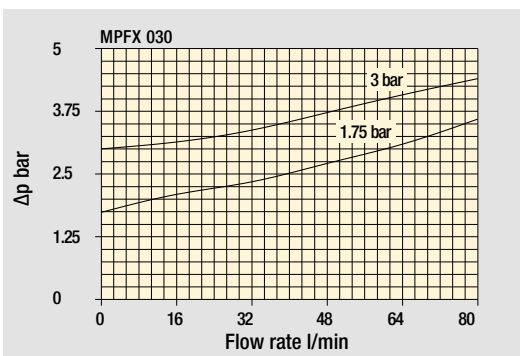
Weights [kg] and volumes [dm³]

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

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
 Δp varies proportionally with density.

MPFX GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MPFX 030	1	7	10	24	29	47	84	60	66
MPFX 100-104-110	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
MPFX 181-182-184	1	127	148	235	243	278	441	285	299
	2	231	262	358	382	388	472	404	412
MPFX 191-192-194	2	261	305	489	528	546	696	583	598
MPFX 400	1	150	171	294	304	350	585	370	390
	2	237	252	454	462	589	868	619	645
	3	248	288	553	609	621	885	680	703
MPFX 410	1	146	167	277	285	325	512	341	357
	2	226	239	396	402	485	644	503	519
	3	236	269	462	497	505	653	539	553
MPFX 450-451	1	150	171	294	304	350	585	370	390
	2	237	252	454	462	589	868	619	645
	3	248	288	553	609	621	885	680	703
MPFX 750	1	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.

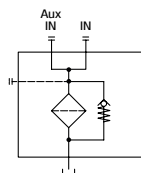
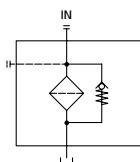
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols

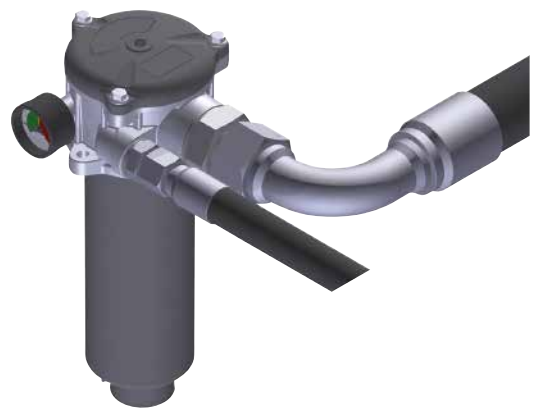
Filter series	Style 1 connection	Style 2 connections
MPFX 030	•	
MPFX 100	•	
MPFX 104	•	
MPFX 110		•
MPFX 181	•	
MPFX 182		•
MPFX 184	•	•
MPFX 191	•	
MPFX 192	•	
MPFX 194	•	•
MPFX 400	•	
MPFX 410		•
MPFX 450	•	
MPFX 451		•
MPFX 750	•	



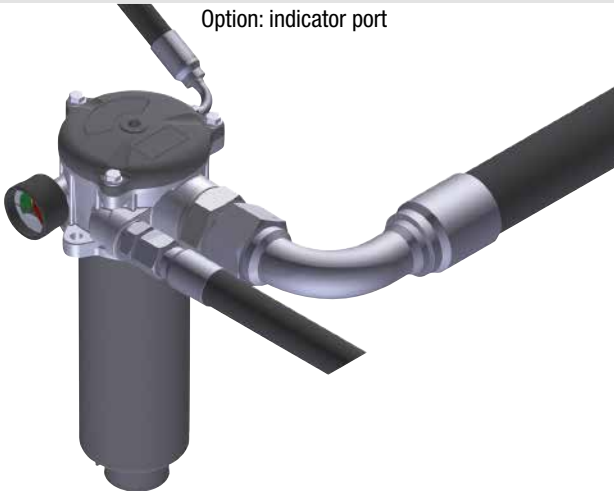
Standard - Single IN port



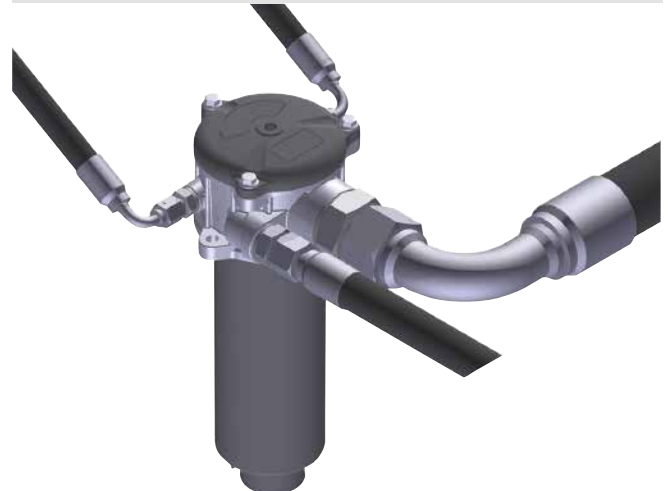
Double IN port
Option: double indicator port



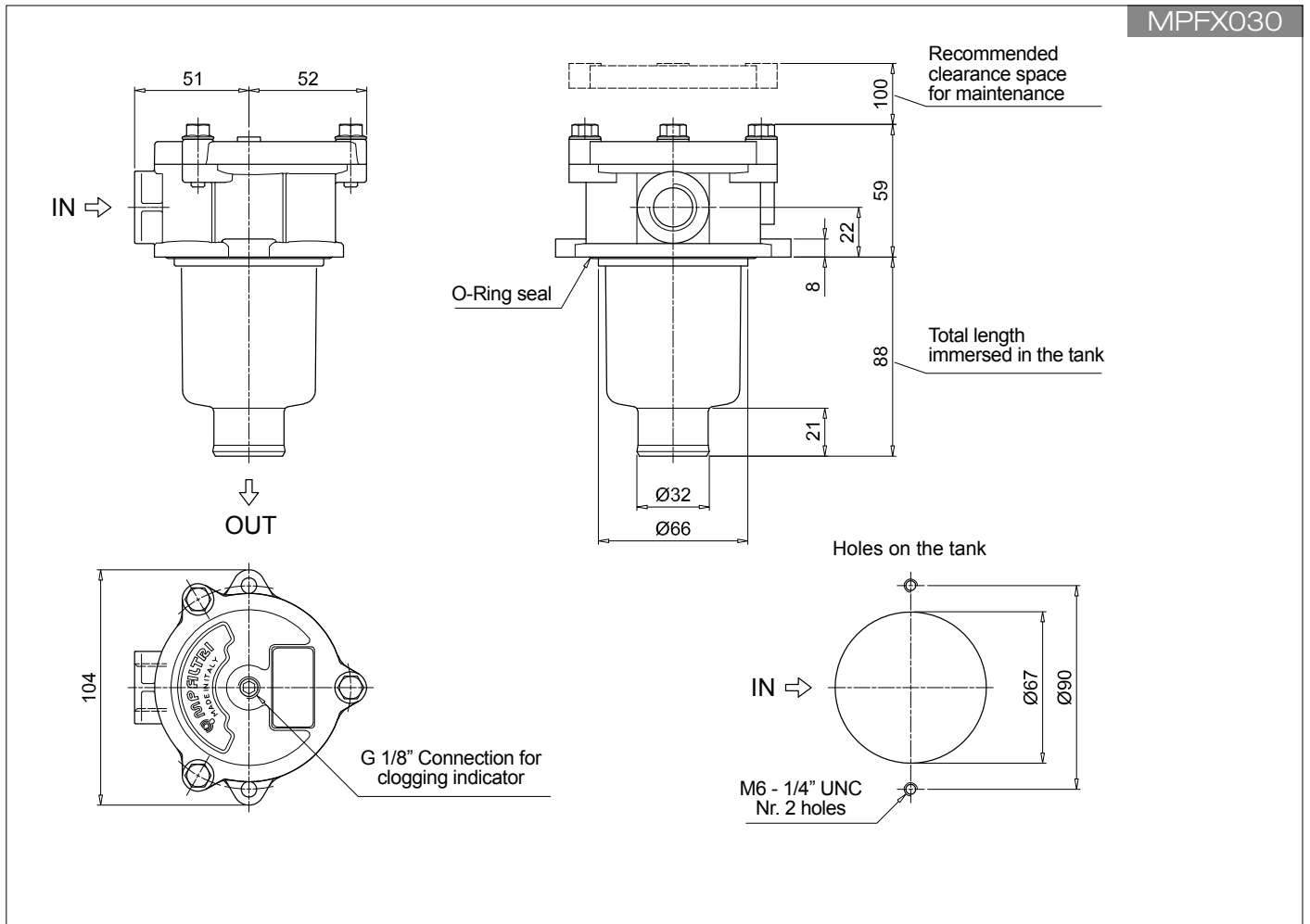
Double IN port - Drain port
Option: indicator port



Double IN port - Double drain port



MPFX030



MPFX MPFX100 - MPFX104

Designation & Ordering code

COMPLETE FILTER

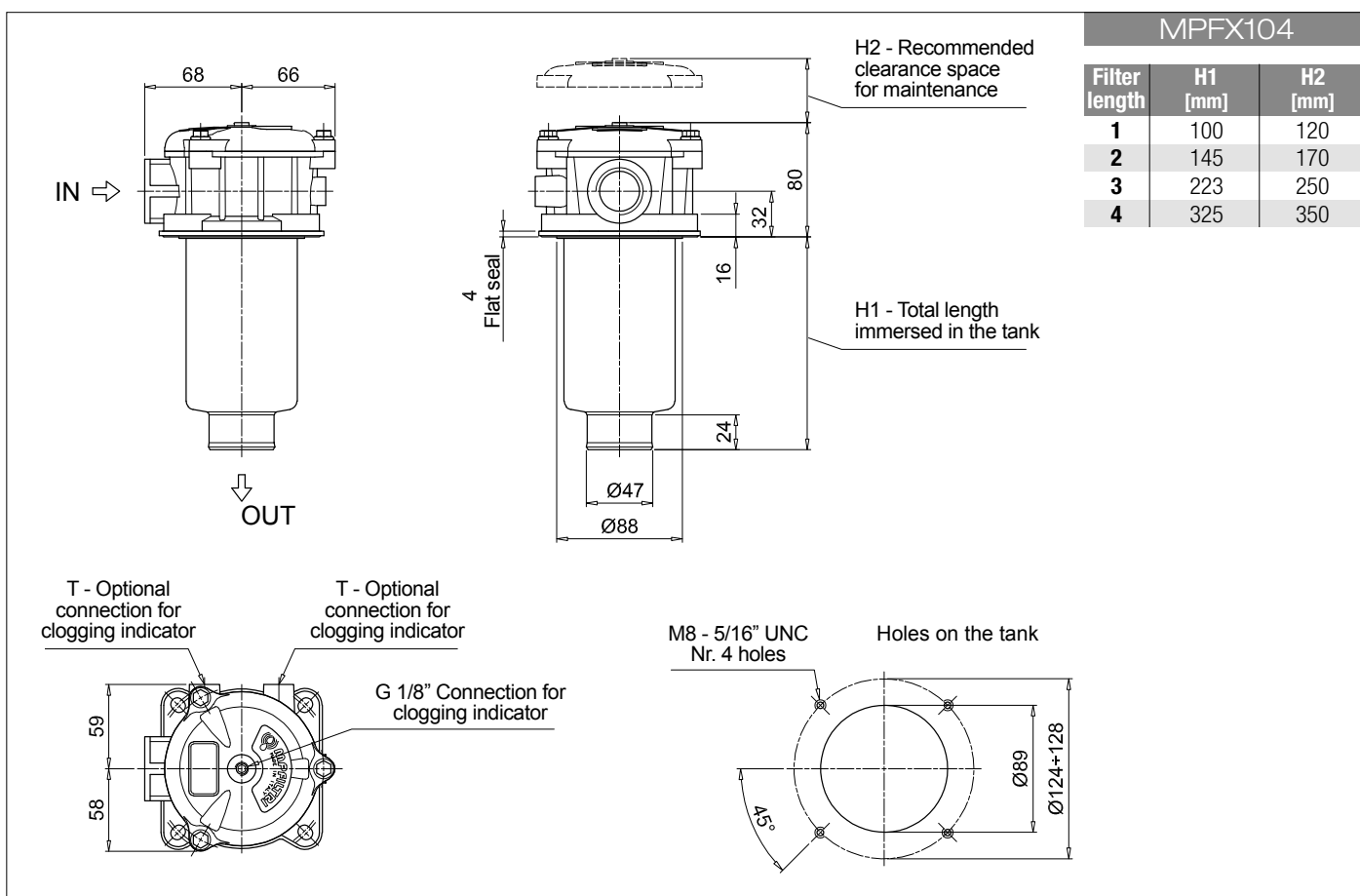
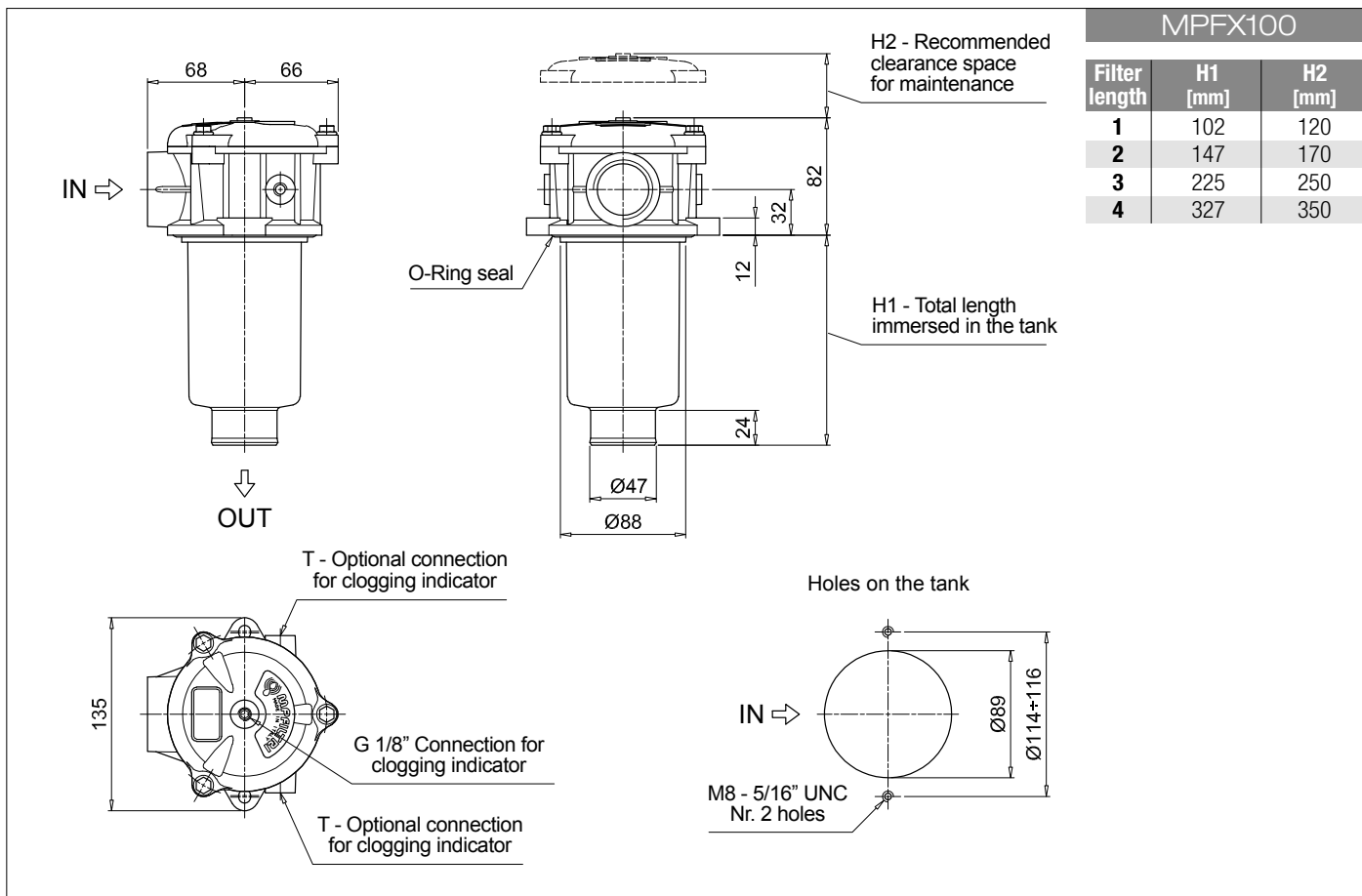
Series and size		Configuration example 1: MPFX100 2 W G3 A06 W B P01									
MPFX100 MPFX104 Filter element with private spigot		Configuration example 2: MPFX104 4 A G8 P10 N E P01									
Length											
1 2 3 4											
Seals and treatments											
A NBR											
V FPM											
W NBR head anodized											
Z FPM head anodized											
Connections		Size 100		Size 104		Connections		Size 100		Size 104	
G1 G 1/2"		•		•		G7 SAE 8 - 3/4" - 16 UNF		•		•	
G2 G 3/4"		•		•		G8 SAE 12 - 1 1/16" - 12 UN		•		•	
G3 G 1"		•		•		G9 SAE 16 - 1 5/16" - 12 UN		•		•	
G4 1/2" NPT		•		•		G10 G 1 1/4"		•			
G5 3/4" NPT		•		•		G11 1 1/4" NPT		•			
G6 1" NPT		•		•		G12 SAE 20 - 1 5/8" - 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											
M60 Wire mesh 60 µm											
M90 Wire mesh 90 µm											
P10 Resin impregnated paper 10 µm											
P25 Resin impregnated paper 25 µm											
Element Δp				Filter media							
N 10 bar				Axx		Mxx		Pxx			
H 10 bar				•		•		•			
W 10 bar, compatible with fluids HFA, HFB and HFC				•		•		•			
								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: MFX100 2 A06 W B P01									
MFX100 Filter element with private spigot		Configuration example 2: MFX100 4 P10 N B E P01									
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											
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											
Element Δp				Filter media							
N 10 bar				Axx		Mxx		Pxx			
H 10 bar				•		•		•			
W 10 bar, compatible with fluids HFA, HFB and HFC				•		•		•			
								Seals		Bypass valve	
								B NBR		E 3 bar	
								V FPM		1.75 bar	
										Execution	
										P01 MP Filtri standard	
										Pxx Customized	

ACCESSORIES

Indicators		page		page	
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239		
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239		
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240		
BVQ Visual pressure indicator with manual reset	241				
Additional features		page		page	
TE Extension tube	248	T5 Filler plug M30x1.5	249		
DFS Diffuser with fast lock connection	249	DPT Dipstick	249		



Designation & Ordering code

COMPLETE FILTER

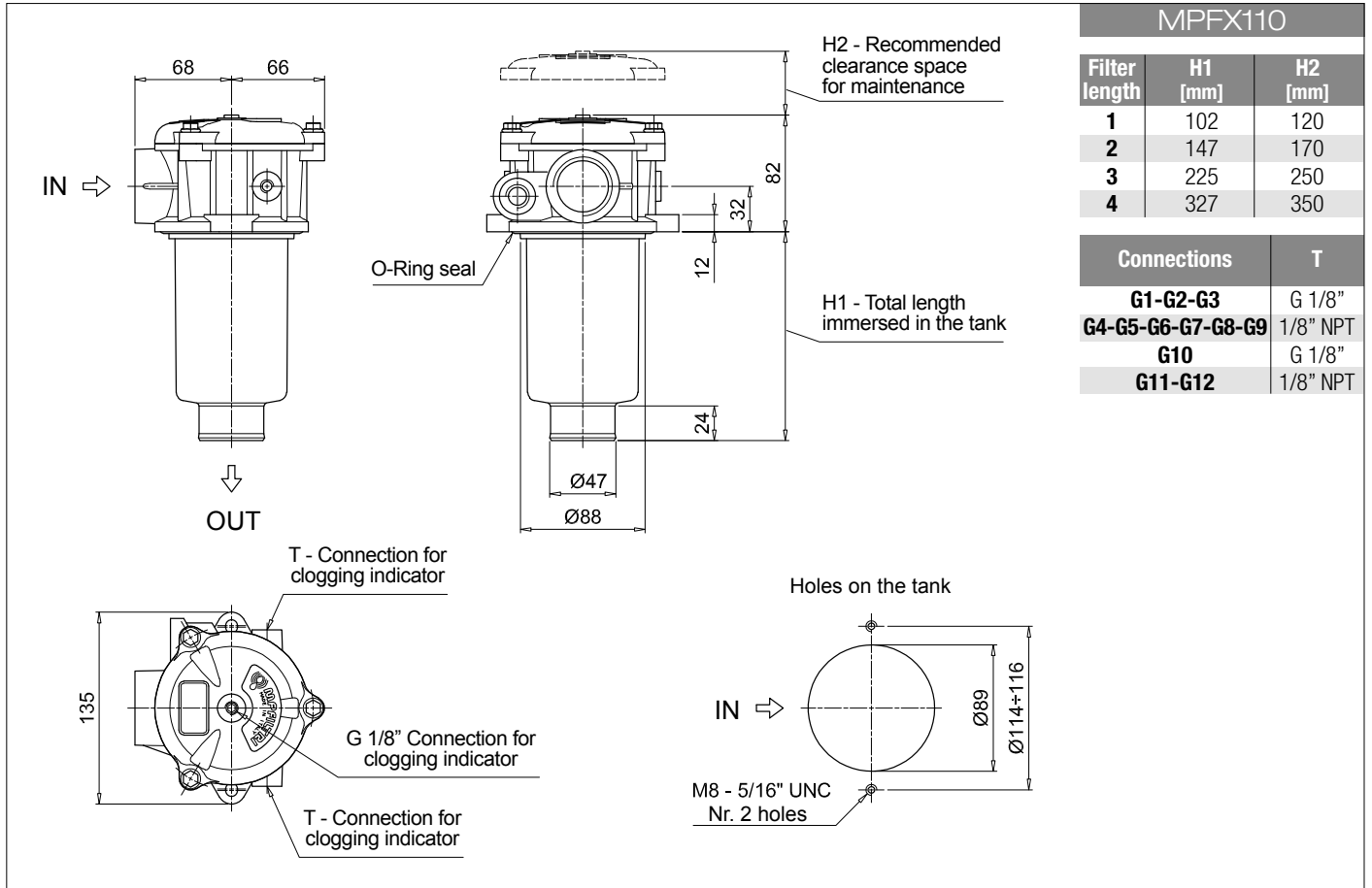
Series and size			Configuration example 1: MPFX110 3 Z G4 2 M25 W B P01								
MPFX110 Filter element with private spigot			Configuration example 2: MPFX110 4 A G8 1 P10 N E P01								
Length											
1 2 3 4											
Seals and treatments											
A NBR			W NBR head anodized								
V FPM			Z FPM head anodized								
Main Connections			Main Connections			Aux size 1			Aux size 2		
G1 G 1/2"			G7 SAE 8 - 3/4" - 16 UNF			SAE 6 - 9/16" - 18 UNF			SAE 8 - 3/4" - 16 UNF		
G2 G 3/4"			G8 SAE 12 - 1 1/16" - 12 UN								
G3 G 1"			G9 SAE 16 - 1 5/16" - 12 UN								
G4 1/2" NPT			G10 G 1 1/4"			G 3/8"			G 1/2"		
G5 3/4" NPT			G11 1 1/4" NPT			3/8" NPT			1/2" NPT		
G6 1" NPT			G12 SAE 20 - 1 5/8" - 12 UN			SAE 6 - 9/16" - 18 UNF			SAE 8 - 3/4" - 16 UNF		
Aux connection - see previous table											
1 Aux size 1			2 Aux size 2								
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			•								
W 10 bar, compatible with fluids HFA, HFB and HFC			• •								
						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: MFX100 3 M25 W V P01								
MFX100 Filter element with private spigot			Configuration example 2: MFX100 4 P10 N B E P01								
Element length											
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			•								
W 10 bar, compatible with fluids HFA, HFB and HFC			• •								
						Seals		Bypass valve		Execution	
						B NBR		E 3 bar		P01 MP Filtri standard	
						V FPM		1.75 bar		Pxx Customized	

ACCESSORIES

Indicators		page			page
BVA	Axial pressure gauge	240	BEA	Electrical pressure indicator	239
BVR	Radial pressure gauge	240	BEM	Electrical pressure indicator	239
BVP	Visual pressure indicator with automatic reset	241	BLA	Electrical / visual pressure indicator	239-240
BVQ	Visual pressure indicator with manual reset	241			
Additional features		page			page
TE	Extension tube	248	T5	Filler plug M30x1.5	249
DFS	Diffuser with fast lock connection	249	DPT	Dipstick	249



MPFX MPFX181 - MPFX191

Designation & Ordering code

COMPLETE FILTER

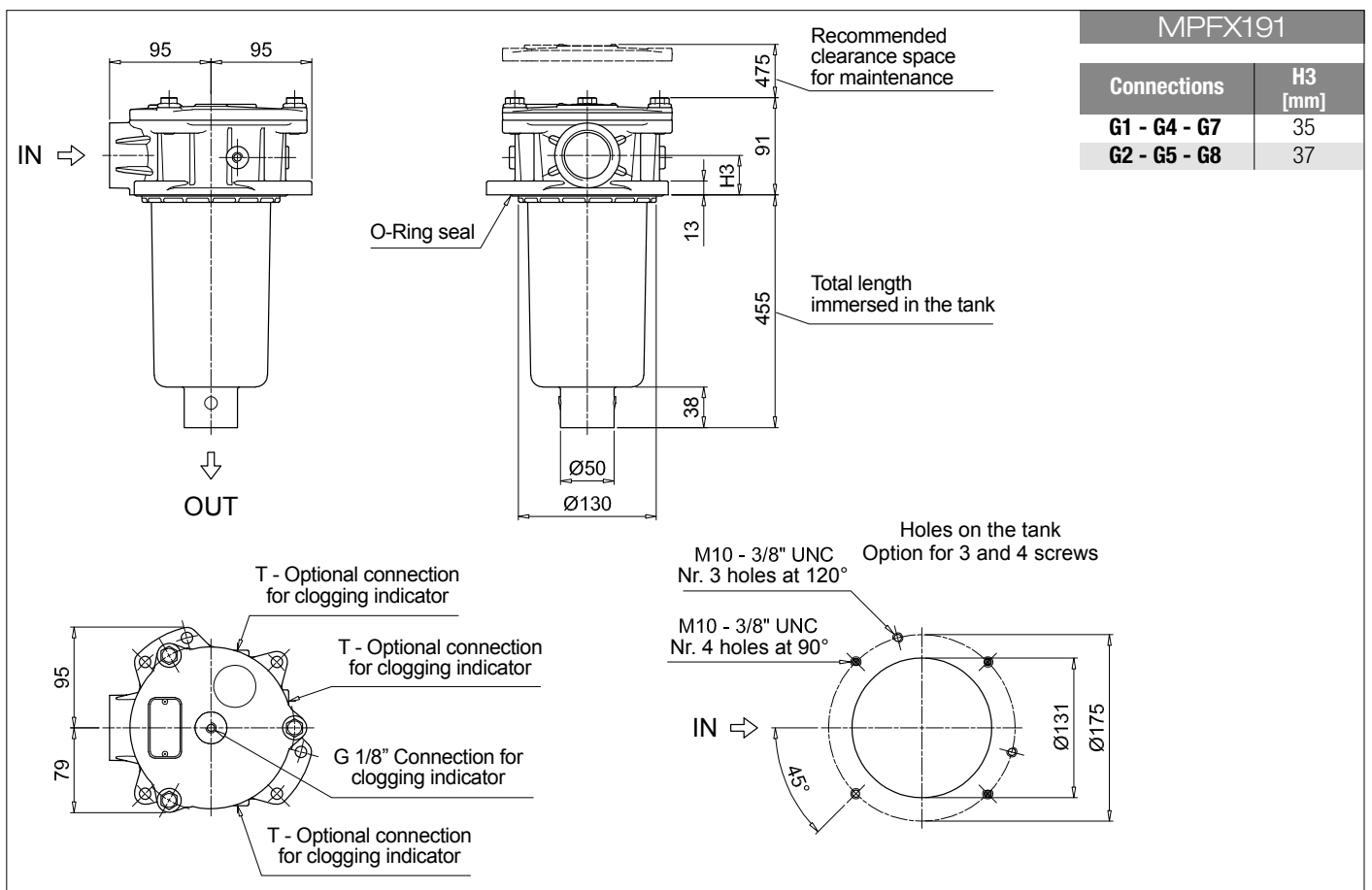
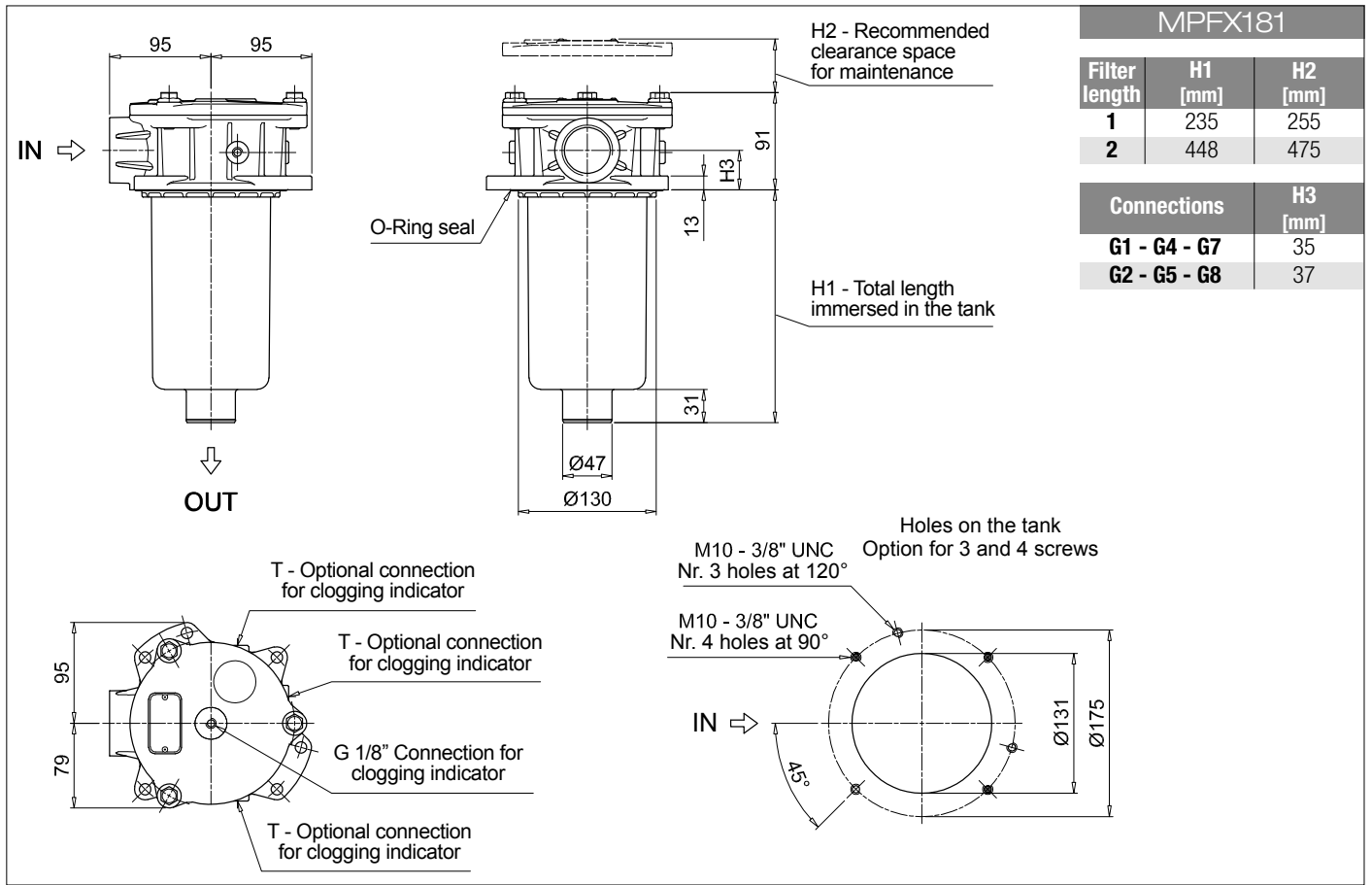
Series and size			Configuration example 1: MPFX181 1 A G1 A25 H E P01								
MPFX181 MPFX191 Filter element with private spigot			Configuration example 2: MPFX191 2 V G2 P10 N B P01								
Length											
	Size 181	Size 191									
1	•										
2	•	•									
Seals and treatments											
A	NBR	B	NBR	flat seal on head							
V	FPM	D	FPM	flat seal on head							
W	NBR	L	NBR	head anodized, flat seal on head							
Z	FPM	M	FPM	head anodized, flat seal on head							
Connections											
G1	G 1 1/4"		G5	1 1/2" NPT							
G2	G 1 1/2"		G7	SAE 20 - 1 5/8" - 12 UN							
G4	1 1/4" NPT		G8	SAE 24 - 1 7/8" - 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							
Element Δp			Filter media								
			Axx	Mxx	Pxx						
N	10 bar			•	•						
H	10 bar		•								
W	10 bar, compatible with fluids HFA, HFB and HFC		•	•							
						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: MFX180 1 A25 H B E P01								
MFX180 Filter element with private spigot			Configuration example 2: MFX180 2 P10 N V P01								
Element length											
1											
2											
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								
			Axx	Mxx	Pxx						
N	10 bar			•	•						
H	10 bar		•								
W	10 bar, compatible with fluids HFA, HFB and HFC		•	•							
						Seals		Bypass valve		Execution	
						B NBR		E 3 bar		P01 MP Filtri standard	
						V FPM		B 1.75 bar		Pxx Customized	

ACCESSORIES

Indicators		page			page
BVA	Axial pressure gauge	240	BEA	Electrical pressure indicator	239
BVR	Radial pressure gauge	240	BEM	Electrical pressure indicator	239
BVP	Visual pressure indicator with automatic reset	241	BLA	Electrical / visual pressure indicator	239-240
BVQ	Visual pressure indicator with manual reset	241			
Additional features		page			
TE	Extension tube	248			
T5	Filler plug M30x1.5	249			



MPFX MPFX182 - MPFX192

Designation & Ordering code

COMPLETE FILTER

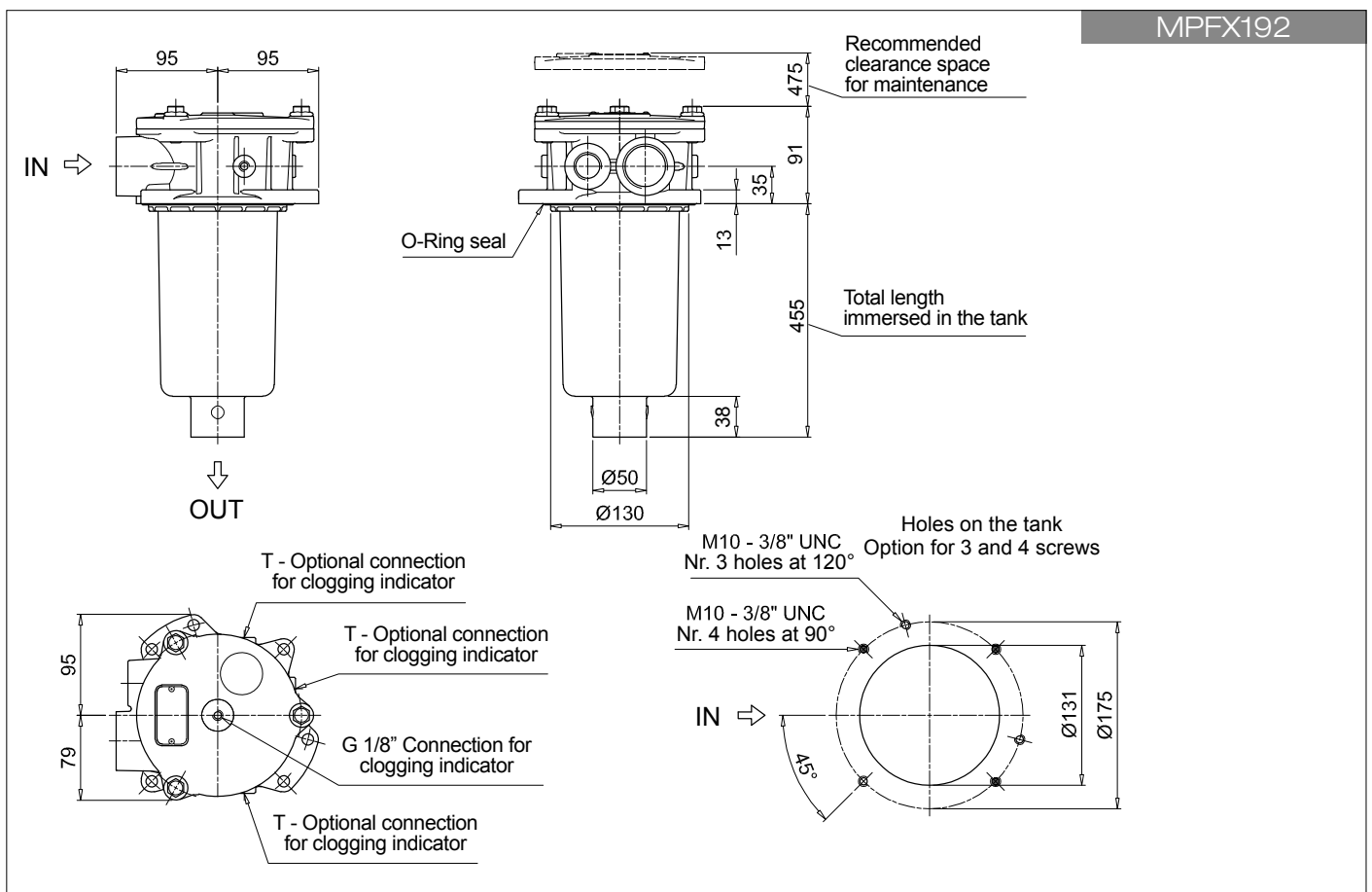
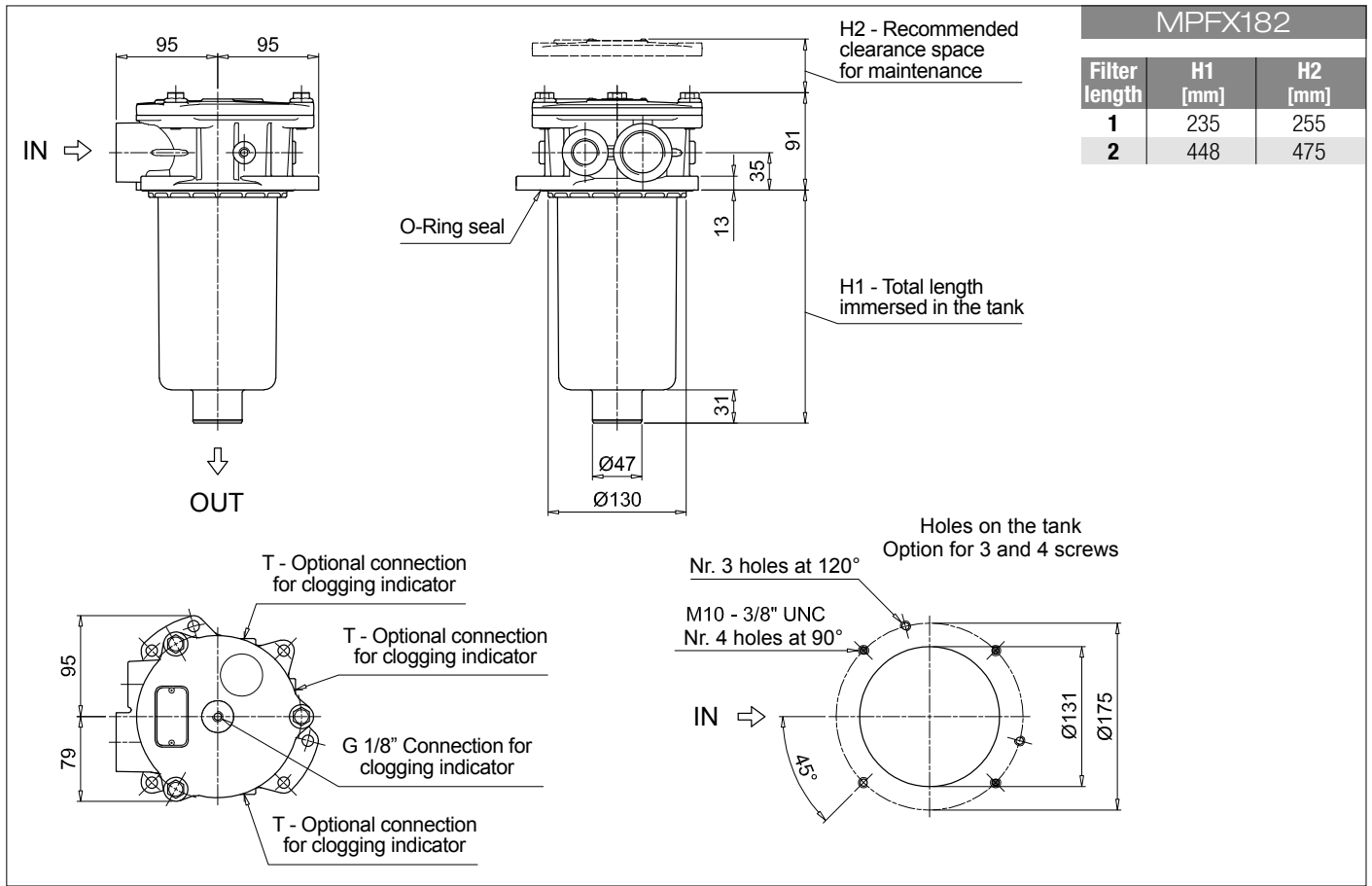
Series and size	Configuration example 1: MPFX182 1 A G1 1 A25 H E P01								
MPFX182 MPFX192 Filter element with private spigot	Configuration example 2: MPFX192 2 V G4 2 P10 N B P01								
Length	Size 182	Size 192							
1	•								
2	•	•							
Seals and treatments									
A NBR	B NBR flat seal on head								
V FPM	D FPM flat seal on head								
W NBR head anodized	L NBR head anodized, flat seal on head								
Z FPM head anodized	M FPM head anodized, flat seal on head								
Main Connections			Aux size 1	Aux size 2					
G1 G 1 1/4"	G 1/2"		G 3/4"						
G4 1 1/4" NPT	1/2" NPT		3/4" NPT						
G7 SAE 20 - 1 5/8" - 12 UN	SAE 8 - 3/16" - 16 UNF		SAE 12 - 1 1/16" - 12 UN						
Aux connection - see previous table									
1 Aux size 1	2 Aux size 2								
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		•	•						
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•							
			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: MFX180 1 A25 H B E P01								
MFX180 Filter element with private spigot	Configuration example 2: MFX180 2 P10 N V P01								
Element length									
1									
2									
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		•	•						
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•							
			Seals		Bypass valve		Execution		
			B NBR		E 3 bar		P01 MP Filtri standard		
			V FPM		1.75 bar		Pxx Customized		

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
TE Extension tube	248		
T5 Filler plug M30x1.5	249		



MPFX MPFX184 - MPFX194

Designation & Ordering code

COMPLETE FILTER

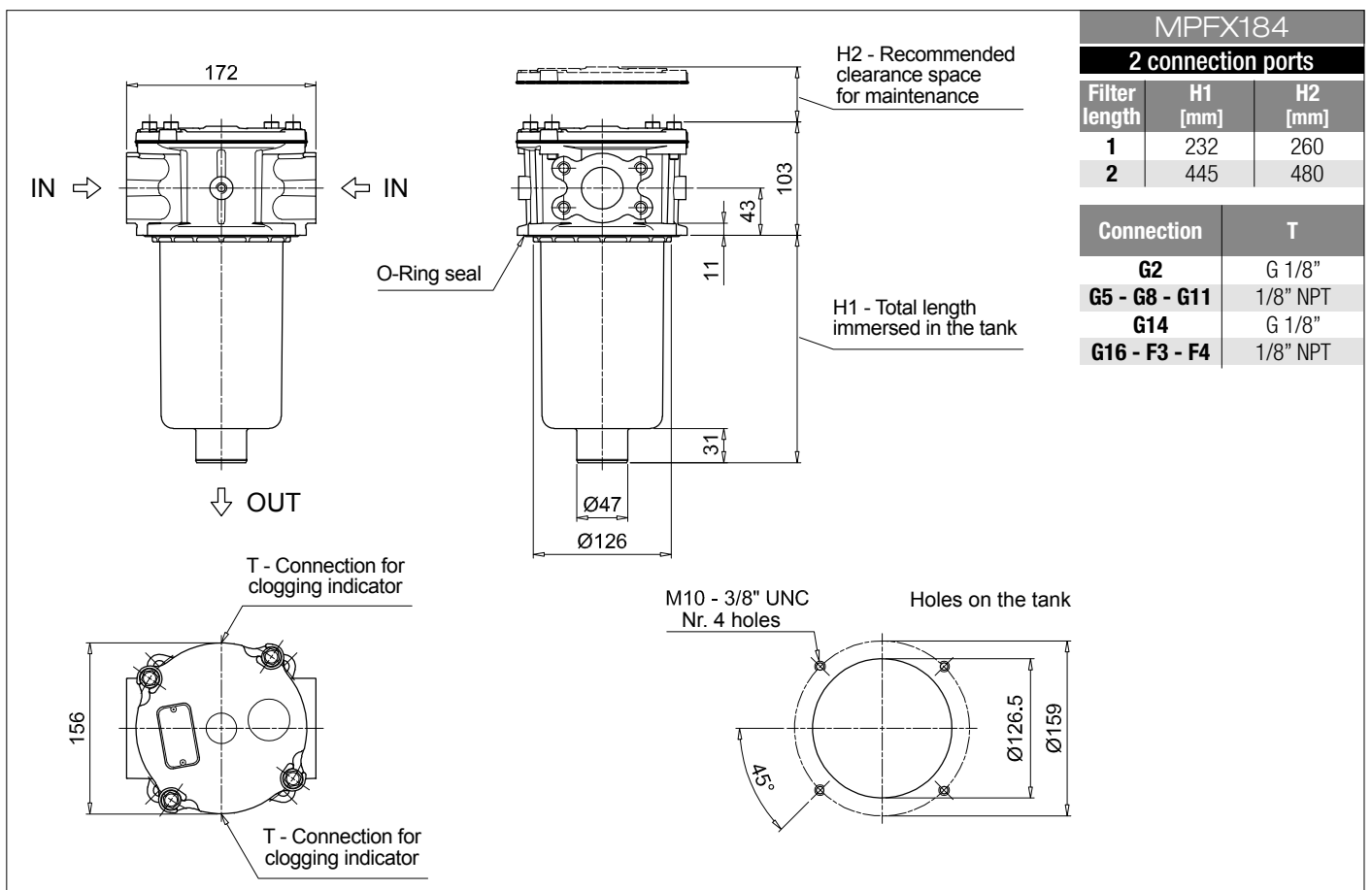
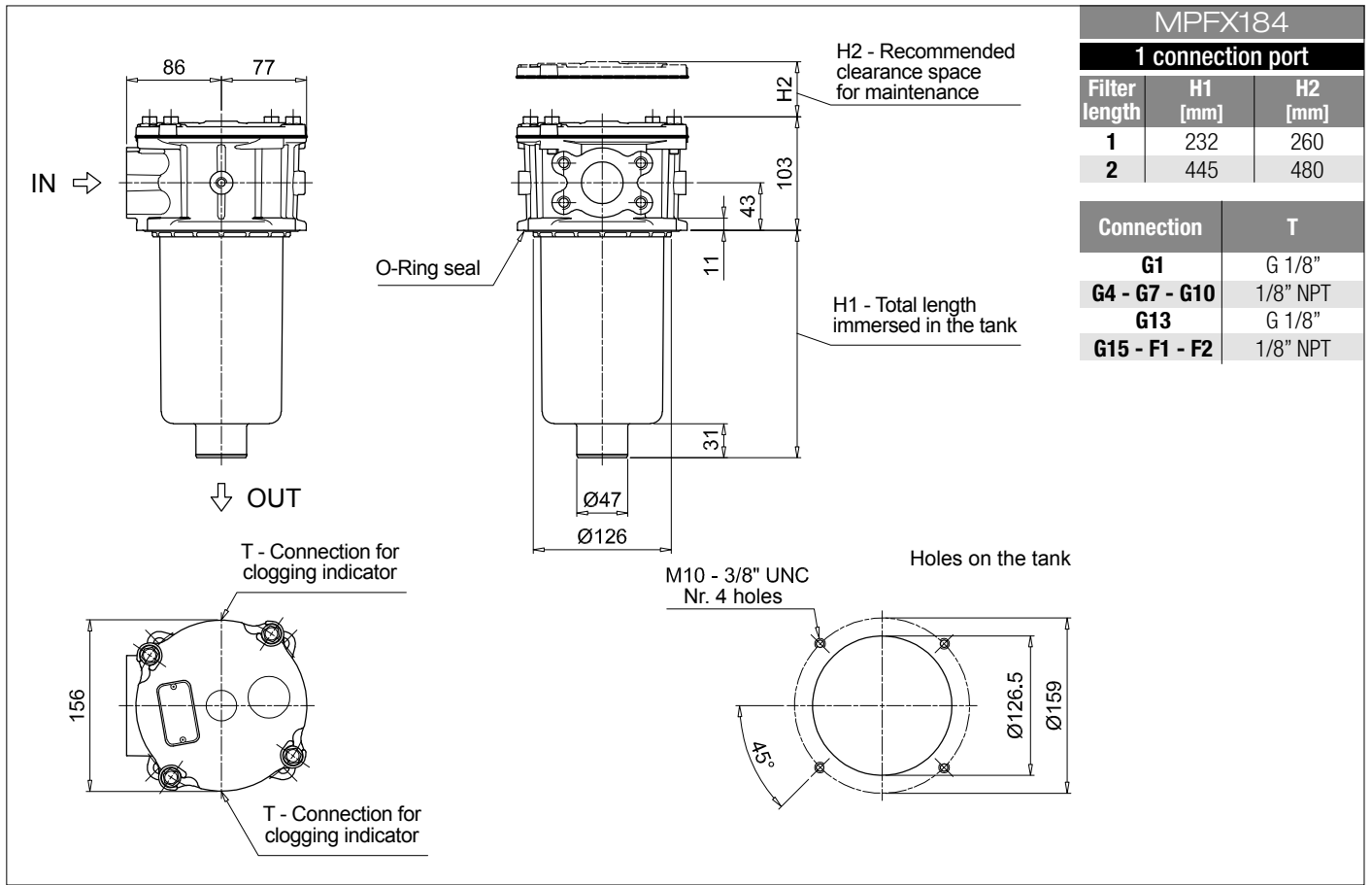
Series and size		Configuration example 1: MPFX184 1 A G1 A25 H E P01										
MPFX184 MPFX194 Filter element with private spigot		Configuration example 2: MPFX194 2 V F3 P10 N B P01										
Length	Size 184	Size 194										
1	•											
2	•	•										
Seals and treatments												
A NBR	W NBR	head anodized										
V FPM	Z FPM	head anodized										
Main Connections		Rear connections		Main Connections		Rear connections						
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								
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		•	•									
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•										
				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: MPFX180 1 A25 H B E P01									
MPFX180 Filter element with private spigot		Configuration example 2: MPFX180 2 P10 N V P01									
Element length											
1											
2											
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		•	•								
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•									
				Seals		Bypass valve		Execution			
				B NBR		E 3 bar		P01 MP Filtri standard			
				V FPM		1.75 bar		Pxx Customized			

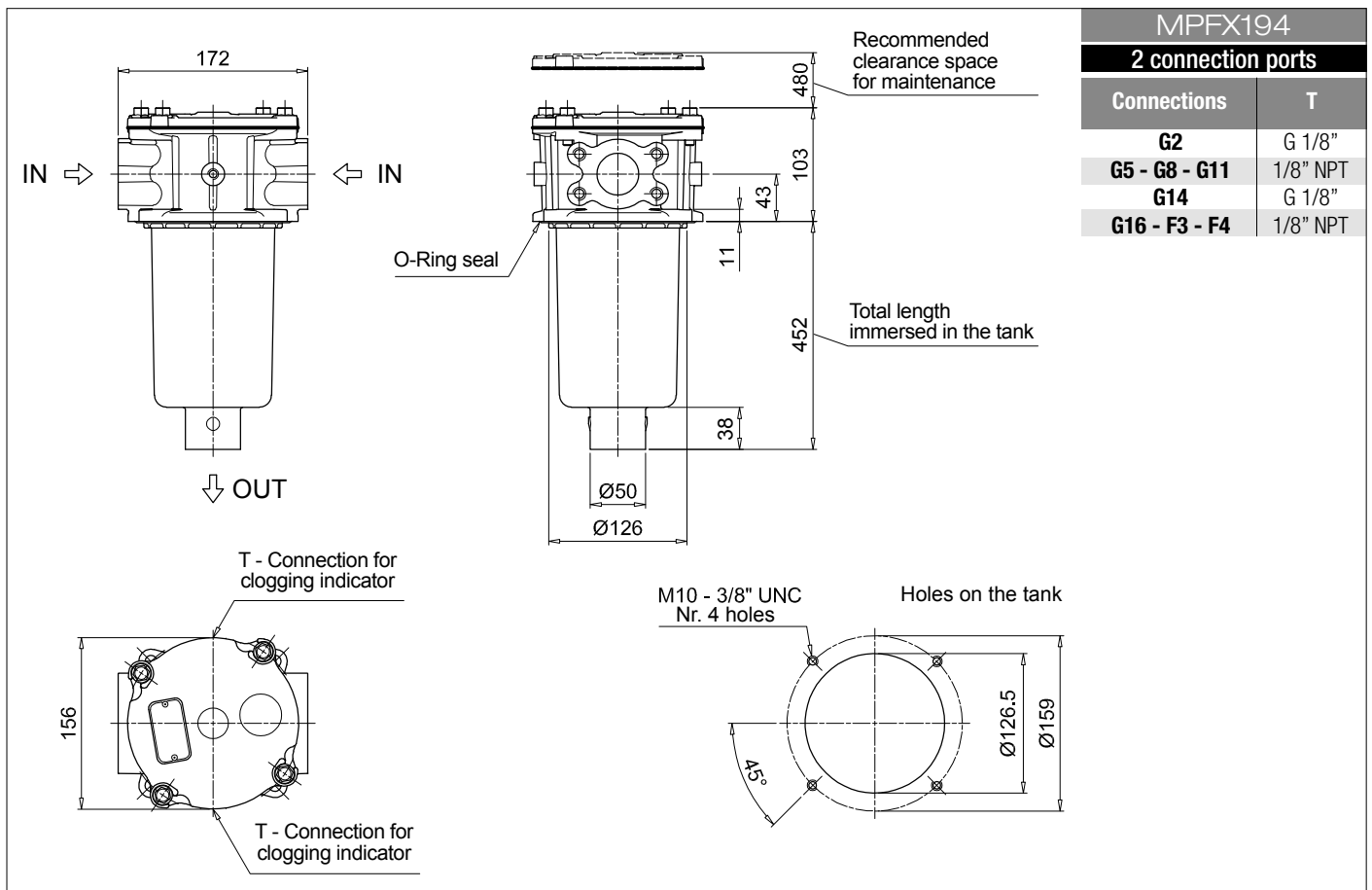
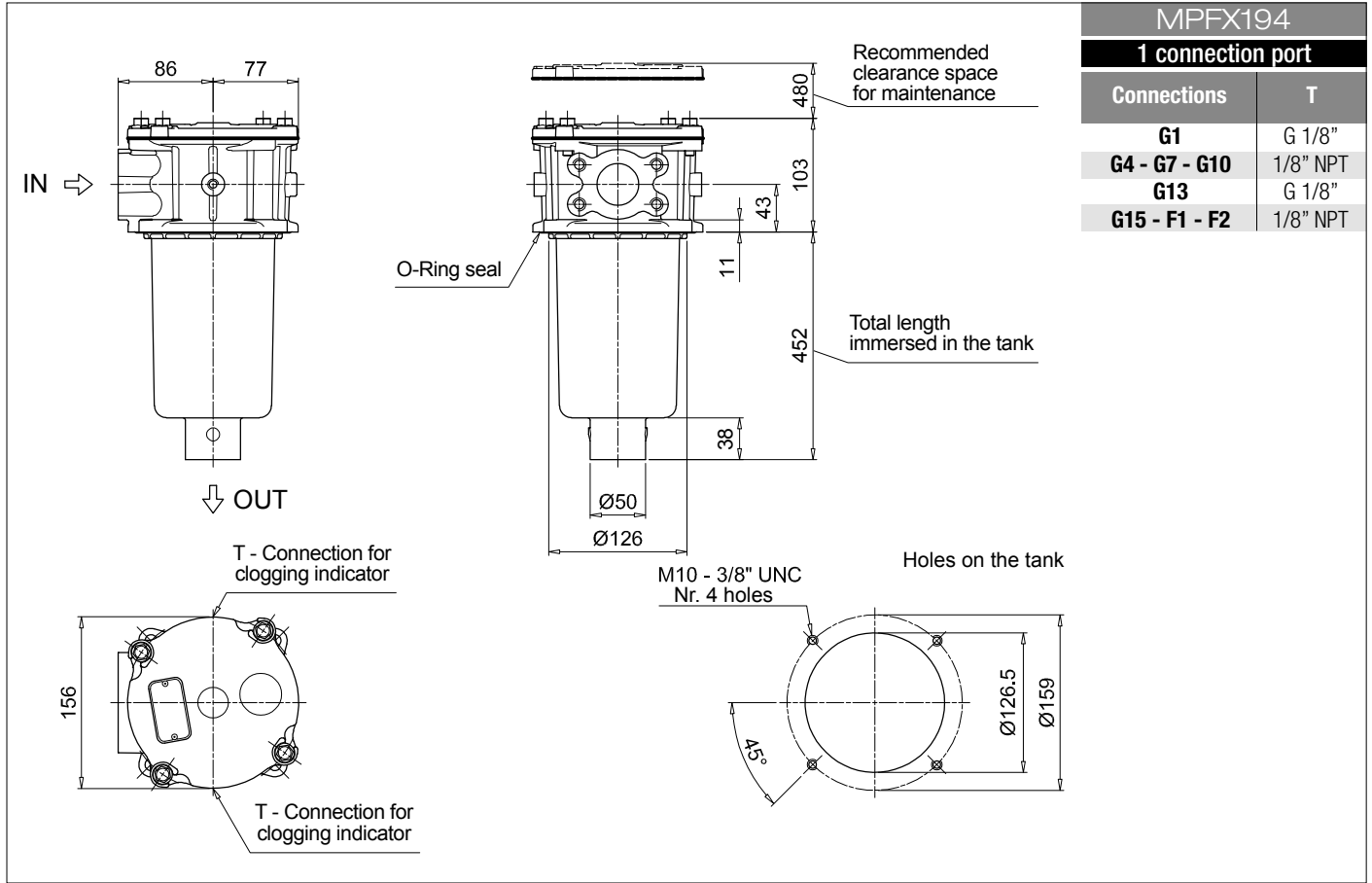
ACCESSORIES

Indicators	page			page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator		239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator		239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator		239-240
BVQ Visual pressure indicator with manual reset	241			
Additional features	page			
TE Extension tube	248			
T5 Filler plug M30x1.5	249			



MPFX MPFX184 - MPFX194

Dimensions



MPFX MPFX400

Designation & Ordering code

COMPLETE FILTER

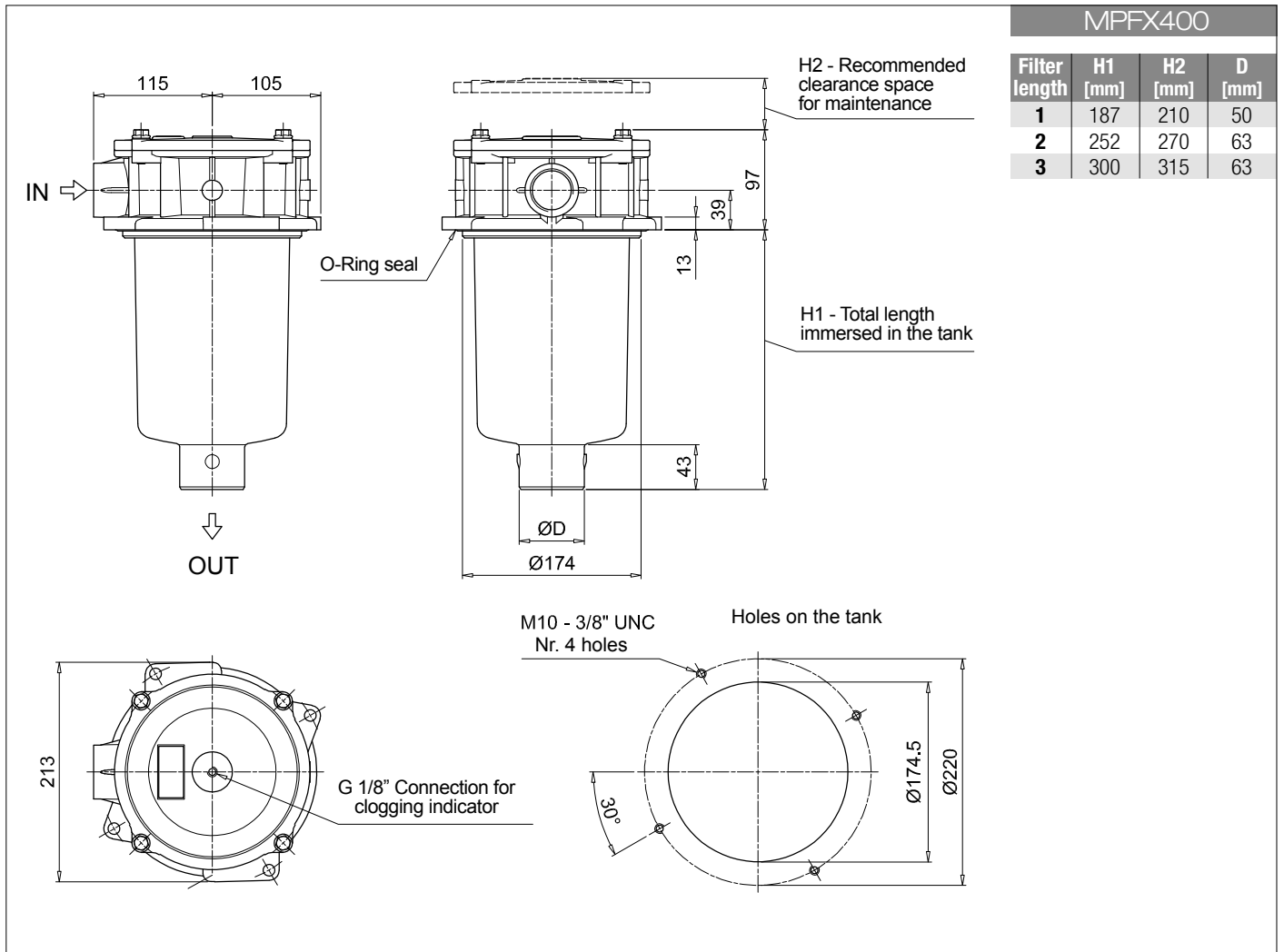
Series and size	Configuration example 1: MPFX400 1 A G9 A25 H B P01							
MPFX400 Filter element with private spigot	Configuration example 2: MPFX400 2 V G4 P10 N E P01							
Length	1 2 3							
Seals and treatments								
A NBR								
V FPM								
W NBR head anodized								
Z FPM head anodized								
Connections								
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								
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							
	Axx	Mxx	Pxx					
N 10 bar		•	•					
H 10 bar		•						
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•						
				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: MFX400 1 A25 H B P01							
MFX400 Filter element with private spigot	Configuration example 2: MFX400 2 P10 N V E 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							
Element Δp	Filter media							
	Axx	Mxx	Pxx					
N 10 bar		•	•					
H 10 bar		•						
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•						
				Seals	Bypass valve	Execution		
				B NBR	E 3 bar	P01 MP Filtri standard		
				V FPM	1.75 bar	Pxx Customized		

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
T5 Filler plug M30x1.5	249		



MPFX MPFX410

Designation & Ordering code

COMPLETE FILTER

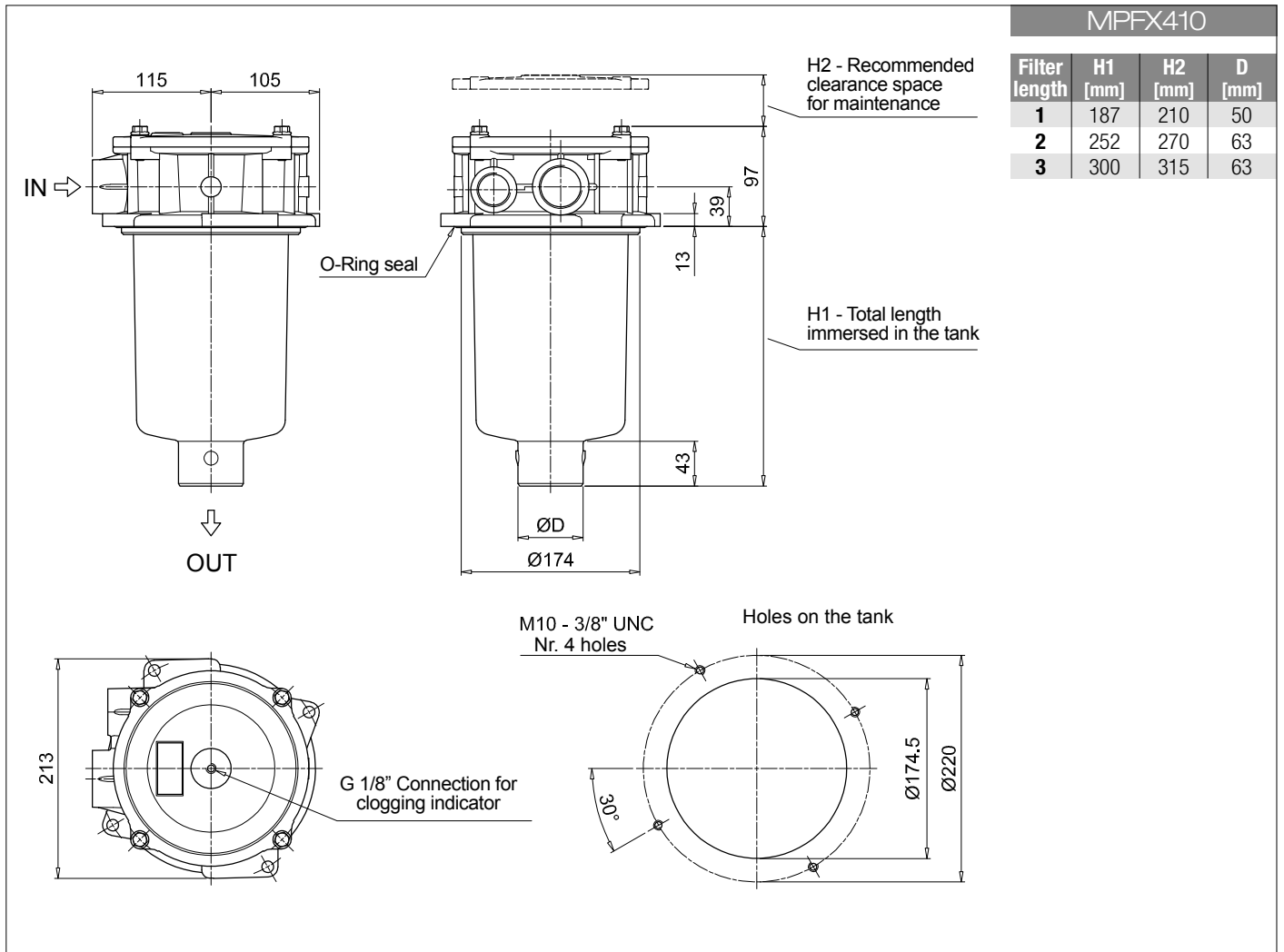
Series and size	Configuration example 1: MPFX410	1	V	G4	1	P10	N	E	P01
MPFX410 Filter element with private spigot	Configuration example 2: MPFX410	1	A	G1	1	A25	H	B	P01
Length									
1 2 3									
Seals and treatments									
A NBR									
V FPM									
W NBR head anodized									
Z FPM head anodized									
Main Connections	Aux size 1								
G1 G 1 1/4"	G 1"								
G4 1 1/4" NPT	1" NPT								
G7 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)									
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		•							
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•							
				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: MFX400	1	P10	N	V	E	P01
MFX400 Filter element with private spigot	Configuration example 2: MFX400	1	A25	H	B		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						
Element Δp	Filter media						
	Axx	Mxx	Pxx				
N 10 bar		•	•				
H 10 bar		•					
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•					
	Seals	Bypass valve	Execution				
	B NBR	E 3 bar	P01 MP Filtri standard				
	V FPM	1.75 bar	Pxx Customized				

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
T5 Filler plug M30x1.5	249		



MPFX MPFX450 - MPFX451 - MPFX750

Designation & Ordering code

COMPLETE FILTER

Series and size				Configuration example 1: MPFX450 1 A G1 A25 H B P01								
MPFX450 MPFX451 MPFX750 Filter element with private spigot				Configuration example 2: MPFX750 1 V F2 P10 N E P01								
Length				MPFX 450	MPFX 451	MPFX 750						
1		•	•	•								
2		•	•									
3		•	•									
Seals and treatments												
A NBR		W NBR	head anodized									
V FPM		Z FPM	head anodized									
Connections				Aux (only size 451)								
G1 G 2"		G 3/4"										
G4 2" NPT		3/4" NPT										
G7 SAE 32 - 2 1/2" - 12 UN		SAE 12 - 1 1/16" - 12 UN										
F1 2" SAE 3000 psi/M		G 3/4"										
F2 2" SAE 3000 psi/UN		3/4" NPT										
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								
		Axx	Mxx	Pxx								
N 10 bar			•	•								
H 10 bar			•									
W 10 bar, compatible with fluids HFA, HFB and HFC		•	•									
							Bypass valve		Execution			
							E 3 bar		P01 MP Filtri standard			
							B 1.75 bar		Pxx Customized			

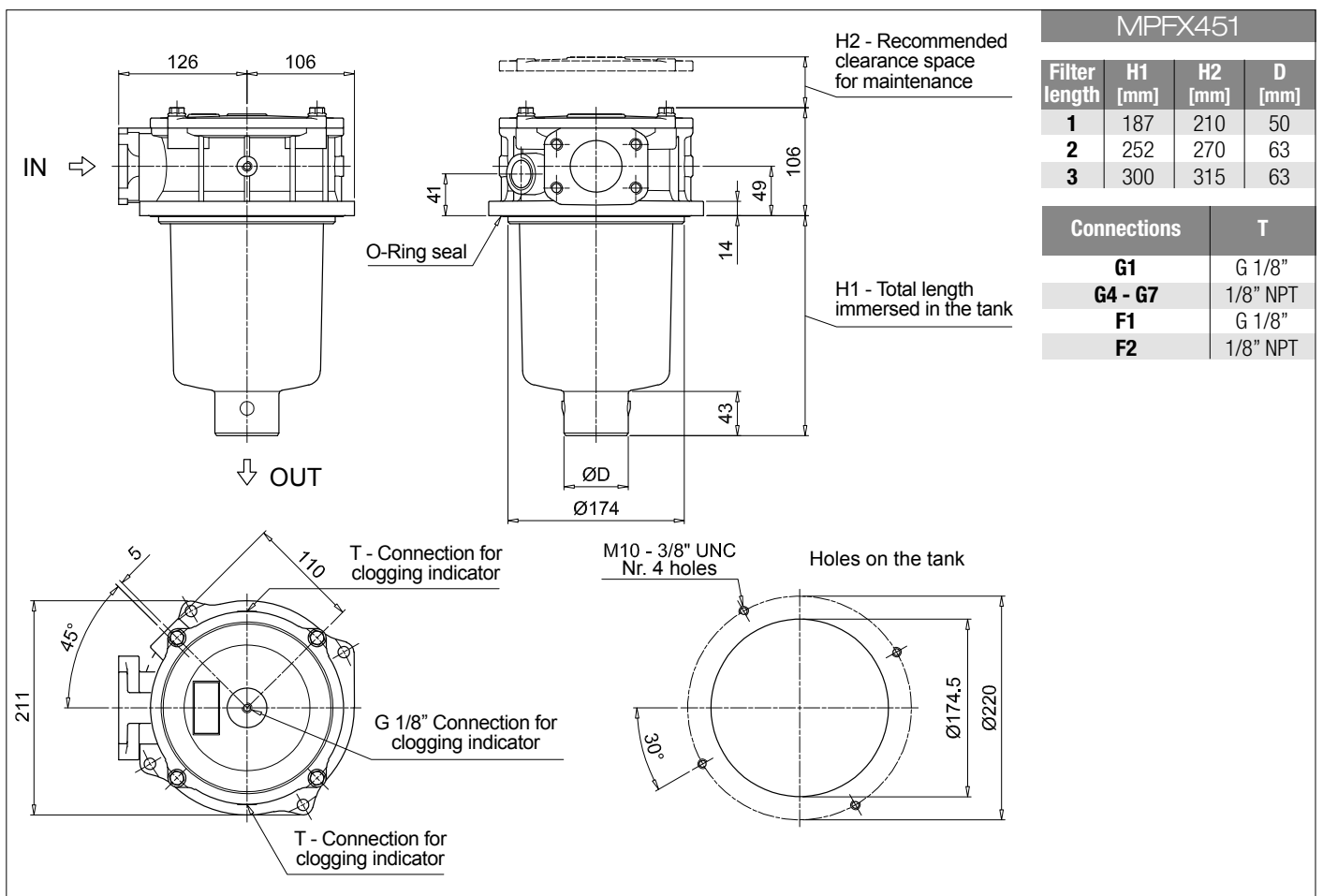
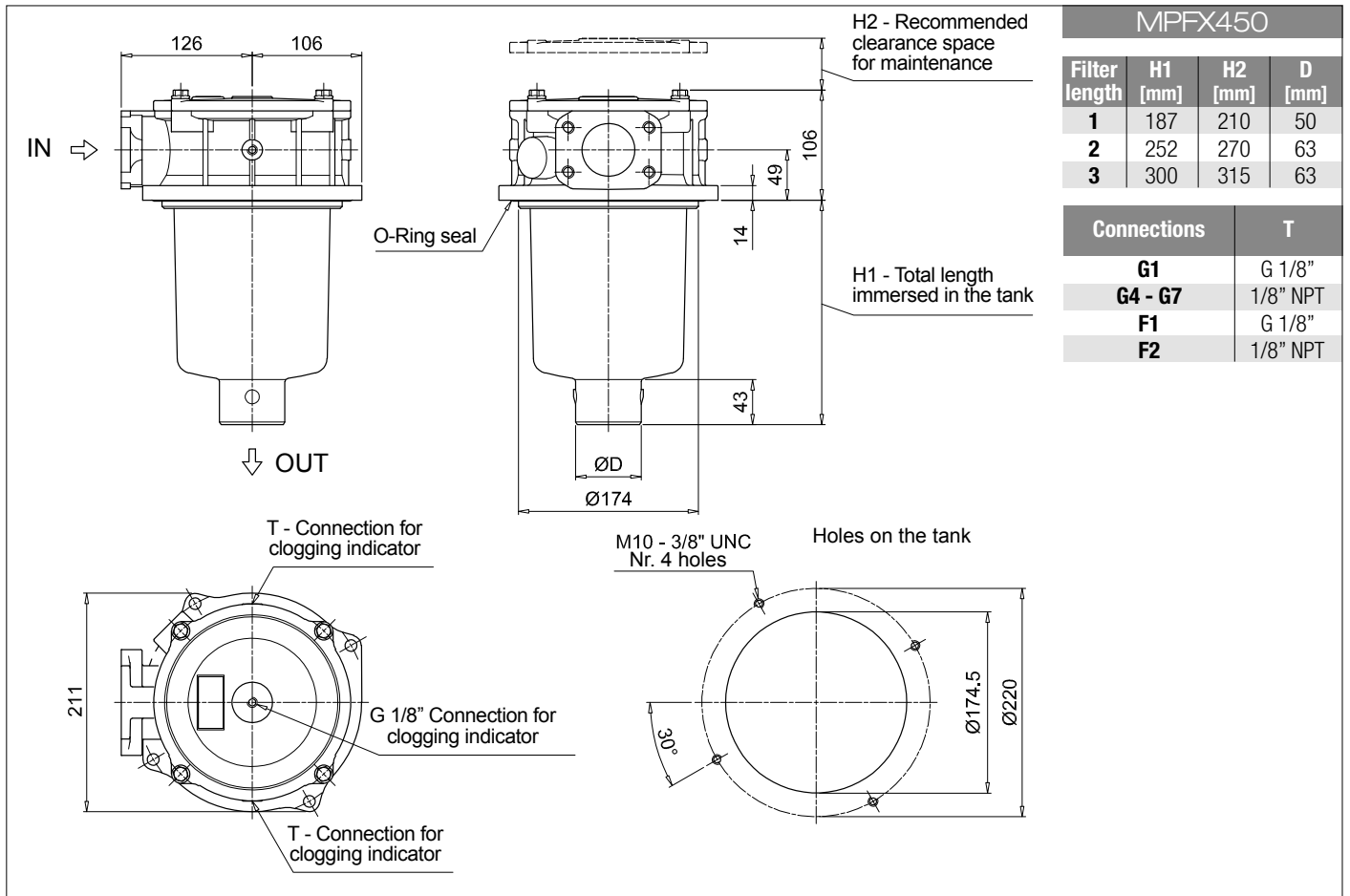
FILTER ELEMENT

Element series and size				Configuration example 1: MFx400 1 A25 H B P01								
MFx400 MFx750 Filter element with private spigot				Configuration example 2: MFx750 1 P10 N V E P01								
Element length				MPFX 450	MPFX 451	MPFX 750						
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										
Element Δp				Filter media								
		Axx	Mxx	Pxx								
N 10 bar			•	•								
H 10 bar			•									
W 10 bar, compatible with fluids HFA, HFB and HFC		•	•									
							Seals		Bypass valve		Execution	
							B NBR		E 3 bar		P01 MP Filtri standard	
							V FPM		B 1.75 bar		Pxx Customized	

ACCESSORIES

Indicators		page			page
BVA Axial pressure gauge		240	BEA Electrical pressure indicator		239
BVR Radial pressure gauge		240	BEM Electrical pressure indicator		239
BVP Visual pressure indicator with automatic reset		241	BLA Electrical / visual pressure indicator		239-240
BVQ Visual pressure indicator with manual reset		241			

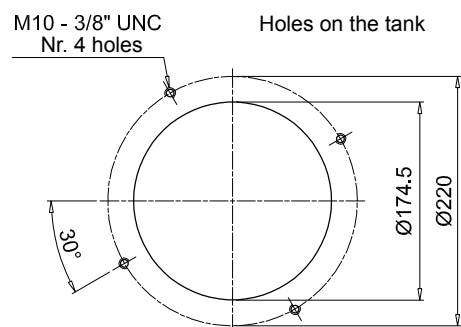
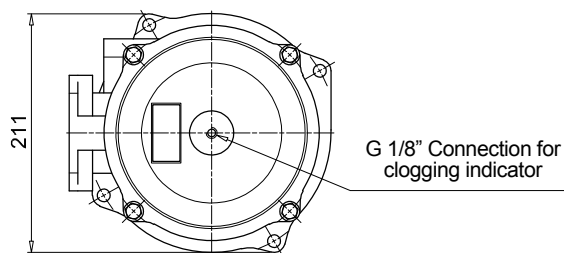
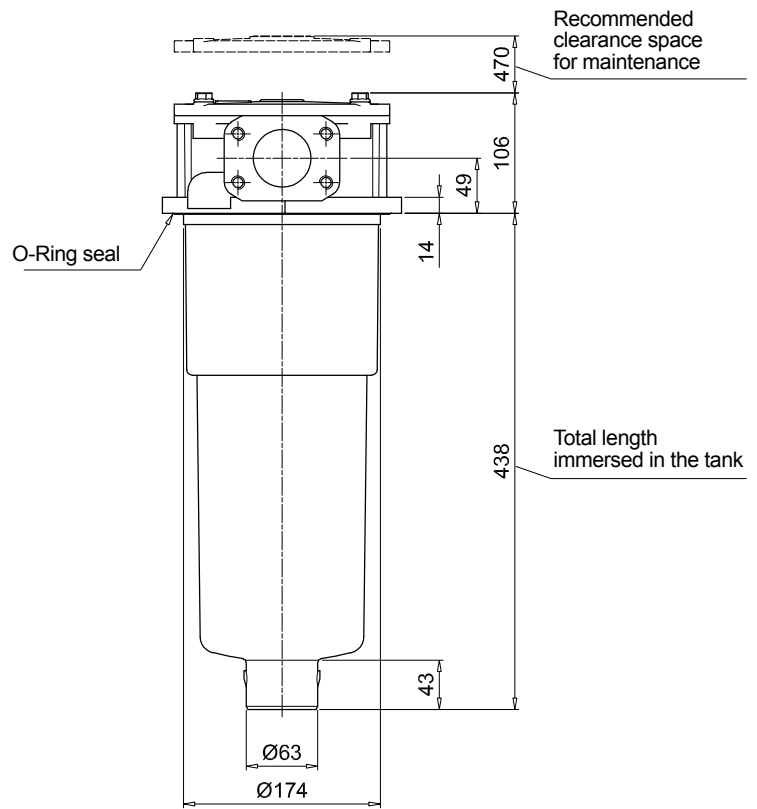
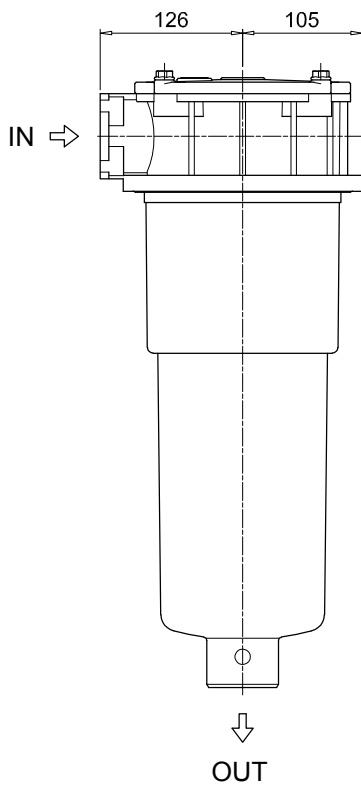
Additional features		page
T5 Filler plug M30x1.5		249



MPFX MPFX450 - MPFX451 - MPFX750

Dimensions

MPFX750



MPFX 100

MPFX 181

O-RING SEAL

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

MPFX 104

MPFX 181

FLAT SEAL

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

MPLX series

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



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 meet any reservoir surface flatness and roughness
- 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

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) $\pm 10\%$

Δp 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

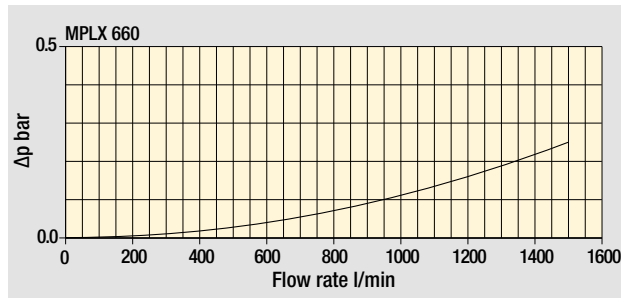
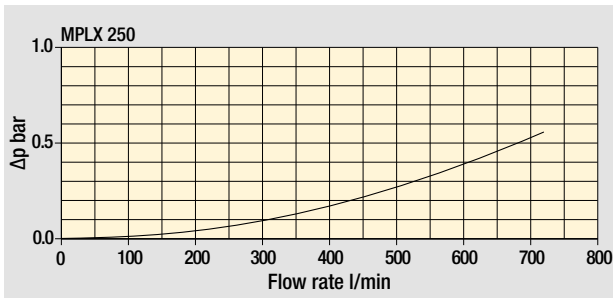
Note

MPLX filters are provided for vertical mounting

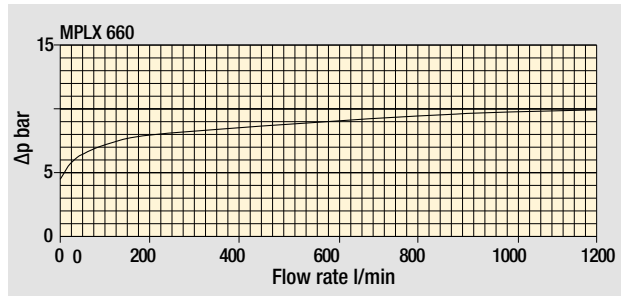
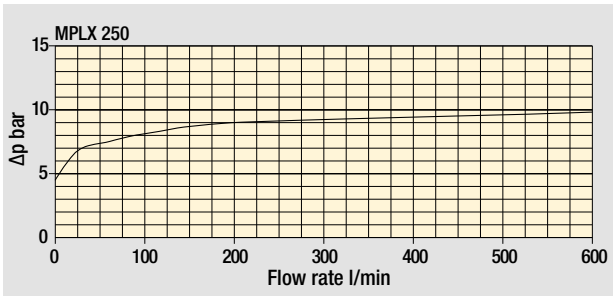


Weights [kg] and volumes [dm³]

Filter series	Weights [kg]		Volumes [dm ³]	
	Length	2	Length	2
MPLX 250		8.95		2.90
MPLX 660		20.20		11.00



Filter housings
Δp pressure drop



Bypass valve
pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Flow rates [l/min]

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

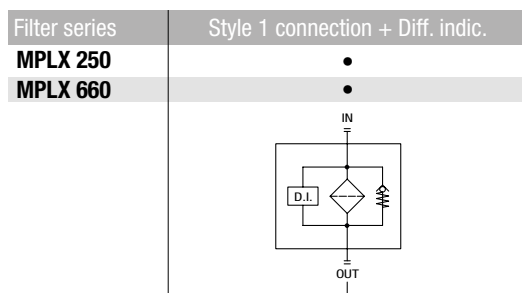
Maximum flow rate for a complete return filter with a pressure drop Δp = 0.5 bar.

The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols



MPLX MPLX250 - MPLX660

Designation & Ordering code

COMPLETE FILTER

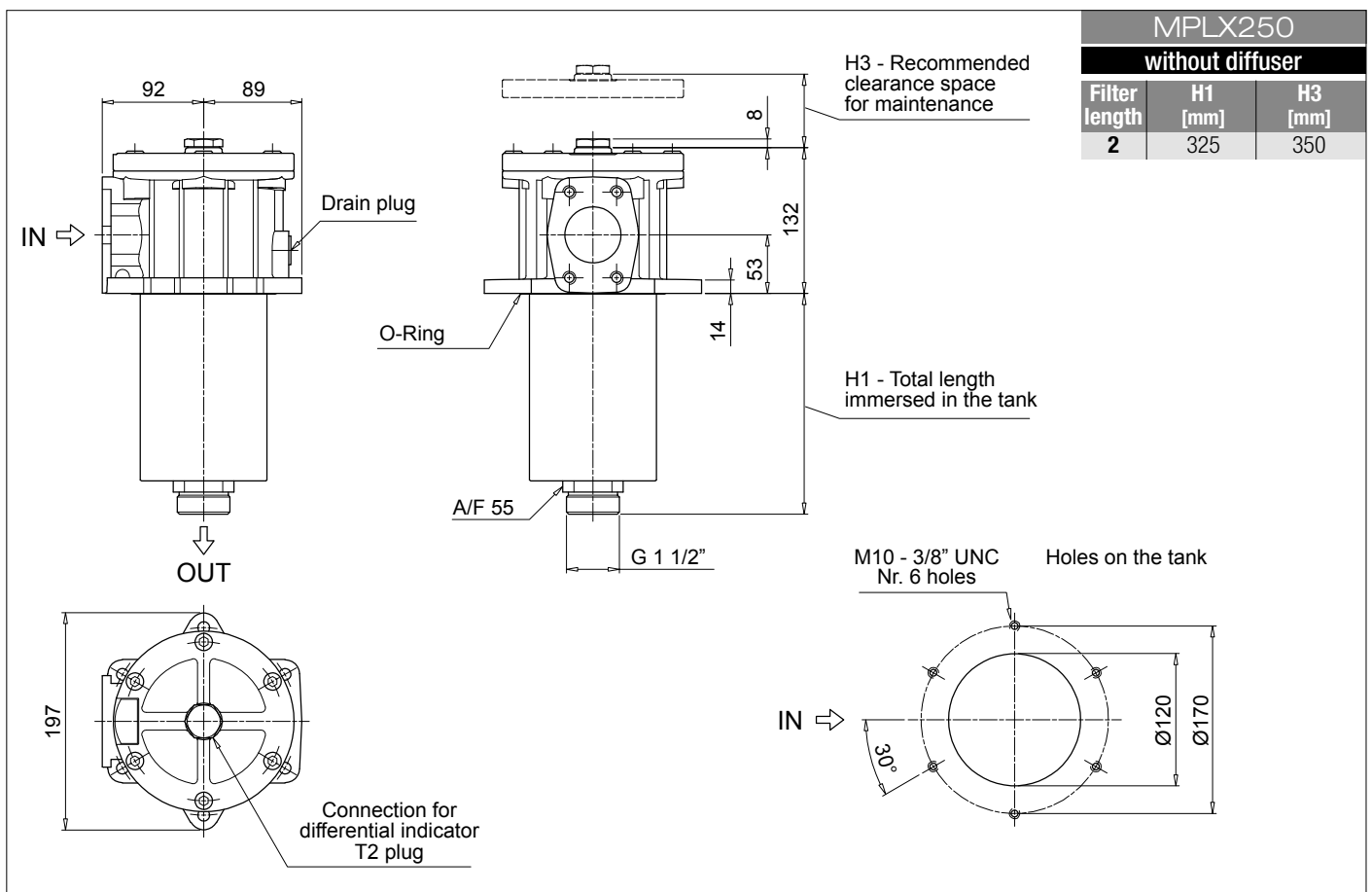
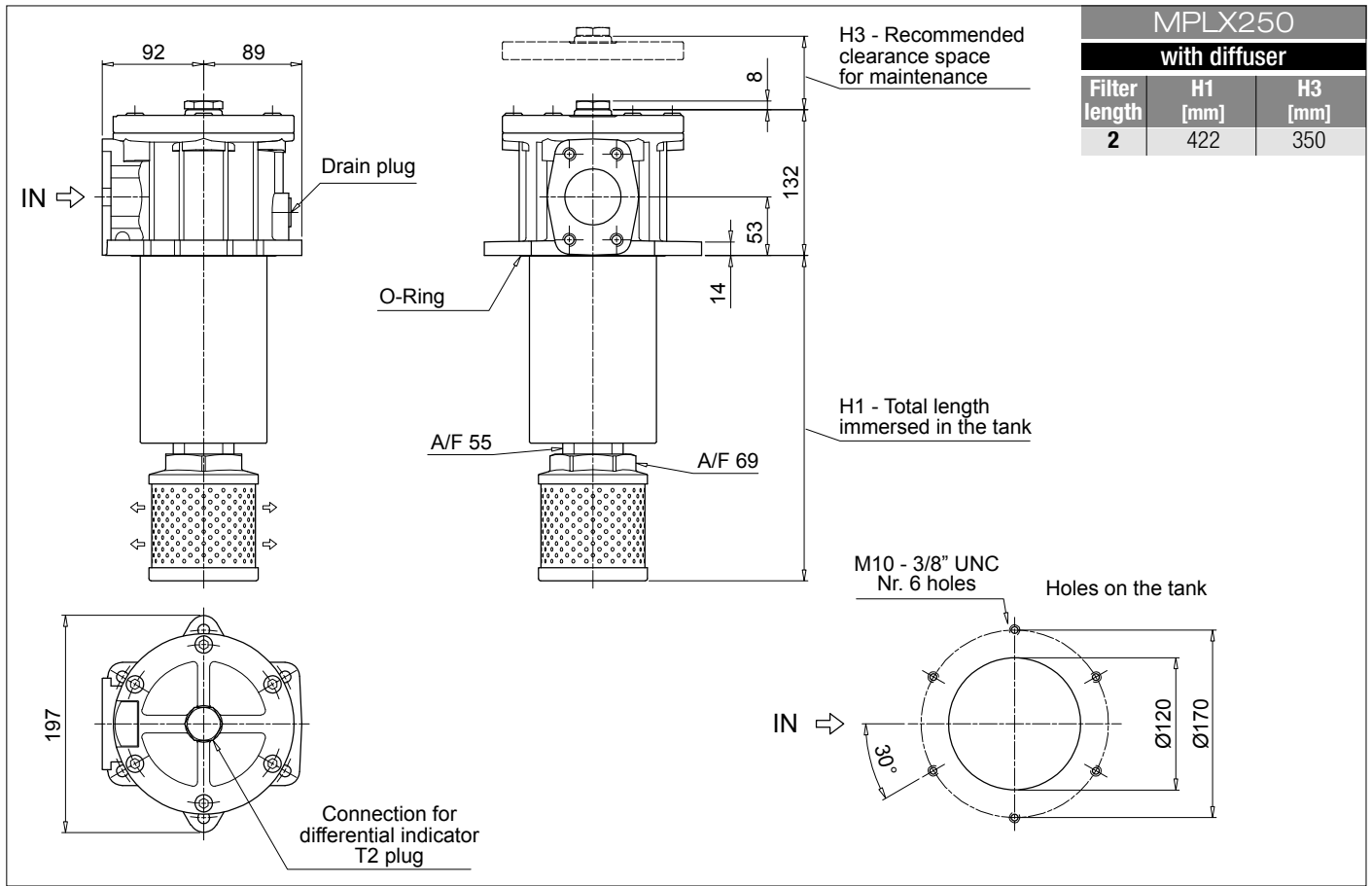
Series and size	Configuration example 1: MPLX250 2 D S W A 6 M25 P01									
MPLX250 Filter element with private spigot	Configuration example 2: MPLX660 2 D D A B 6 A10 P01									
MPLX660 Filter element with private spigot										
Length	2									
By-pass valve	D 4.5 bar									
Diffuser	S Without diffuser D With standard diffuser									
Seals and treatments	Filtration rating									
	Axx	Mxx	Pxx							
A NBR	•	•	•							
V FPM	•	•	•							
W NBR filter element compatible with fluids HFA-HFB-HFC	•	•								
Z FPM	•	•								
Connections	MPLX250		MPLX660							
A	2" SAE 3000 psi/M		3" SAE 3000 psi/M							
B	2" SAE 3000 psi/UNC		3" SAE 3000 psi/UNC							
Connection for differential 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									
										Execution
										P01 MP Filtri standard
										Pxx Customized

FILTER ELEMENT

Element series and size	Configuration example 1: MLX250 2 M25 W P01					
MLX250 Filter element with private spigot	Configuration example 2: MLX660 2 A10 A P01					
MLX660 Filter element with private spigot						
Element length	2					
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 and treatments	Filtration rating					
	Axx	Mxx	Pxx			
A NBR	•	•	•			
V FPM	•	•	•			
W NBR filter element compatible with fluids HFA-HFB-HFC	•	•				
Z FPM	•	•				
						Execution
						P01 MP Filtri standard
						Pxx Customized

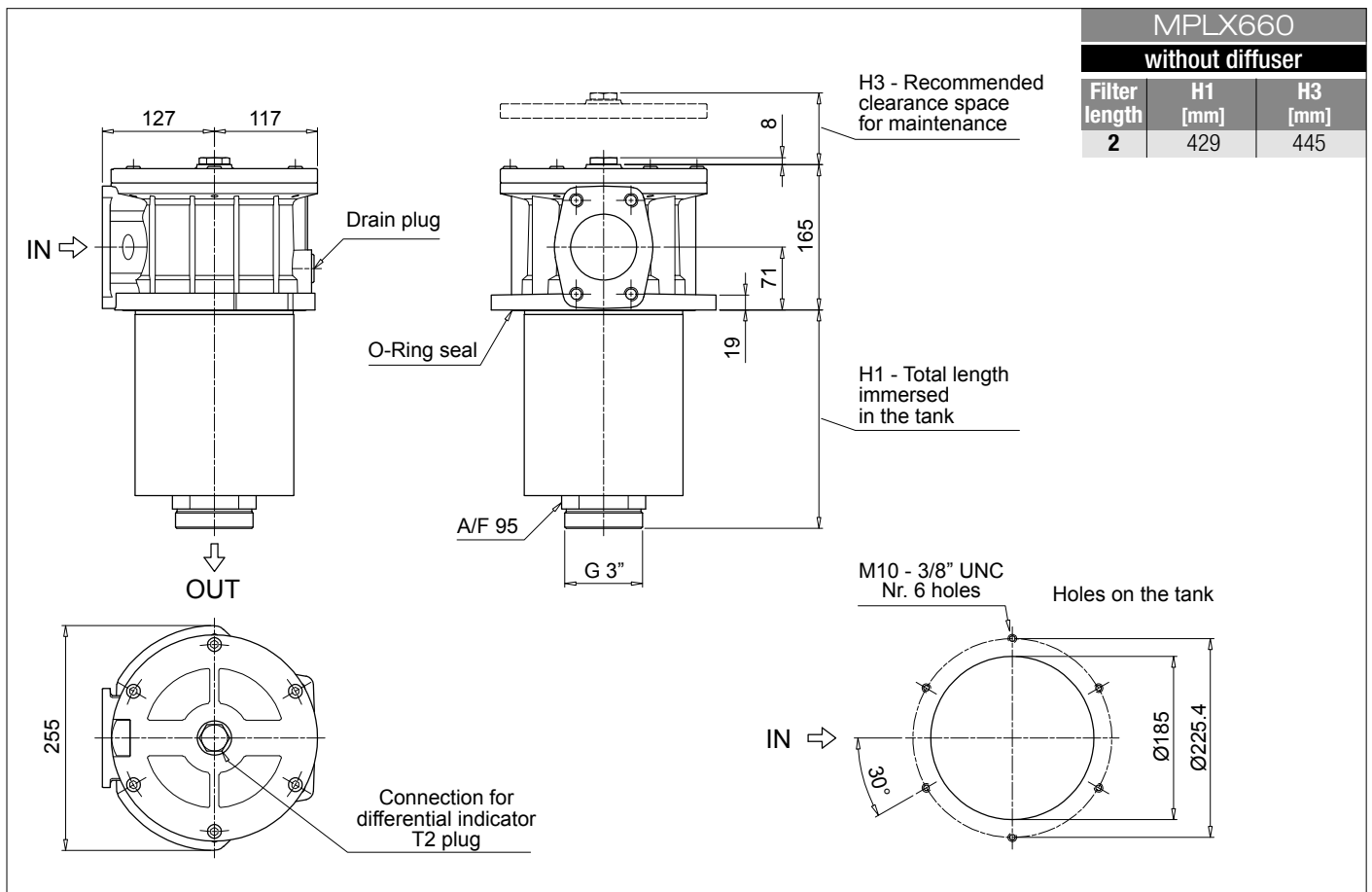
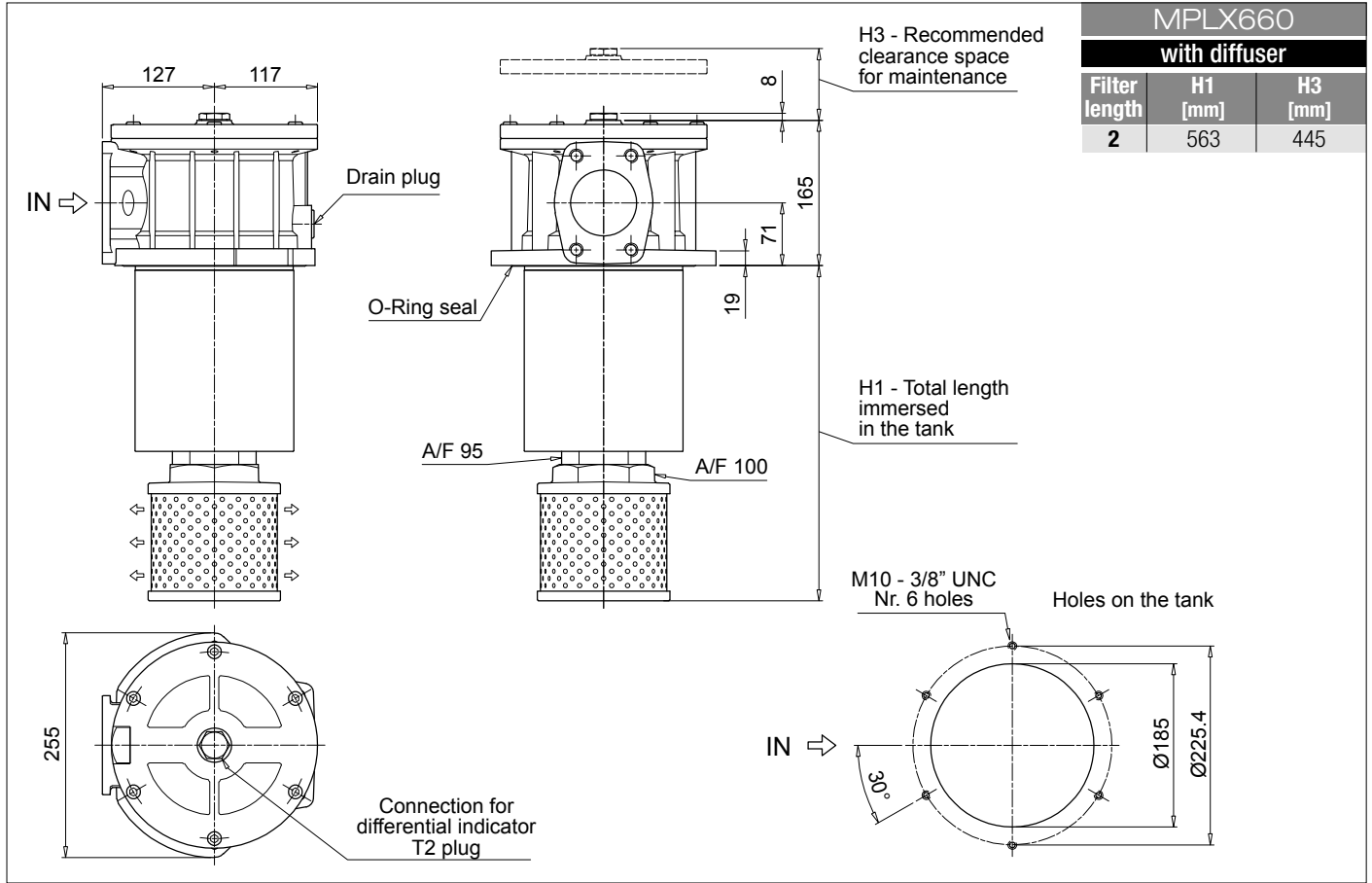
ACCESSORIES

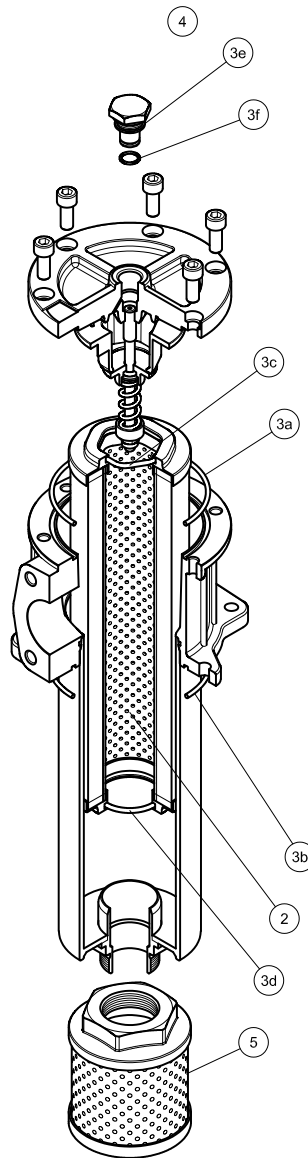
Indicators			
DEA Electrical differential indicator	242	DTA Electronic differential indicator	245
DEM Electrical differential indicator	242-243	DVA Visual differential indicator	245
DLA Electrical / visual differential indicator	243-244	DVM Visual differential indicator	245
DLE Electrical / visual differential indicator	244		
Additional features			
T2 Plug	246		



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
		NBR	FPM	NBR	FPM	
MPLX 250	See order table	02050745	02050746	T2H	T2V	STD 100 C 115 P01
MPLX 660	See order table	02050747	02050748			STD 150 E 155 P01

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, 4 or 6 fixing holes for installation, to meet any reservoir surface flatness and roughness
- O-ring or Flat seal, to meet any reservoir surface flatness and roughness
- 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: Nylon
- Bowl: Nylon

Bypass valve

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

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

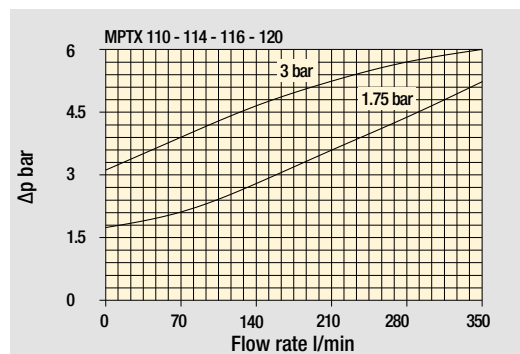
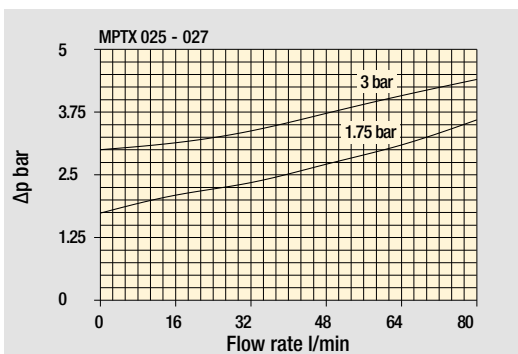
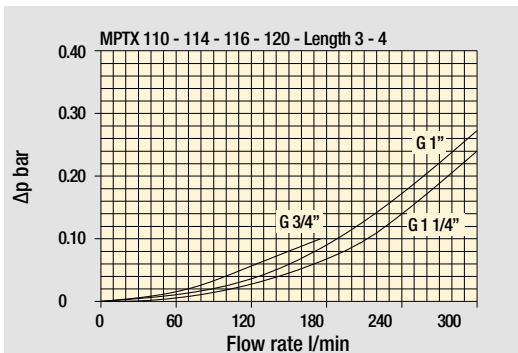
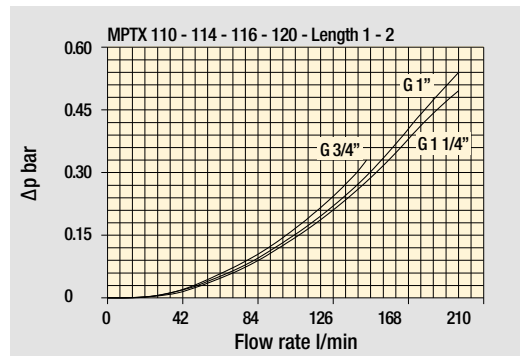
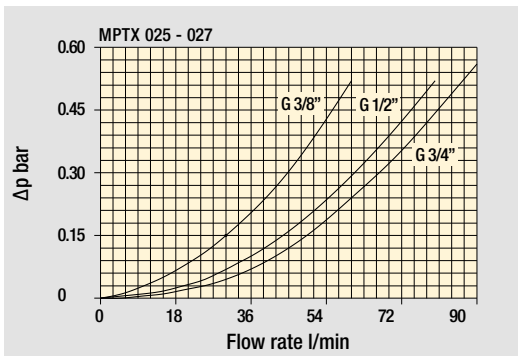
MPTX filters are provided for vertical mounting



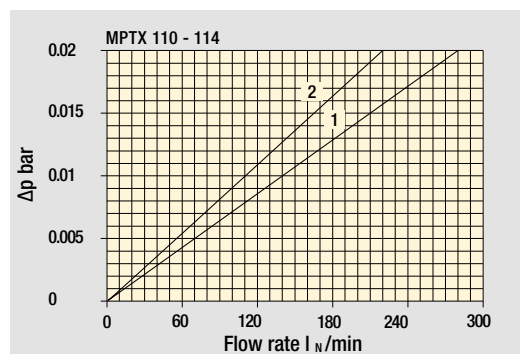
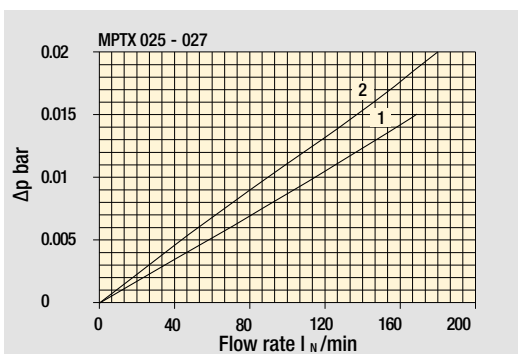
Weights [kg] and volumes [dm³]

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

Filter housings Δp pressure drop



Bypass valve pressure drop



Air breather pressure drop

- 1 C With air breather 10 μm
- 2 D With anti-splash and SAP50 10 μm

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
 Δp varies proportionally with density.

MPTX GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MPTX 025-027	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
MPTX 110-120 114-116	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

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

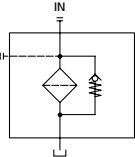
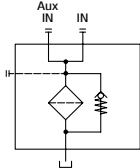
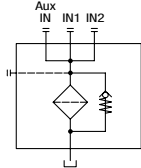
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.





Hydraulic symbols

Filter series	Style 1 connection	Style 2 connections	Style 3 connections
MPTX 025	•		
MPTX 027	•		
MPTX 110		•	
MPTX 114	•		
MPTX 116	•		
MPTX 120			•

		
---	---	---

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

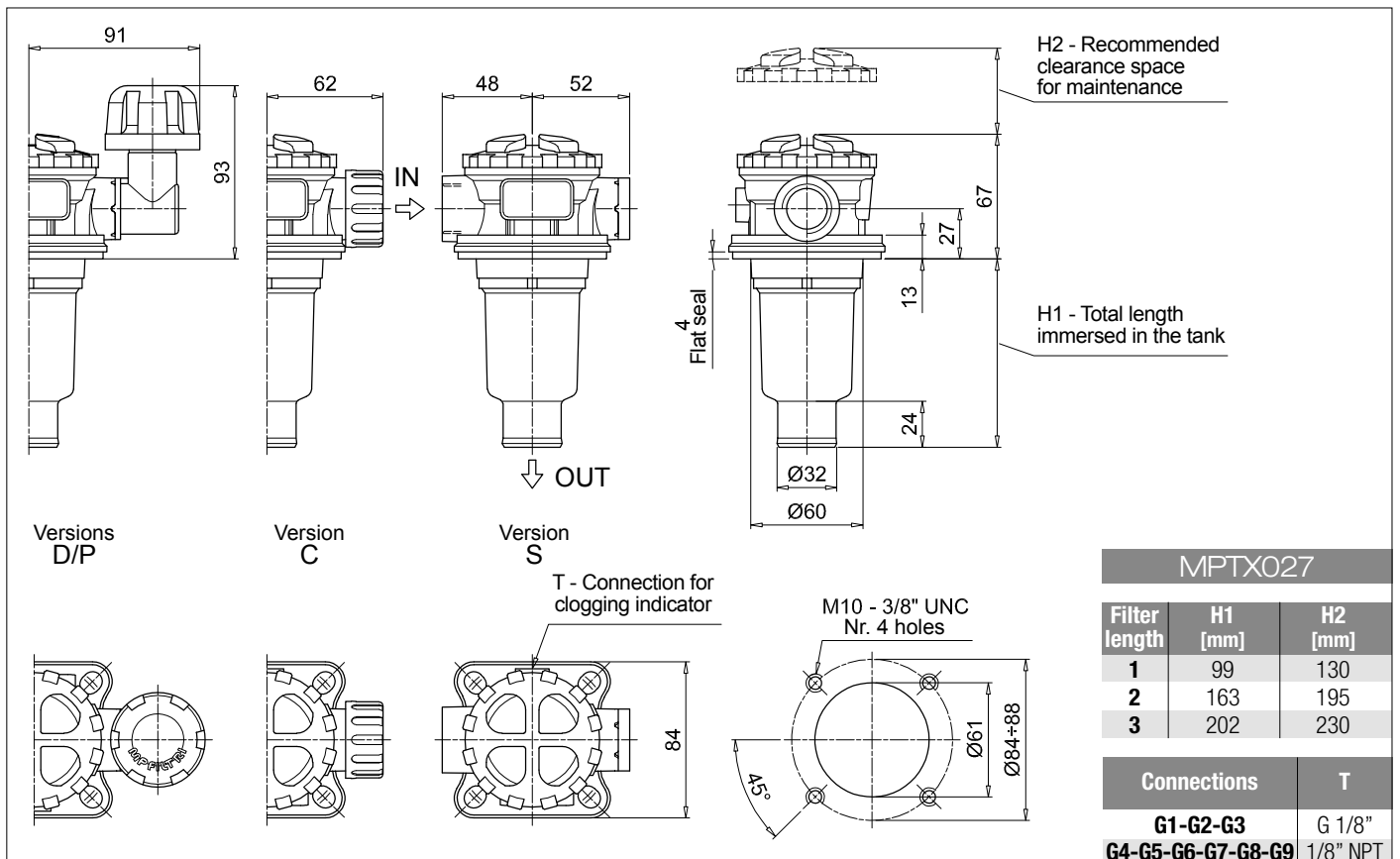
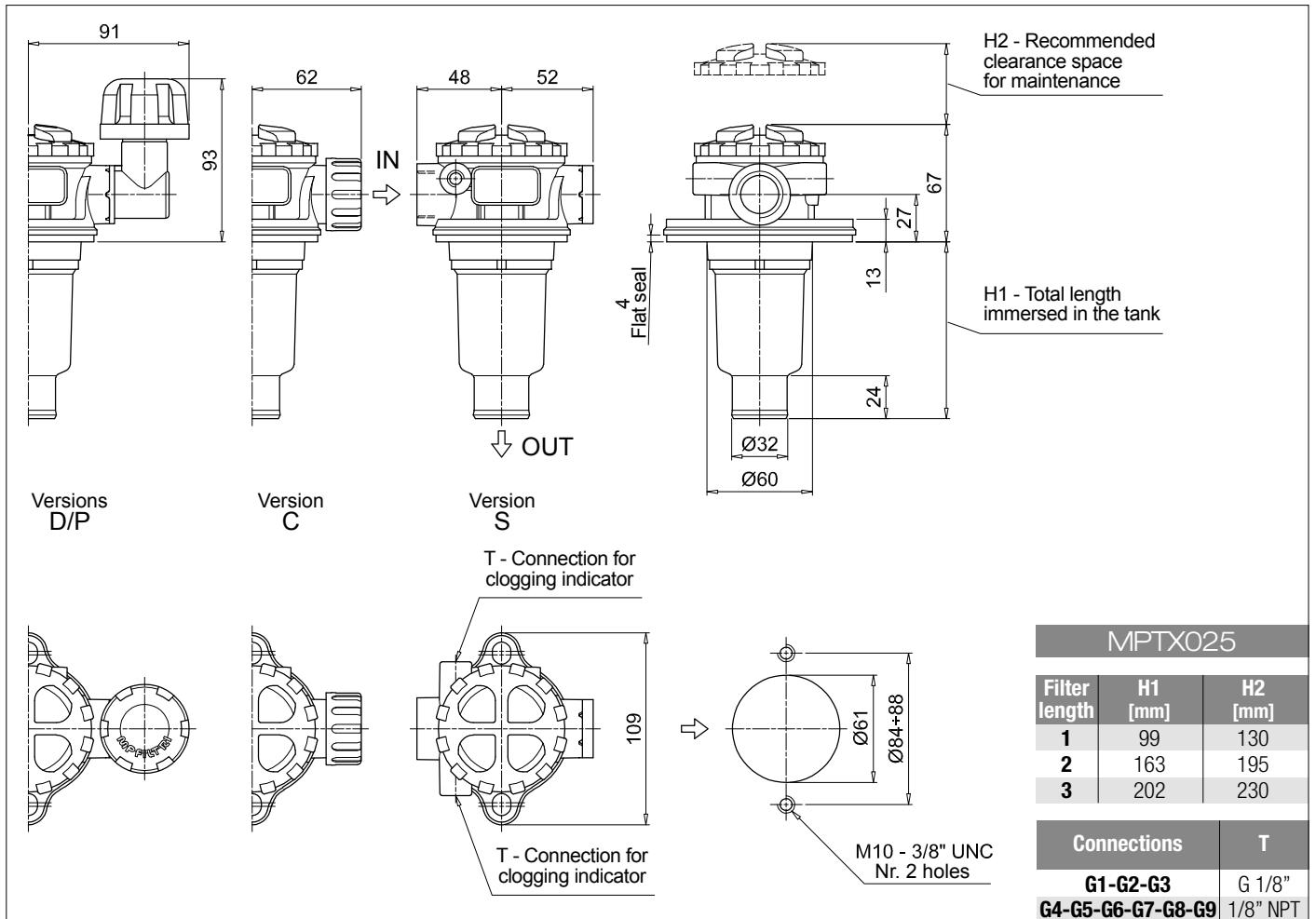
Series and size MPTX025 MPTX027 Filter element with private spigot	Configuration example 1: MPTX025 1 S A G3 A10 E P01
	Configuration example 2: MPTX027 3 C W G6 A03 B P01
Length 1 2 3	
Air breather S Without air breather C With air breather 10 µm D With anti-splash and air breather SAP050 10 µm P With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar	
Seals and treatments	Filtration rating
A NBR	Axx Mxx Pxx
V FPM	• • •
W NBR head anodized filter element compatible with fluids HFA-HFB-HFC	• • •
Z FPM head anodized	• • •
Connections	
G1 G 3/8"	G6 3/4" NPT
G2 G 1/2"	G7 SAE 6 - 9/16" - 18 UNF
G3 G 3/4"	G8 SAE 8 - 3/4" - 16 UNF
G4 3/8" NPT	G9 SAE 12 - 1 1/16" - 12 UN
G5 1/2" NPT	
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
	Bypass valve E 3 bar B 1.75 bar
	Execution P01 MP Filtri standard Pxx Customized

FILTER ELEMENT

Element series and size MFXX020 Filter element with private spigot	Configuration example 2: MFXX020 1 A10 H B E P01
	Configuration example 1: MFXX020 3 A03 W B 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
Element Δp	Filter media
N 10 bar	Axx Mxx Pxx
H 10 bar	• • •
W 10 bar, compatible with fluids HFA, HFB and HFC	• • •
	Seals B NBR V FPM
	Bypass valve E 3 bar B 1.75 bar
	Execution P01 MP Filtri standard Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
TE Extension tube	248		
DPT Dipstick	249		



Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1: MPTX110 1 S A G1 0 A06 E P01								
MPTX110 Filter element with private spigot			Configuration example 2: MPTX110 3 P V G4 1 M25 B P01								
Length											
1 2 3 4											
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						
A NBR			•	•	•						
V FPM			•	•	•						
W NBR head anodized			•	•		filter element compatible with fluids HFA-HFB-HFC					
Z FPM head anodized			•	•							
Main Connections		Aux size 1	Aux size 2	Main Connections		Aux size 1	Aux size 2				
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											
Aux connection - see previous table											
0 Not machined 1 Aux size 1 2 Aux size 2											
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								
						Bypass valve		Execution			
						E 3 bar		P01 MP Filtri standard			
						B 1.75 bar		Pxx Customized			

FILTER ELEMENT

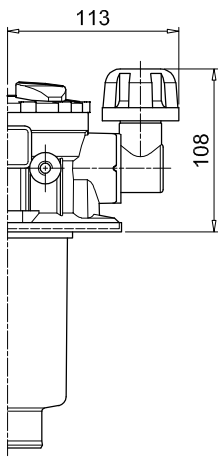
Element series and size			Configuration example 1: MFx100 1 A06 H B E P01								
MFx100 Filter element with private spigot			Configuration example 2: MFx100 3 M25 N V P01								
Element length											
1 2 3 4											
Filtration rating (filter media)											
A03 Inorganic microfiber 3 µm			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								
			Axx	Mxx	Pxx						
N 10 bar			•	•	•						
H 10 bar			•								
W 10 bar, compatible with fluids HFA, HFB and HFC			•	•							
			Seals		Bypass valve		Execution				
			B NBR		E 3 bar		P01 MP Filtri standard				
			V FPM		B 1.75 bar		Pxx Customized				

ACCESSORIES

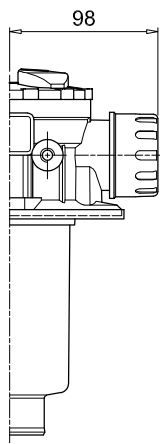
Indicators		page			page
BVA Axial pressure gauge	240		BEA Electrical pressure indicator	239	
BVR Radial pressure gauge	240		BEM Electrical pressure indicator	239	
BVP Visual pressure indicator with automatic reset	241		BLA Electrical / visual pressure indicator	239-240	
BVQ Visual pressure indicator with manual reset	241				
Additional features		page			page
TE Extension tube	248		DPT Dipstick	249	
DFS Diffuser with fast lock connection	249				

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

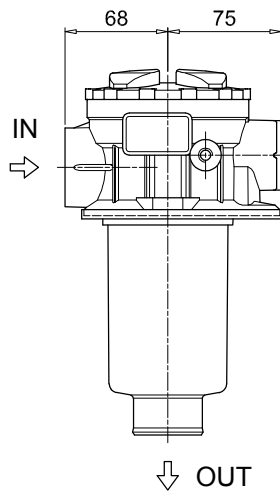
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



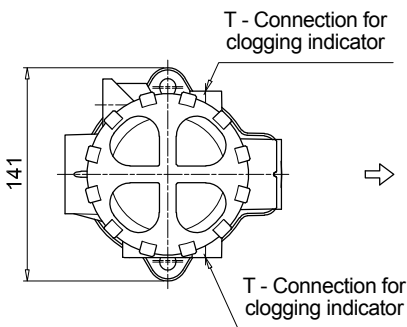
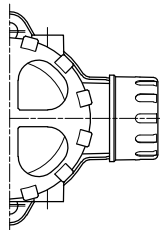
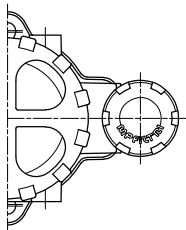
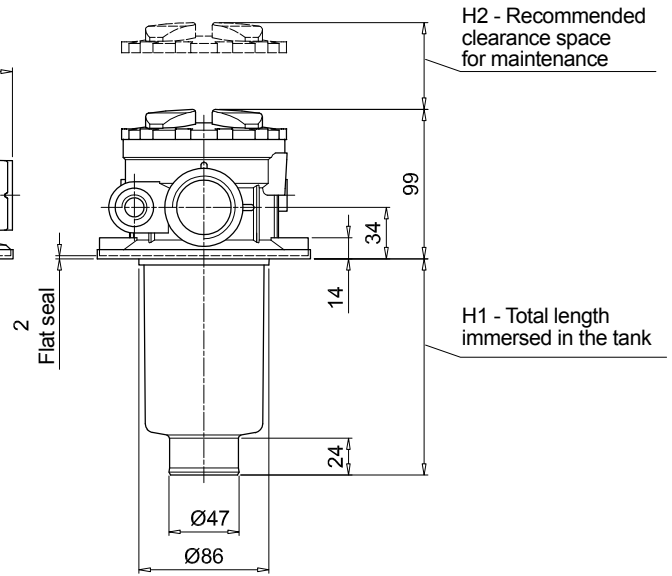
Versions D/P



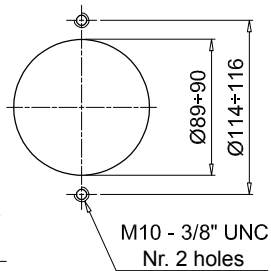
Version C



Version S



Holes on the tank



Designation & Ordering code

COMPLETE FILTER

Series and size MPTX114 Filter element with private spigot	Configuration example 1: MPTX114 4 S A G3 A10 E P01
	Configuration example 2: MPTX114 3 C W G6 A03 B P01
Length 1 2 3 4	
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
A NBR	Axx Mxx Pxx
V FPM	• • •
W NBR head anodized filter element compatible with fluids HFA-HFB-HFC	• •
Z FPM head anodized	• •
Connections	
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	
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
	Bypass valve E 3 bar B 1.75 bar
	Execution P01 MP Filtri standard Pxx Customized

FILTER ELEMENT

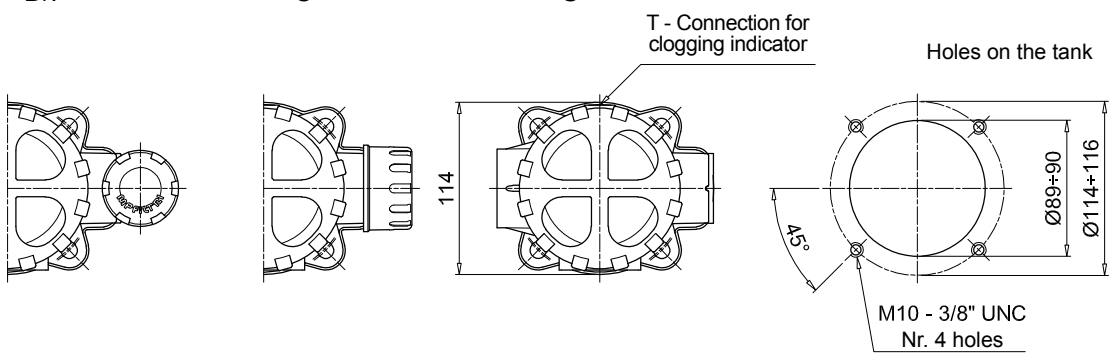
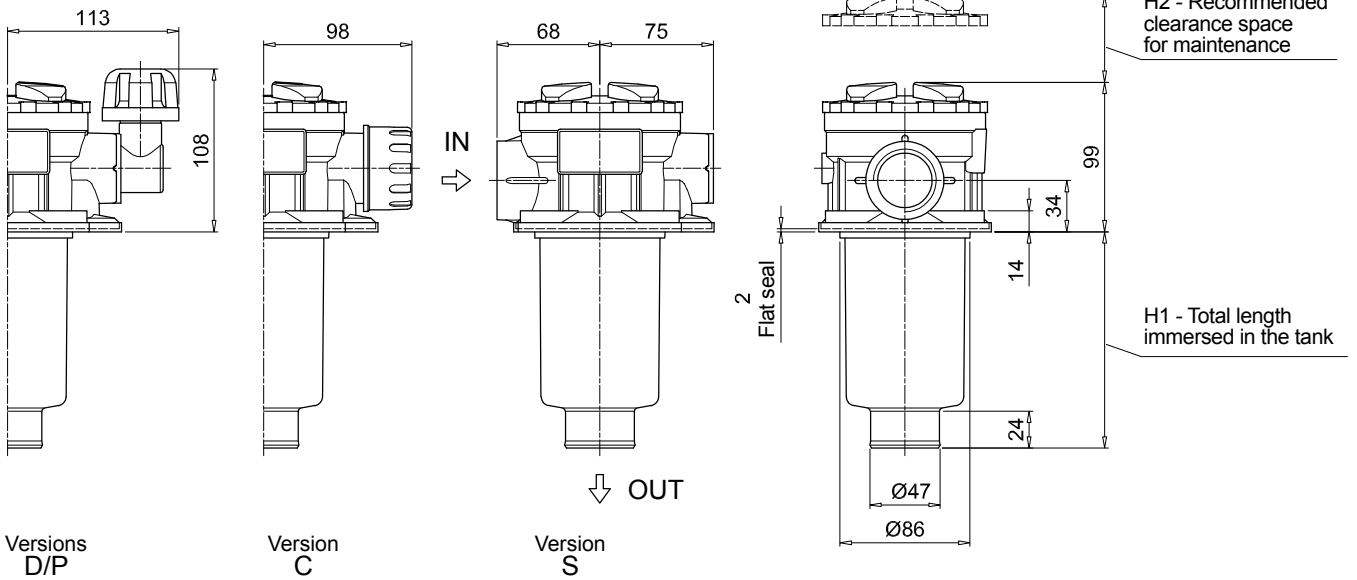
Element series and size MFx100 Filter element with private spigot	Configuration example 2: MFx100 4 A10 H B E P01
	Configuration example 1: MFx100 3 A03 W B P01
Element length 1 2 3 4	
Filtration rating (filter media)	
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 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	• •
W 10 bar, compatible with fluids HFA, HFB and HFC	• •
	Seals B NBR V FPM
	Bypass valve E 3 bar B 1.75 bar
	Execution P01 MP Filtri standard Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	DPT Dipstick	249
DFS Diffuser with fast lock connection	249		

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



Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1: MPTX116 1 S A G1 M90 E P01								
MPTX116 Filter element with private spigot	Configuration example 2: MPTX116 2 S Z G9 A03 B P01								
Length	1 2 3 4								
Air breather	S Without air breather								
Seals and treatments	Filtration rating								
	Axx	Mxx	Pxx						
A NBR	•	•	•						
V FPM	•	•	•						
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC					
Z FPM head anodized	•	•							
Flat seal on the head on request									
Connections									
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									
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								
	Bypass valve			Execution					
	E 3 bar			P01 MP Filtri standard					
	B 1.75 bar			Pxx Customized					

FILTER ELEMENT

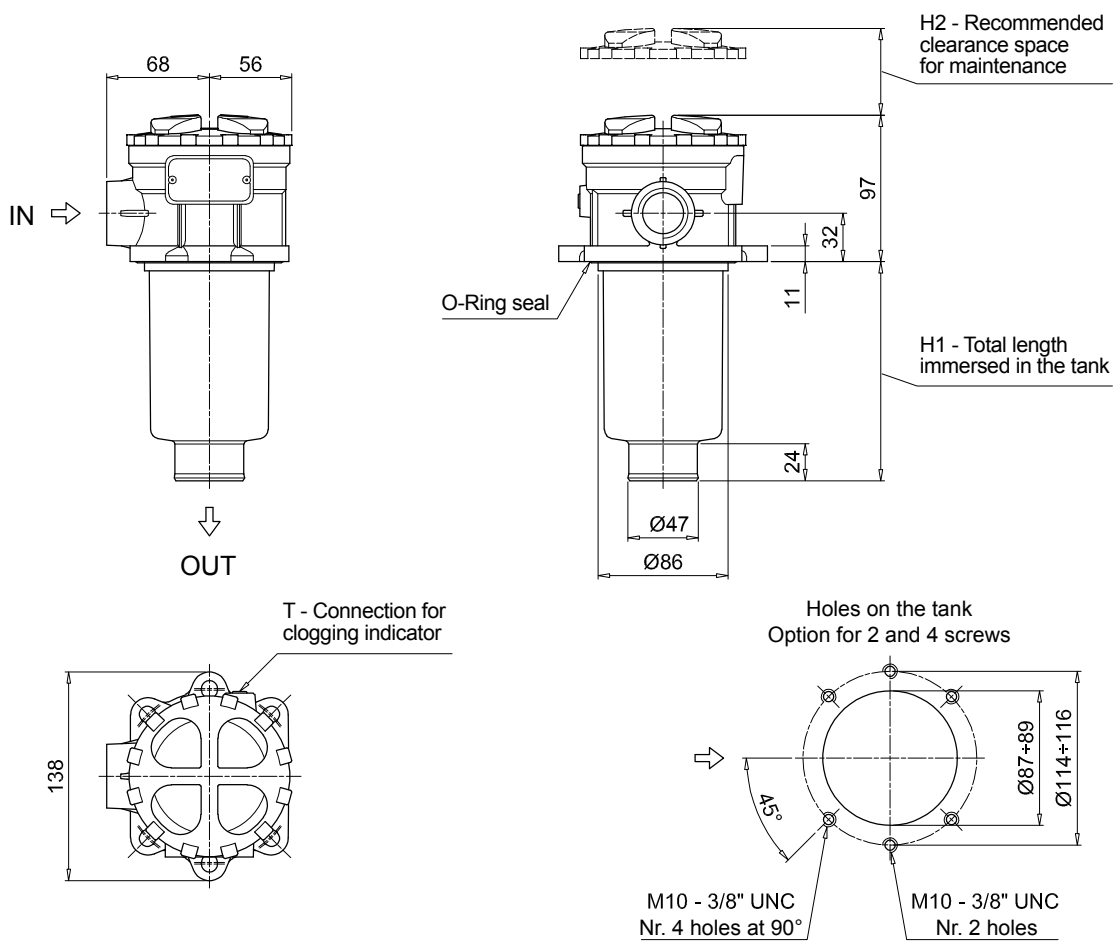
Element series and size	Configuration example 2: MFX100 1 M90 N B E P01							
MFX100 Filter element with private spigot	Configuration example 1: MFX100 2 A03 W V P01							
Element length	1 2 3 4							
Filtration rating (filter media)								
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm							
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							
	Axx	Mxx	Pxx					
N 10 bar		•	•					
H 10 bar	•							
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•						
	Seals			Bypass valve		Execution		
	B NBR			E 3 bar		P01 MP Filtri standard		
	V FPM			B 1.75 bar		Pxx Customized		

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	DPT Dipstick	249
DFS Diffuser with fast lock connection	249		

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	Configuration example 1:	MPTX120	1	A	G1	0	A06	E	P01
MPTX120 Filter element with private spigot	Configuration example 2:	MPTX120	3	V	G4	1	M25	B	P01

Length	
1 2 3 4	

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

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

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:	MFx100	1	A06	H	B	E	P01
MFx100 Filter element with private spigot	Configuration example 2:	MFx100	3	M25	N	V		P01

Element length	
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		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

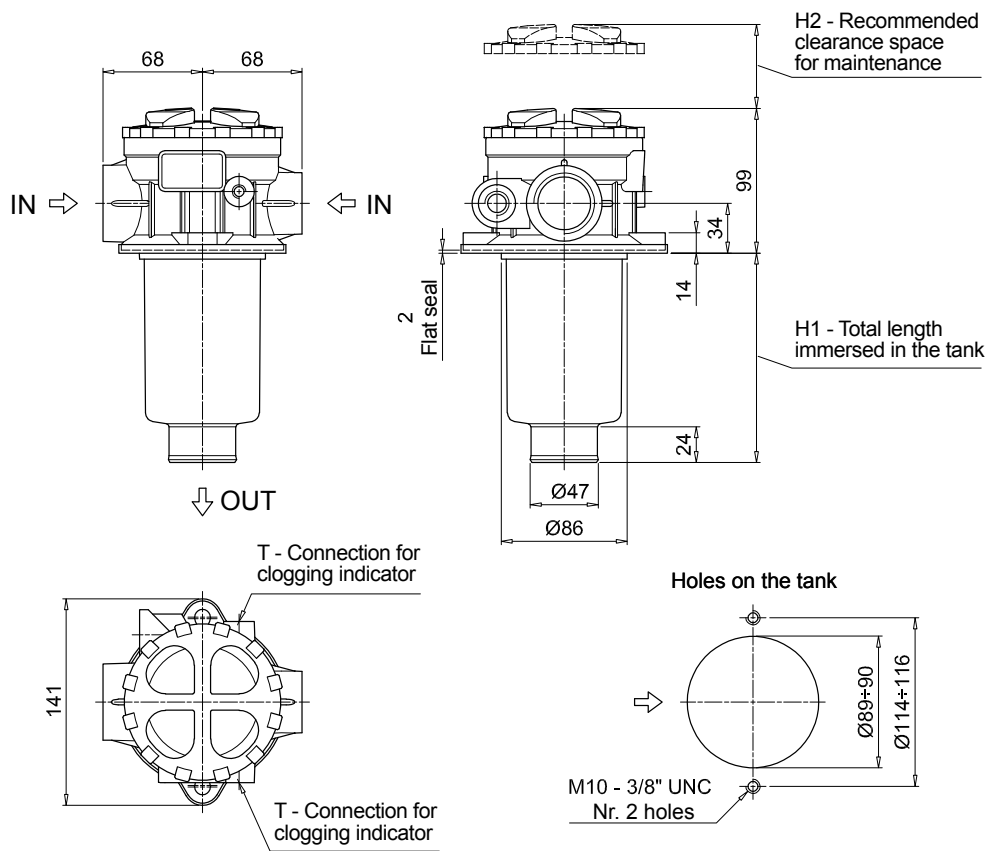
Seals	Bypass valve	Execution
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	1.75 bar	Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	DPT Dipstick	249
DFS Diffuser with fast lock connection	249		

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

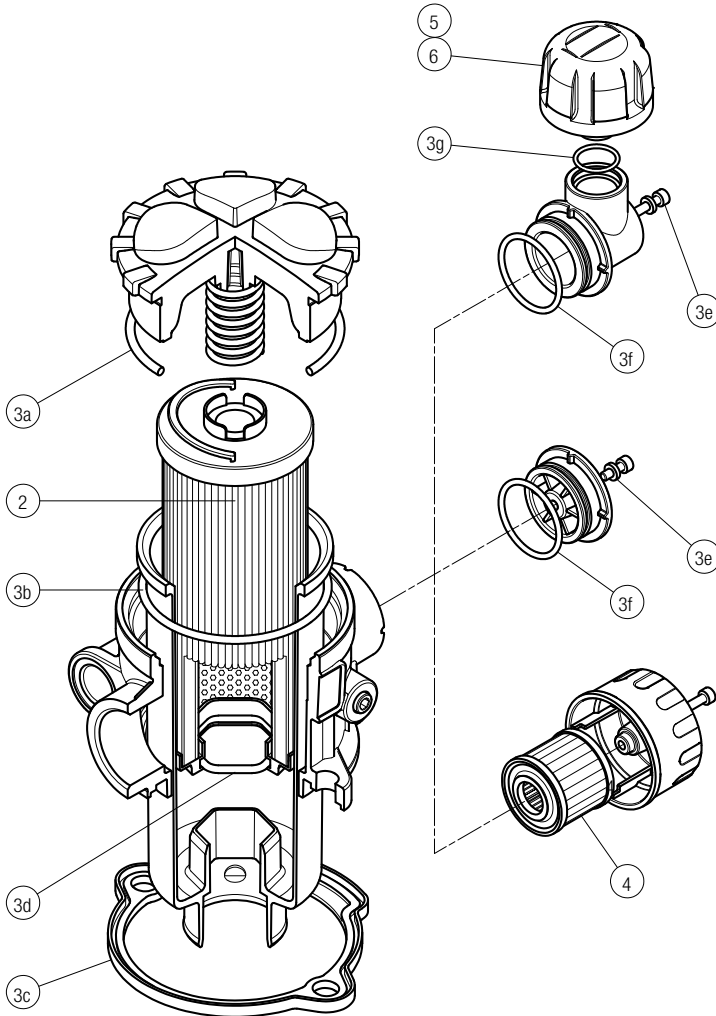
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



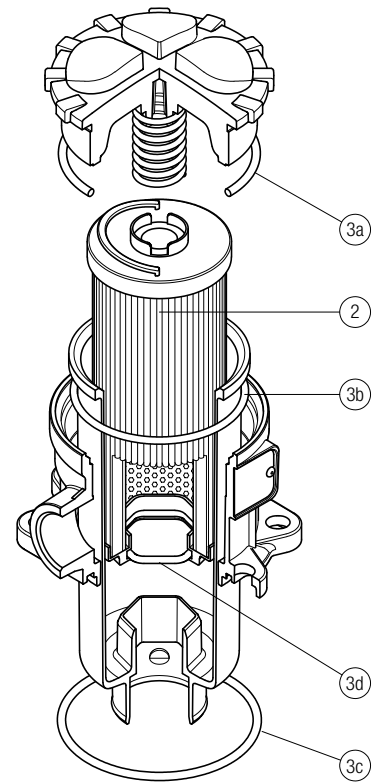
MPTX SPARE PARTS

Order number for spare parts

MPTX 025 - 027 - 110



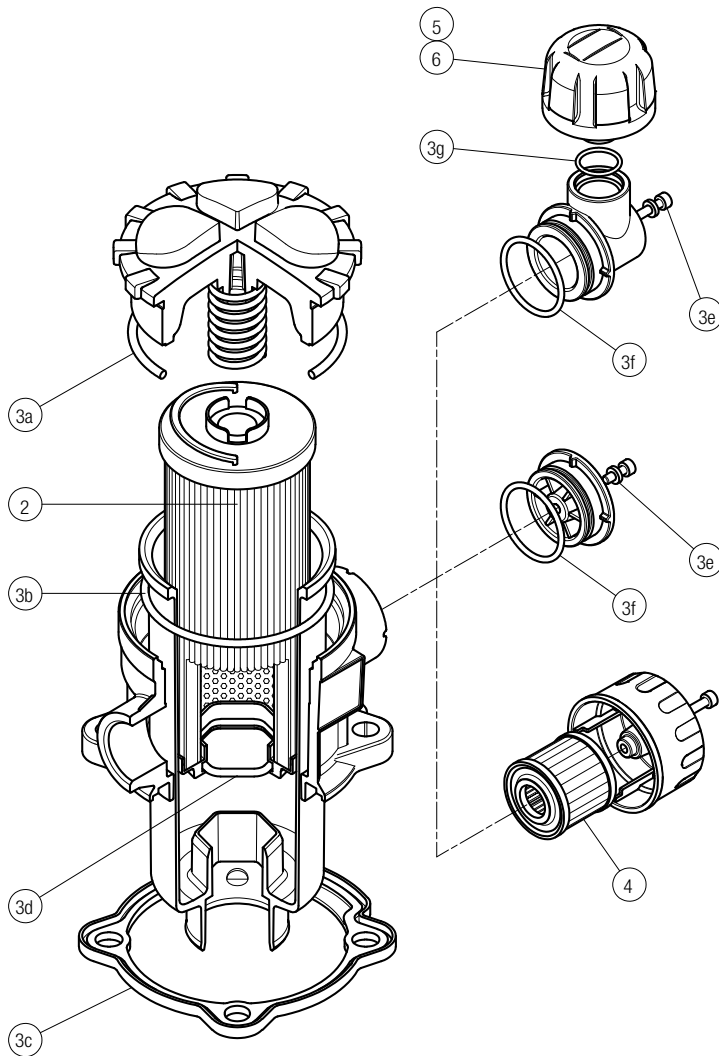
MPTX 116



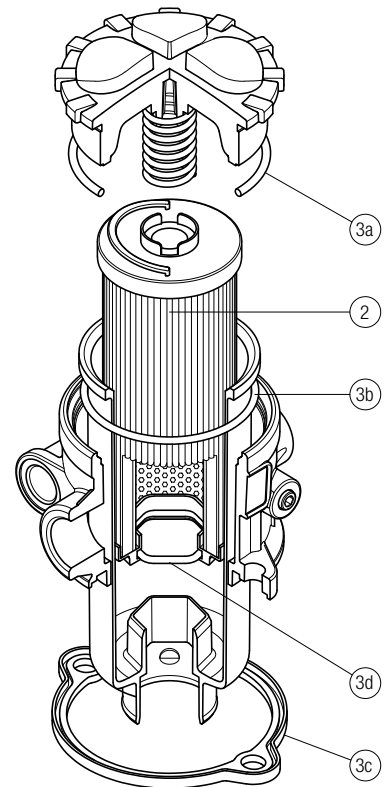
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		
		NBR	FPM	C	D	P
MPTX 025	See order table	02050701	02050702	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPTX 027		02050703	02050704	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPTX 110		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
MPTX 116	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:		
MPTX 114	See order table	NBR	FPM	C	D	P
		02050707	02050708	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µmm SAP50G3L03A1P01

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

MFBX series

BOWL ASSEMBLY

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 500 l/min



Return filter Bowl assembly

Maximum working pressure up to 800 kPa (8 bar)

Flow rate up to 500 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
Nylon: MFBX 020-030-100
Aluminium: MFBX 180-190

- Bowl: Nylon

Filter element materials

- Caps: Nylon
- Spring: Spring steel

Bypass valve

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

Δp 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 [dm³]

Filter series	Weights [kg]					Volumes [dm ³]				
	Length	1	2	3	4	Length	1	2	3	4
MFBX 020		0.25	0.35	0.40	-		0.10	0.15	0.20	-
MFBX 030		0.25	-	-	-		0.15	-	-	-
MFBX 100		0.50	0.60	0.75	0.95		0.35	0.50	0.80	1.10
MFBX 180		1.60	2.40	-	-		1.50	2.90	-	-
MFBX 190		-	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
MFBX 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
MFBX 030	1	7	10	24	29	47	84	60	66
MFBX 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
MFBX 180	1	127	148	235	243	278	441	285	299
	2	231	262	358	382	388	472	404	412
MFBX 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.

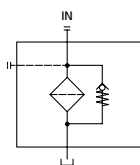
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style 1 connection
MFBX 020	•
MFBX 030	•
MFBX 100	•
MFBX 180	•
MFBX 190	•



Designation & Ordering code

COMPLETE FILTER

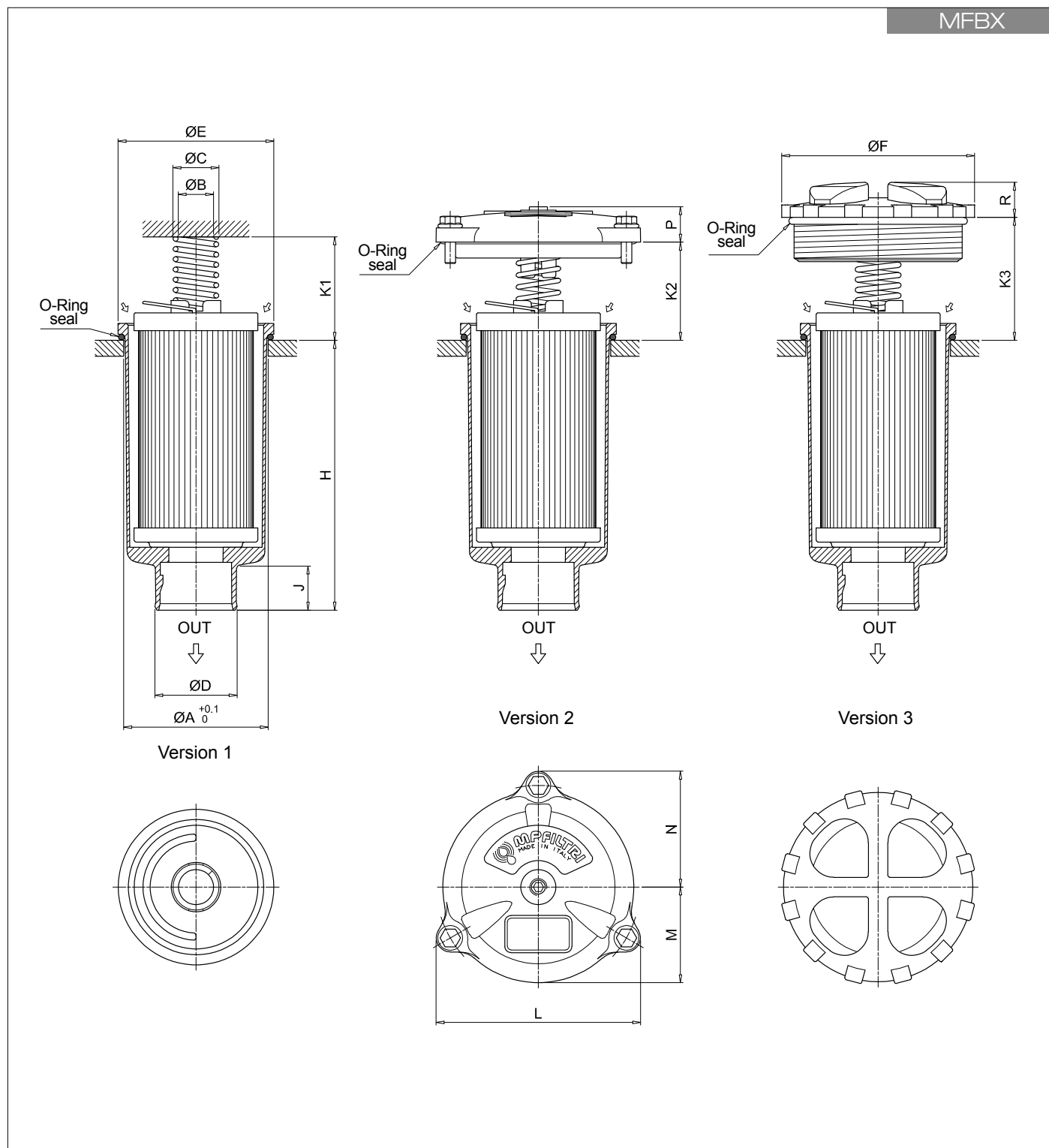
Series and size						Configuration example 1: MFBX100 1 A 2 A10 H E P01							
MFBX020 MFBX030 MFBX100 MFBX180 MFBX190						Configuration example 2: MFBX180 2 V 1 M25 N B P01							
Filter element with private spigot													
Length	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190								
1	•	•	•	•									
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													
N 10 bar													
H 10 bar													
W 10 bar, compatible with fluids HFA, HFB and HFC													
										Bypass valve			
										E 3 bar			
										B 1.75 bar			
										Execution			
										P01 MP Filtri standard			
										Pxx Customized			

FILTER ELEMENT

Element series and size						Configuration example 1: MFX180 2 M25 H V P01							
MFX020 MFX030 MFX100 MFX180						Configuration example 2: MFX100 1 A10 N B E P01							
Filter element with private spigot													
Element length	MFX020	MFX030	MFX100	MFX180	MFX190								
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													
N 10 bar													
H 10 bar													
										Seals			
										B NBR			
										V FPM			
										Bypass valve			
										E 3 bar			
										 1.75 bar			
										Execution			
										P01 MP Filtri standard			
										Pxx Customized			

ACCESSORIES

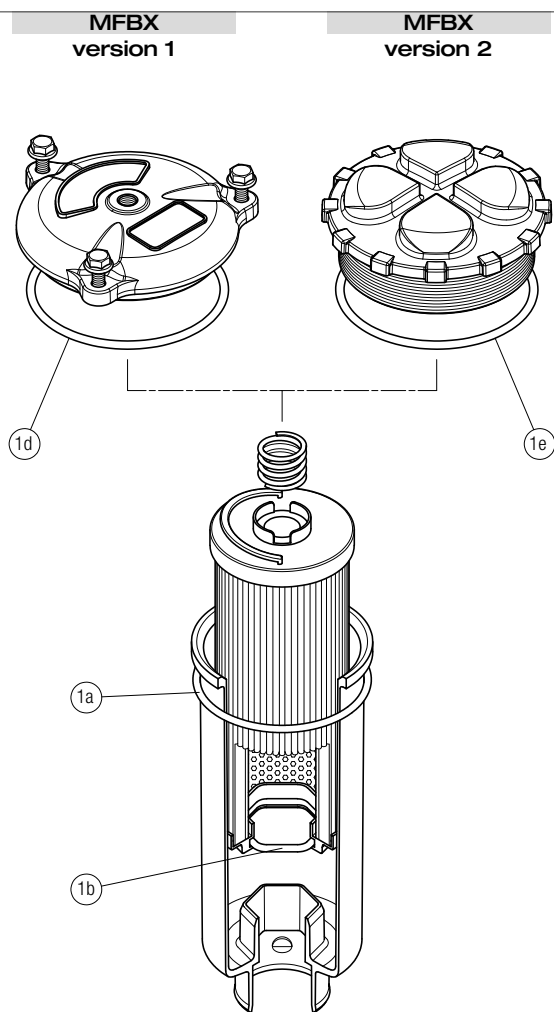
Additional features											page	
						MFBX020	MFBX030	MFBX100	MFBX180	MFBX190		
TE	Extension tube					•	•	•	•	•		248
DFS	Diffuser with fast lock connection							•				249



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]
020	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
030	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
100	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
180	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	-
190	2	112.5	26	33.5	50	121	-	454	38	58	69	-	159	76	95	21	-

MFBX SPARE PARTS

Order number for spare parts



Q.ty: 1 pc.
1 (1a ÷ 1d)

Filter series	Seal Kit code number	
	NBR	FPM
MFBX 020	02050713	02050714
MFBX 030	02050715	02050716
MFBX 100	02050717	02050718
MFBX 180-190	02050719	02050720

MPF series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 750 l/min



Description

Technical data

Return filter

Maximum working pressure up to 800 kPa (8 bar)

Flow rate up to 750 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 750 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 meet any reservoir surface flatness and roughness
- O-ring or Flat seal, to meet any reservoir surface flatness and roughness
- 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
Nylon: MPF 020-030-100-104-110
Aluminium: MPF 181-182-184-191-192-194-400-410-450-451-750
- Bowl: Nylon

Bypass valve

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

Δp 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

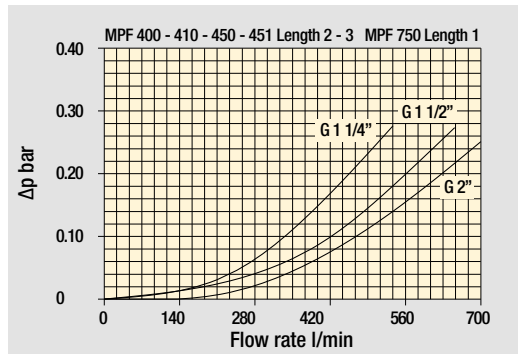
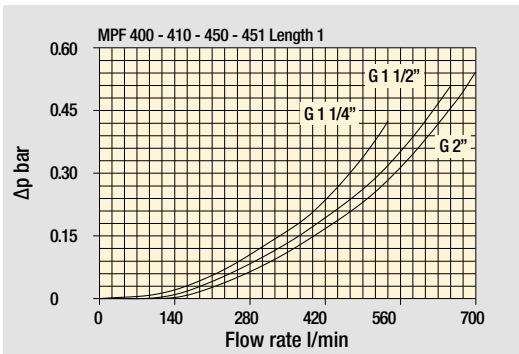
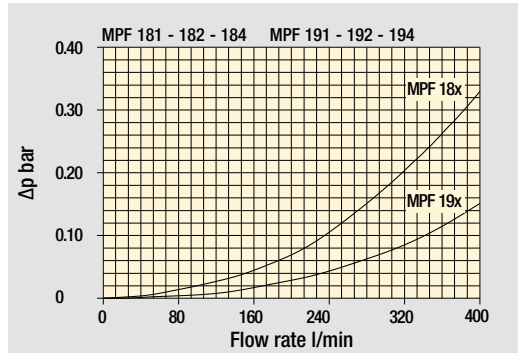
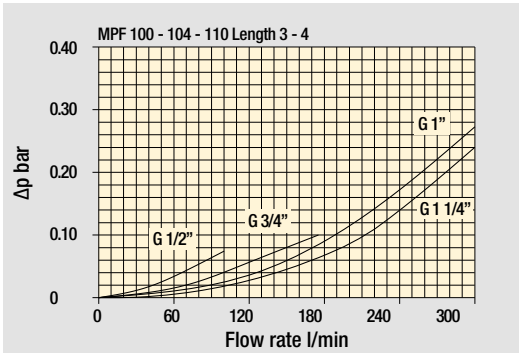
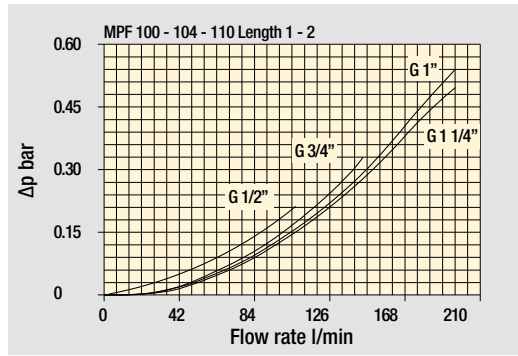
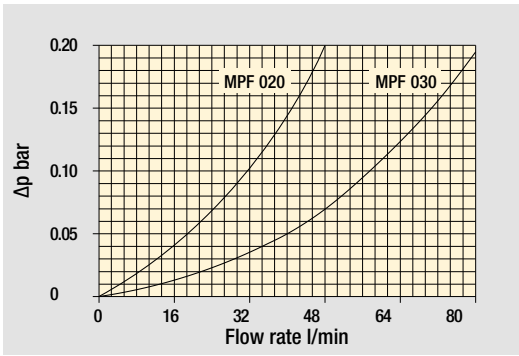
MPF filters are provided for vertical mounting



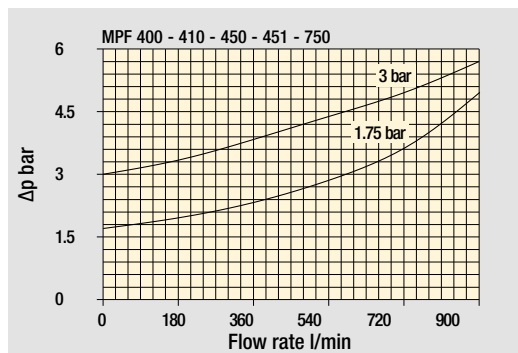
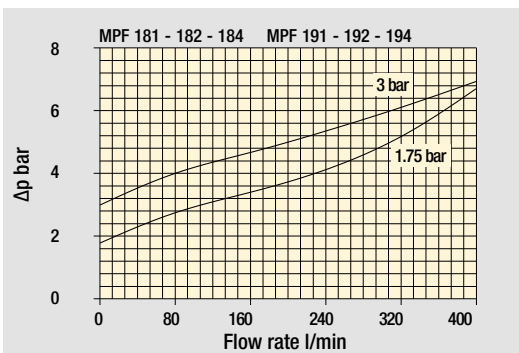
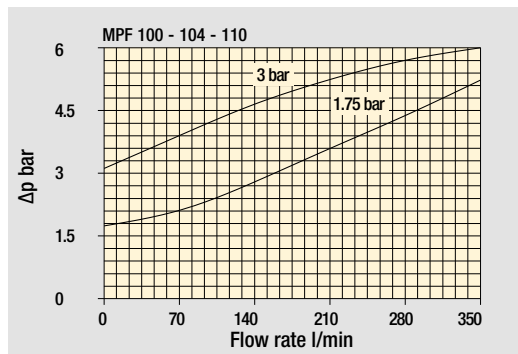
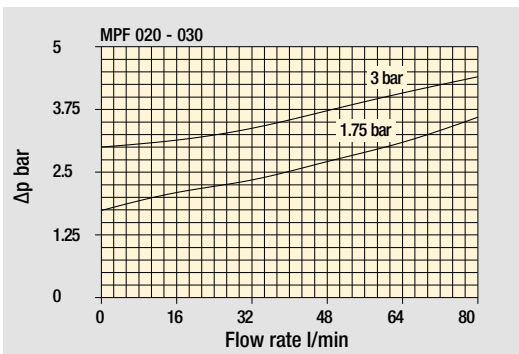
Weights [kg] and volumes [dm³]

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

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
 Δp varies proportionally with density.

MPF GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MPF 020	1	7	10	23	28	42	59	51	54
MPF 030	1	7	10	24	29	47	84	60	66
MPF 100-104-110	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
MPF 181-182-184	1	127	148	235	243	278	441	285	299
	2	231	262	358	382	388	472	404	412
MPF 191-192-194	2	261	305	489	528	546	696	583	598
MPF 400	1	150	171	294	304	350	585	370	390
	2	237	252	454	462	589	868	619	645
	3	248	288	553	609	621	885	680	703
MPF 410	1	146	167	277	285	325	512	341	357
	2	226	239	396	402	485	644	503	519
	3	236	269	462	497	505	653	539	553
MPF 450-451	1	150	171	294	304	350	585	370	390
	2	237	252	454	462	589	868	619	645
	3	248	288	553	609	621	885	680	703
MPF 750	1	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.

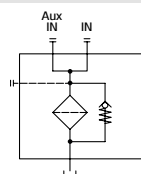
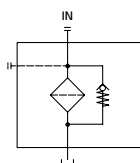
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols

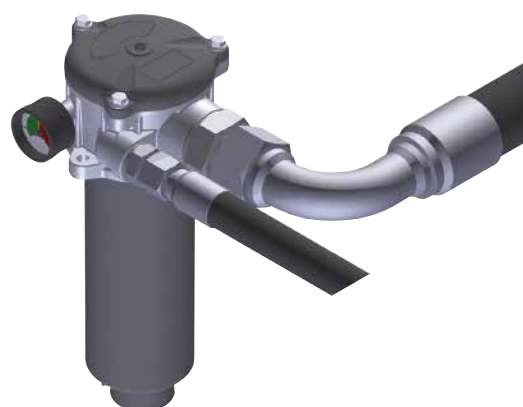
Filter series	Style 1 connection	Style 2 connections
MPF 020	•	
MPF 030	•	
MPF 100	•	
MPF 104	•	
MPF 110		•
MPF 181	•	
MPF 182		•
MPF 184	•	•
MPF 191	•	
MPF 192	•	
MPF 194	•	•
MPF 400	•	
MPF 410		•
MPF 450	•	
MPF 451		•
MPF 750	•	



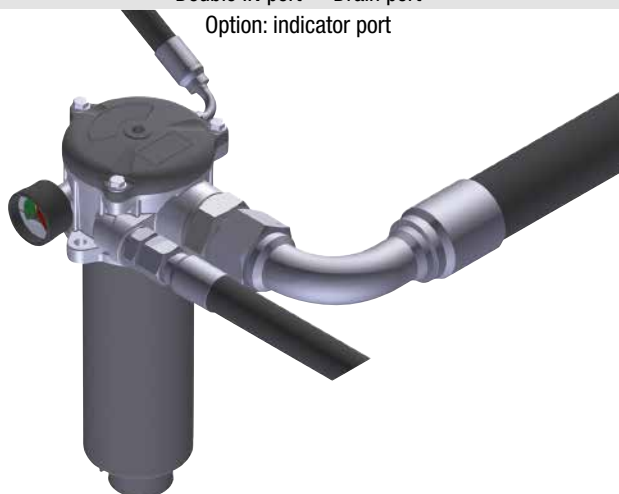
Standard - Single IN port



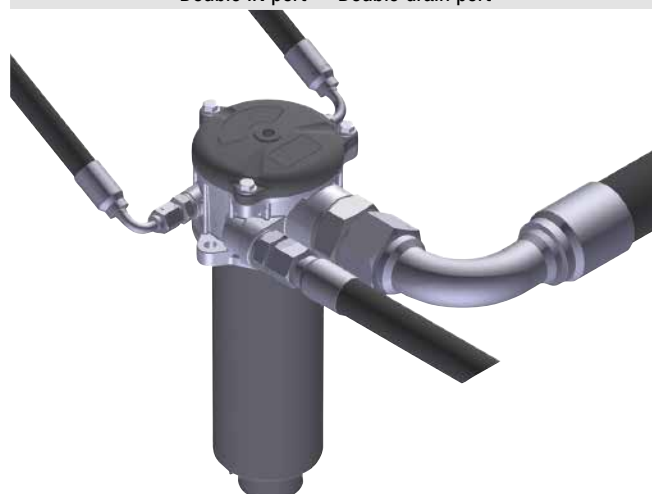
Double IN port
Option: double indicator port



Double IN port - Drain port
Option: indicator port



Double IN port - Double drain port



MPF MPF020 - MPF030

Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1:	MPF020	1	A	P1	A10	H	E	P01
MPF020 MPF030 Filter element with standard spigot	Configuration example 2:	MPF030	1	V	G1	M25	N	B	P01
Length									
1									
Seals and treatments									
A NBR									
V FPM									
W NBR head anodized									
Z FPM head anodized									
Connections	Size 20	Size 30							
P1 Hose barb ø12	•								
G1 G 1/2"		•							
G4 1/2" NPT		•							
G7 SAE 8 - 3/4" - 16 UNF		•							
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									
M60 Wire mesh 60 µm									
M90 Wire mesh 90 µm									
P10 Resin impregnated paper 10 µm									
P25 Resin impregnated paper 25 µm									
Element Δp	Filter media								
	Axx	Mxx	Pxx						
N 10 bar		•	•						
H 10 bar	•								
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•							
				Bypass valve	Execution				
				E 3 bar	P01 MP Filtri standard				
				B 1.75 bar	Pxx Customized				

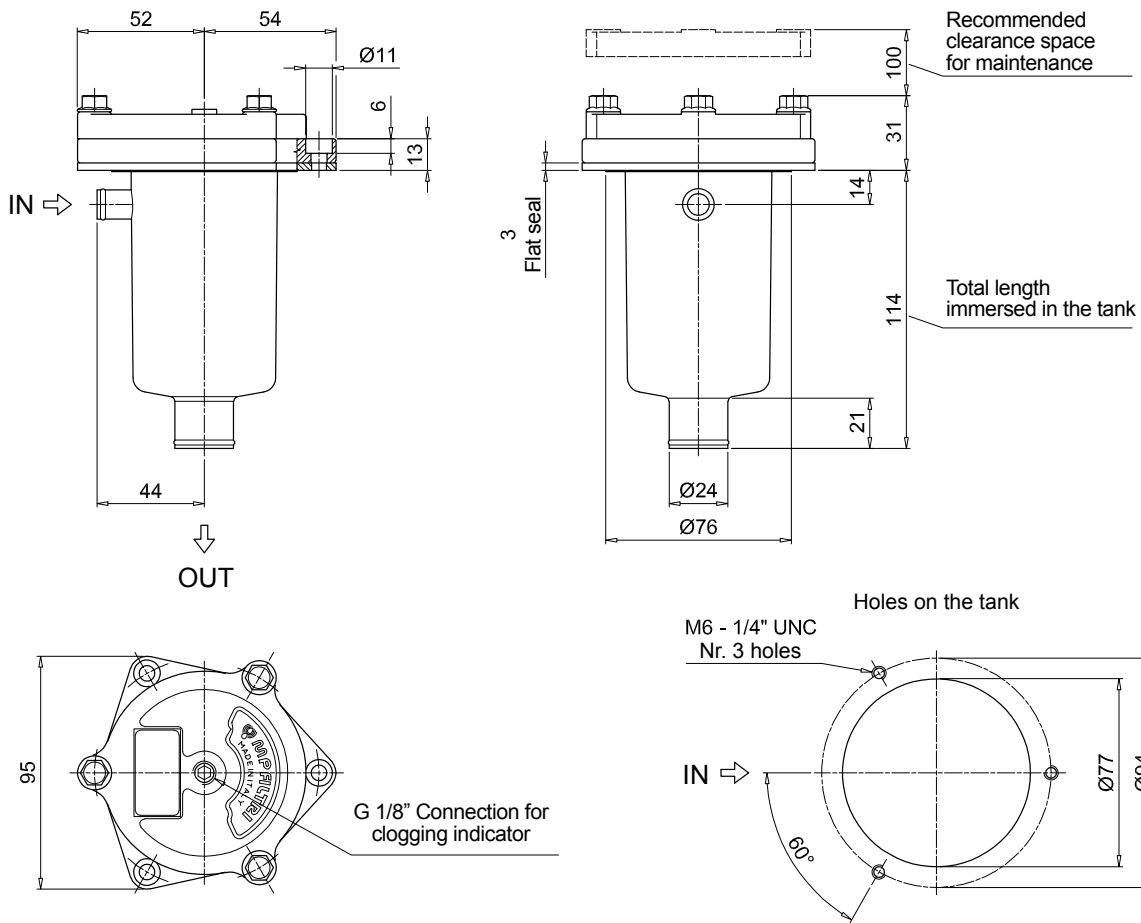
FILTER ELEMENT

Element series and size	Configuration example 1:	MF030	1	A10	H	B	E	P01
MF030 Filter element with standard spigot	Configuration example 2:	MF030	1	M25	N	V		P01
Element length								
1								
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								
M60 Wire mesh 60 µm								
M90 Wire mesh 90 µm								
P10 Resin impregnated paper 10 µm								
P25 Resin impregnated paper 25 µm								
Element Δp	Filter media							
	Axx	Mxx	Pxx					
N 10 bar		•	•					
H 10 bar	•							
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•						
				Seals	Bypass valve	Execution		
				B NBR	E 3 bar	P01 MP Filtri standard		
				V FPM	1.75 bar	Pxx Customized		

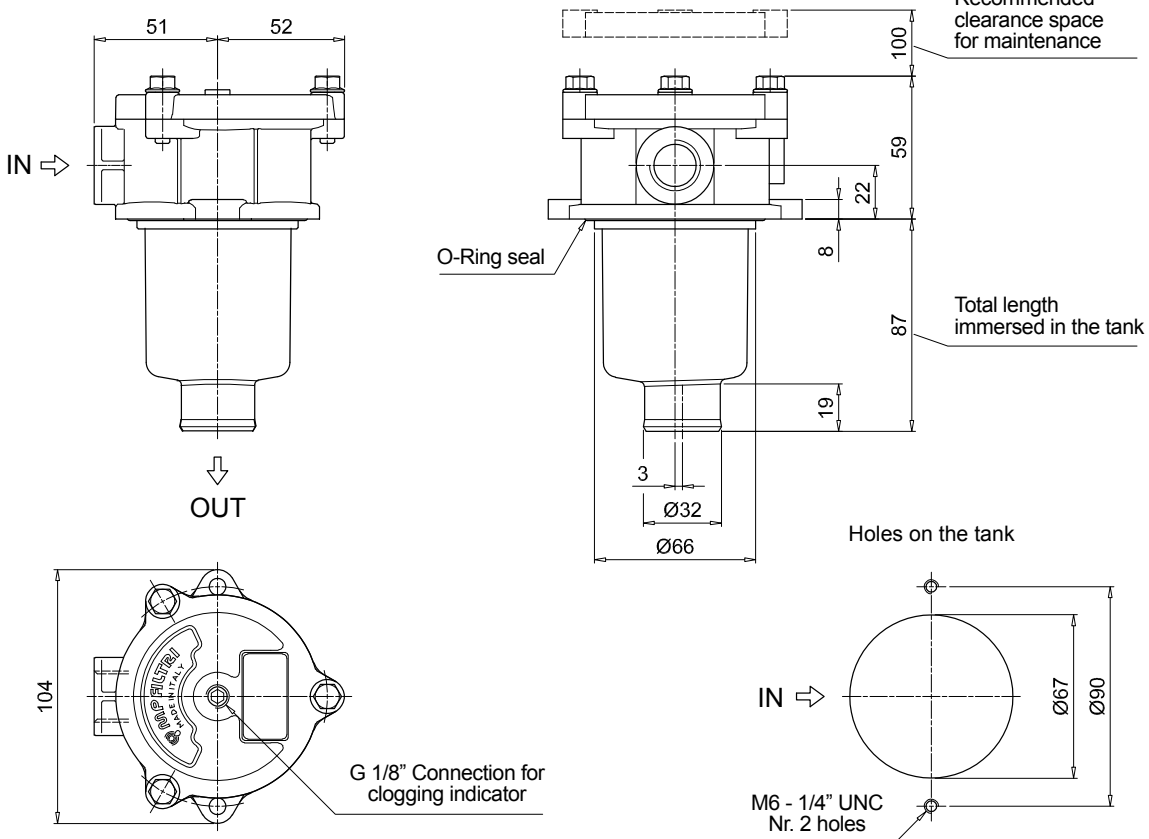
ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
TE Extension tube	248		
T5 Filler plug M30x1.5	249		

MPF020



MPF030



MPF MPF100 - MPF104

Designation & Ordering code

COMPLETE FILTER

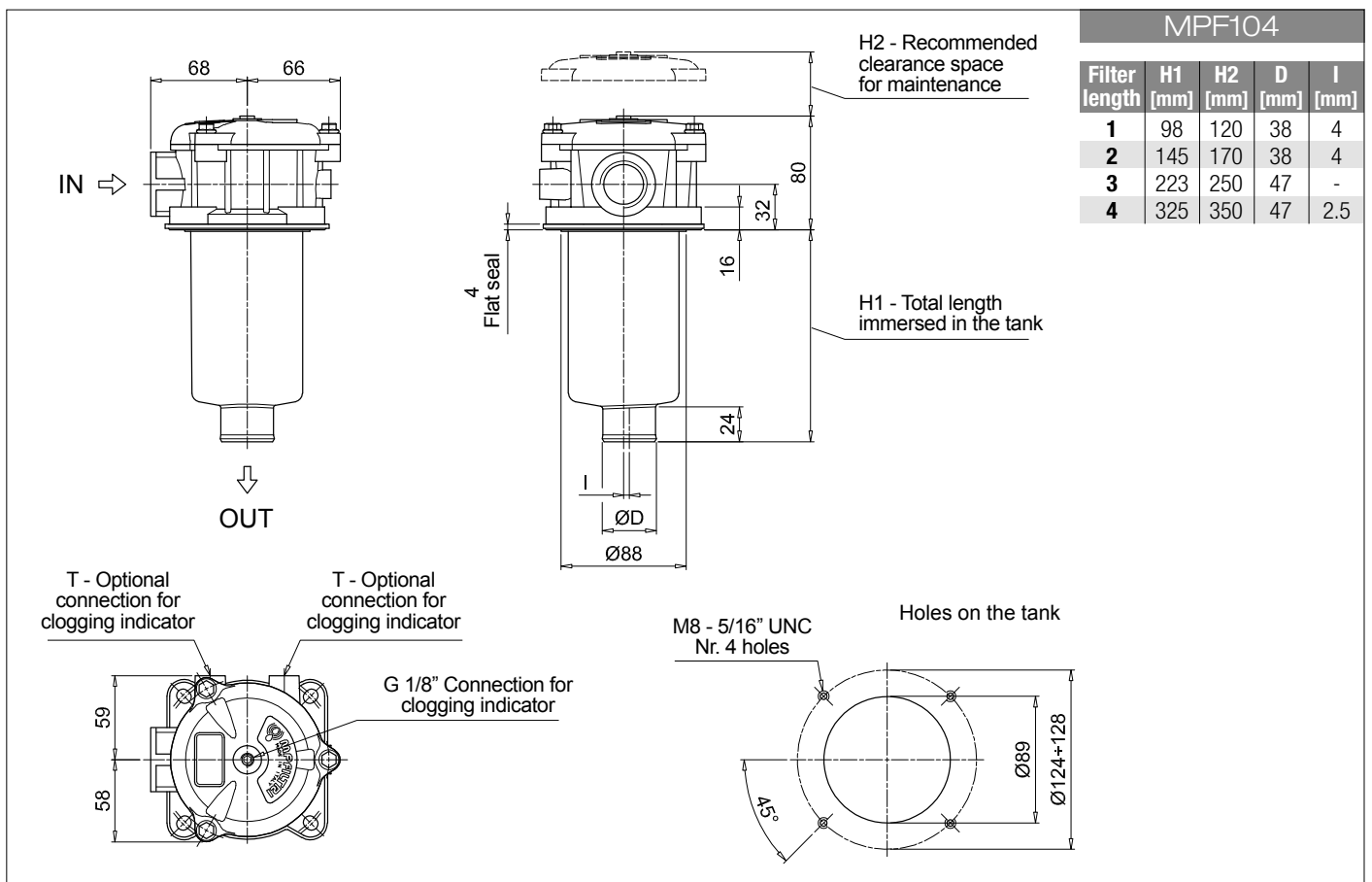
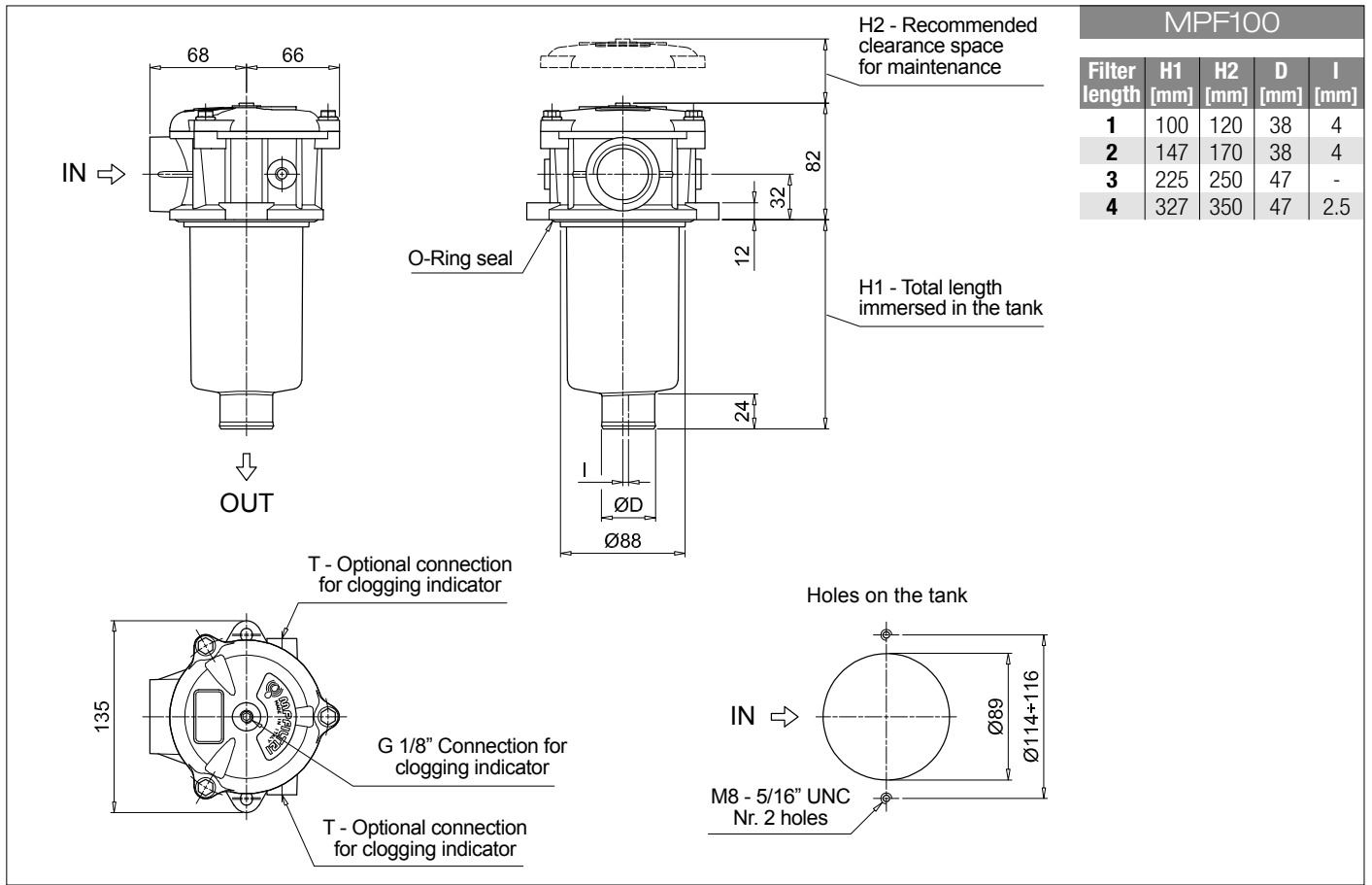
Series and size		Configuration example 1: MPF100 2 W G3 A06 W B P01									
MPF100 MPF104 Filter element with standard spigot		Configuration example 2: MPF104 4 A G8 P10 N E P01									
Length											
1 2 3 4											
Seals and treatments											
A NBR											
V FPM											
W NBR head anodized											
Z FPM head anodized											
Connections		Size 100		Size 104		Connections		Size 100		Size 104	
G1 G 1/2"		•		•		G7 SAE 8 - 3/4" - 16 UNF		•		•	
G2 G 3/4"		•		•		G8 SAE 12 - 1 1/16" - 12 UN		•		•	
G3 G 1"		•		•		G9 SAE 16 - 1 5/16" - 12 UN		•		•	
G4 1/2" NPT		•		•		G10 G 1 1/4"		•			
G5 3/4" NPT		•		•		G11 1 1/4" NPT		•			
G6 1" NPT		•		•		G12 SAE 20 - 1 5/8" - 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											
M60 Wire mesh 60 µm											
M90 Wire mesh 90 µm											
P10 Resin impregnated paper 10 µm											
P25 Resin impregnated paper 25 µm											
Element Δp				Filter media							
		Axx Mxx Pxx									
N 10 bar				•		•					
H 10 bar				•							
W 10 bar, compatible with fluids HFA, HFB and HFC				•		•					
								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 2 A06 W B P01									
MF100 Filter element with standard spigot		Configuration example 2: MF100 4 P10 N B E P01									
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											
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											
Element Δp				Filter media							
		Axx Mxx Pxx									
N 10 bar				•		•					
H 10 bar				•							
W 10 bar, compatible with fluids HFA, HFB and HFC				•		•					
								Seals		Bypass valve	
								B NBR		E 3 bar	
								V FPM		1.75 bar	
										Execution	
										P01 MP Filtri standard	
										Pxx Customized	

ACCESSORIES

Indicators		page		page	
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239		
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239		
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240		
BVQ Visual pressure indicator with manual reset	241				
Additional features		page		page	
TE Extension tube	248	T5 Filler plug M30x1.5	249		
DFS Diffuser with fast lock connection	249	DPT Dipstick	249		



Designation & Ordering code

COMPLETE FILTER

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

Length	1	2	3	4
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Seals and treatments	A NBR	W NBR head anodized
	V FPM	Z FPM head anodized

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

Aux connection - see previous table	1 Aux size 1	2 Aux size 2
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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		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

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	2	A16	H	B	E	P01
MF100 Filter element with standard spigot	Configuration example 2:	MF100	4	M60	N	V		P01

Element length	1	2	3	4
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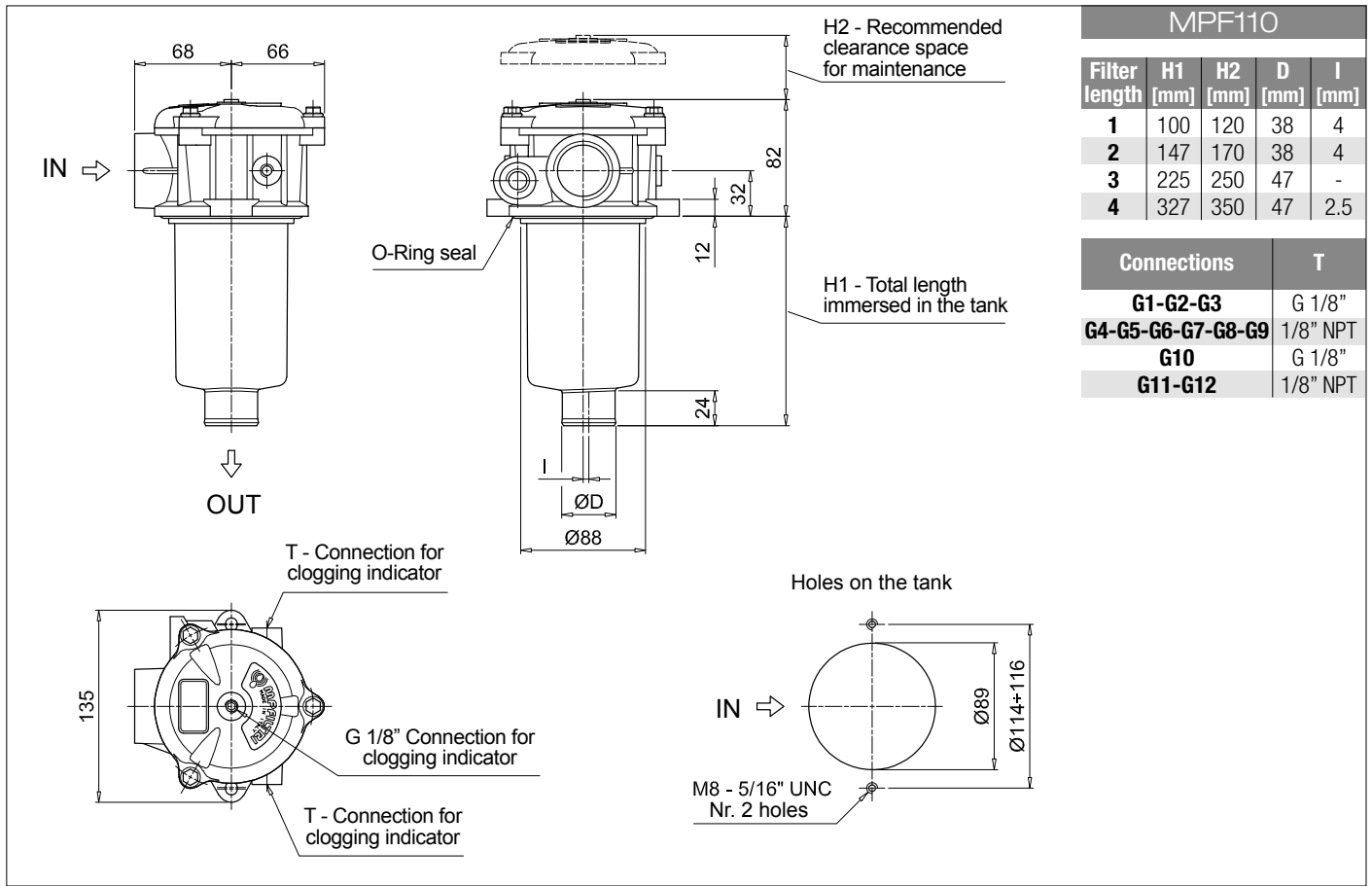
Filtration rating (filter media)	A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
	A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm
	A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm
	A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm
	A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm

Element Δp	Filter media		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals	Bypass valve	Execution
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	B 1.75 bar	Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	T5 Filler plug M30x1.5	249
DFS Diffuser with fast lock connection	249	DPT Dipstick	249



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

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

MPF MPF181 - MPF191

Designation & Ordering code

COMPLETE FILTER

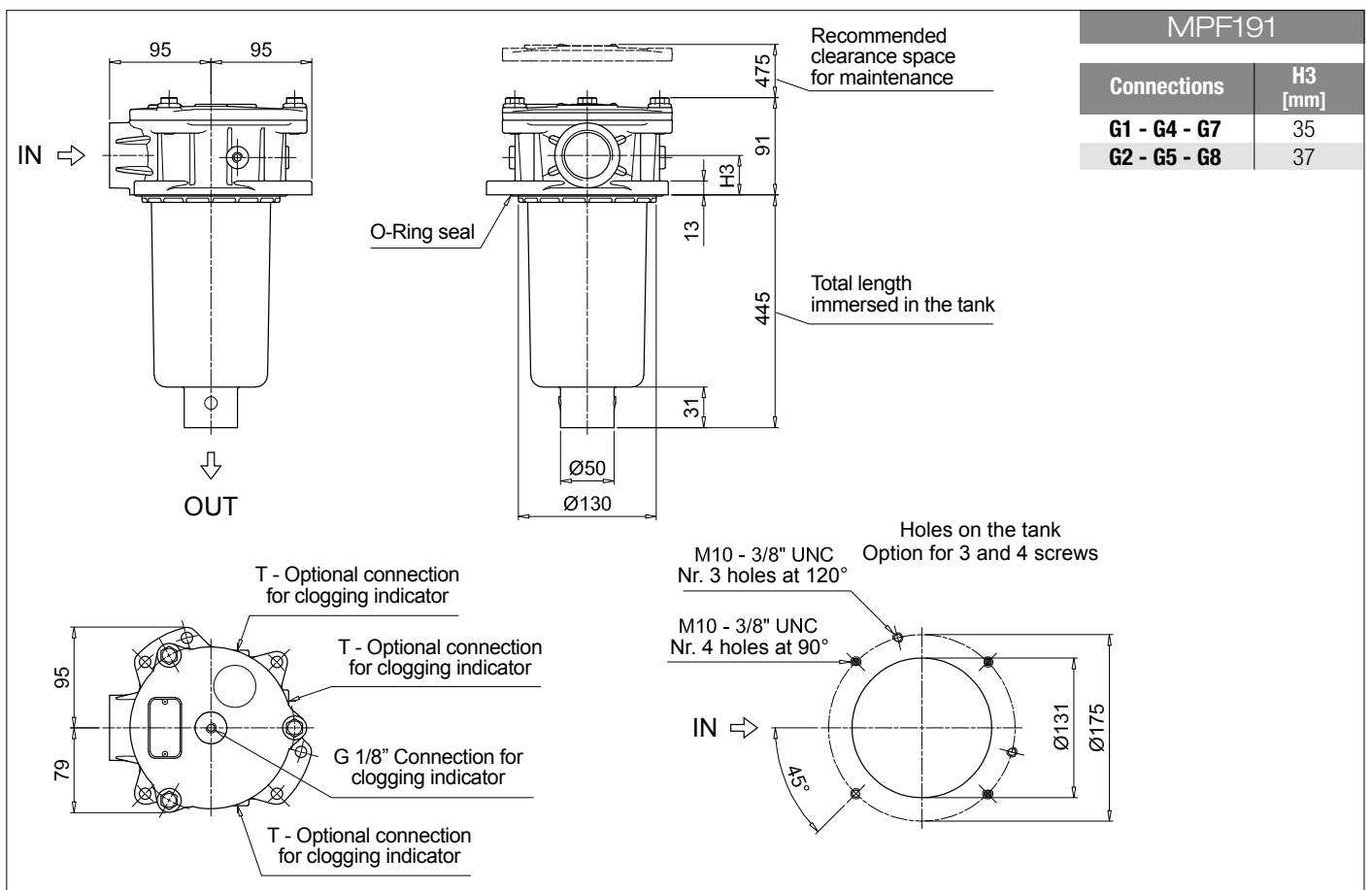
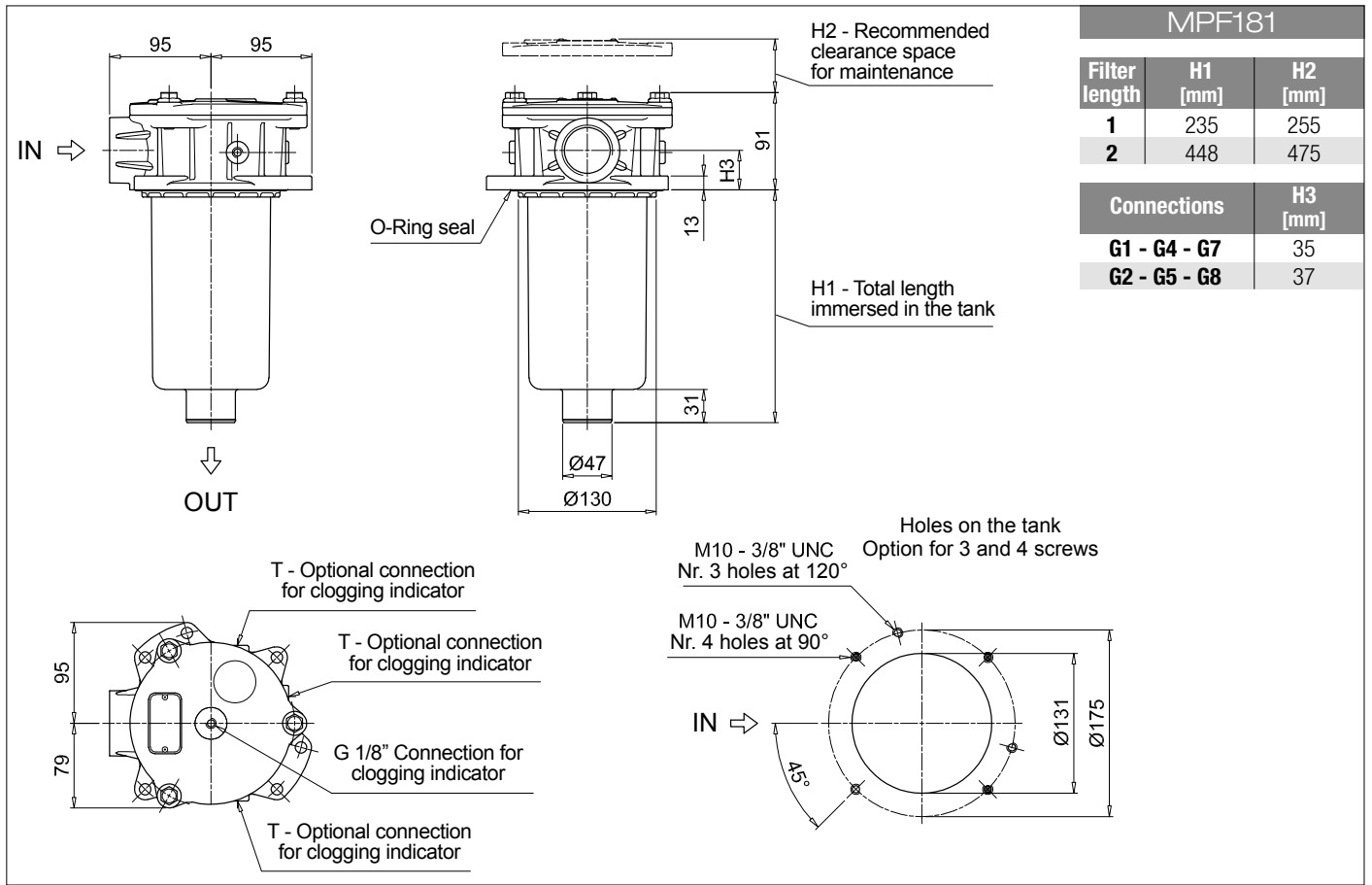
Series and size			Configuration example 1: MPF181 1 A G1 A25 H E P01								
MPF181 MPF191 Filter element with standard spigot			Configuration example 2: MPF191 2 V G2 P10 N B P01								
Length		Size 181	Size 191								
1		•									
2		•	•								
Seals and treatments											
A NBR	B NBR flat seal on head										
V FPM	D FPM flat seal on head										
W NBR head anodized	L NBR head anodized, flat seal on head										
Z FPM head anodized	M FPM head anodized, flat seal on head										
Connections											
G1 G 1 1/4"	G5 1 1/2" NPT										
G2 G 1 1/2"	G7 SAE 20 - 1 5/8" - 12 UN										
G4 1 1/4" NPT	G8 SAE 24 - 1 7/8" - 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										
			Filter media								
Element Δp	Axx	Mxx	Pxx								
N 10 bar		•	•								
H 10 bar		•									
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•									
			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: MF180 1 A25 H B E P01								
MF180 MF190 Filter element with standard spigot			Configuration example 2: MF190 2 P10 N V P01								
Element length		Size 180	Size 190								
1		•									
2		•	•								
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										
			Filter media								
Element Δp	Axx	Mxx	Pxx								
N 10 bar		•	•								
H 10 bar		•									
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•									
			Seals		Bypass valve		Execution				
			B NBR		E 3 bar		P01 MP Filtri standard				
			V FPM		 1.75 bar		Pxx Customized				

ACCESSORIES

Indicators		page			page
BVA Axial pressure gauge	240		BEA Electrical pressure indicator	239	
BVR Radial pressure gauge	240		BEM Electrical pressure indicator	239	
BVP Visual pressure indicator with automatic reset	241		BLA Electrical / visual pressure indicator	239-240	
BVQ Visual pressure indicator with manual reset	241				
Additional features		page			
TE Extension tube	248				
Sxx Extension tube	248				
T5 Filler plug M30x1.5	249				



MPF MPF182 - MPF192

Designation & Ordering code

COMPLETE FILTER

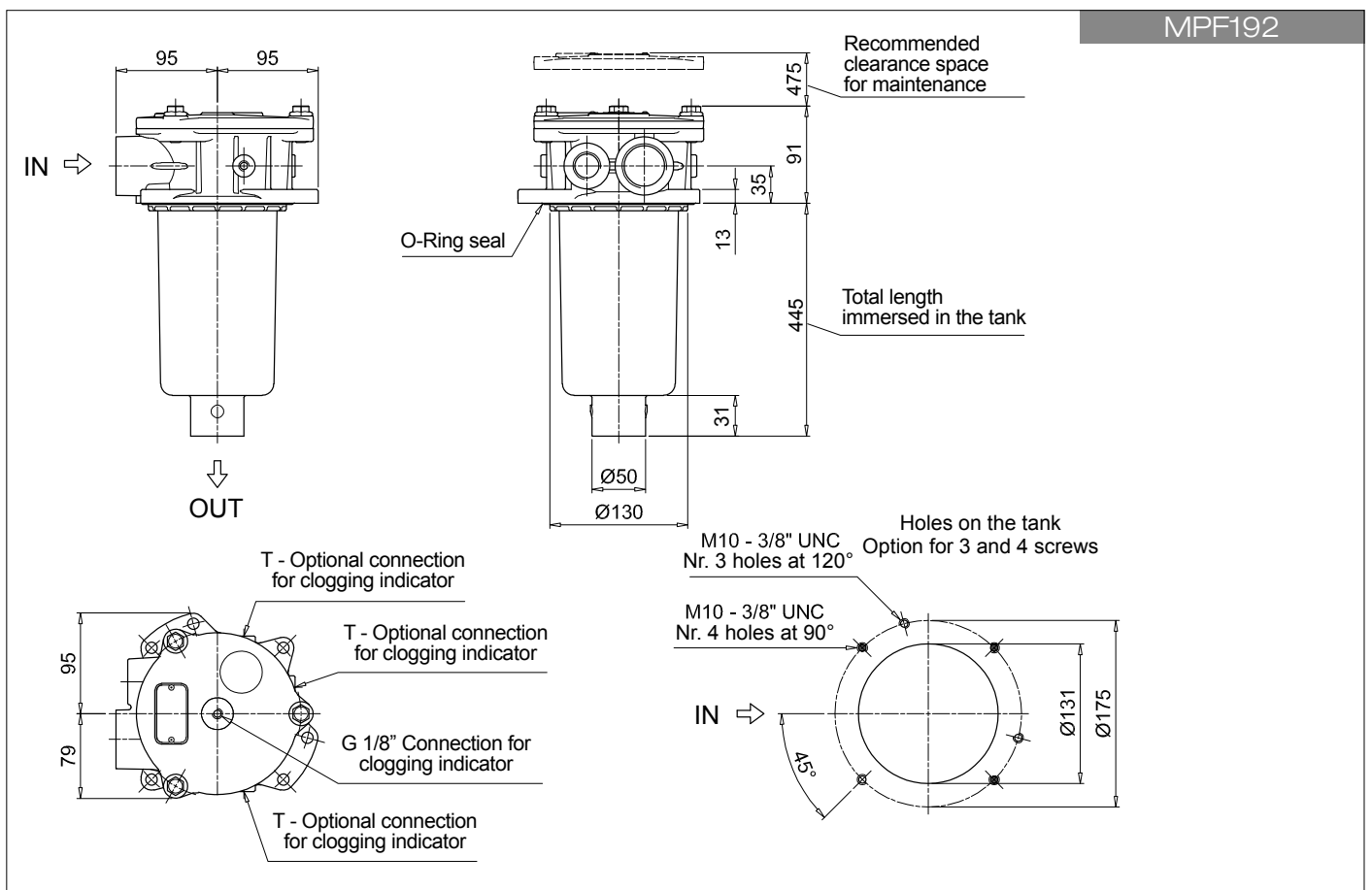
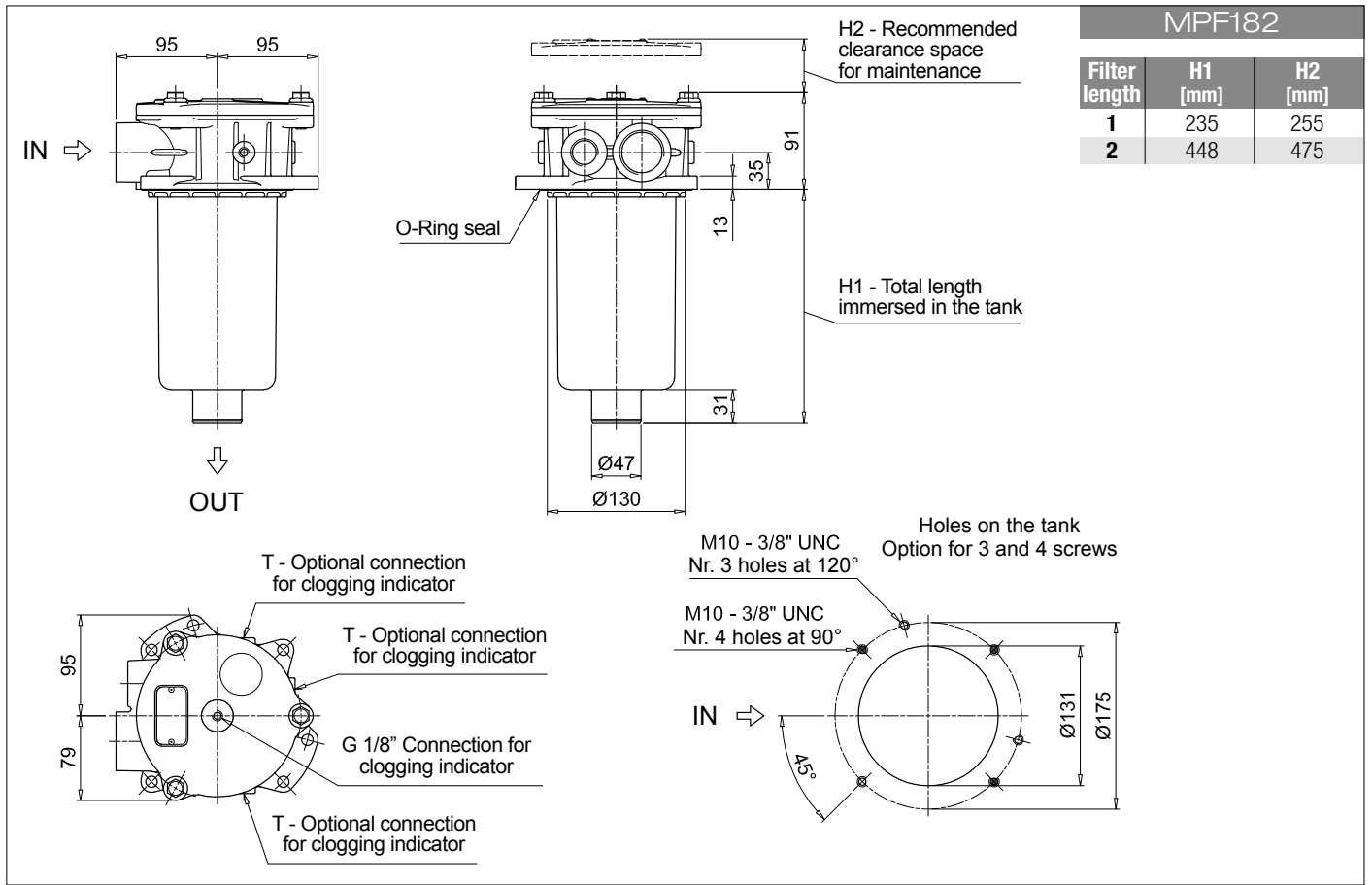
Series and size		Configuration example 1: MPF182 1 A G1 1 A25 H E P01									
MPF182 MPF192 Filter element with standard spigot		Configuration example 2: MPF192 2 V G4 2 P10 N B P01									
Length		Size 182		Size 192							
1		•									
2		•		•							
Seals and treatments											
A NBR		B NBR flat seal on head									
V FPM		D FPM flat seal on head									
W NBR head anodized		L NBR head anodized, flat seal on head									
Z FPM head anodized		M FPM head anodized, flat seal on head									
Main Connections			Aux size 1			Aux size 2					
G1 G 1 1/4"			G 1/2"			G 3/4"					
G4 1 1/4" NPT			1/2" NPT			3/4" NPT					
G7 SAE 20 - 1 5/8" - 12 UN			SAE 8 - 3/16" - 16 UNF			SAE 12 - 1 1/16" - 12 UN					
Aux connection - see previous table											
1 Aux size 1			2 Aux size 2								
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			•								
W 10 bar, compatible with fluids HFA, HFB and HFC			• •								
						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: MF180 1 A25 H B E P01									
MF180 MF190 Filter element with standard spigot		Configuration example 2: MF190 2 P10 N V P01									
Element length		Size 180		Size 190							
1		•									
2		•		•							
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			•								
W 10 bar, compatible with fluids HFA, HFB and HFC			• •								
						Seals		Bypass valve		Execution	
						B NBR		E 3 bar		P01 MP Filtri standard	
						V FPM		1.75 bar		Pxx Customized	

ACCESSORIES

Indicators		page			
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239		
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239		
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240		
BVQ Visual pressure indicator with manual reset	241				
Additional features		page			
TE Extension tube	248				
Sxx Extension tube	248				
T5 Filler plug M30x1.5	249				



MPF MPF184 - MPF194

Designation & Ordering code

COMPLETE FILTER

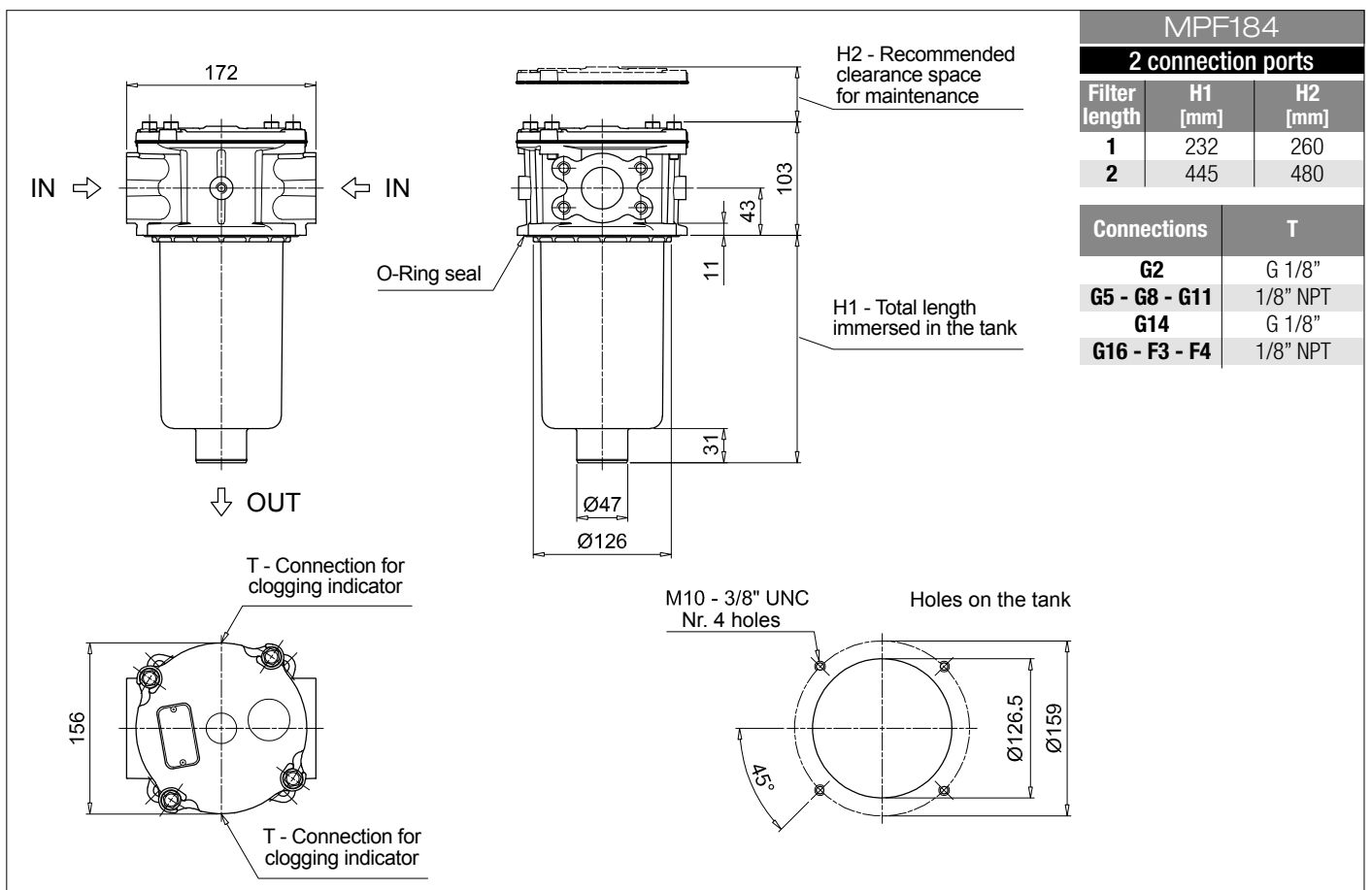
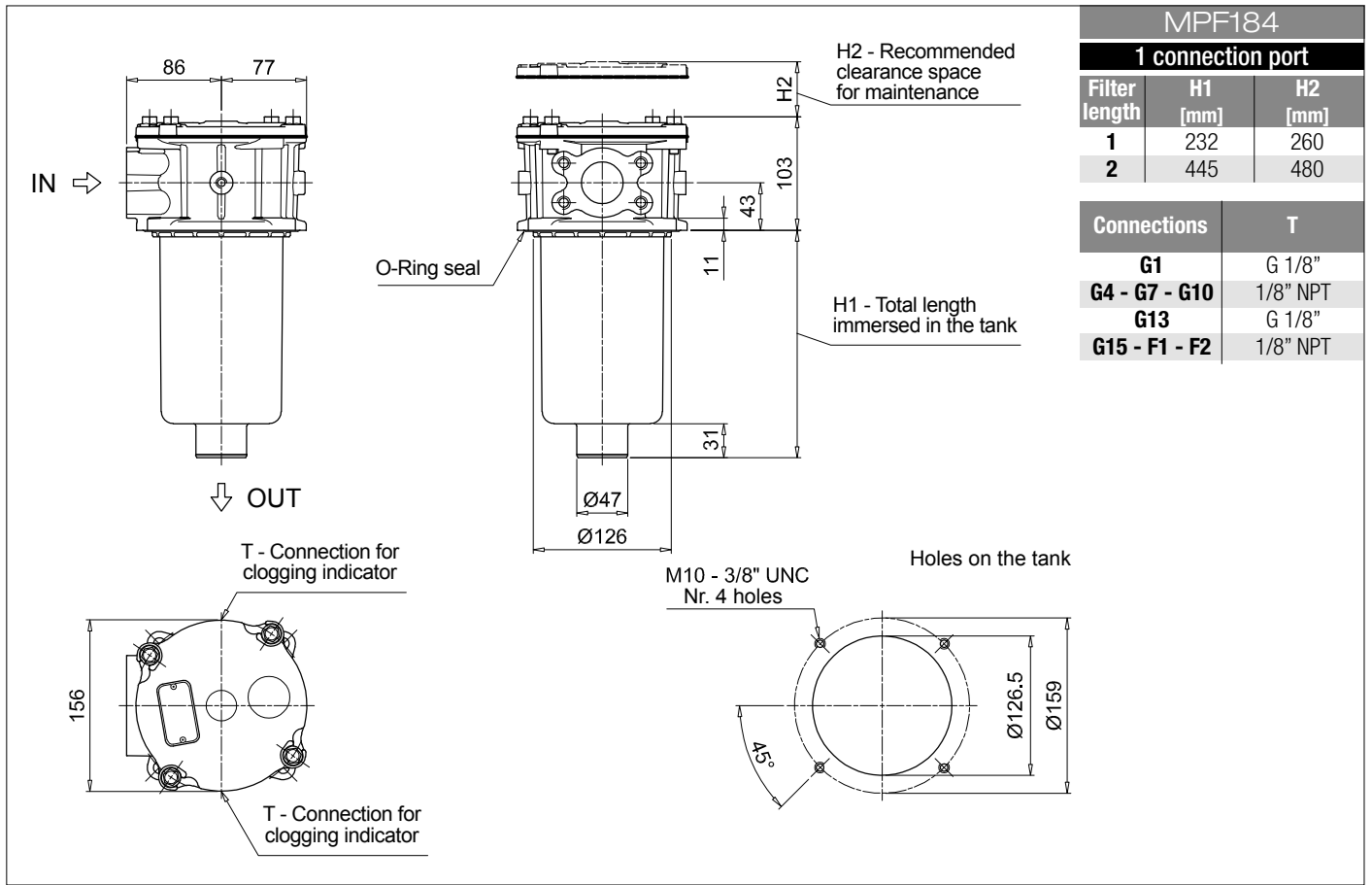
Series and size			Configuration example 1: MPF184 1 A G1 A25 H E P01								
MPF184 MPF194 Filter element with standard spigot			Configuration example 2: MPF194 2 V F3 P10 N B P01								
Length		Size 184	Size 194								
1		•									
2		•	•								
Seals and treatments											
A NBR		W NBR	head anodized								
V FPM		Z FPM	head anodized								
Main Connections		Rear connections		Main Connections		Rear connections					
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					
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			Bypass valve			Execution		
			Axx Mxx Pxx			E 3 bar			P01 MP Filtri standard		
N 10 bar			• • •			B 1.75 bar			Pxx Customized		
H 10 bar			•								
W 10 bar, compatible with fluids HFA, HFB and HFC			• •								

FILTER ELEMENT

Element series and size			Configuration example 1: MF180 1 A25 H B E P01											
MF180 MF190 Filter element with standard spigot			Configuration example 2: MF190 2 P10 N V P01											
Element length		Size 180	Size 190											
1		•												
2		•	•											
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			Seals			Bypass valve			Execution		
			Axx Mxx Pxx			B NBR			E 3 bar			P01 MP Filtri standard		
N 10 bar			• • •			V FPM			B 1.75 bar			Pxx Customized		
H 10 bar			•											
W 10 bar, compatible with fluids HFA, HFB and HFC			• •											

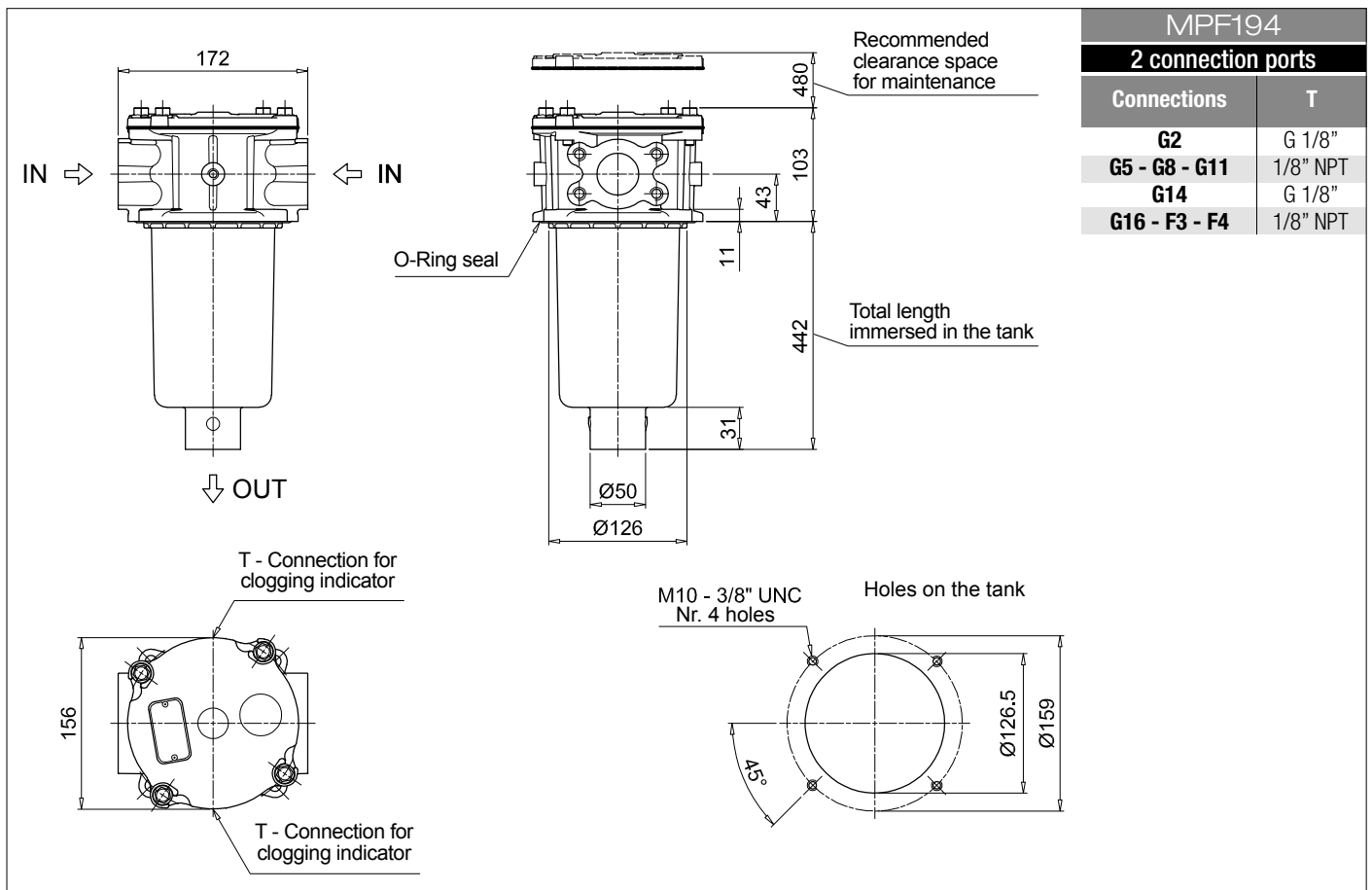
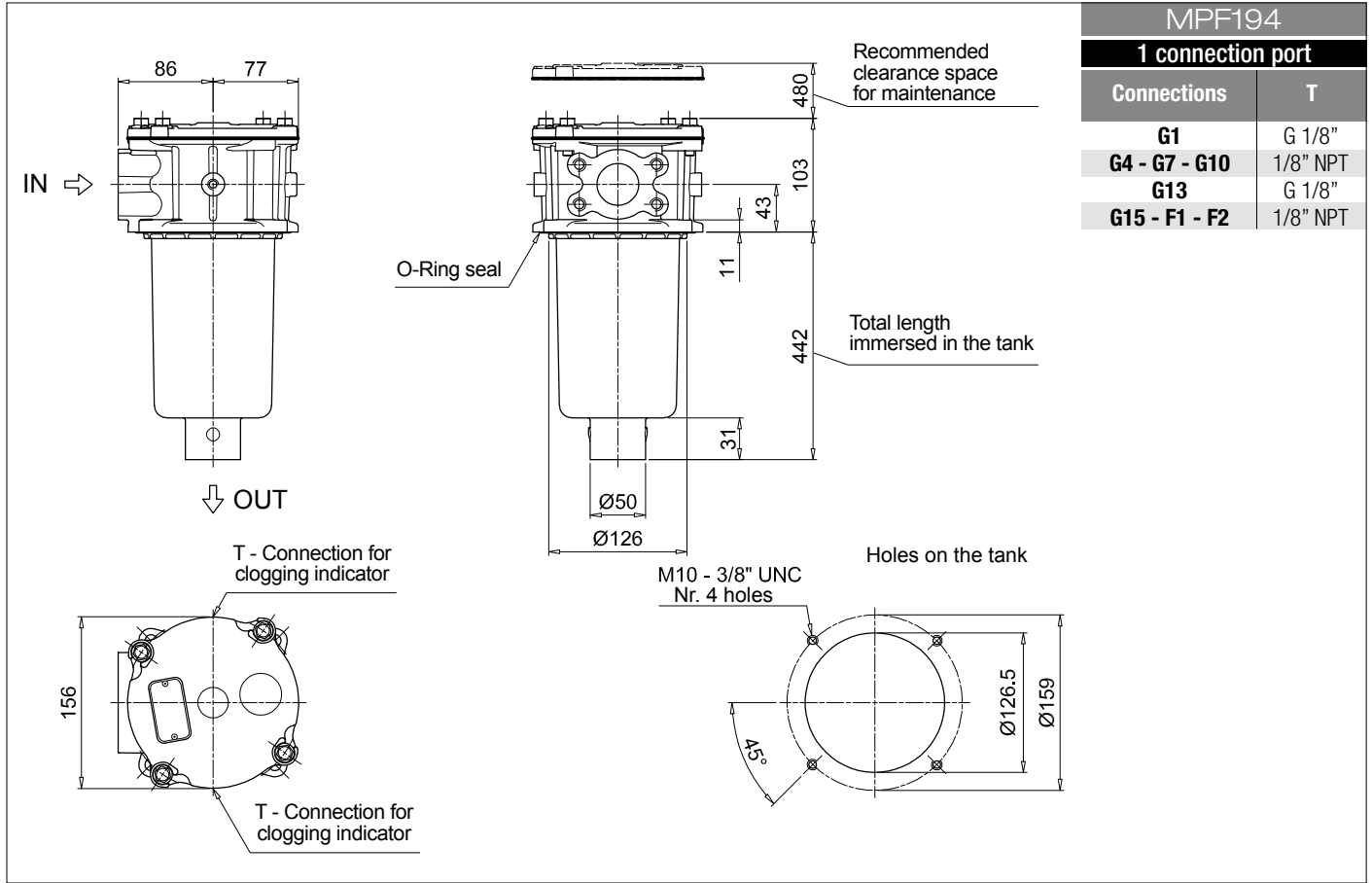
ACCESSORIES

Indicators		page			page
BVA Axial pressure gauge		240	BEA Electrical pressure indicator		239
BVR Radial pressure gauge		240	BEM Electrical pressure indicator		239
BVP Visual pressure indicator with automatic reset		241	BLA Electrical / visual pressure indicator		239-240
BVQ Visual pressure indicator with manual reset		241			
Additional features		page			
TE Extension tube		248			
Sxx Extension tube		248			
T5 Filler plug M30x1.5		249			



MPF MPF184 - MPF194

Dimensions



Designation & Ordering code

COMPLETE FILTER

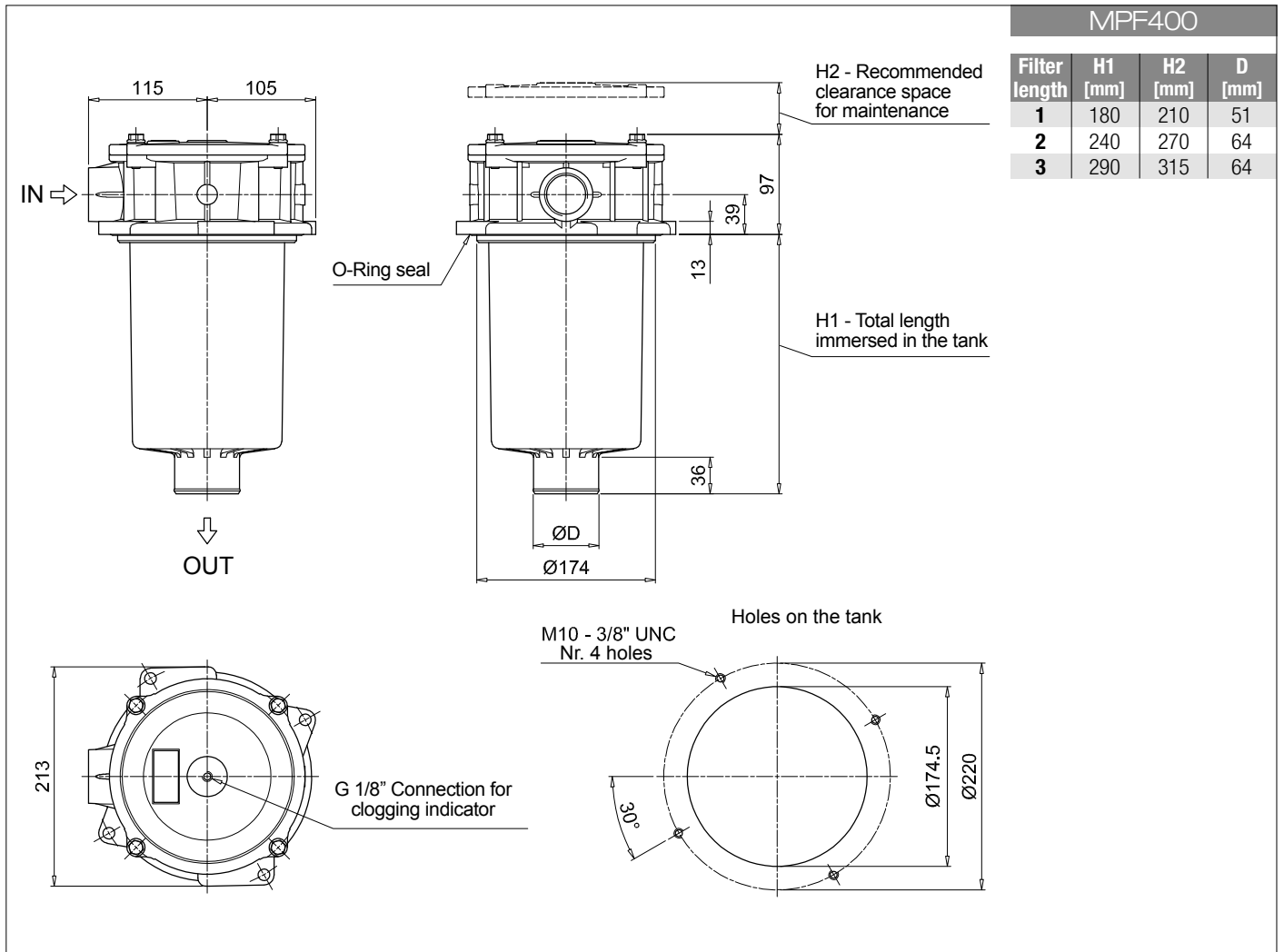
Series and size	Configuration example 1:	MPF400	1	A	G9	A25	H	B	P01	
MPF400 Filter element with standard spigot	Configuration example 2:	MPF400	2	V	G4	P10	N	E	P01	
Length										
1 2 3										
Seals and treatments										
A NBR										
V FPM										
W NBR head anodized										
Z FPM head anodized										
Connections										
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										
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										
Filter media										
Element Δp Axx Mxx Pxx										
N 10 bar • • •										
H 10 bar • • •										
W 10 bar, compatible with fluids HFA, HFB and HFC • • •										
							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:	MF400	1	A25	H	B		P01
MF400 Filter element with standard spigot	Configuration example 2:	MF400	2	P10	N	V	E	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								
Filter media								
Element Δp Axx Mxx Pxx								
N 10 bar • • •								
H 10 bar • • •								
W 10 bar, compatible with fluids HFA, HFB and HFC • • •								
				Seals	Bypass valve	Execution		
				B NBR	E 3 bar	P01 MP Filtri standard		
				V FPM	1.75 bar	Pxx Customized		

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
Sxx Extension tube	248		
T5 Filler plug M30x1.5	249		



Designation & Ordering code

COMPLETE FILTER

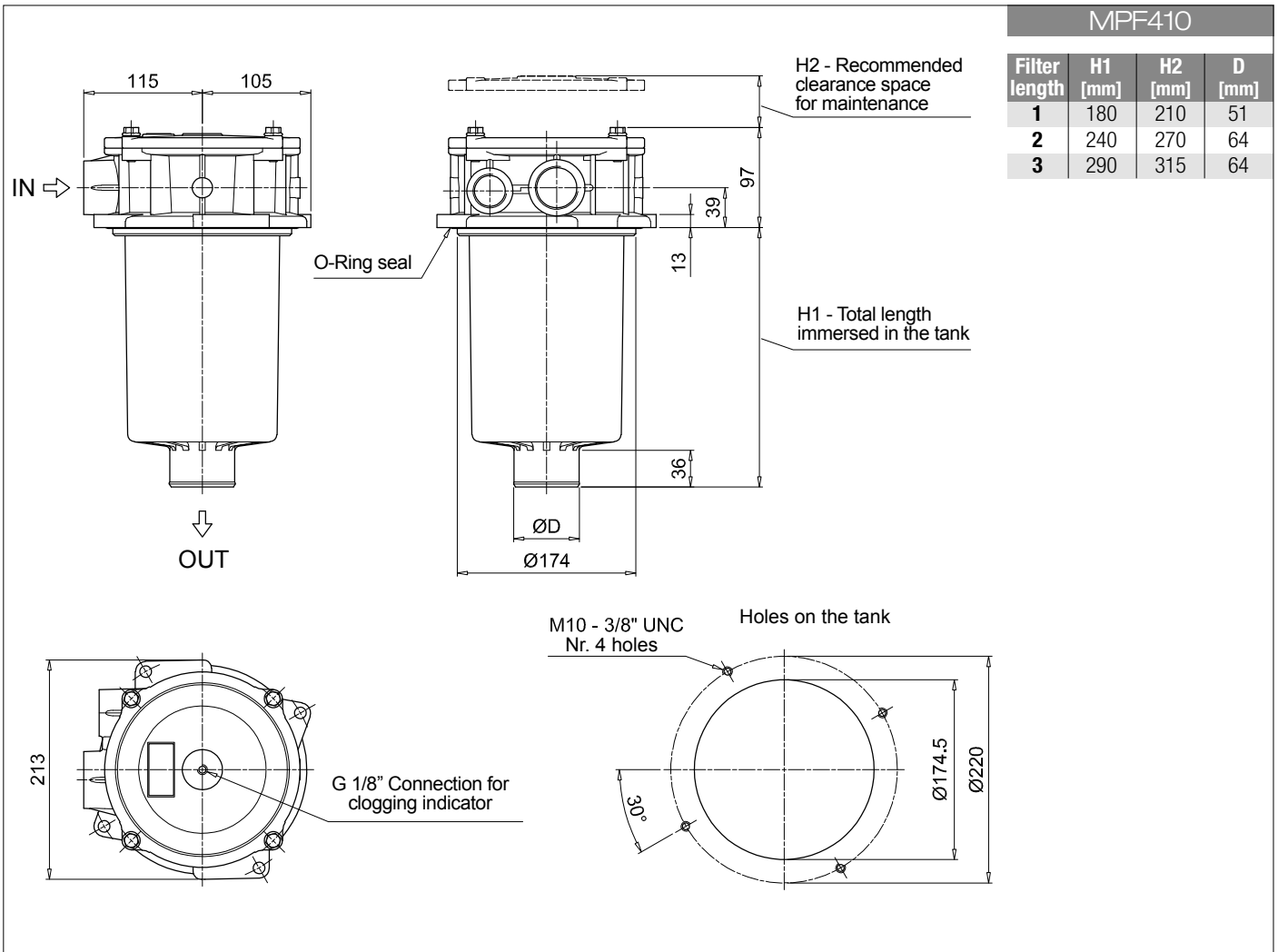
Series and size	Configuration example 1:	MPF410	1	A	G1	1	A25	H	B	P01
MPF410 Filter element with standard spigot	Configuration example 2:	MPF410	1	V	G4	1	P10	N	E	P01
Length										
1 2 3										
Seals and treatments										
A NBR										
V FPM										
W NBR head anodized										
Z FPM head anodized										
Main Connections										
G1 G 1 1/4"	Aux size 1					G 1"				
G4 1 1/4" NPT						1" NPT				
G7 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)										
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		•								
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•								
Bypass valve										
E 3 bar										
B 1.75 bar										
Execution										
P01 MP Filtri standard										
Pxx Customized										

FILTER ELEMENT

Element series and size	Configuration example 1:	MF400	1	A25	H	B		P01
MF400 Filter element with standard spigot	Configuration example 2:	MF400	1	P10	N	V	E	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			
Element Δp	Filter media							
	Axx	Mxx	Pxx					
N 10 bar		•	•					
H 10 bar		•						
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•						
Seals								
B NBR								
V FPM								
Bypass valve								
E 3 bar								
1.75 bar								
Execution								
P01 MP Filtri standard								
Pxx Customized								

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
Sxx Extension tube	248		
T5 Filler plug M30x1.5	249		



MPF MPF450 - MPF451 - MPF750

Designation & Ordering code

COMPLETE FILTER

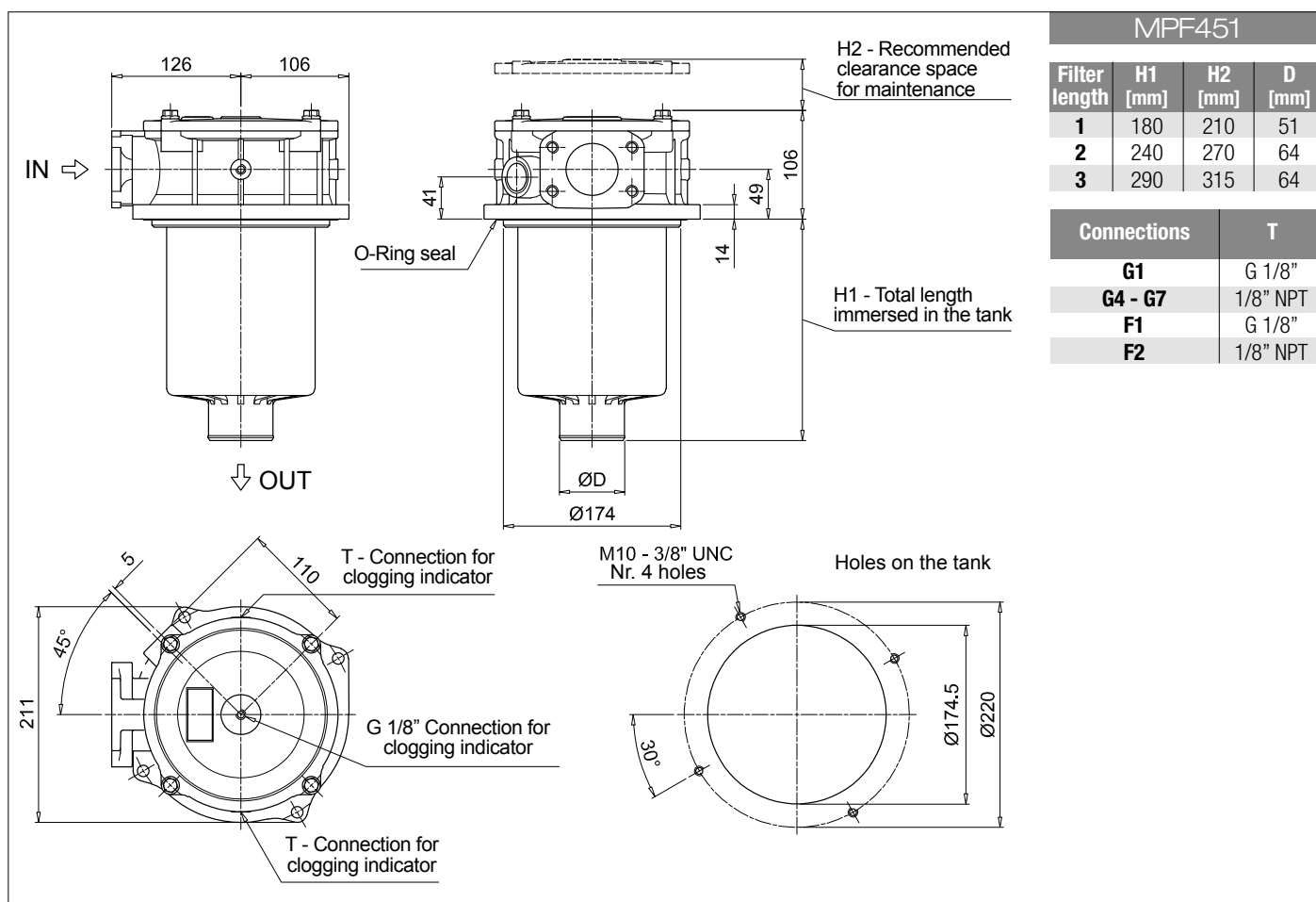
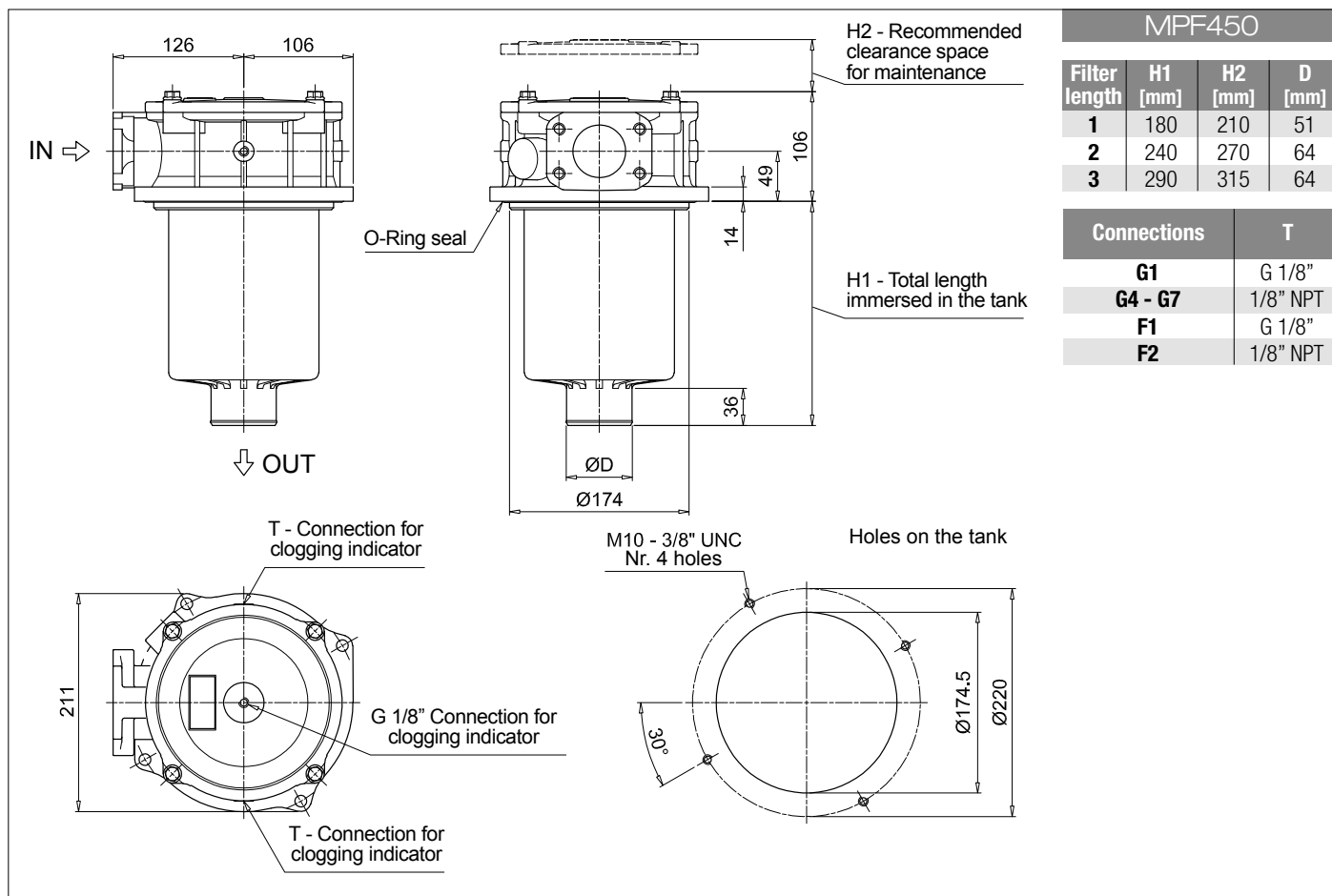
Series and size			Configuration example 1: MPF450 1 A G1 A25 H B P01								
MPF450 MPF451 MPF750	Filter element with standard spigot		Configuration example 2: MPF750 1 V F2 P10 N E P01								
Length			MPF 450	MPF 451	MPF 750						
1			•	•	•						
2			•	•							
3			•	•							
Seals and treatments											
A NBR	W NBR	head anodized									
V FPM	Z FPM	head anodized									
Connections			Aux (only size 451)								
G1 G 2"	G 3/4"										
G4 2" NPT	3/4" NPT										
G7 SAE 32 - 2 1/2" - 12 UN	SAE 12 - 1 1/16" - 12 UN										
F1 2" SAE 3000 psi/M	G 3/4"										
F2 2" SAE 3000 psi/UN	3/4" NPT										
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								
			Axx	Mxx	Pxx						
N 10 bar				•	•						
H 10 bar				•							
W 10 bar, compatible with fluids HFA, HFB and HFC			•	•							
						Bypass valve		Execution			
						E 3 bar		P01 MP Filtri standard			
						B 1.75 bar		Pxx Customized			

FILTER ELEMENT

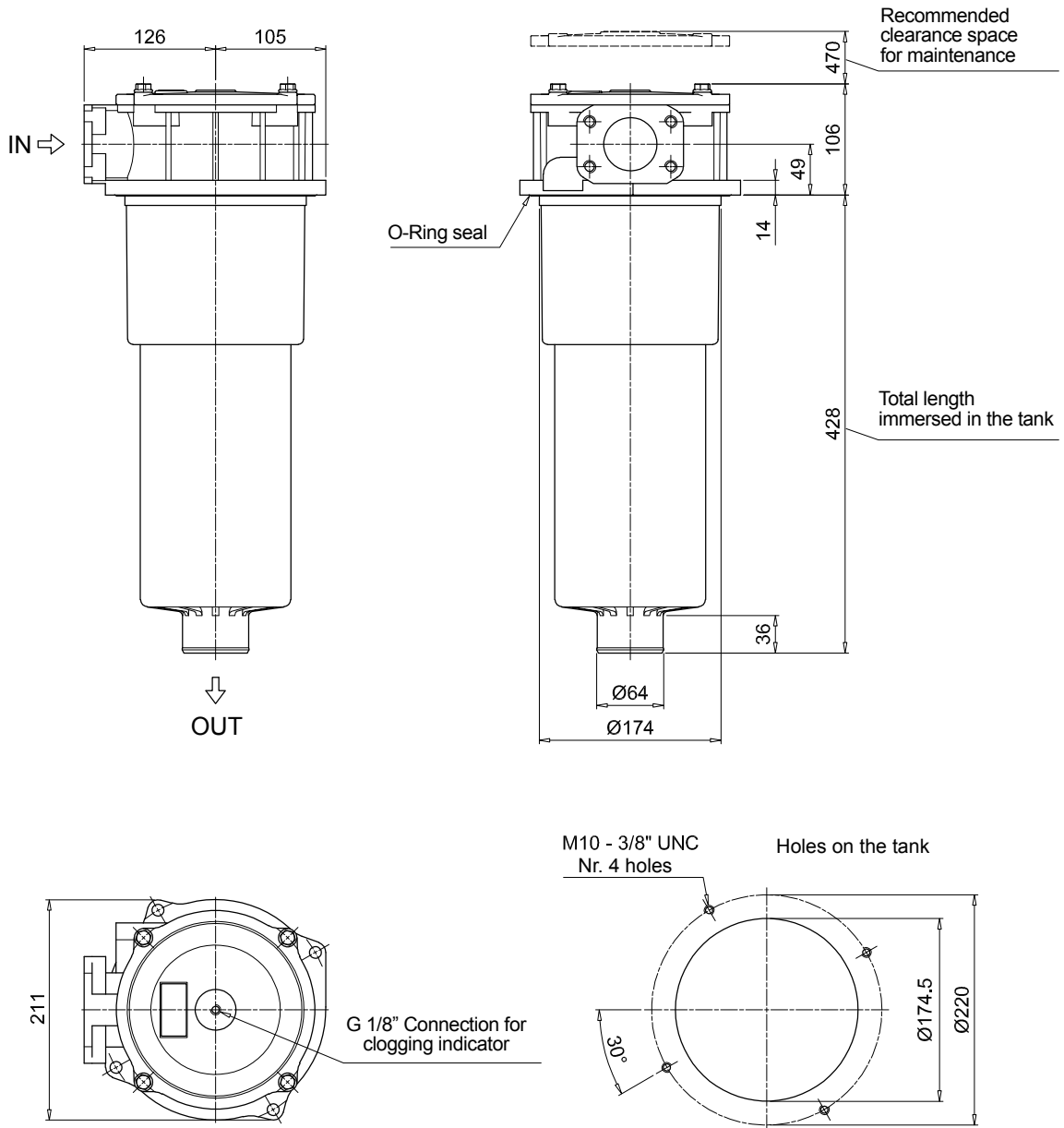
Element series and size			Configuration example 1: MF400 1 A25 H B P01								
MF400 MF750	Filter element with standard spigot		Configuration example 2: MFX750 1 P10 N V E P01								
Element length			MPF 450	MPF 451	MPF 750						
1			•	•	•						
2			•	•							
3			•	•							
Filtration rating (filter 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										
Element Δp			Filter media								
			Axx	Mxx	Pxx						
N 10 bar				•	•						
H 10 bar				•							
W 10 bar, compatible with fluids HFA, HFB and HFC			•	•							
						Seals		Bypass valve		Execution	
						B NBR		E 3 bar		P01 MP Filtri standard	
						V FPM		B 1.75 bar		Pxx Customized	

ACCESSORIES

Indicators		page			page
BVA Axial pressure gauge		240	BEA Electrical pressure indicator		239
BVR Radial pressure gauge		240	BEM Electrical pressure indicator		239
BVP Visual pressure indicator with automatic reset		241	BLA Electrical / visual pressure indicator		239-240
BVQ Visual pressure indicator with manual reset		241			
Additional features		page			
Sxx Extension tube		248			
T5 Filler plug M30x1.5		249			



MPF750



MPF 100

MPF 181

O-RING SEAL

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

MPF 104

MPF 181

FLAT SEAL

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		
	Filter series	Filter element	Seal Kit code number NBR FPM	
MPF 020	See order table		02050438	02050439
MPF 104			02050350	02050408
MPF 181-182			02050659	02050660
MPF 191-192			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, 4 or 6 fixing holes for installation, to meet any reservoir surface flatness and roughness
- O-ring or Flat seal, to meet any reservoir surface flatness and roughness
- 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: Nylon
- Bowl: Nylon

Bypass valve

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

Δp 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

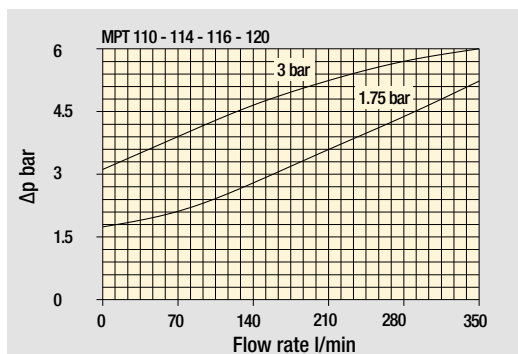
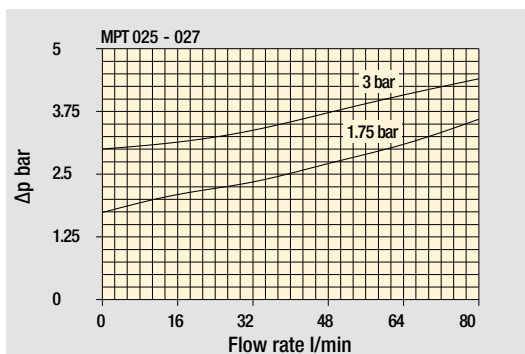
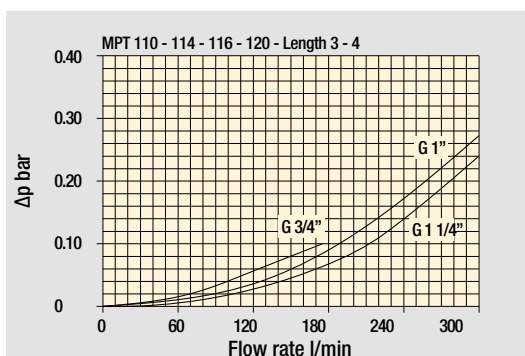
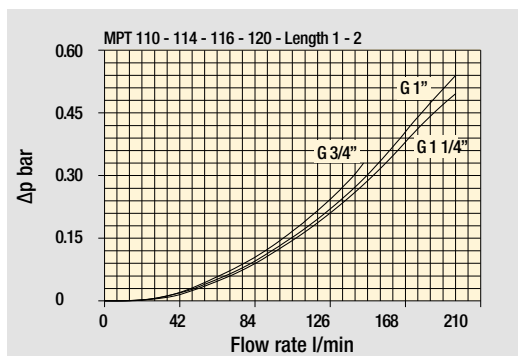
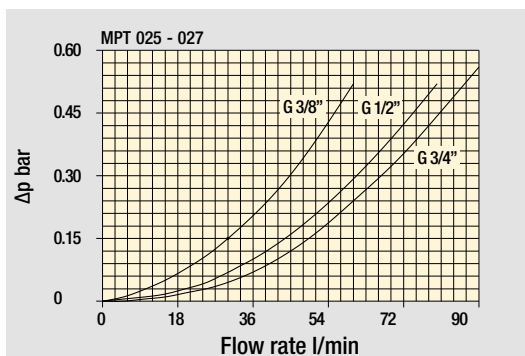
MPT filters are provided for vertical mounting



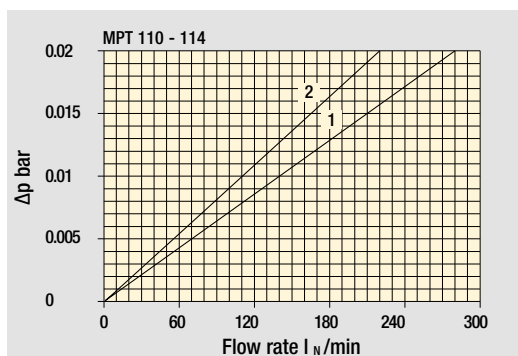
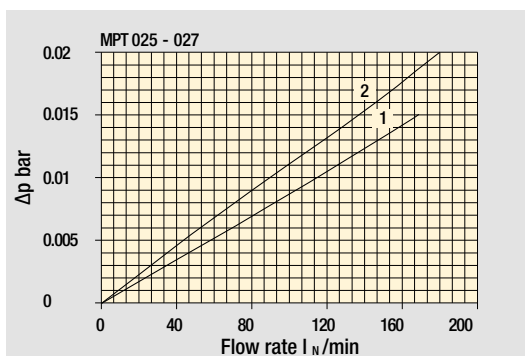
Weights [kg] and volumes [dm³]

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

Filter housings Δp pressure drop



Bypass valve pressure drop



Air breather pressure drop

- 1 C With air breather 10 μ m
- 2 D With anti-splash and SAP50 10 μ m

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
 Δp varies proportionally with density.

MPT GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	Filter element design - H series					Filter element design - N series		
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MPT 025-027	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
MPT 110-114 116-120	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

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

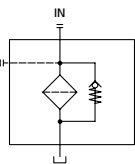
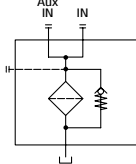
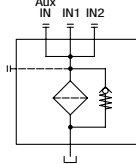
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.





Hydraulic symbols

Filter series	Style 1 connection	Style 2 connections	Style 3 connections
MPT 025	•		
MPT 027	•		
MPT 110		•	
MPT 114	•		
MPT 116	•		
MPT 120			•

		
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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

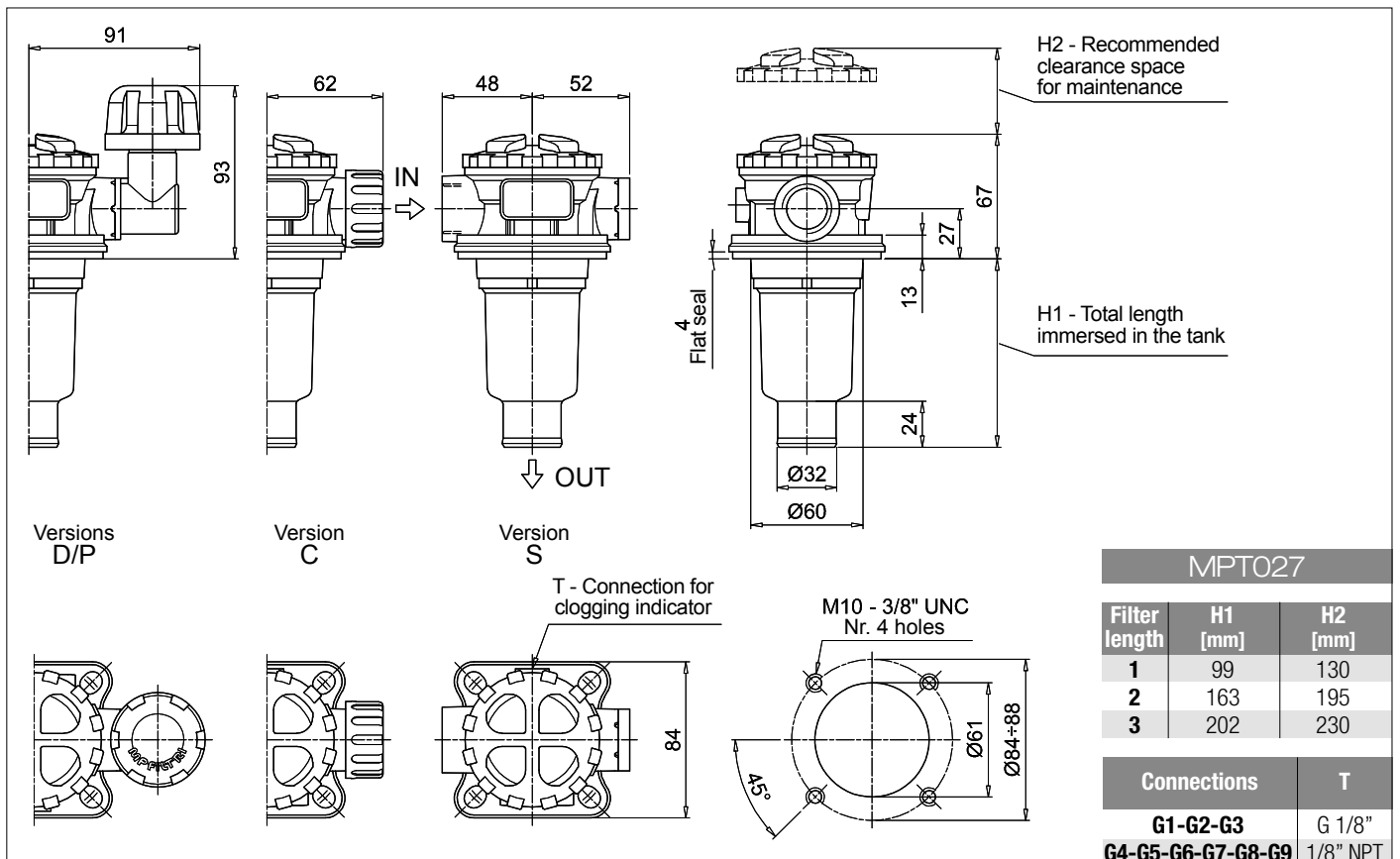
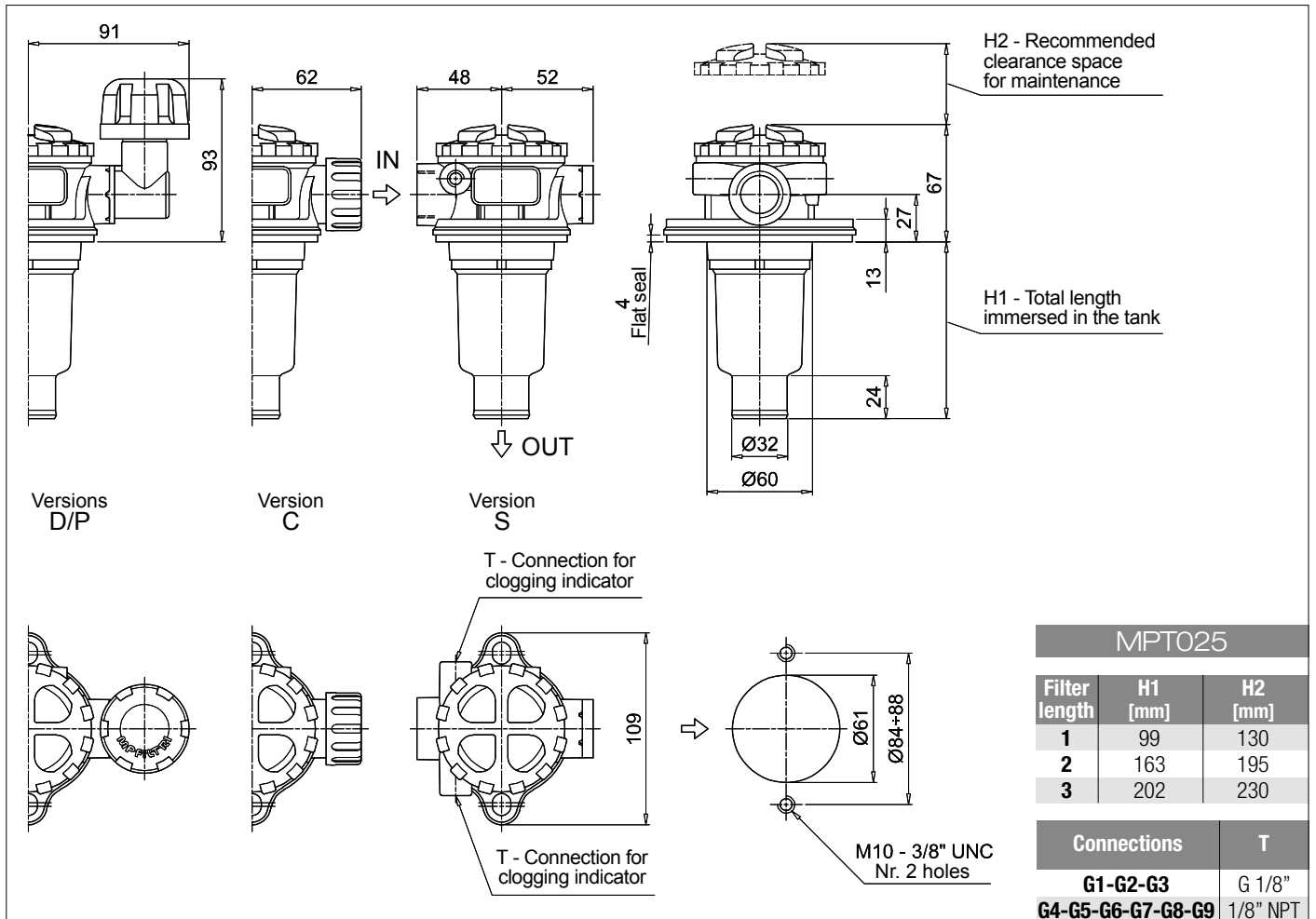
Series and size MPT025 MPT027 Filter element with standard spigot	Configuration example 1: MPT025 1 S A G3 A10 E P01
	Configuration example 2: MPT027 3 C W G6 A03 B P01
Length 1 2 3	
Air breather S Without air breather C With air breather 10 µm D With anti-splash and air breather SAP050 10 µm P With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar	
Seals and treatments	Filtration rating
A NBR	Axx Mxx Pxx
V FPM	• • •
W NBR head anodized	• • •
Z FPM head anodized	• • •
	filter element compatible with fluids HFA-HFB-HFC
Connections	
G1 G 3/8"	G6 3/4" NPT
G2 G 1/2"	G7 SAE 6 - 9/16" - 18 UNF
G3 G 3/4"	G8 SAE 8 - 3/4" - 16 UNF
G4 3/8" NPT	G9 SAE 12 - 1 1/16" - 12 UN
G5 1/2" NPT	
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
	Bypass valve E 3 bar B 1.75 bar
	Execution P01 MP Filtri standard Pxx Customized

FILTER ELEMENT

Element series and size MF020 Filter element with standard spigot	Configuration example 1: MF020 1 A10 H B E P01
	Configuration example 2: MF020 3 A03 W B 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
Element Δp	Filter media
N 10 bar	Axx Mxx Pxx
H 10 bar	• • •
W 10 bar, compatible with fluids HFA, HFB and HFC	• • •
	Seals B NBR V FPM
	Bypass valve E 3 bar B 1.75 bar
	Execution P01 MP Filtri standard Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
TE Extension tube	248		
DPT Dipstick	249		



Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1: MPT110 1 S A G1 0 A06 E P01								
MPT110 Filter element with standard spigot			Configuration example 2: MPT110 3 P V G4 1 M25 B P01								
Length											
1 2 3 4											
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						
A NBR			•	•	•						
V FPM			•	•	•						
W NBR head anodized			•	•		filter element compatible with fluids HFA-HFB-HFC					
Z FPM head anodized			•	•							
Main Connections		Aux size 1	Aux size 2	Main Connections		Aux size 2	Aux size 2				
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"				G8 SAE 16 - 1 5/16" - 12 UN							
G4 3/4" NPT		3/8" NPT	1/2" NPT	G9 SAE 20 - 1 5/8" - 12 UN							
G5 1" NPT											
Aux connection - see previous table											
0 Not machined			1 Aux size 1	2 Aux size 2							
Filtration rating (filter media)											
A03 Inorganic microfiber 3 µm			M25 Wire mesh 25 µm						Bypass valve		Execution
A06 Inorganic microfiber 6 µm			M60 Wire mesh 60 µm						E 3 bar		P01 MP Filtri standard
A10 Inorganic microfiber 10 µm			M90 Wire mesh 90 µm						B 1.75 bar		Pxx Customized
A16 Inorganic microfiber 16 µm			P10 Resin impregnated paper 10 µm								
A25 Inorganic microfiber 25 µm			P25 Resin impregnated paper 25 µm								

FILTER ELEMENT

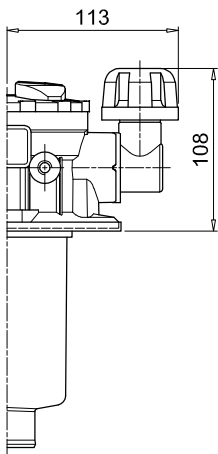
Element series and size			Configuration example 1: MF100 1 A06 H B E P01								
MF100 Filter element with standard spigot			Configuration example 2: MF100 3 M25 N V P01								
Element length											
1 2 3 4											
Filtration rating (filter media)											
A03 Inorganic microfiber 3 µm			M25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

ACCESSORIES

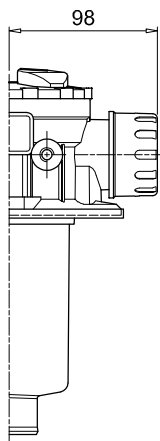
Indicators		page			page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator			239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator			239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator			239-240
BVQ Visual pressure indicator with manual reset	241				
Additional features		page			page
TE Extension tube	248	DPT Dipstick			249
DFS Diffuser with fast lock connection	249				

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

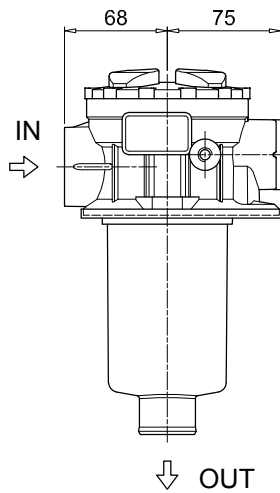
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



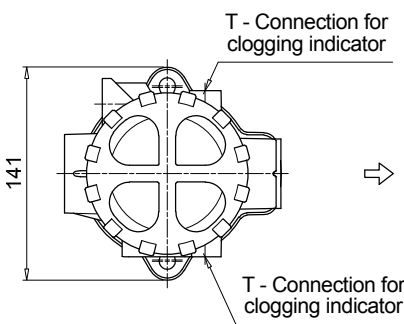
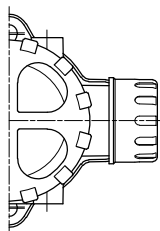
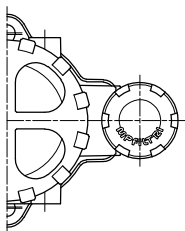
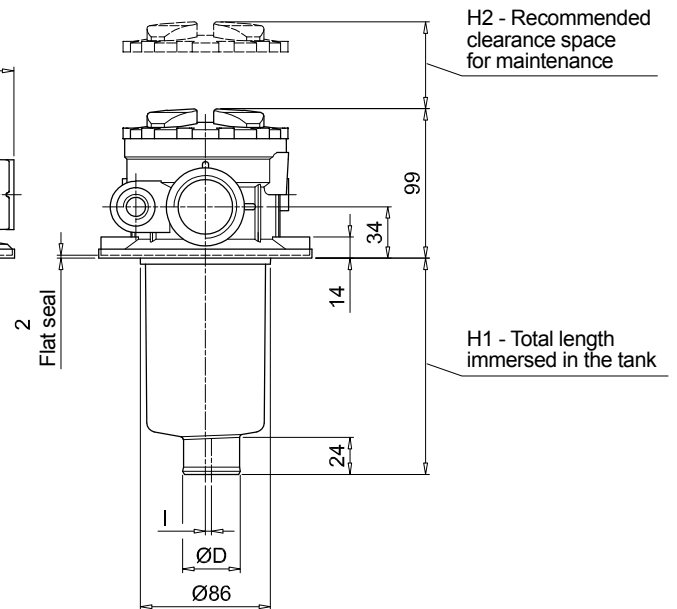
Versions D/P



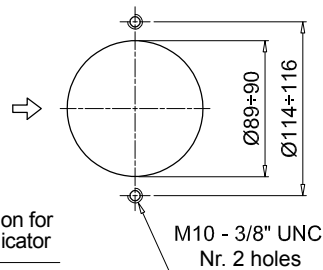
Version C



Version S



Holes on the tank



Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1:	MPT114	4	S	A	G3	A10	E	P01
MPT114 Filter element with standard spigot	Configuration example 2:	MPT114	3	C	W	G6	A03	B	P01

Length	
1 2 3 4	

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
A NBR	•	•	•
V FPM	•	•	•
W NBR head anodized	•	•	
Z FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections	
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	

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

Bypass valve	Execution
E 3 bar	P01 MP Filtri standard
B 1.75 bar	Pxx Customized

FILTER ELEMENT

Element series and size	Configuration example 2:	MF100	4	A10	H	B	E	P01
MF100 Filter element with standard spigot	Configuration example 1:	MF100	3	A03	W	B		P01

Element length	
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		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

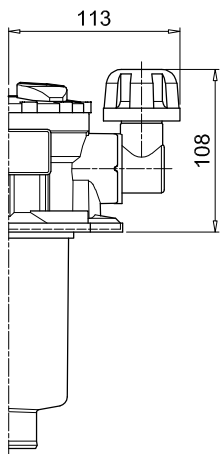
Seals	Bypass valve	Execution
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	1.75 bar	Pxx Customized

ACCESSORIES

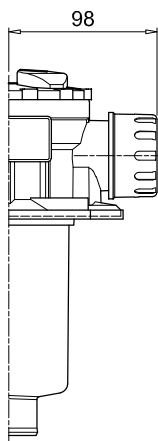
Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	DPT Dipstick	249
DFS Diffuser with fast lock connection	249		

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

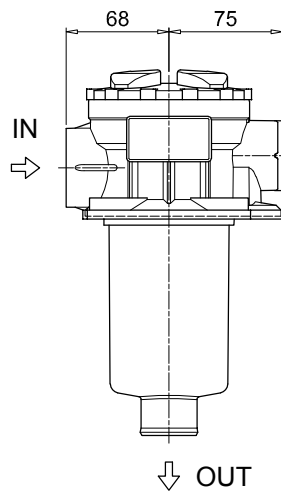
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



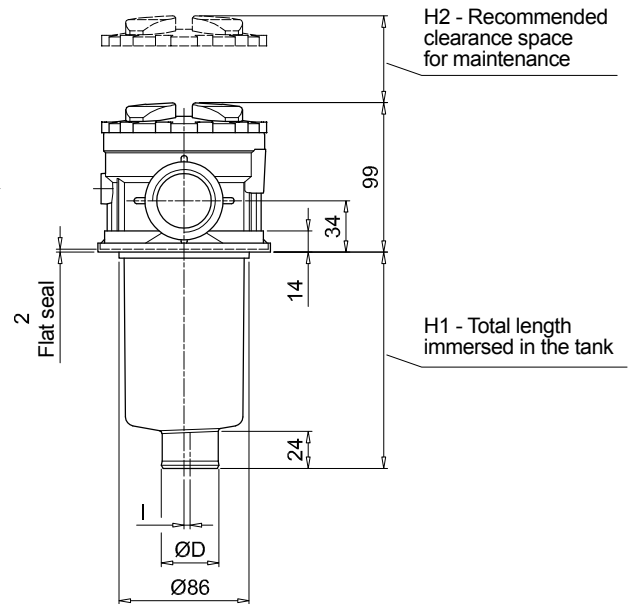
Versions D/P



Version C

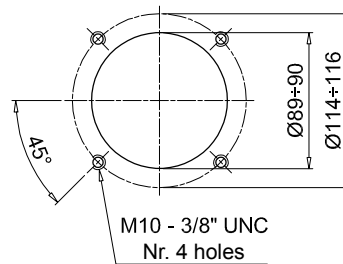
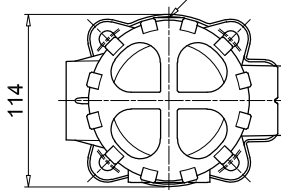
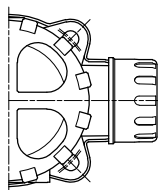
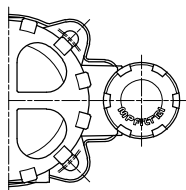


Version S



T - Connection for clogging indicator

Holes on the tank



Designation & Ordering code

COMPLETE FILTER

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

Length	
1 2 3 4	

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	•	•	

filter element compatible with fluids HFA-HFB-HFC

Flat seal on the head on request

Connections	
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	

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

Bypass valve	Execution
E 3 bar	P01 MP Filtri standard
B 1.75 bar	Pxx Customized

FILTER ELEMENT

Element series and size	Configuration example 2:	MF100	1	M90	N	B	E	P01
MF100 Filter element with standard spigot	Configuration example 1:	MF100	2	A03	W	V		P01

Element length	
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		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

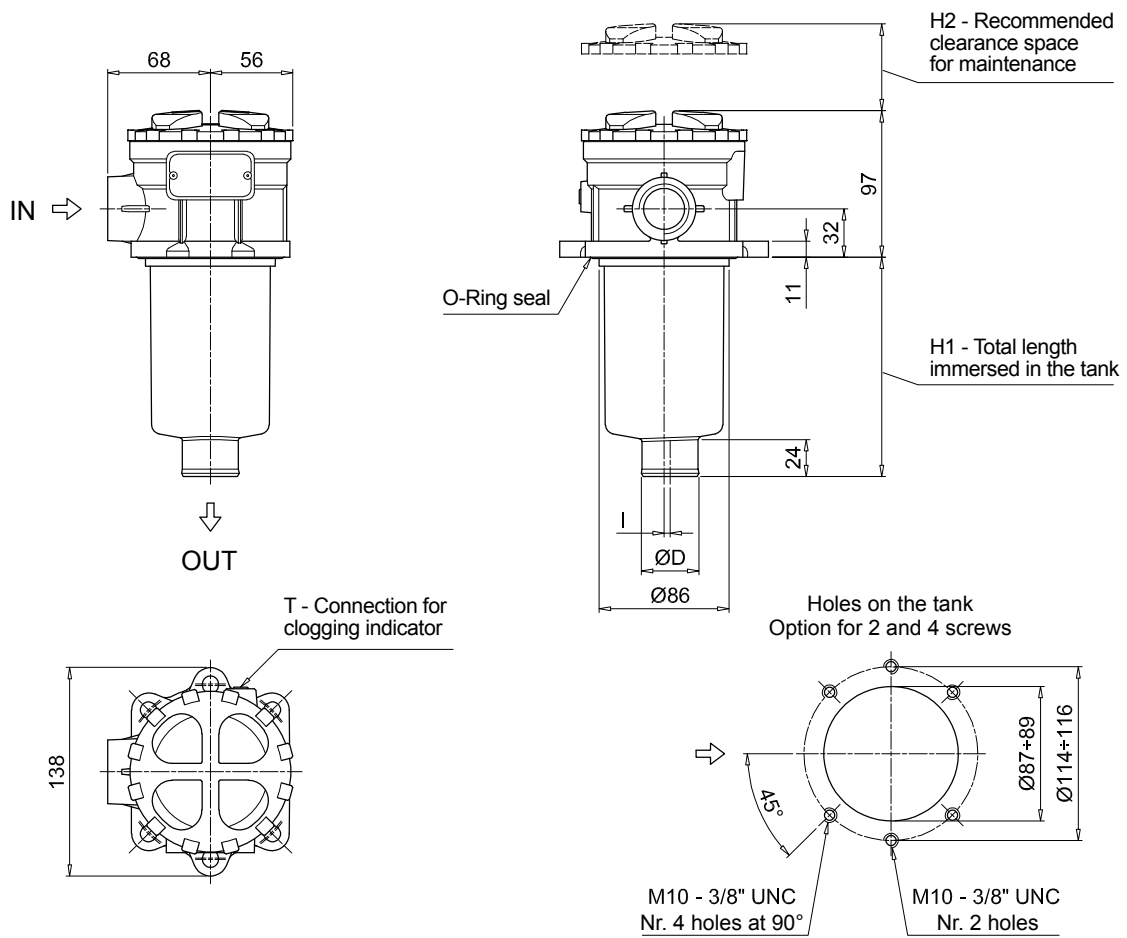
Seals	Bypass valve	Execution
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	1.75 bar	Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	DPT Dipstick	249
DFS Diffuser with fast lock connection	249		

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

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

Length	
1 2 3 4	

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

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

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	A06	H	B	E	P01
MF100 Filter element with standard spigot	Configuration example 2:	MF100	3	M25	N	V		P01

Element length	
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		
	Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

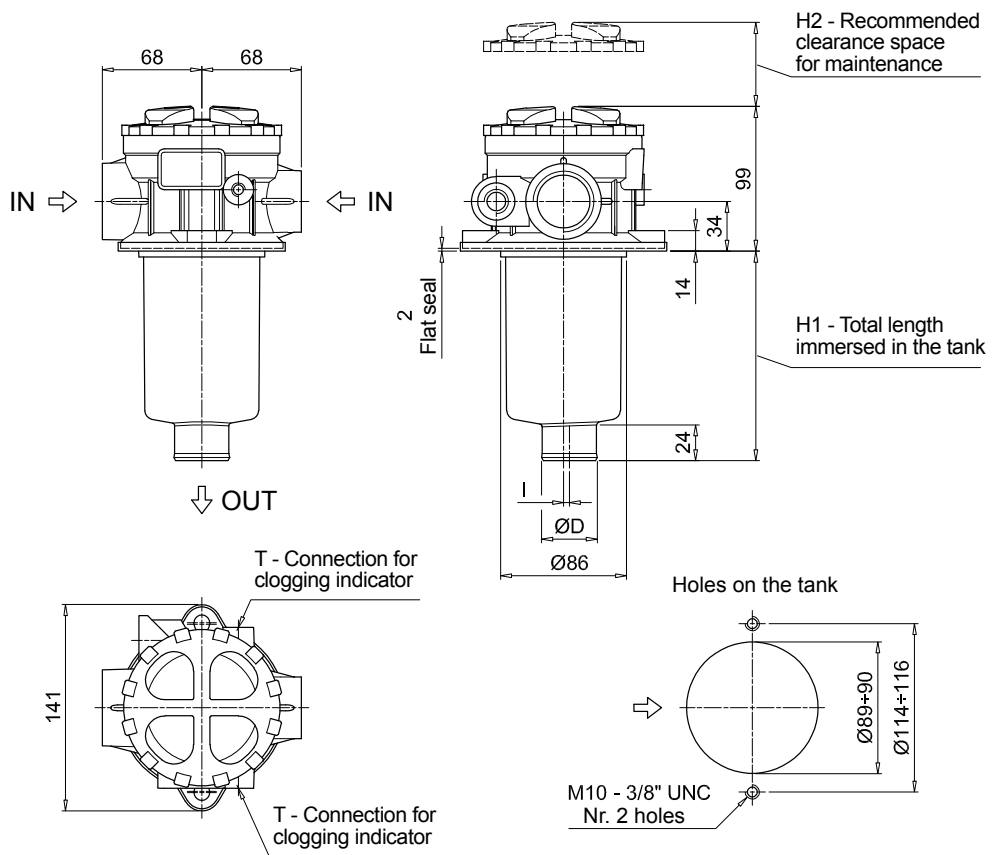
Seals	Bypass valve	Execution
B NBR	E 3 bar	P01 MP Filtri standard
V FPM	1.75 bar	Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		page
TE Extension tube	248	DPT Dipstick	249
DFS Diffuser with fast lock connection	249		

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

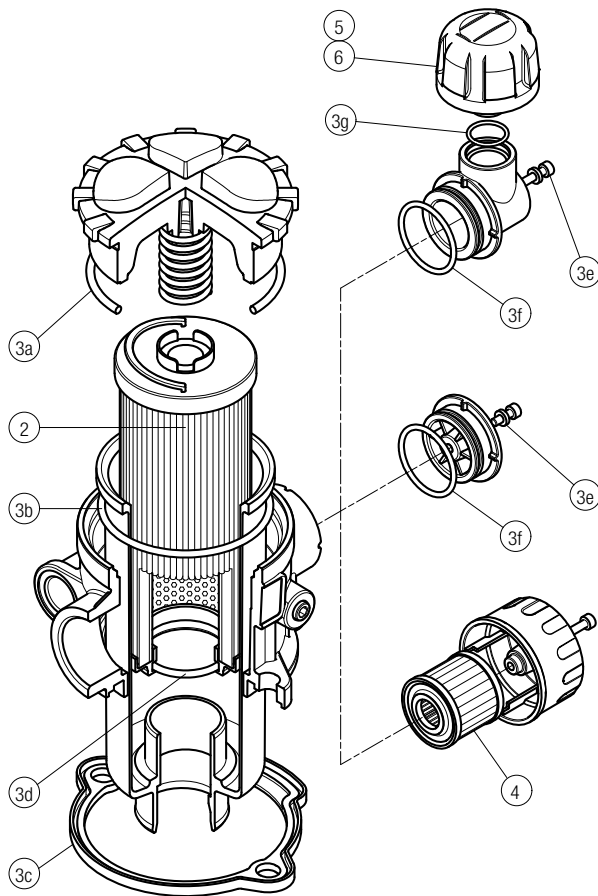
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



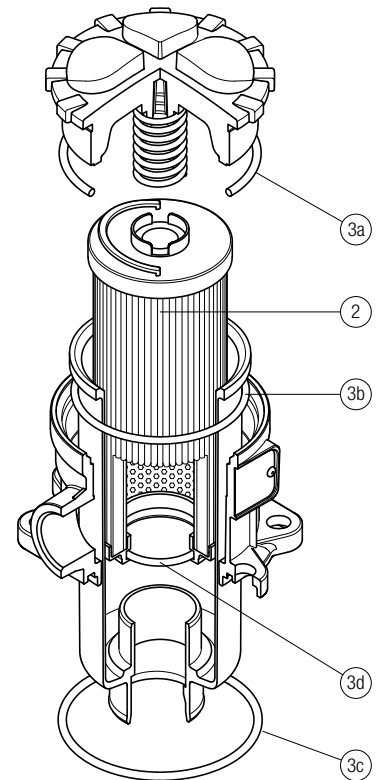
MPT SPARE PARTS

Order number for spare parts

MPT 025 - 027 - 110



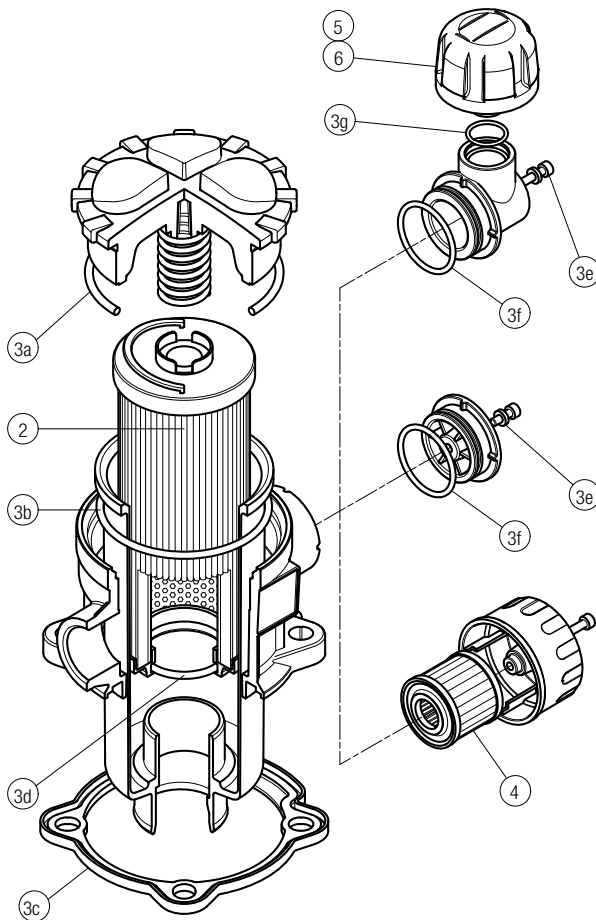
MPT 116



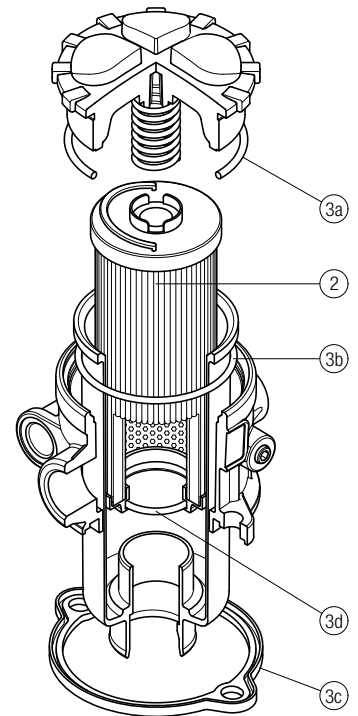
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number		C	D	P
		NBR	FPM			
MPT 025	See order table	02050557	02050558	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 027		02050559	02050560	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm 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
MPT 114	See order table	02050580	02050581	10 µm A3L03	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 120	See order table	02050563	02050564

MFB series

BOWL ASSEMBLY

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 500 l/min



Return filter Bowl assembly

Maximum working pressure up to 800 kPa (8 bar)

Flow rate up to 500 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
Nylon: MFB 020-030-100
Aluminium: MFB 180-190

- Bowl: Nylon

Filter element materials

- Caps: Nylon
- Spring: Spring steel

Bypass valve

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

Δp 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 [dm³]

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

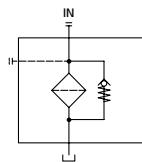
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

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	•



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		MFB020	MFB030	MFB100	MFB180	MFB190							
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									
				Axx	Mxx	Pxx							
N	10 bar				•	•							
H	10 bar			•									
W	10 bar, compatible with fluids HFA, HFB and HFC			•	•								
						Bypass valve		Execution					
						E 3 bar		P01 MP Filtri standard					
						B 1.75 bar		Pxx Customized					

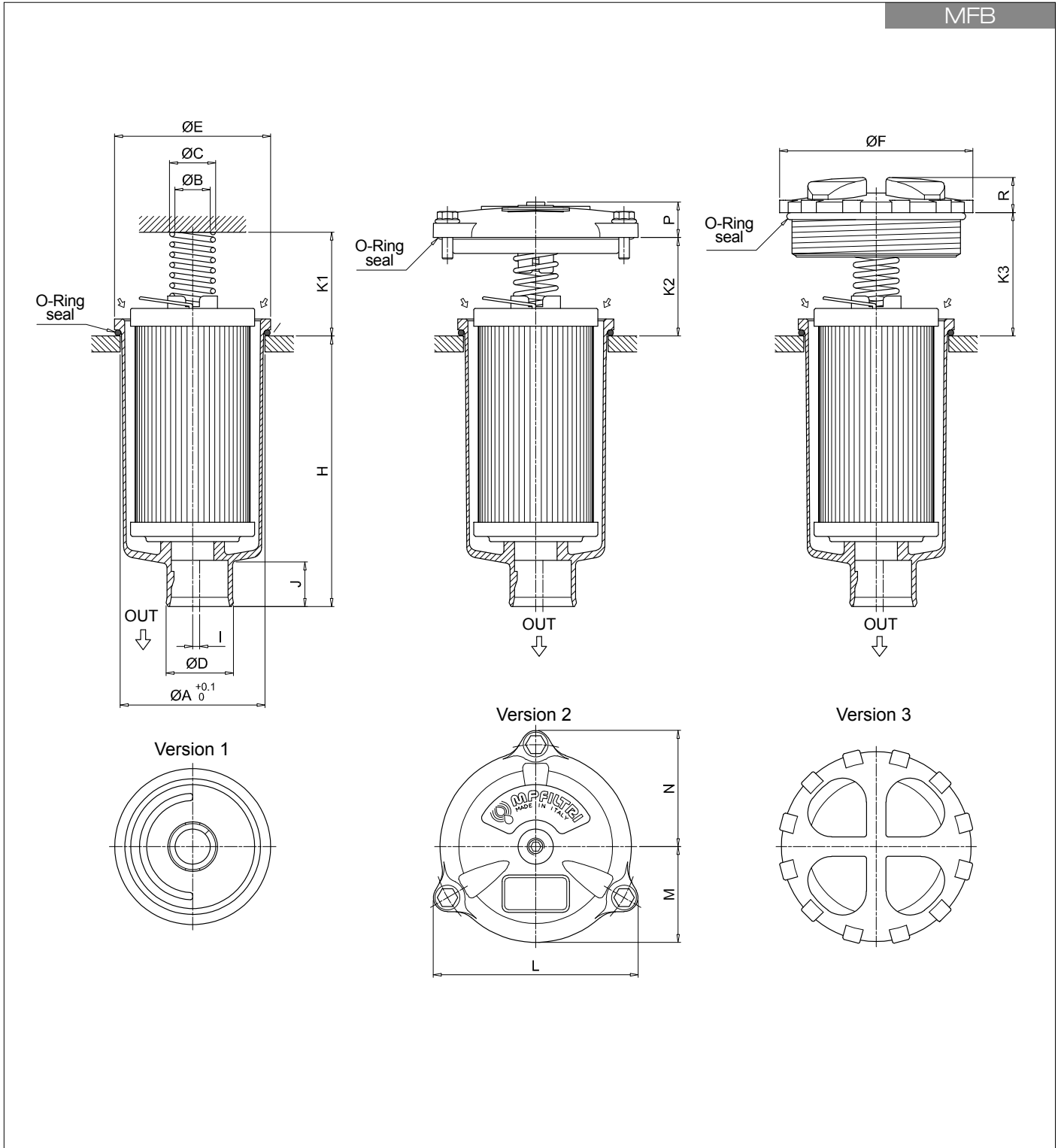
FILTER ELEMENT

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									
				Axx	Mxx	Pxx							
N	10 bar				•	•							
H	10 bar			•									
						Seals		Bypass valve		Execution			
						B NBR		E 3 bar		P01 MP Filtri standard			
						V FPM		 1.75 bar		Pxx Customized			

ACCESSORIES

Additional features											page	
		MFB020	MFB030	MFB100	MFB180	MFB190						
TE	Extension tube	•	•	•	•	•						248
DFS	Diffuser with fast lock connection			•								249

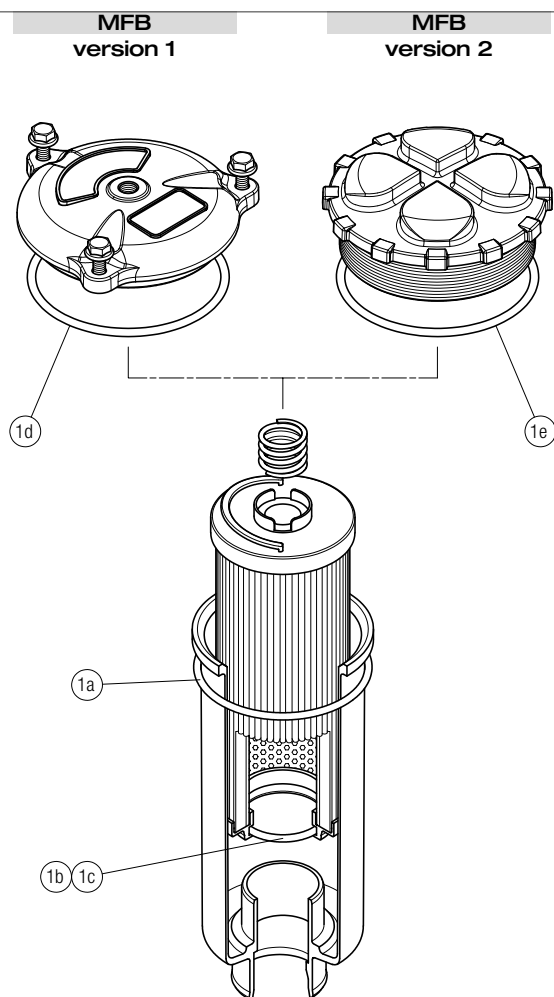
MFB



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]
020	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
030	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
100	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: Q.ty: 1 pc. 1 (1a ÷ 1e)		
Filter series	Seal Kit code number	
	NBR	FPM
MFB 020	02050572	02050573
MFB 030	02050574	02050575
MFB 100	02050555	02050556
MFB 180	02050576	02050577
MFB 190	02050578	02050579

MPH series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 3000 l/min



Description

Technical data

Return filter

Maximum working pressure up to 1 MPa (10 bar)

Flow rate up to 3000 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 3000 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 column, to hold the ferrous particles
- 2, 3, 4 or 8 fixing holes for installation, to meet any reservoir surface flatness and roughness
- Flat seal, to meet any reservoir surface flatness and roughness
- 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
 - Nylon: MPH 110-114-116-120
 - Aluminium: MPH 250
 - Anodized Aluminium: MPH 630
 - Painted Aluminium: MPH 660
 - Steel: MPH 850
- Insert assembly
 - Nylon: MPH 110-114-116-120
 - Aluminium: MPH 250-630-660-850
- Diffuser: Tinned 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

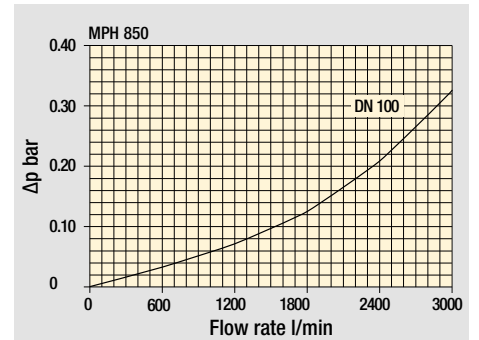
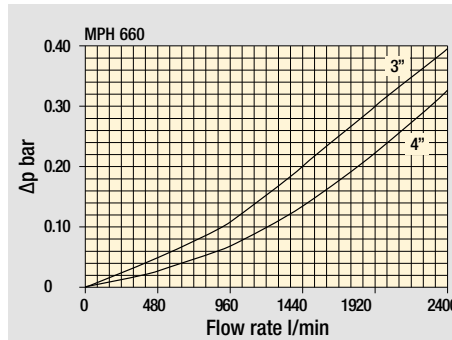
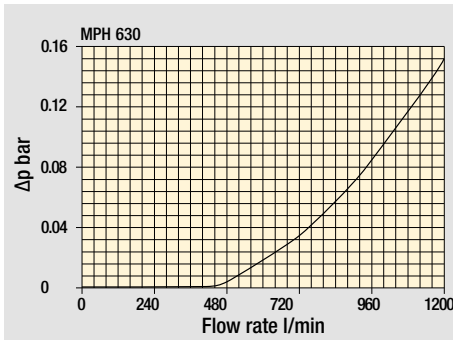
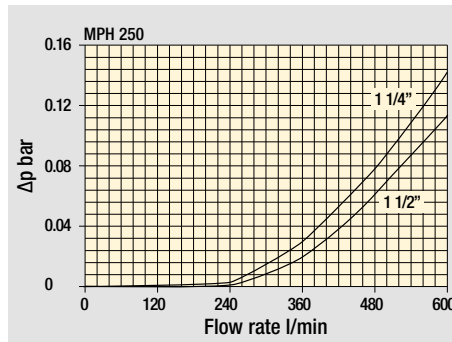
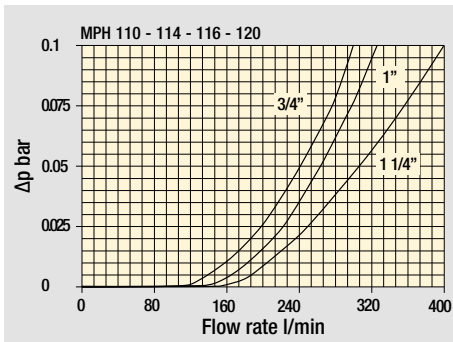
MPH filters are provided for vertical mounting



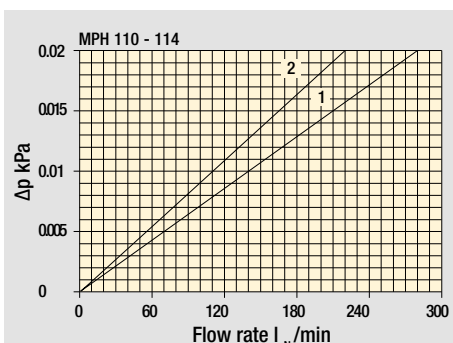
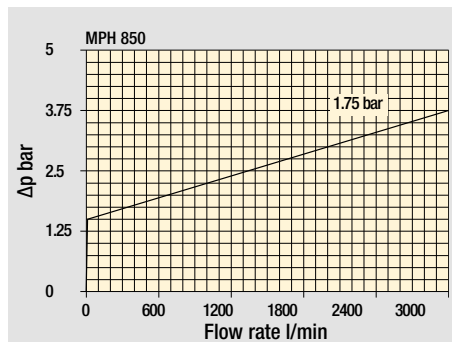
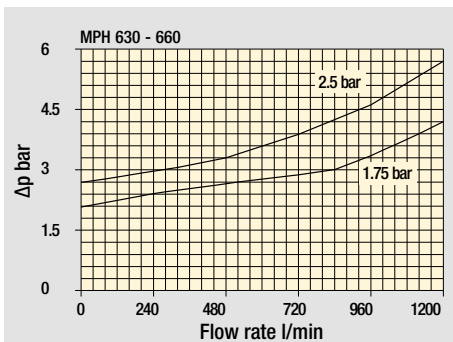
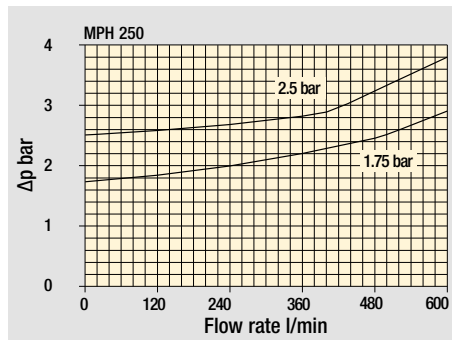
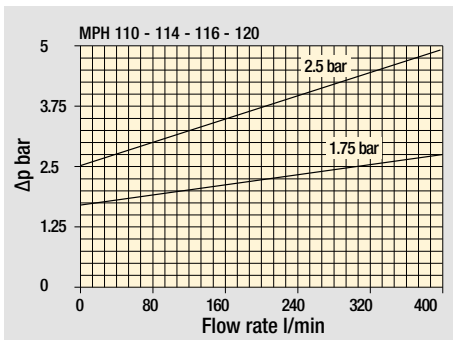
Weights [kg] and volumes [dm³]

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

Filter housings Δp pressure drop



Bypass valve pressure drop



- 1 C With air breather 10 μm
- 2 D With anti-splash and SAP50 10 μm

Air breather pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

MPH GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MPH 110-114 116-120	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
MPH 250	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
MPH 630	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
MPH 660	4	370	399	903	1042	1460	2376	1596	1830
	5	624	699	1282	1343	1997	2663	2182	2331
MPH 850	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.

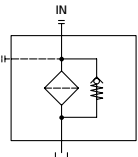
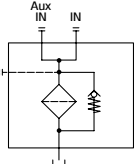
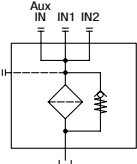
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style 1 connection	Style 2 connections	Style 3 connections
MPH 110		•	
MPH 114	•		
MPH 116	•		
MPH 120			•
MPH 250	•	•	
MPH 630	•	•	
MPH 660	•		
MPH 850		•	

		
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Designation & Ordering code

COMPLETE FILTER

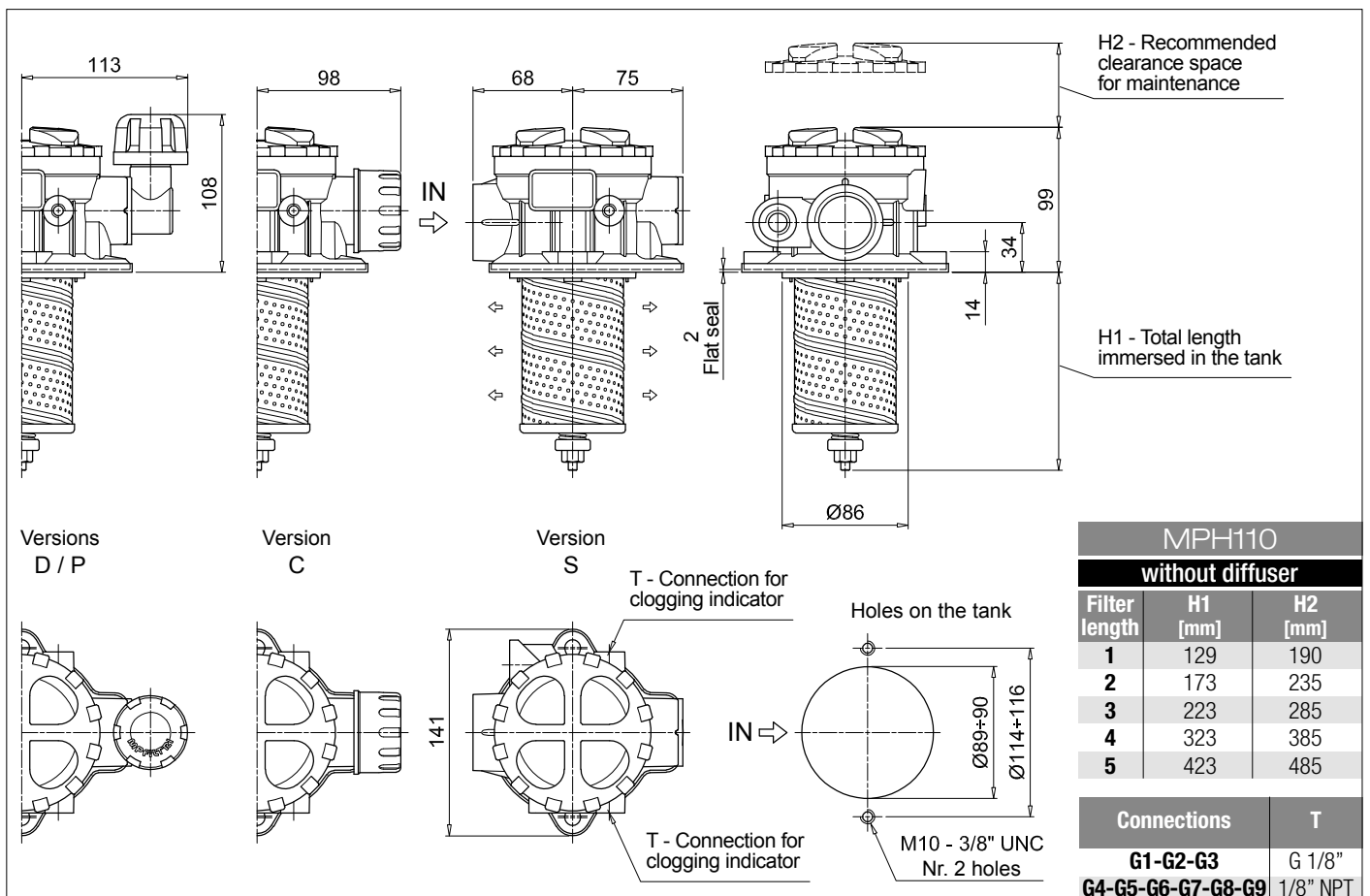
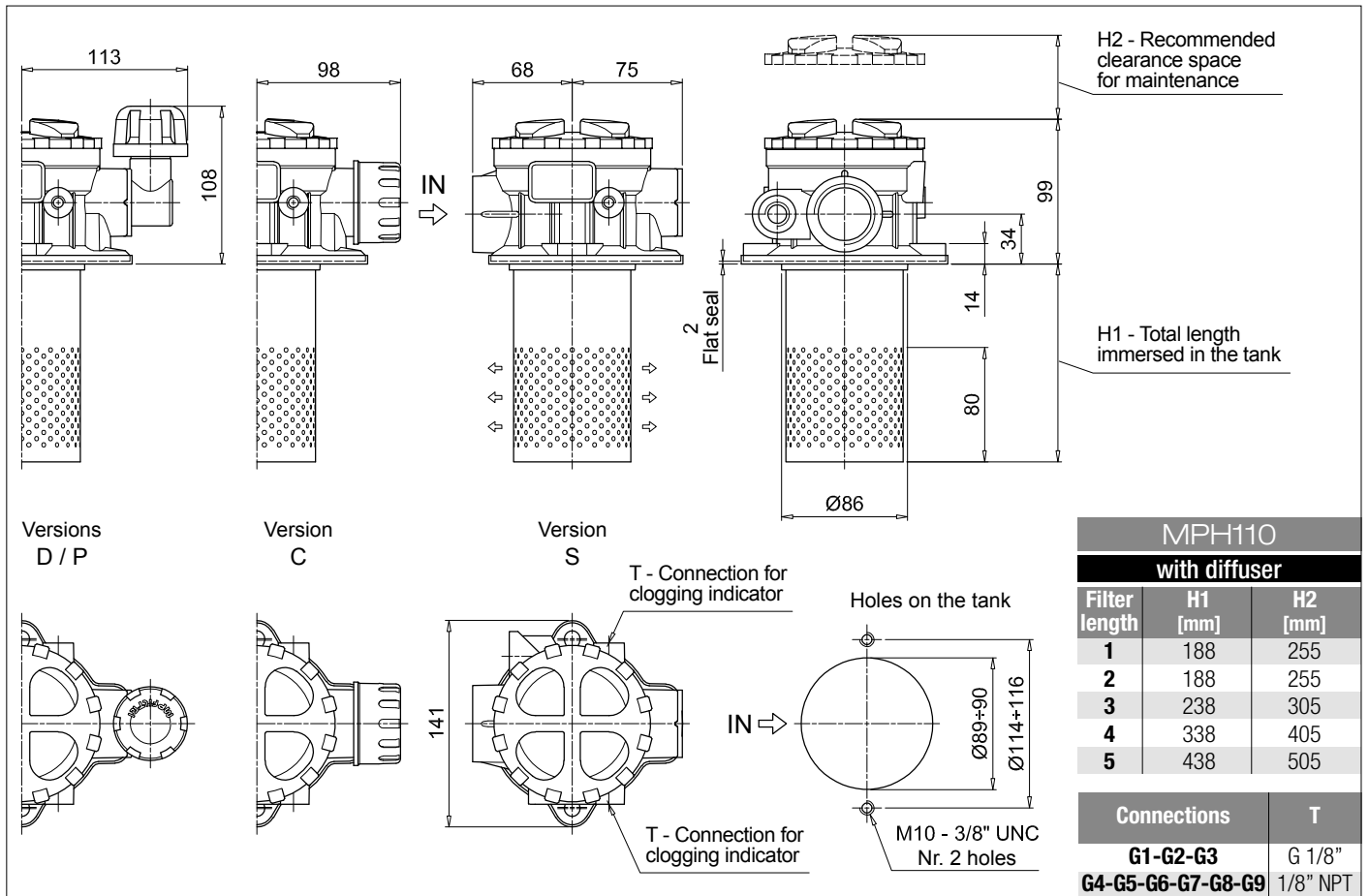
Series and size		Configuration example: MPH110 1 S D S A G1 1 A10 P01									
MPH110											
Length											
1 2 3 4 5											
Bypass valve											
S Without bypass		C 1.75 bar		E 2.5 bar							
Diffuser and magnetic column											
D With diffuser, with magnetic column											
F With diffuser, without magnetic column											
O Without diffuser, with magnetic column											
E Without diffuser, without magnetic column											
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							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•		filter element compatible with fluids HFA-HFB-HFC						
Z FPM head anodized		•	•								
Main Connections		Aux size 1		Aux size 2		Main Connections		Aux size 1		Aux size 2	
G1 G 3/4"		G 3/8"		G 1/2"		G7 SAE 12 - 1 1/16" - 12 UN		SAE 6 - 9/16" - 18 UNF		SAE 8 - 3/4" - 16 UNF	
G2 G 1"						G8 SAE 16 - 1 5/16" - 12 UN					
G3 G 1 1/4"						G9 SAE 20 - 1 5/8" - 12 UN					
G4 3/4" NPT						3/8" NPT		1/2" NPT			
G5 1" NPT											
G6 1 1/4" NPT											
Aux connection - see previous table											
0 Not machined		1 Aux size 1		2 Aux size 2							
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

Element series and size		Configuration example: MR100 1 A10 A P01				
MR100						
Element length						
1 2 3 4 5						
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		Execution
				A NBR		P01 MP Filtri standard
				V FPM		Pxx Customized

ACCESSORIES

Indicators		page			page
BVA	Axial pressure gauge	240	BEA	Electrical pressure indicator	239
BVR	Radial pressure gauge	240	BEM	Electrical pressure indicator	239
BVP	Visual pressure indicator with automatic reset	241	BLA	Electrical / visual pressure indicator	239-240
BVQ	Visual pressure indicator with manual reset	241			
Additional features		page			
DPT	Dipstick	249			



Designation & Ordering code

COMPLETE FILTER

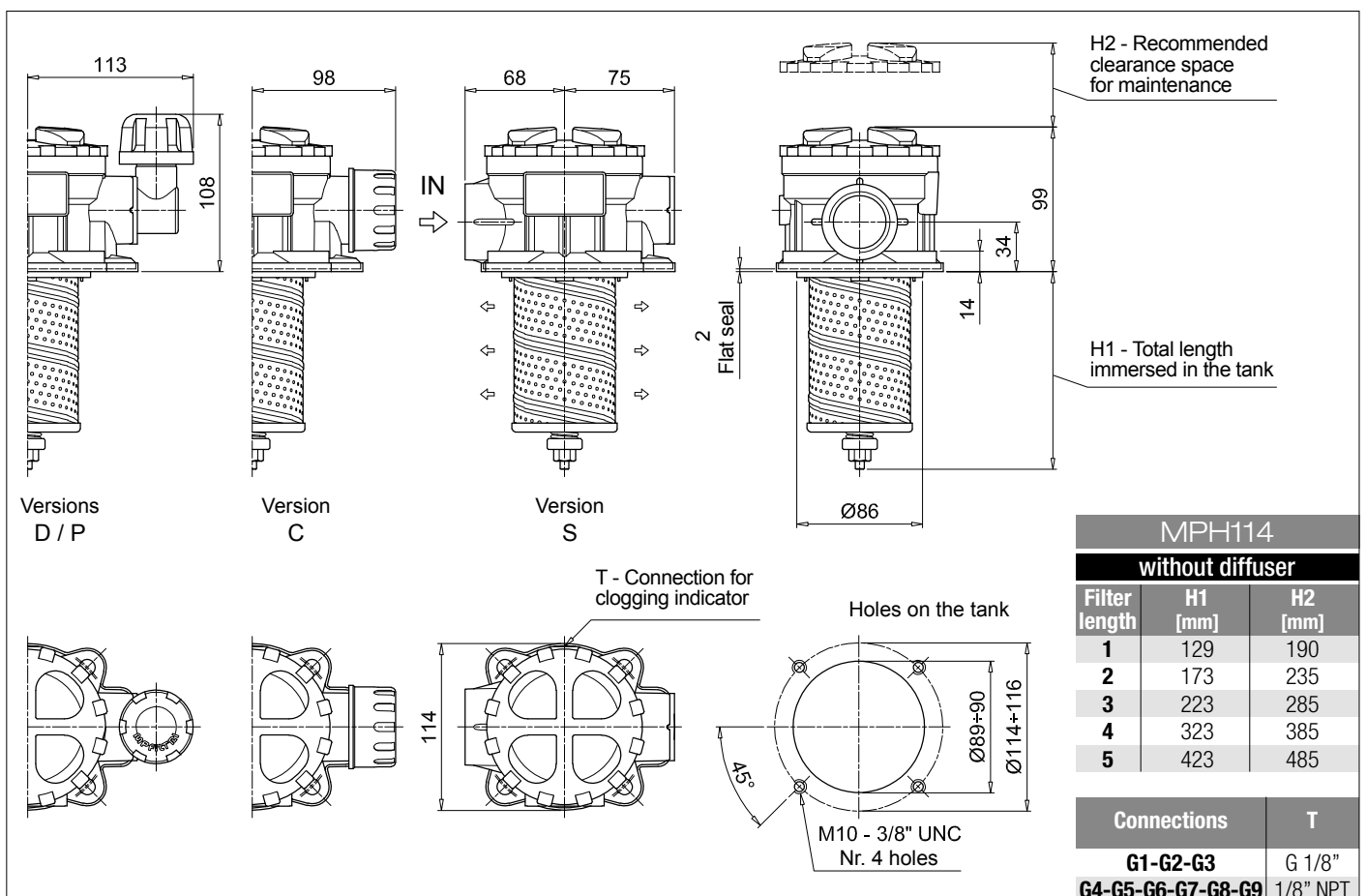
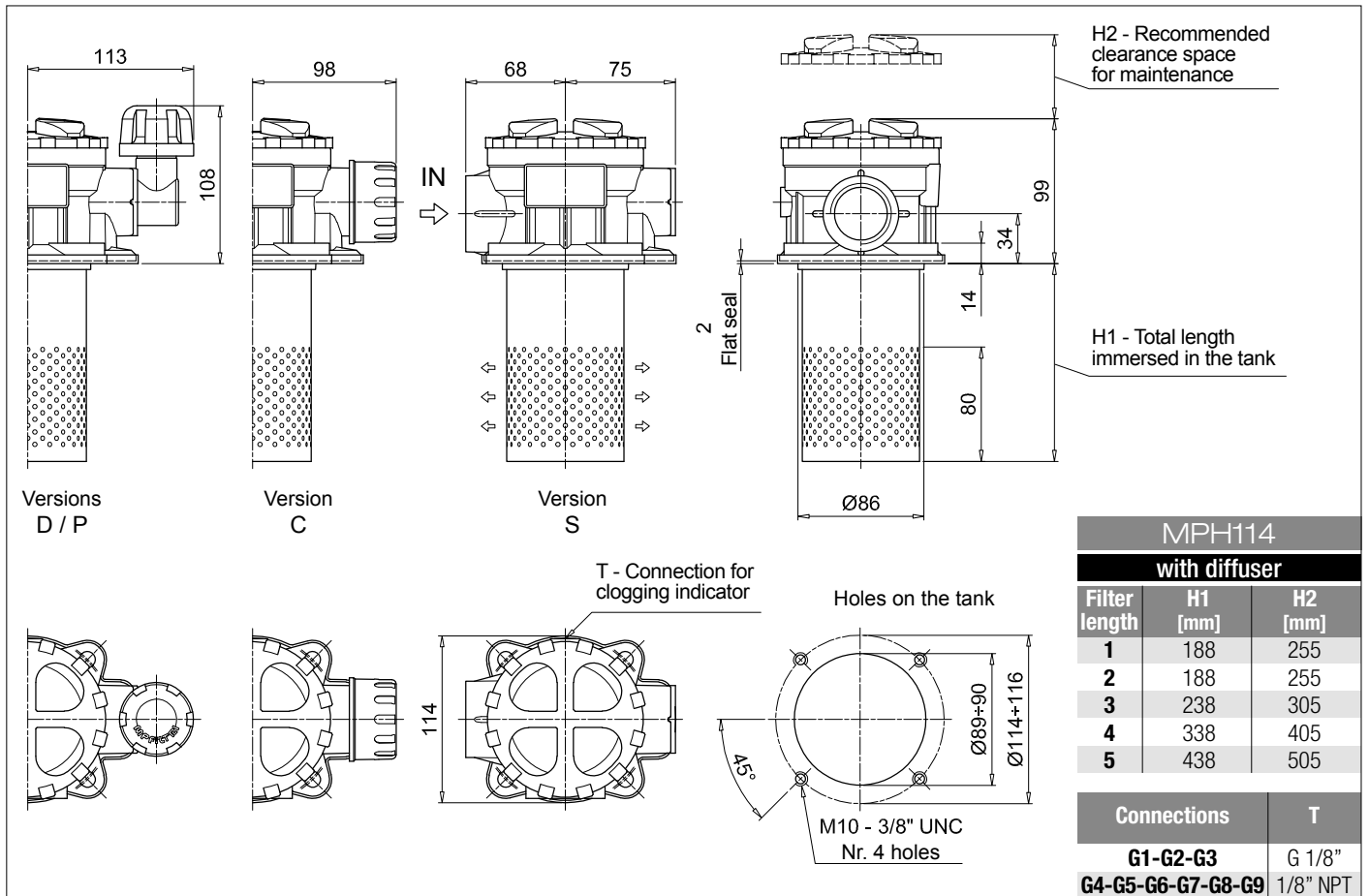
Series and size MPH114	Configuration example: MPH114 3 C E C Z G6 M60 P01									
Length 1 2 3 4 5										
Bypass valve S Without bypass C 1.75 bar E 2.5 bar										
Diffuser and magnetic column D With diffuser, with magnetic column F With diffuser, without magnetic column O Without diffuser, with magnetic column E Without diffuser, without magnetic column										
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							
A NBR	•	•	•							
V FPM	•	•	•							
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC						
Z FPM head anodized	•	•								
Connections										
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										
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

Element series and size MR100	Configuration example: MR100 3 M60 V P01				
Element length 1 2 3 4 5					
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	Execution	
			A NBR	P01 MP Filtri standard	
			V FPM	Pxx Customized	

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
DPT Dipstick	249		



Designation & Ordering code

COMPLETE FILTER

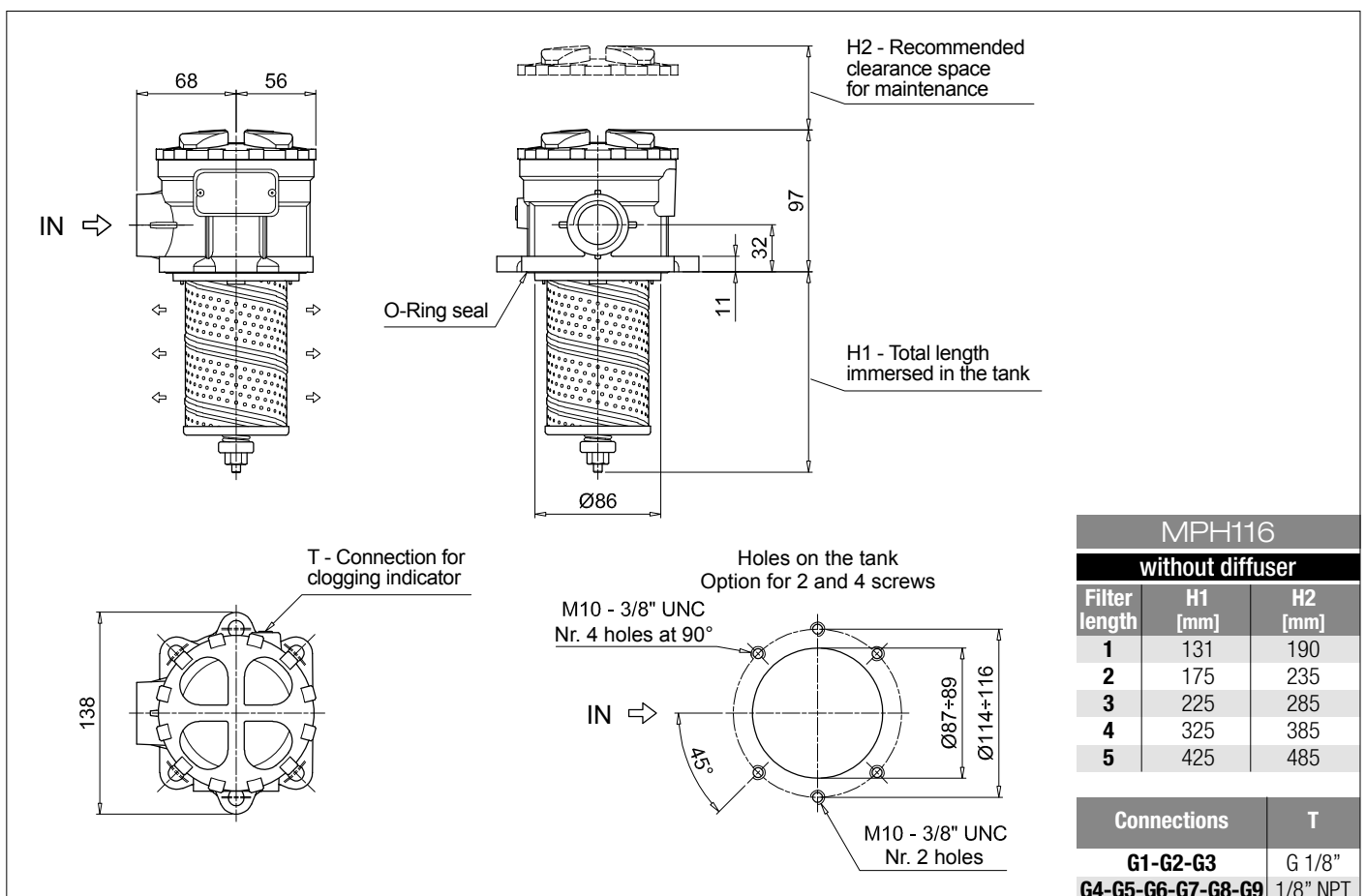
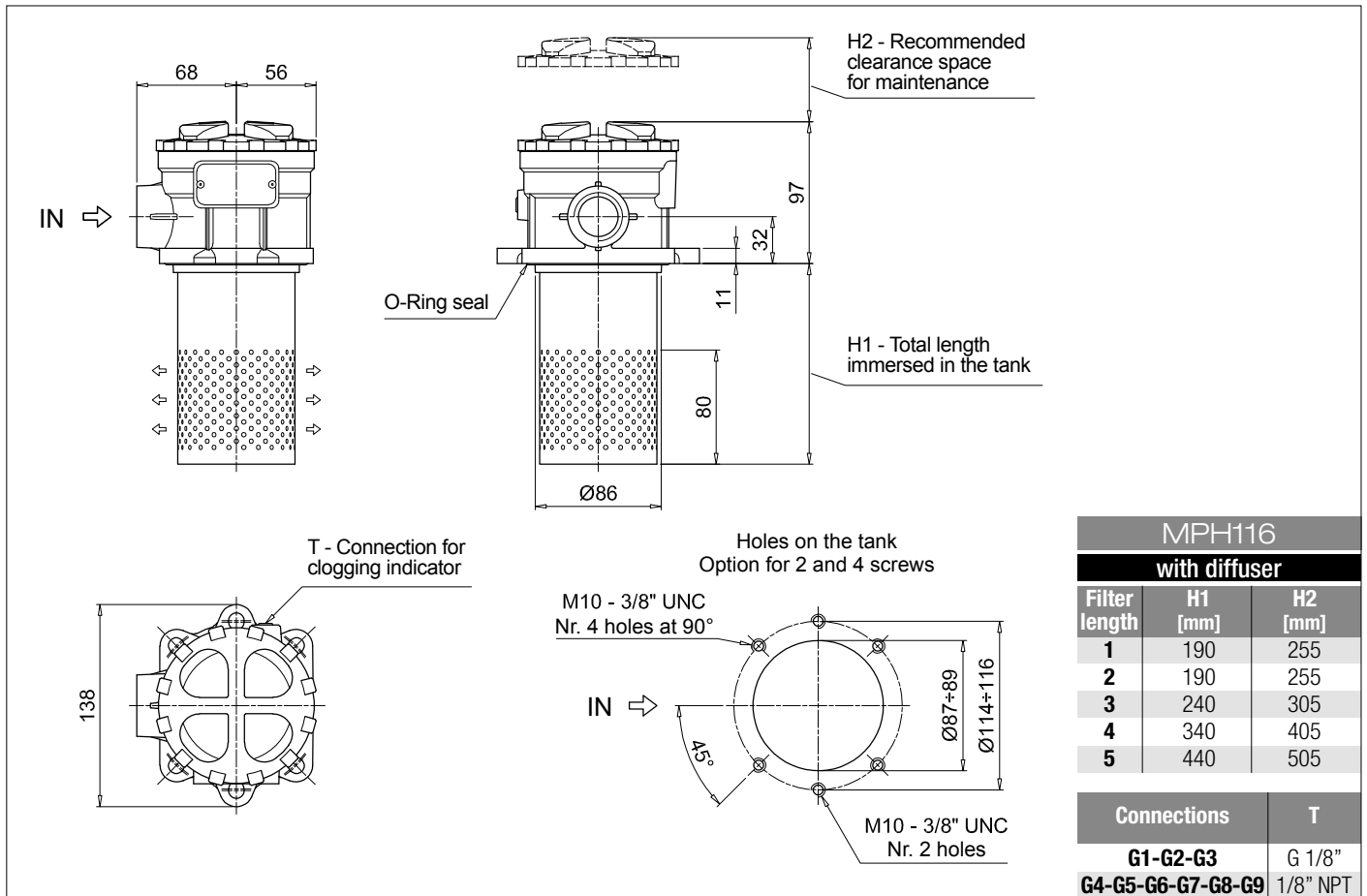
Series and size MPH116	Configuration example: MPH116										
Length 1 2 3 4 5	5	S	D	S	A	G1	A10	P01			
Bypass valve S Without bypass C 1.75 bar E 2.5 bar											
Diffuser and magnetic column D With diffuser, with magnetic column F With diffuser, without magnetic column O Without diffuser, with magnetic column E Without diffuser, without magnetic column											
Air breather S Without air breather											
Seals and treatments	Filtration rating										
A NBR	Axx	Mxx	Pxx								
V FPM	•	•	•								
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC							
Z FPM head anodized	•	•									
Flat seal on the head on request											
Connections											
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											
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

Element series and size MR100	Configuration example: MR100			
Element length 1 2 3 4 5	5	A10	A	P01
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		Execution
		A NBR		P01 MP Filtri standard
		V FPM		Pxx Customized

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features			
DPT Dipstick	249		



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 column

D With diffuser, with magnetic column

F With diffuser, without magnetic column

O Without diffuser, with magnetic column

E Without diffuser, without magnetic column

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

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

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

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)

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

Seals

A NBR

V FPM

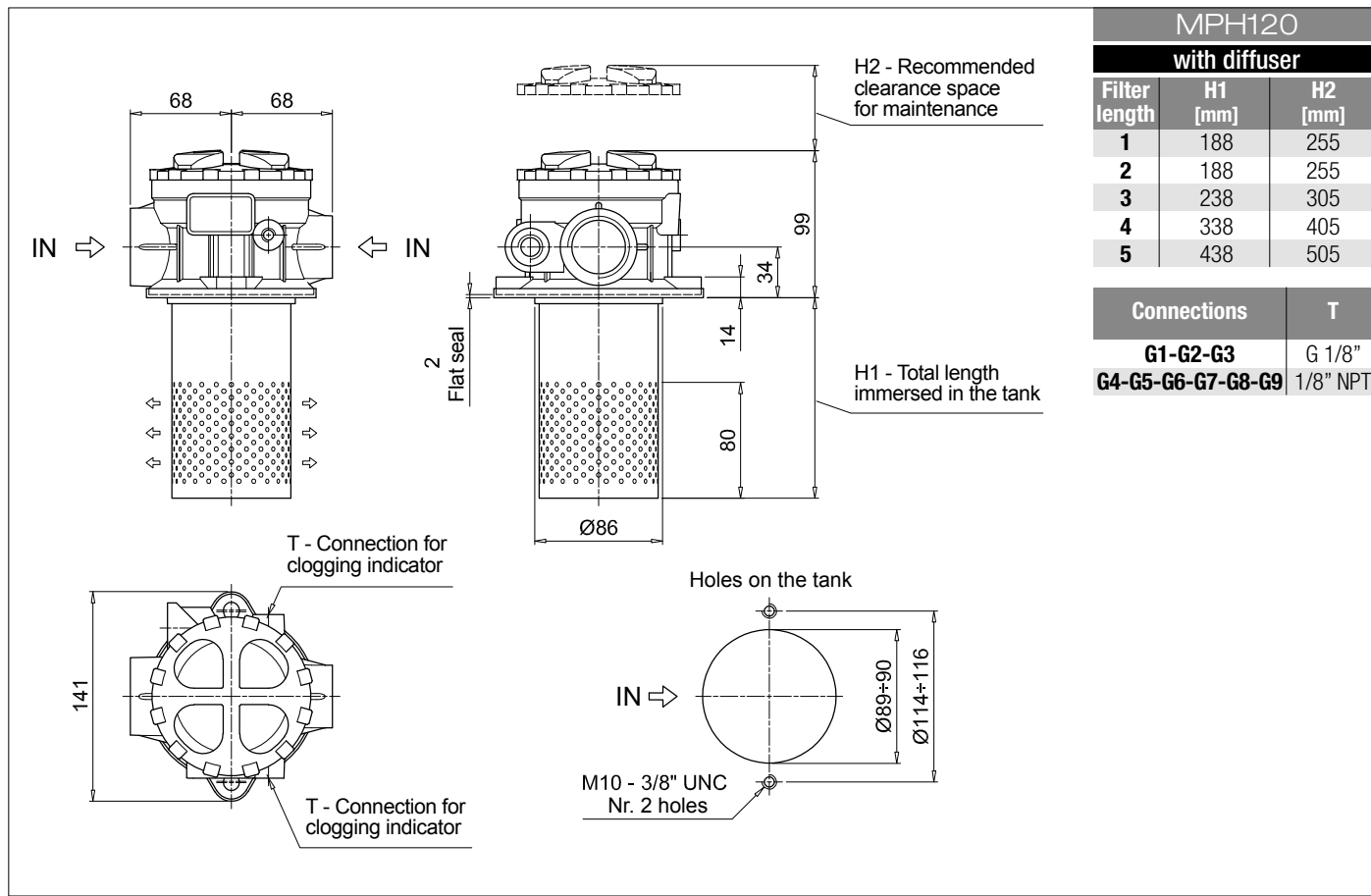
Execution

P01 MP Filtri standard

Pxx Customized

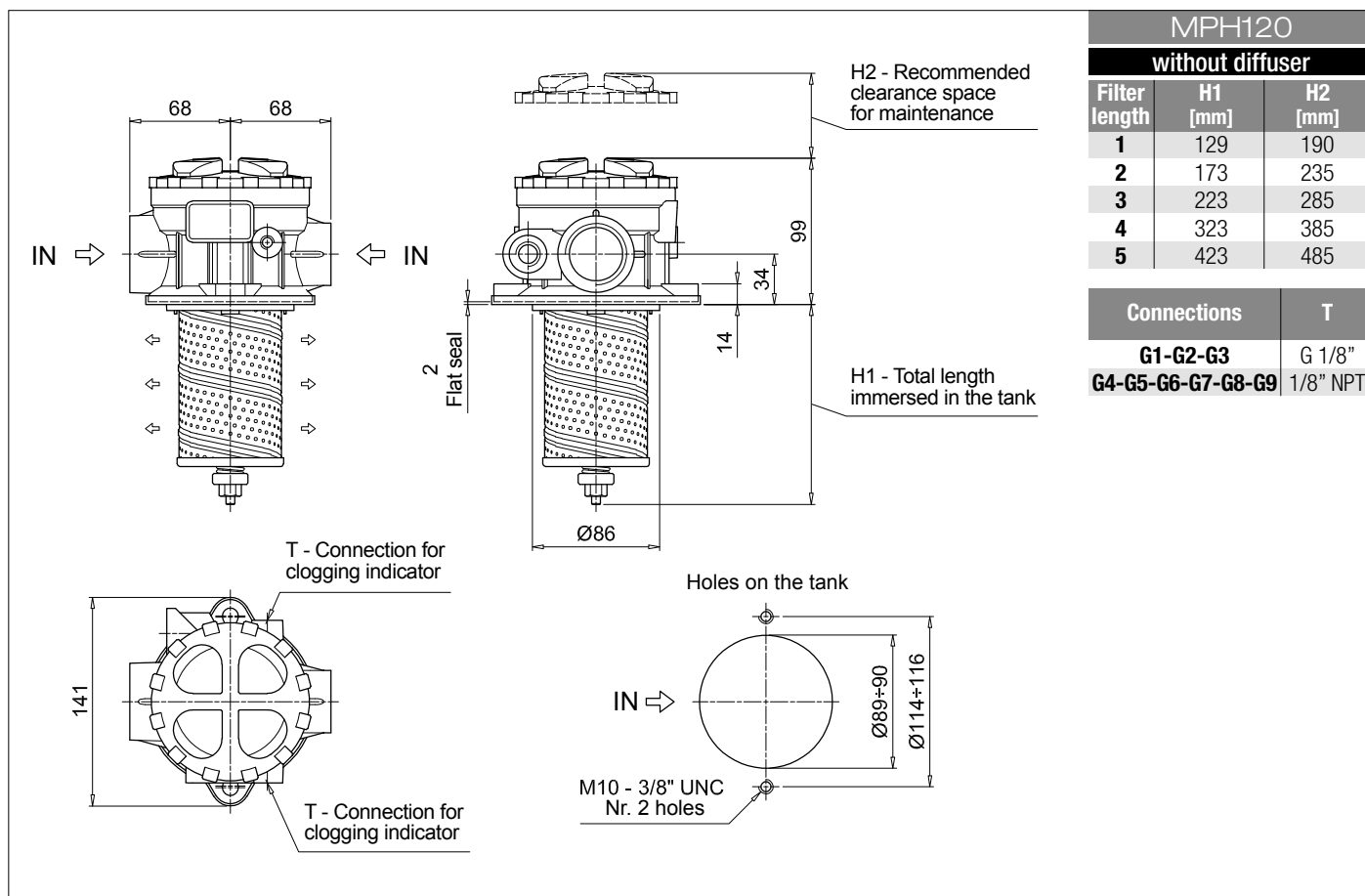
ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		
Additional features	page		
DPT Dipstick	249		



MPH120		
with diffuser		
Filter length	H1 [mm]	H2 [mm]
1	188	255
2	188	255
3	238	305
4	338	405
5	438	505

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



MPH120		
without diffuser		
Filter length	H1 [mm]	H2 [mm]
1	129	190
2	173	235
3	223	285
4	323	385
5	423	485

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

Designation & Ordering code

COMPLETE FILTER

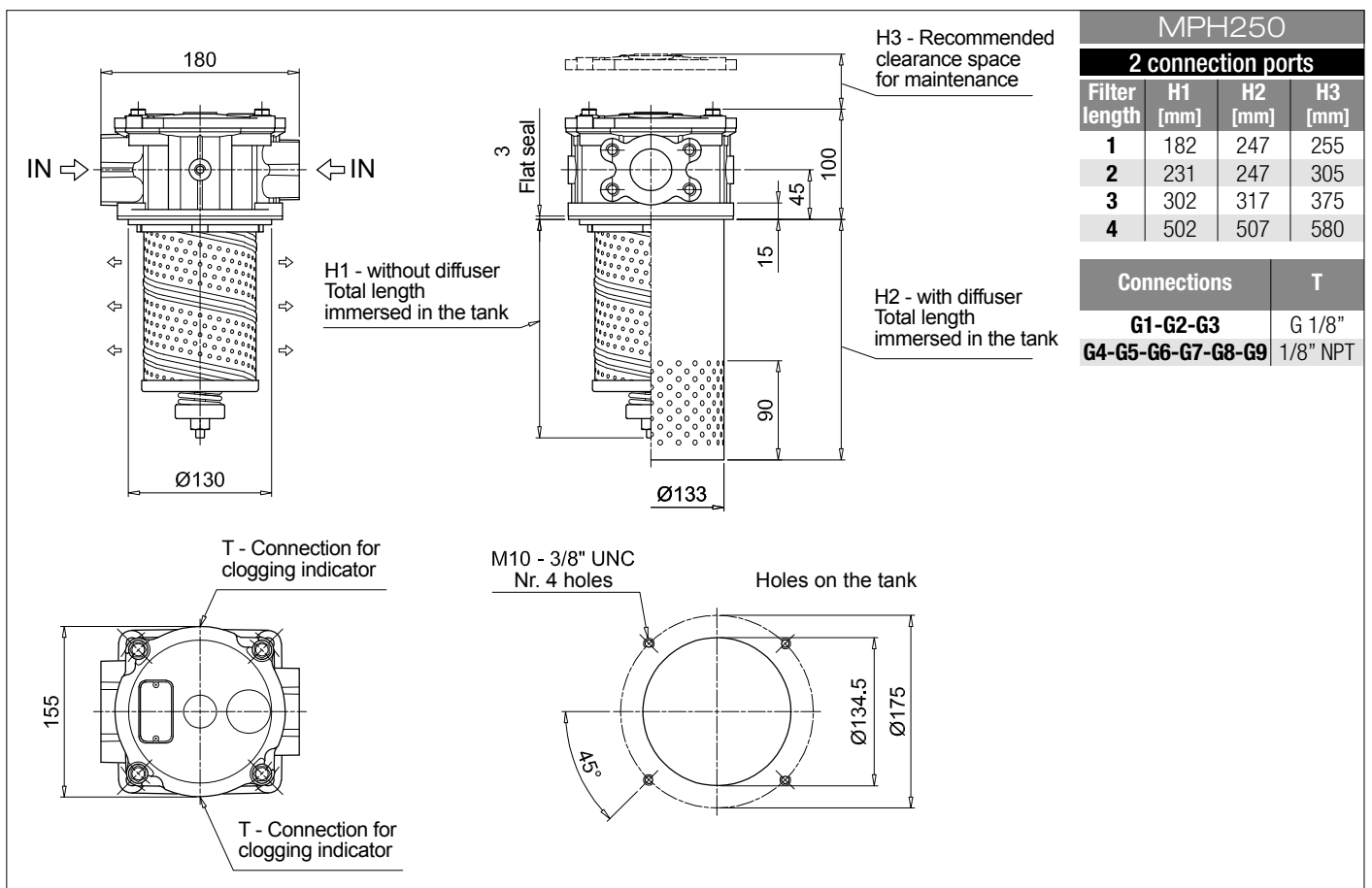
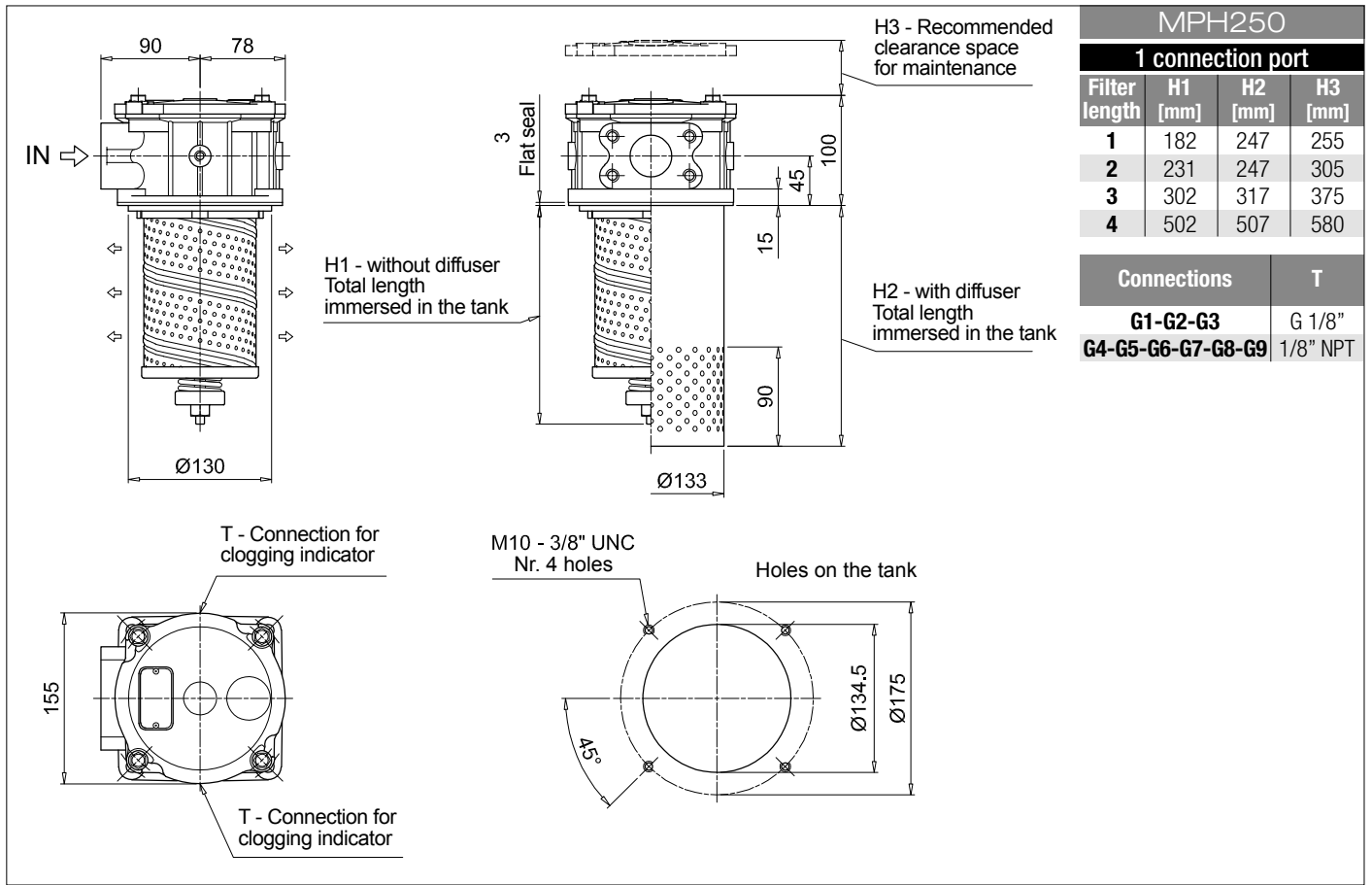
Series and size MPH250		Configuration example: MPH250 1 C D S A G1 A10 P01									
Length 1 2 3 4											
Bypass valve S Without bypass C 1.75 bar E 2.5 bar											
Diffuser and magnetic column D With diffuser, with magnetic column F With diffuser, without magnetic column O Without diffuser, with magnetic column E Without diffuser, without magnetic column											
Air breather S Without air breather											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A	NBR	•	•	•							
V	FPM	•	•	•							
W	NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC						
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)		Execution									
A03	Inorganic microfiber 3 µm	M25	Wire mesh 25 µm	P01							MP Filtri standard
A06	Inorganic microfiber 6 µm	M60	Wire mesh 60 µm	Pxx							Customized
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								

FILTER ELEMENT

Element series and size MR250		Configuration example: MR250 1 A10 A P01								
Element length 1 2 3 4										
Filtration rating (filter media)							Seals		Execution	
A03	Inorganic microfiber 3 µm	M25	Wire mesh 25 µm			A	NBR	P01	MP Filtri standard	
A06	Inorganic microfiber 6 µm	M60	Wire mesh 60 µm			V	FPM	Pxx	Customized	
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							

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		



Designation & Ordering code

COMPLETE FILTER

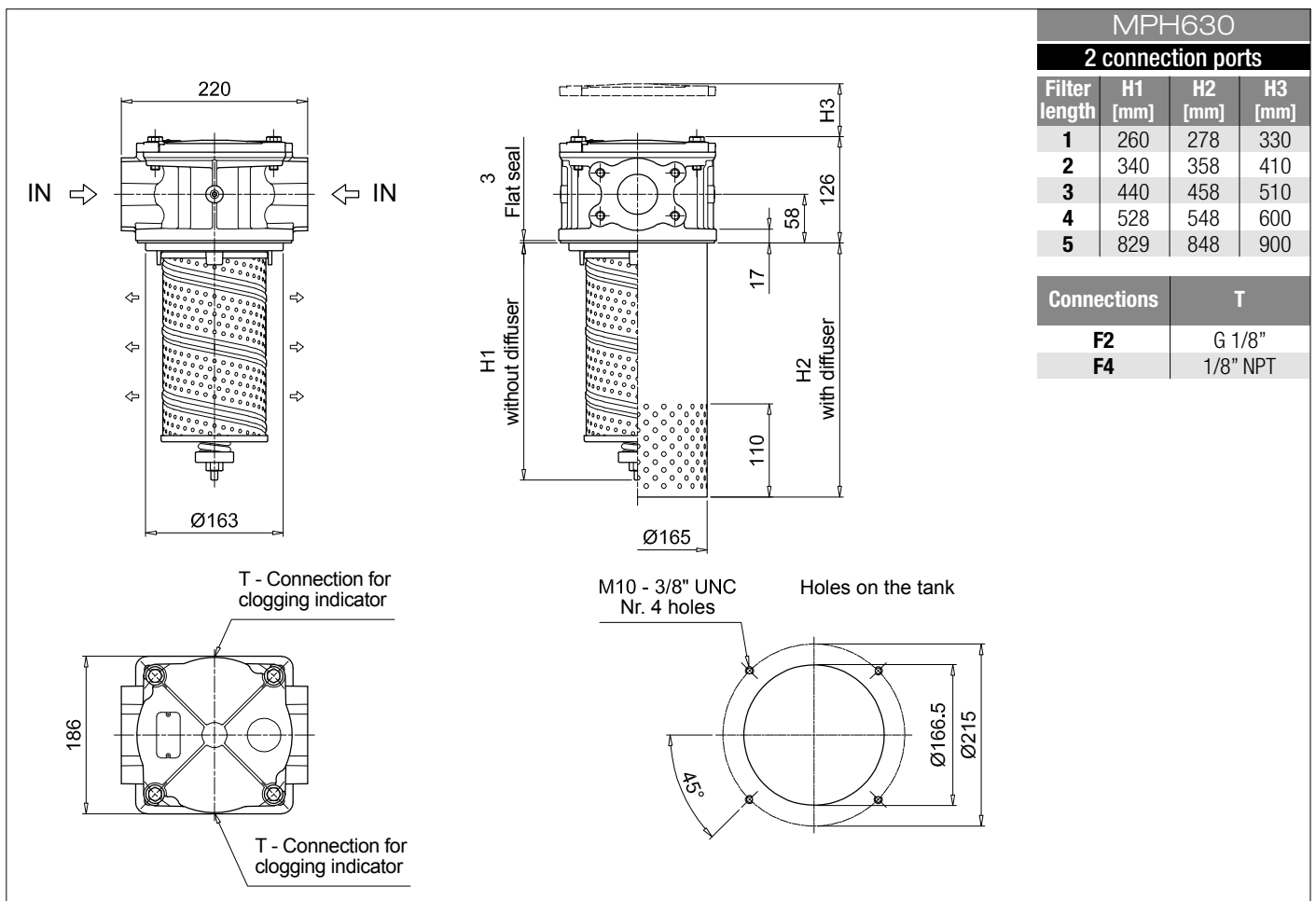
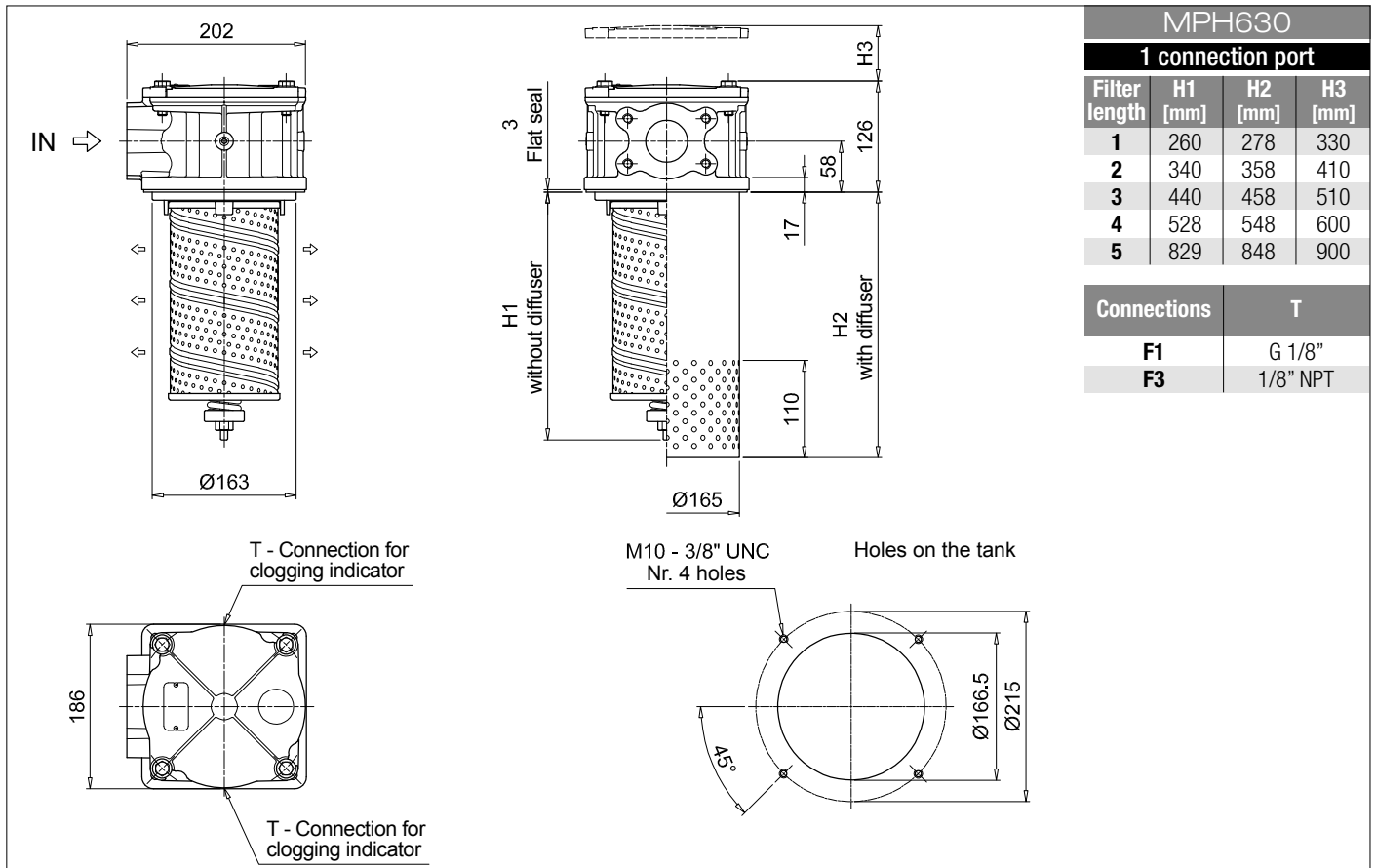
Series and size	Configuration example: MPH630 1 S E S W F1 M25 P01									
MPH630										
Length	1 2 3 4 5									
Bypass valve	S Without bypass C 1.75 bar E 2.5 bar									
Diffuser and magnetic column	D With diffuser, with magnetic column F With diffuser, without magnetic column O Without diffuser, with magnetic column E Without diffuser, without magnetic column									
Air breather	S Without air breather									
Seals and treatments	Filtration rating									
	Axx	Mxx	Pxx							
A NBR	•	•	•							
V FPM	•	•	•							
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC						
Z FPM head anodized	•	•								
Main Connections	Rear connections									
F1 2 1/2" SAE 3000 psi/M	-									
F2 2 1/2" SAE 3000 psi/M	2" SAE 3000 psi/M									
F3 2 1/2" SAE 3000 psi/UNC	-									
F4 2 1/2" SAE 3000 psi/UNC	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									
	Execution									
	P01 MP Filtri standard									
	Pxx Customized									

FILTER ELEMENT

Element series and size	Configuration example: MR630 1 M25 A P01				
MR630					
Element length	1 2 3 4 5				
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		Execution		
	A NBR		P01 MP Filtri standard		
	V FPM		Pxx Customized		

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		



Designation & Ordering code

COMPLETE FILTER

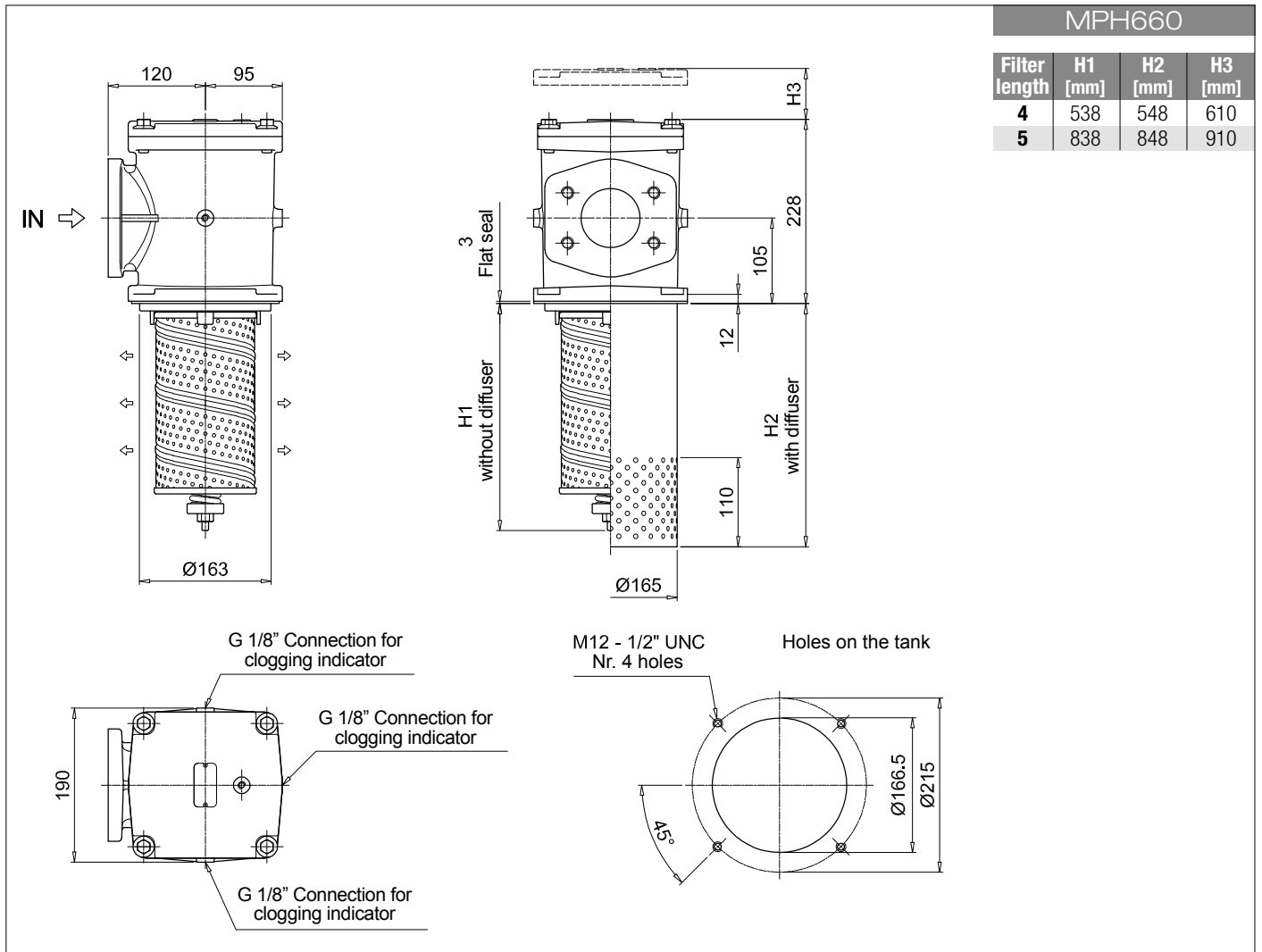
Series and size	Configuration example: MPH660 4 C D S A F2 A10 P01																			
MPH660																				
Length	4 5																			
Bypass valve	S Without bypass C 1.75 bar E 2.5 bar																			
Diffuser and magnetic column	D With diffuser, with magnetic column F With diffuser, without magnetic column O Without diffuser, with magnetic column E Without diffuser, without magnetic column																			
Air breather	S Without air breather																			
Seals and treatments	Filtration rating																			
	Axx	Mxx	Pxx																	
A NBR	•	•	•																	
V FPM	•	•	•																	
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC																
Z FPM head anodized	•	•																		
Main Connections	F1 3" SAE 3000 psi/M F2 4" SAE 3000 psi/M																			
Filtration rating (filter media)	<table border="0"> <tr> <td>A03 Inorganic microfiber 3 µm</td> <td>M25 Wire mesh 25 µm</td> </tr> <tr> <td>A06 Inorganic microfiber 6 µm</td> <td>M60 Wire mesh 60 µm</td> </tr> <tr> <td>A10 Inorganic microfiber 10 µm</td> <td>M90 Wire mesh 90 µm</td> </tr> <tr> <td>A16 Inorganic microfiber 16 µm</td> <td>P10 Resin impregnated paper 10 µm</td> </tr> <tr> <td>A25 Inorganic microfiber 25 µm</td> <td>P25 Resin impregnated paper 25 µm</td> </tr> </table>										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
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

Element series and size	Configuration example: MR630 5 M25 A P01														
MR630															
Element length	4 5														
Filtration rating (filter media)	<table border="0"> <tr> <td>A03 Inorganic microfiber 3 µm</td> <td>M25 Wire mesh 25 µm</td> </tr> <tr> <td>A06 Inorganic microfiber 6 µm</td> <td>M60 Wire mesh 60 µm</td> </tr> <tr> <td>A10 Inorganic microfiber 10 µm</td> <td>M90 Wire mesh 90 µm</td> </tr> <tr> <td>A16 Inorganic microfiber 16 µm</td> <td>P10 Resin impregnated paper 10 µm</td> </tr> <tr> <td>A25 Inorganic microfiber 25 µm</td> <td>P25 Resin impregnated paper 25 µm</td> </tr> </table>					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
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	Execution											
			A NBR	P01 MP Filtri standard											
			V FPM	Pxx Customized											

ACCESSORIES

Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		



Designation & Ordering code

COMPLETE FILTER

Series and size **MPH850** Configuration example: **MPH850** | **1** | **C** | **D** | **S** | **A** | **F1** | **A10** | **P01**

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

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

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

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
F1 UNI 2223 DN 100 PN 10/16	3" SAE 3000 psi/M
F2 UNI 2223 DN 100 PN 10/16	3" SAE 3000 psi/UNC
F5 Not machined	3" SAE 3000 psi/M
F6 Not machined	3" SAE 3000 psi/UNC
F7 4" SAE 3000 psi/M	3" SAE 3000 psi/M
F8 4" SAE 3000 psi/UNC	3" 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

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Element series and size **MR850** Configuration example: **MR850** | **1** | **A10** | **A** | **P01**

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

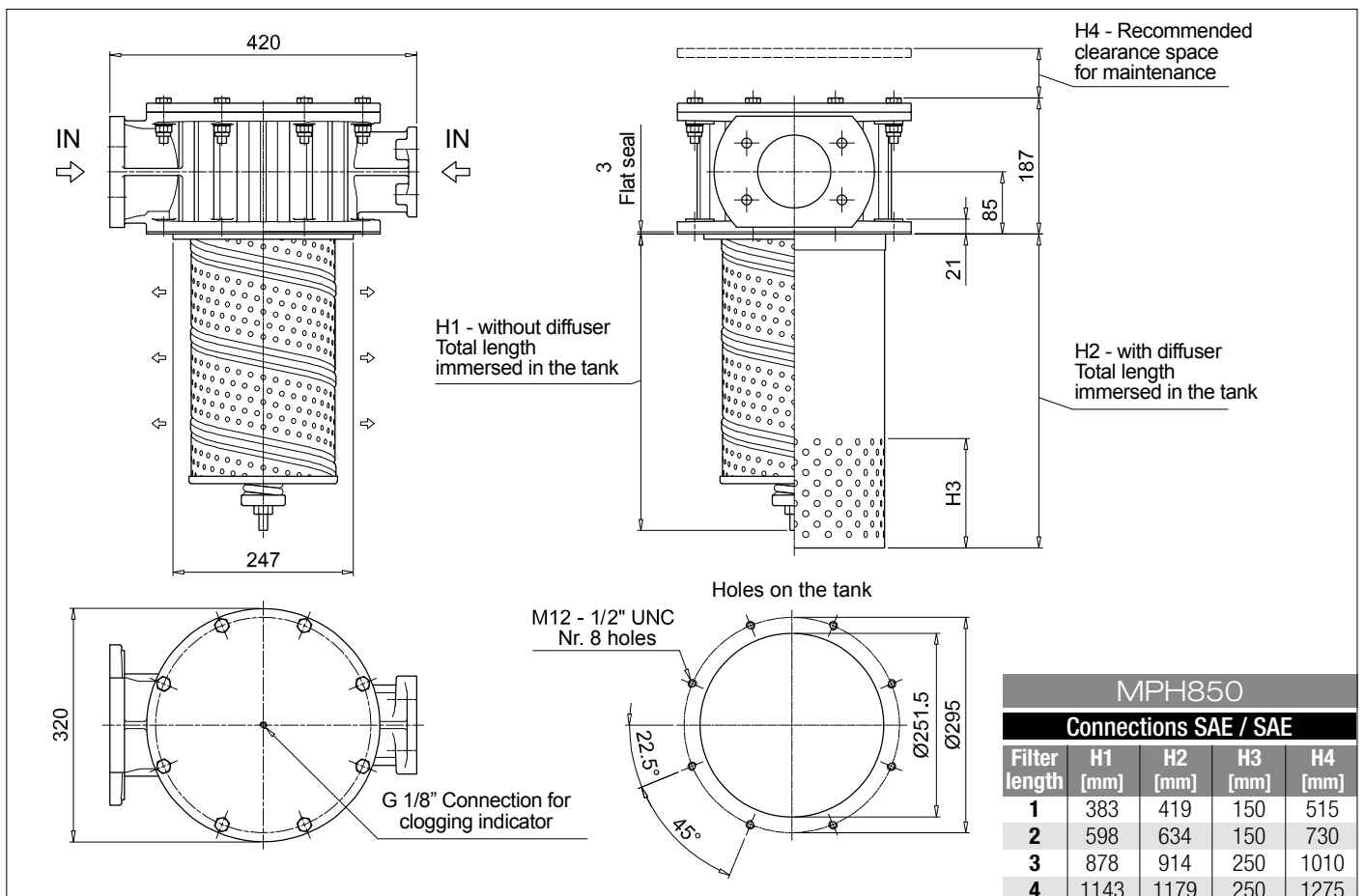
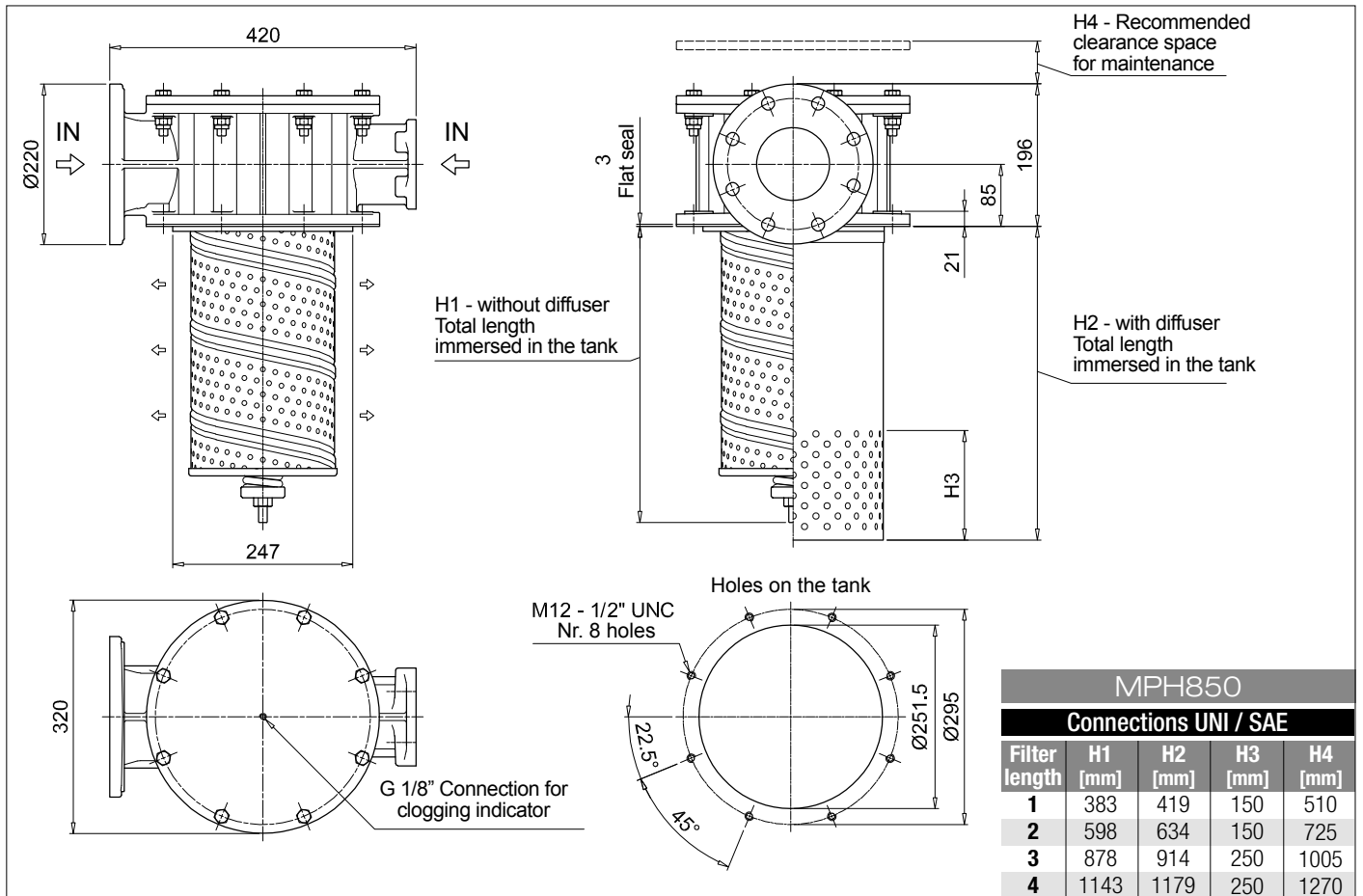
Filtration rating (filter media)	
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	P25 Resin impregnated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

Seals	
A	NBR
V	FPM

Execution	
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

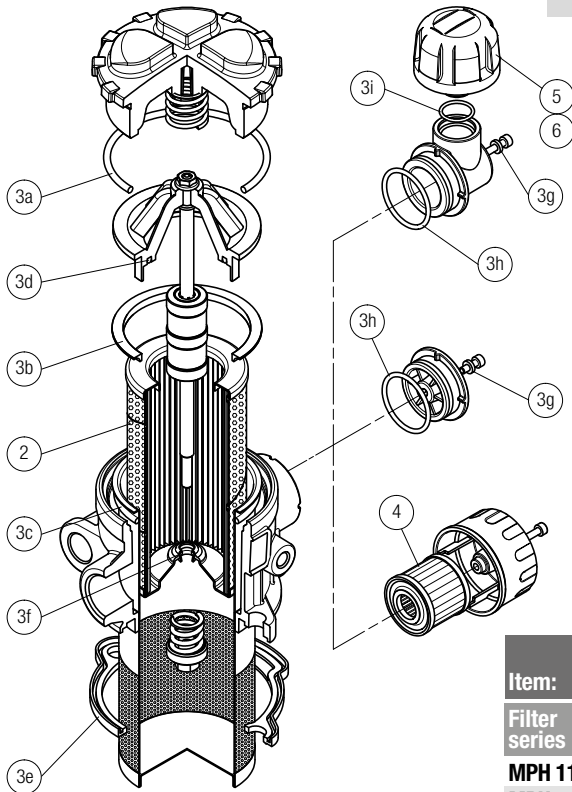
Indicators	page		page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator	239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator	239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator	239-240
BVQ Visual pressure indicator with manual reset	241		



MPH SPARE PARTS

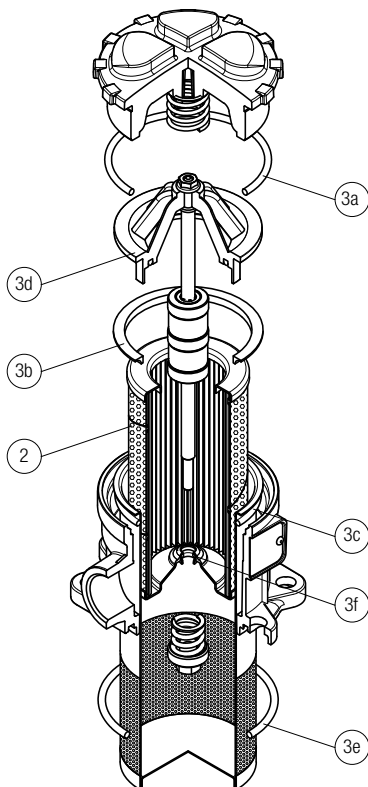
Order number for spare parts

MPH 110 - 114



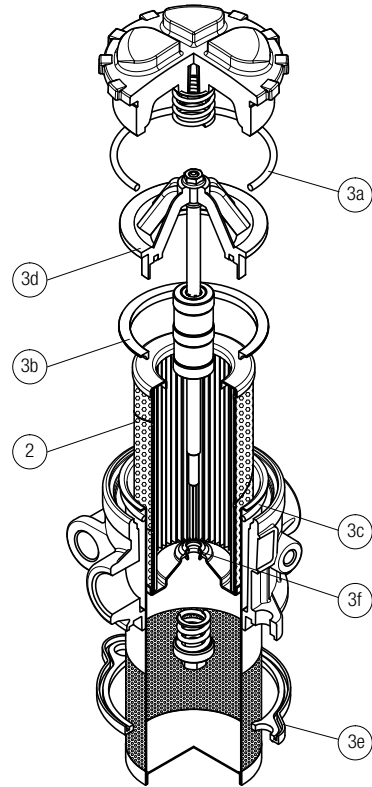
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:			
		NBR	FPM	C	D	P	
MPH 110	See order table	02050565	02050566	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01	
MPH 114	See order table	02050582	02050583				

MPH 116



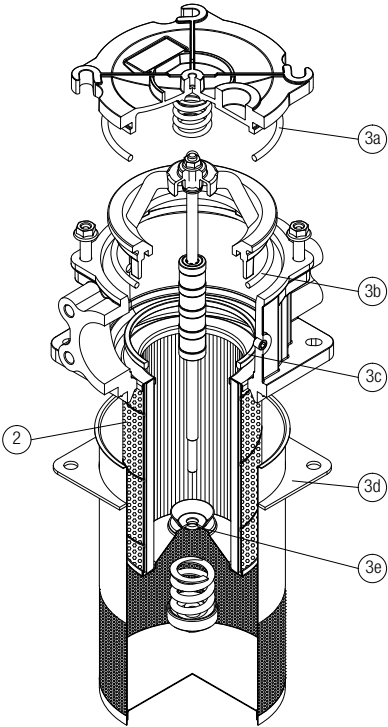
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPH 116	See order table	02050741	02050742

MPH 120



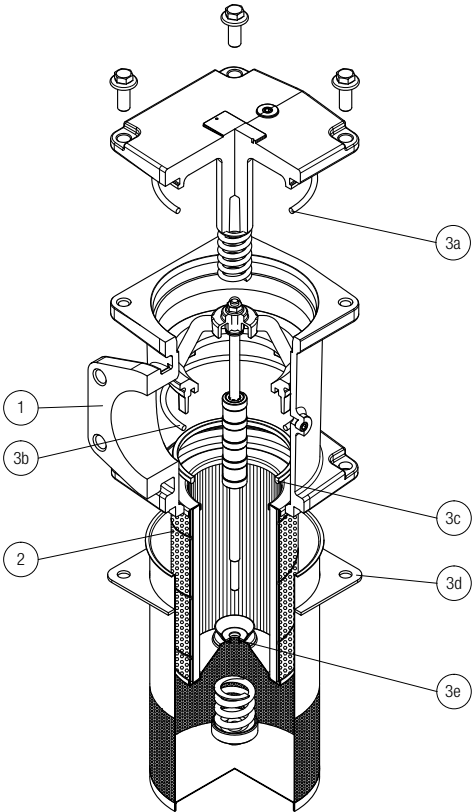
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPH 120	See order table	02050567	02050568

MPH 250 - 630



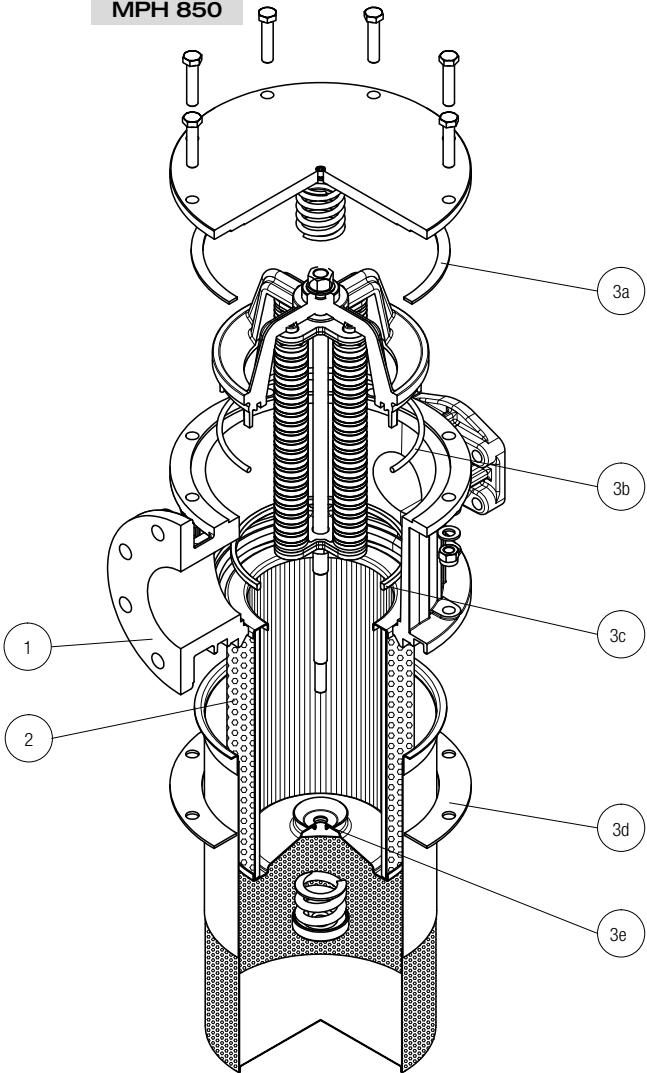
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
MPH 250	MPH 630	NBR	FPM
	2	3 (3a ÷ 3e)	
	See order table	02050151	02050152
	See order table	02050153	02050154

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 3000 l/min



Description

Technical data

Return filter

Maximum working pressure up to 1 MPa (10 bar)

Flow rate up to 3000 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 column, 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

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

MPI filters are provided for vertical mounting



Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm ³]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
MPI 100		0.90	1.00	1.20	1.50	1.80		0.90	0.90	1.20	1.60	1.80
MPI 250		2.20	2.50	2.90	4.30	-		3.50	3.50	4.50	7.00	-
MPI 630		3.40	3.90	4.30	5.40	6.60		5.80	7.40	9.50	11.40	13.50
MPI 850		15.20	18.20	21.20	25.20	-		8.80	12.20	16.70	20.80	-

Filters series	Length	A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
MPI 100	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
MPI 250	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
MPI 630	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
MPI 850	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.

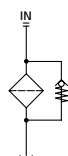
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbol

Filter series	Style 1 connection
MPI 100	•
MPI 250	•
MPI 630	•
MPI 850	•



MPI MPI100 - MPI250 - MPI630 - MPI850

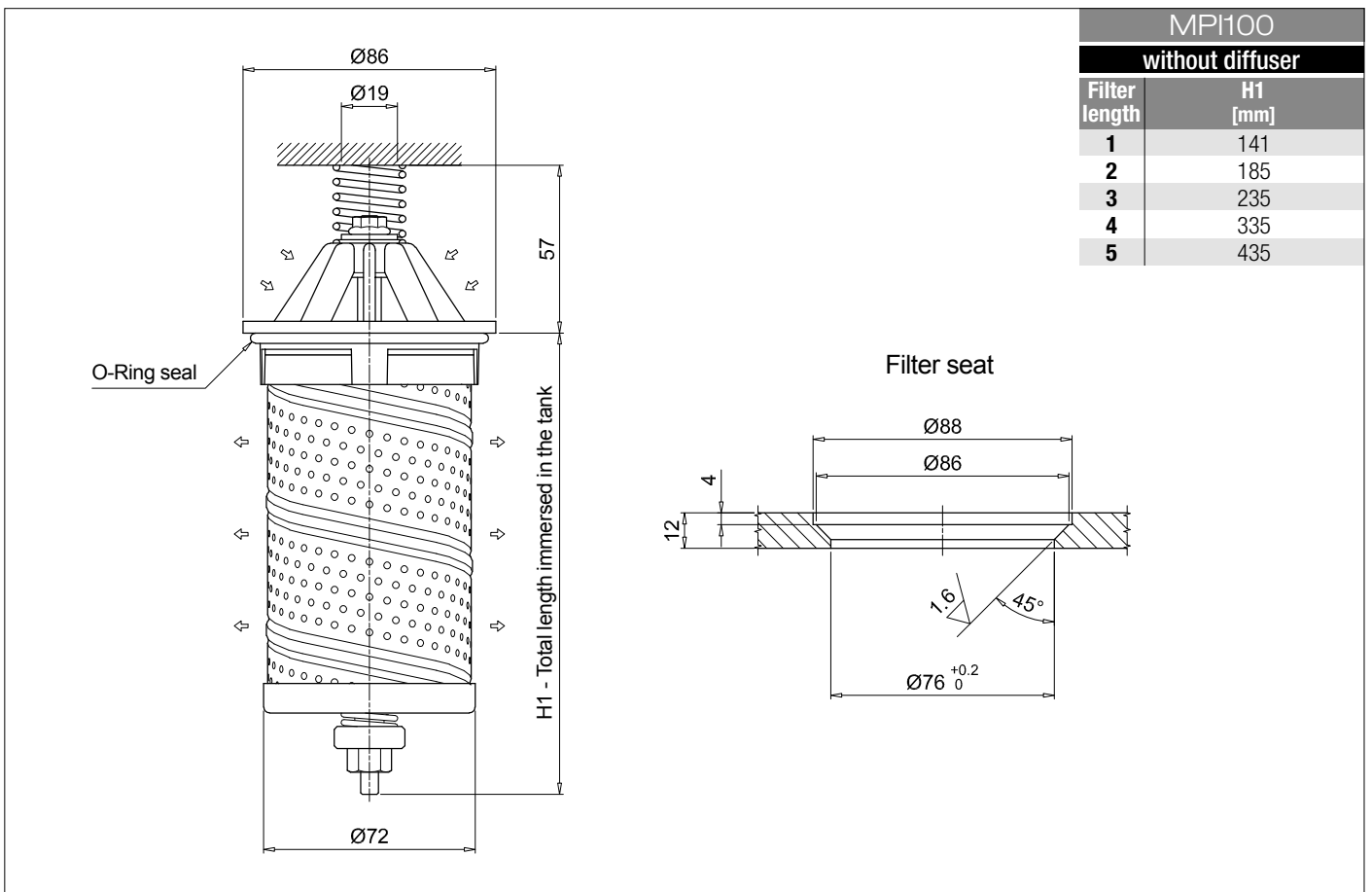
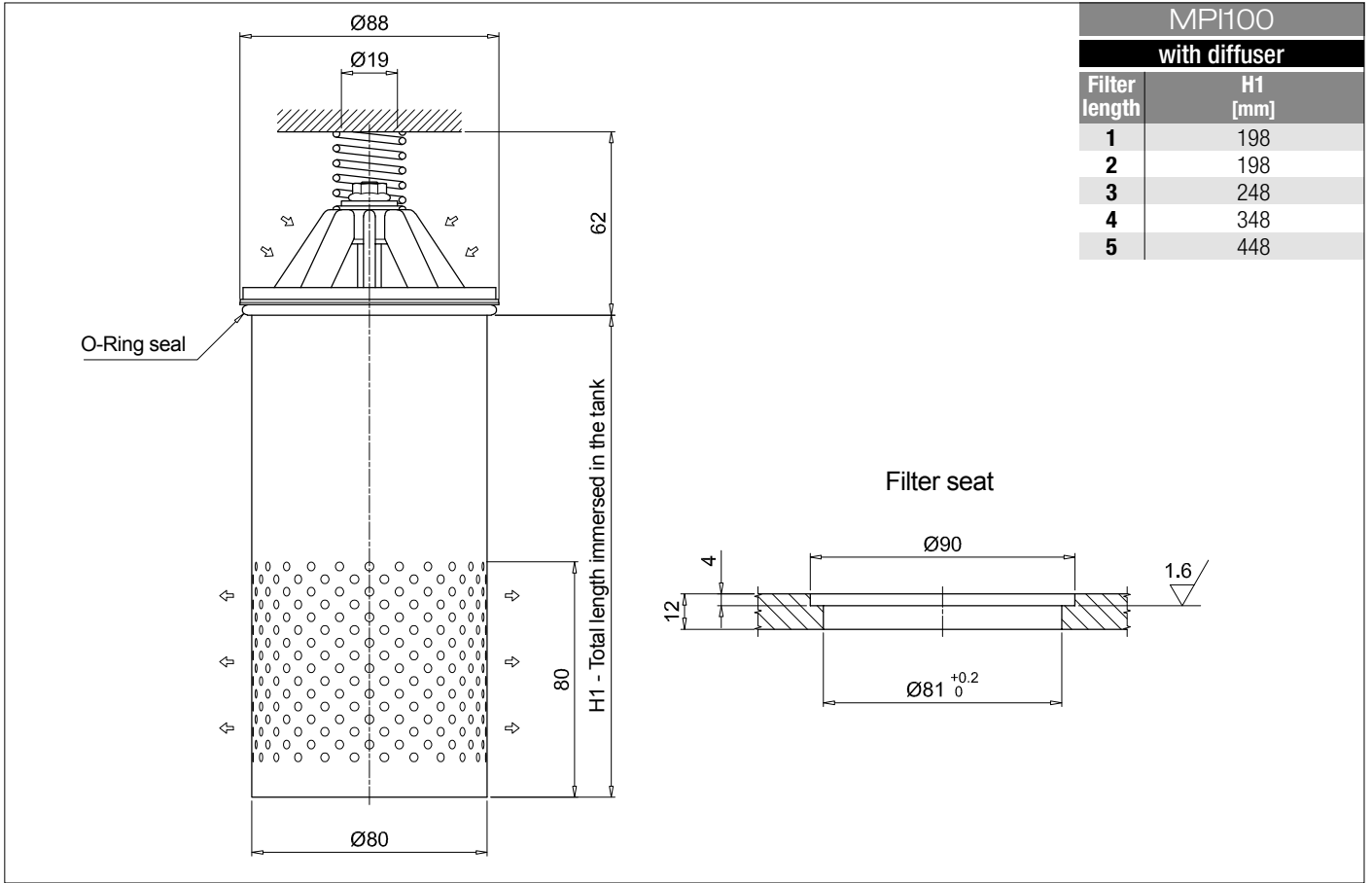
Designation & Ordering code

COMPLETE FILTER

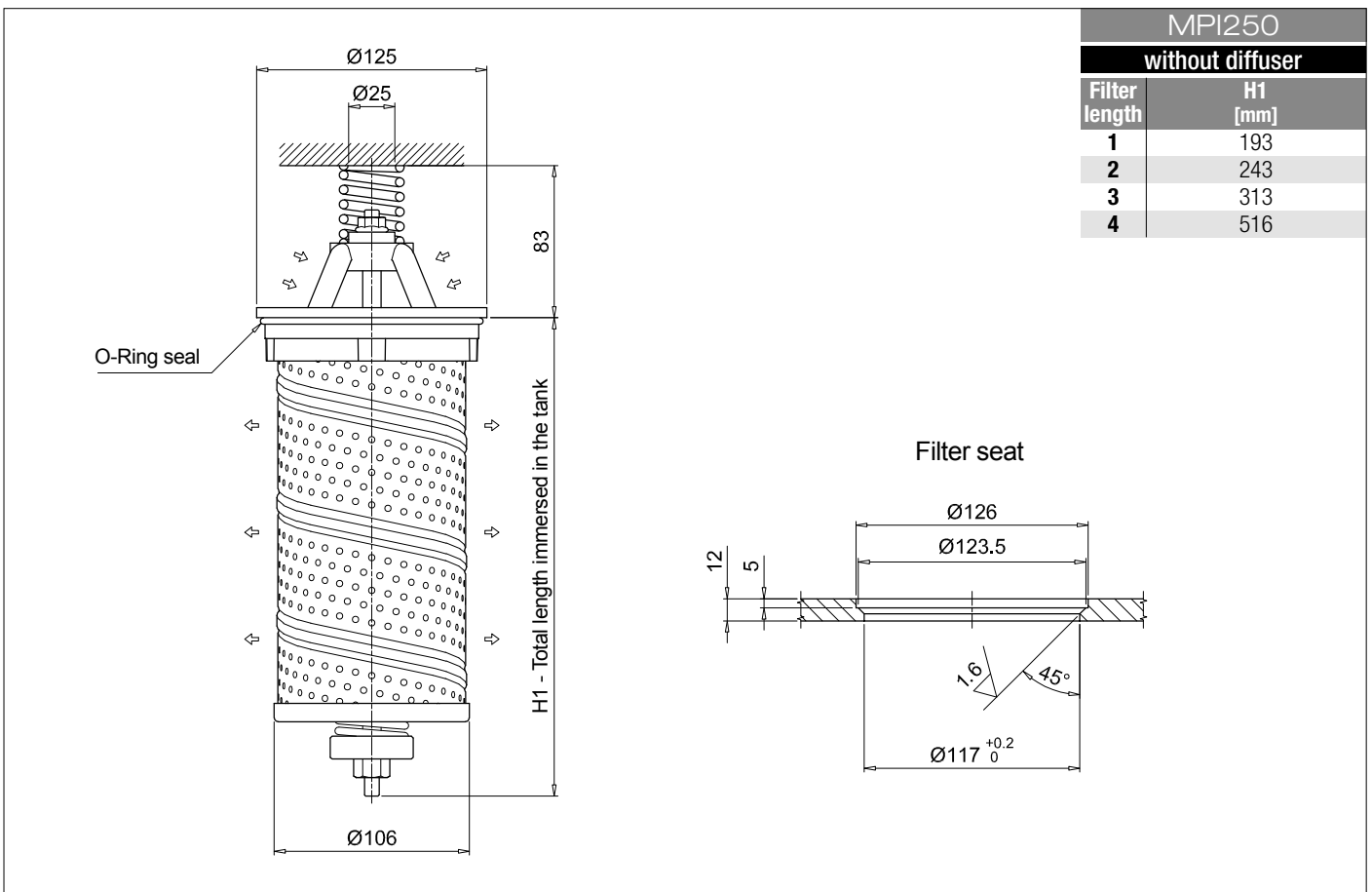
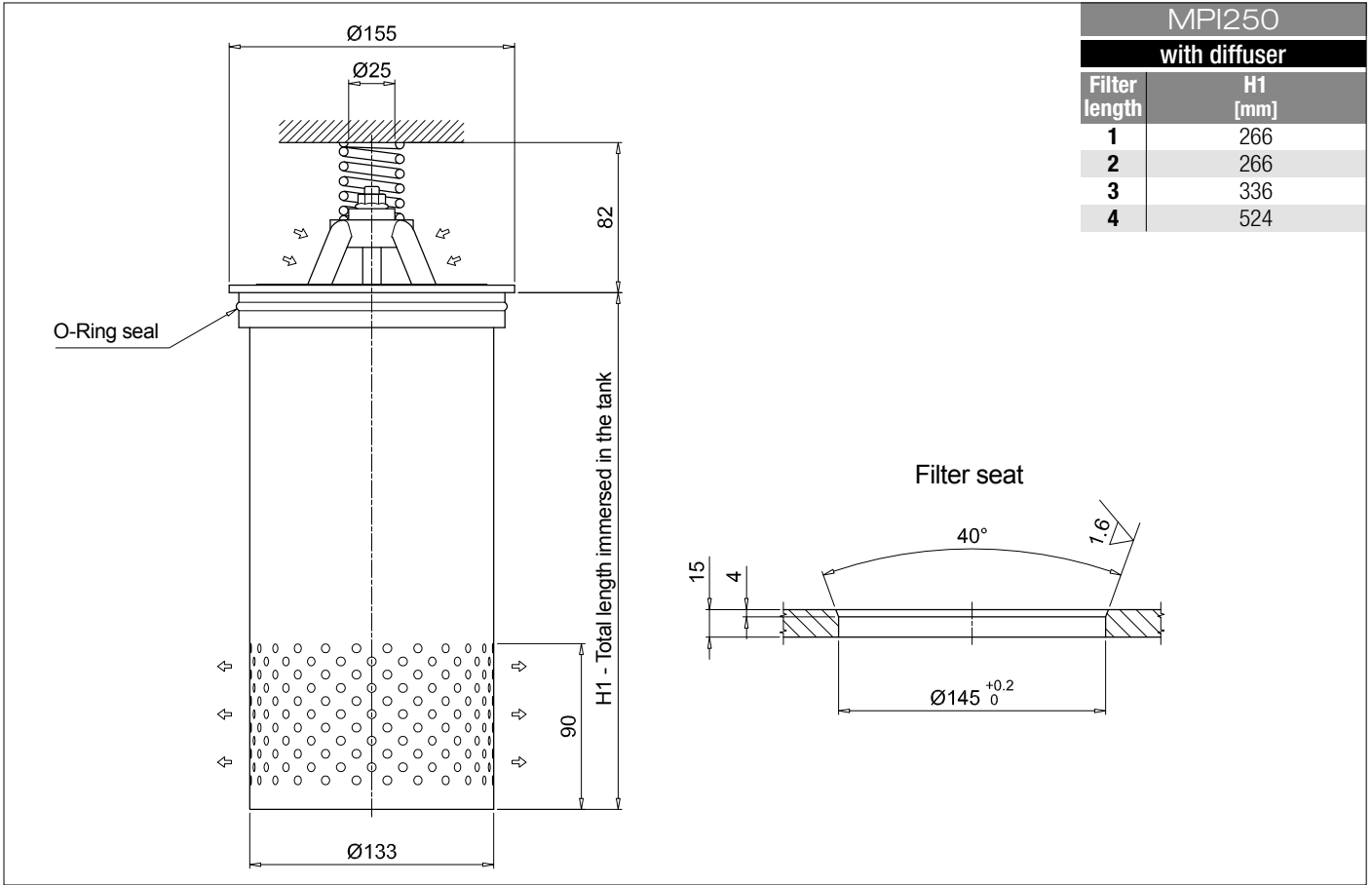
Series and size					Configuration example 1: MPI100 1 C D A A10 P01						
MPI100					Configuration example 2: MPI630 5 E D Z M25 P01						
MPI250											
MPI630											
MPI850											
Length					MPI100	MPI250	MPI630	MPI850			
1					•	•	•	•			
2					•	•	•	•			
3					•	•	•	•			
4					•	•	•	•			
5					•	•	•	•			
Bypass valve					MPI100	MPI250	MPI630	MPI850			
S	Without				•	•	•	•			
C	1.75 bar				•	•	•	•			
E	2.5 bar				•	•	•	•			
Diffuser and magnetic column											
D	With diffuser, with magnetic column										
F	With diffuser, without magnetic column										
O	Without diffuser, with magnetic column										
E	Without diffuser, without magnetic column										
Seals and treatments					Filtration rating						
A	NBR				Axx	Mxx	Pxx				
V	FPM				•	•	•				
W	NBR head anodized	filter element compatible with fluids HFA-HFB-HFC			•	•					
Z	FPM head anodized				•	•					
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						

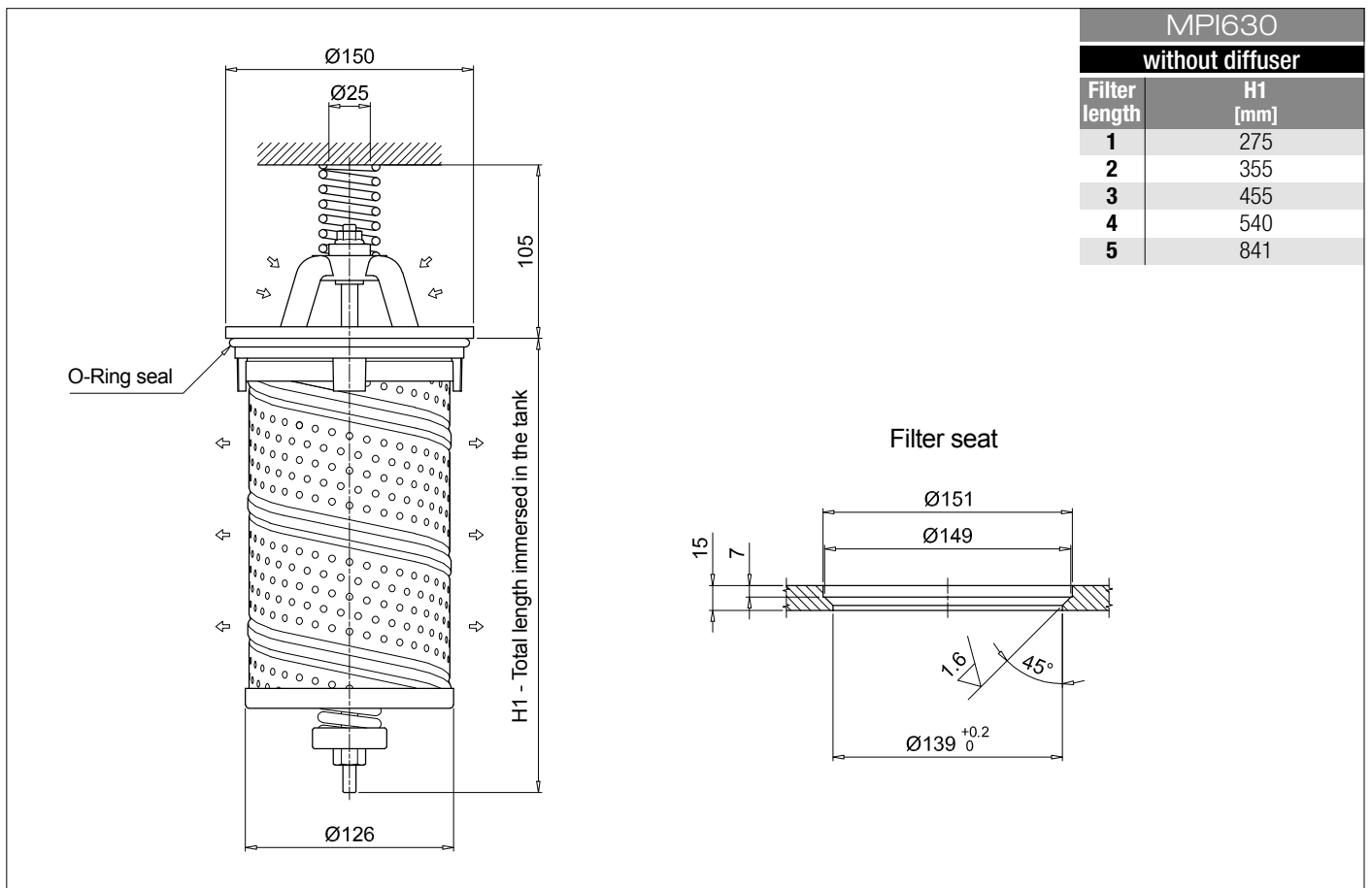
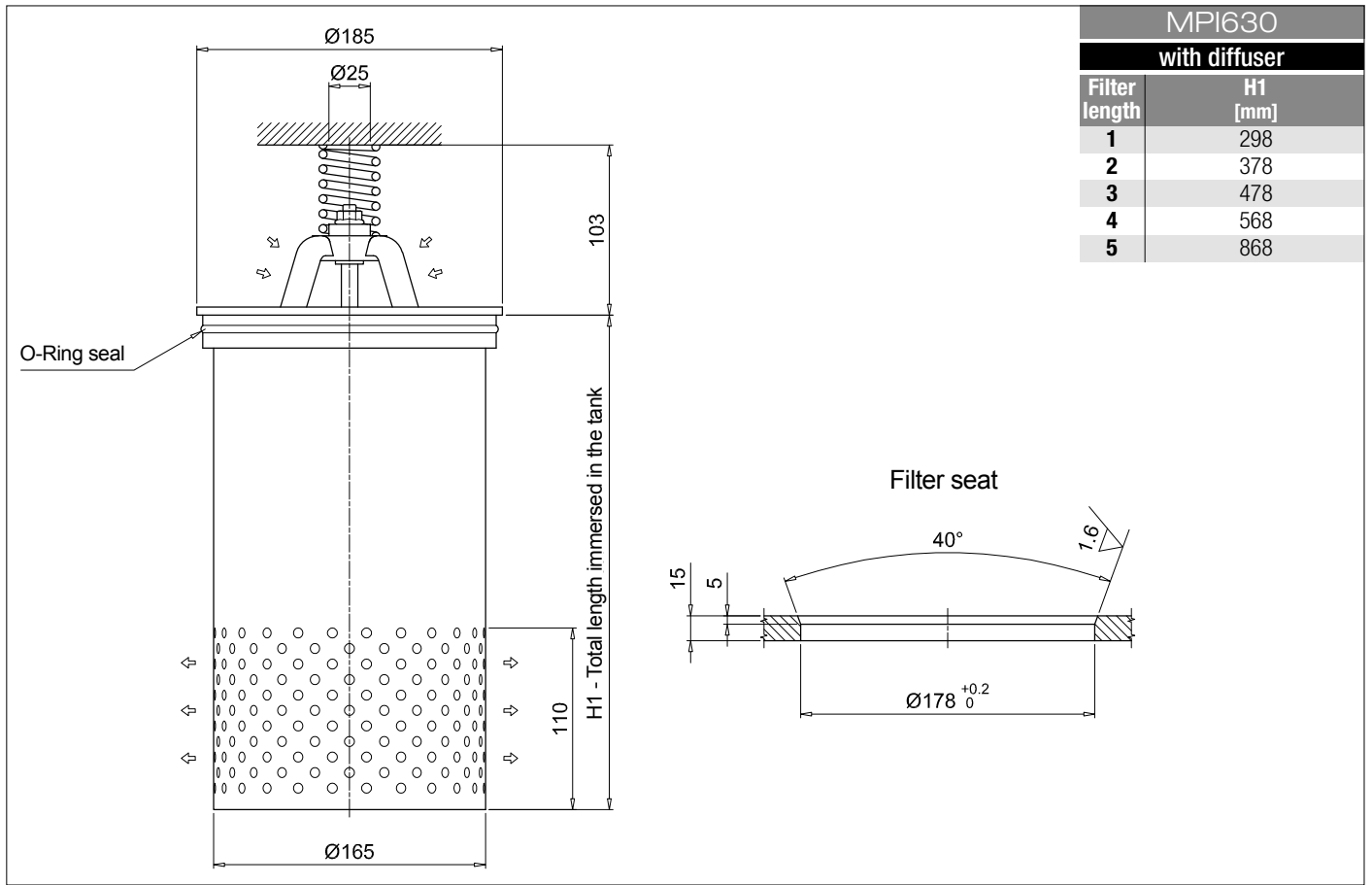
FILTER ELEMENT

Element series and size					Configuration example 1: MR100 1 A10 A P01					
MR100					Configuration example 2: MR630 5 M25 V P01					
MR250										
MR630										
MR850										
Element length					Size 100	Size 250	Size 630	Size 850		
1					•	•	•	•		
2					•	•	•	•		
3					•	•	•	•		
4					•	•	•	•		
5					•	•	•	•		
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		Execution			
					A NBR		P01 MP Filtri standard			
					V FPM		Pxx Customized			



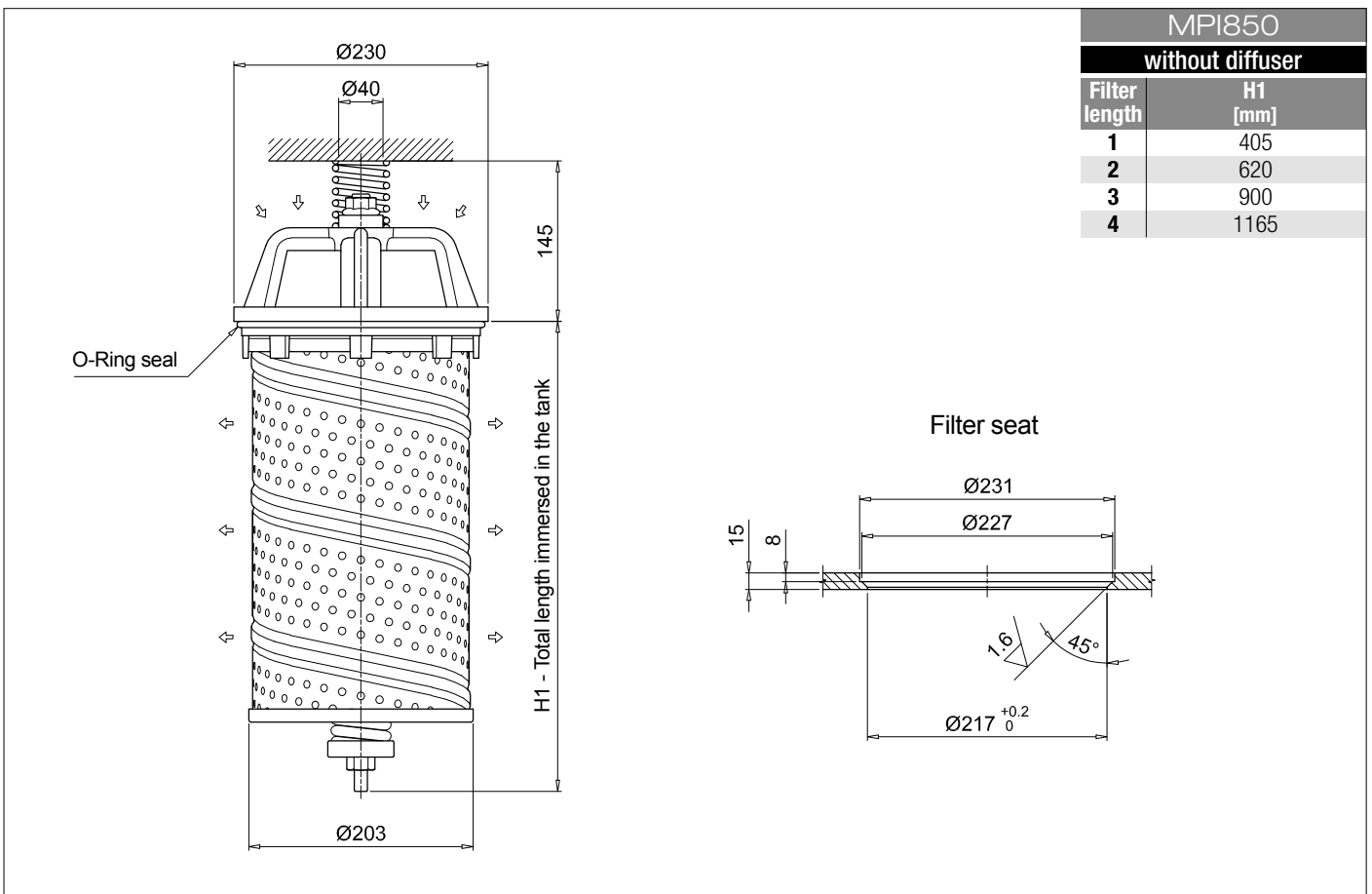
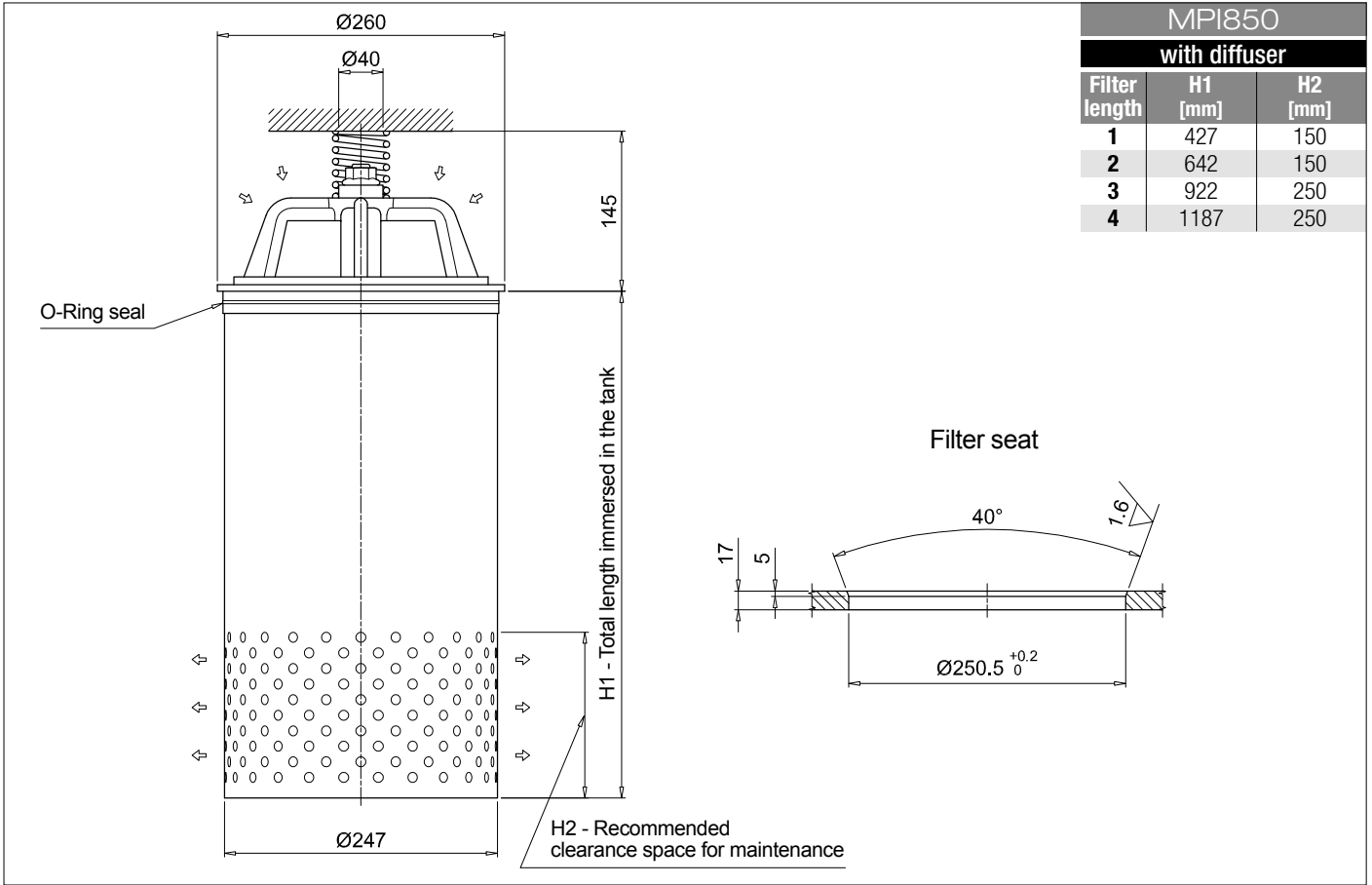
Dimensions





MPI MPI100 - MPI250 - MPI630 - MPI850

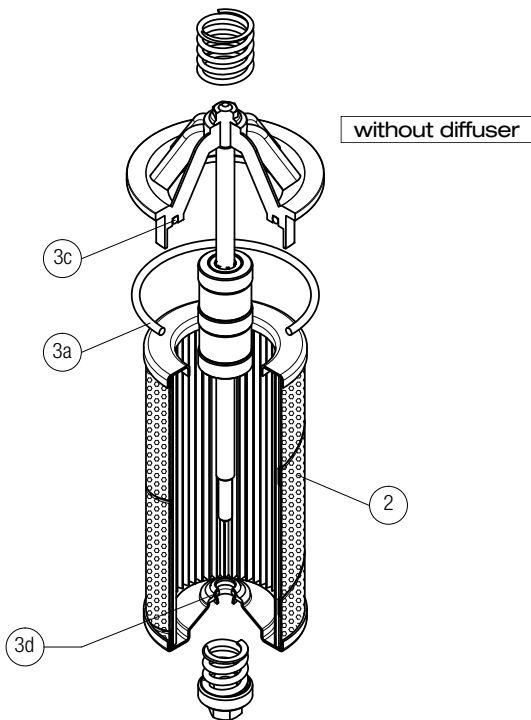
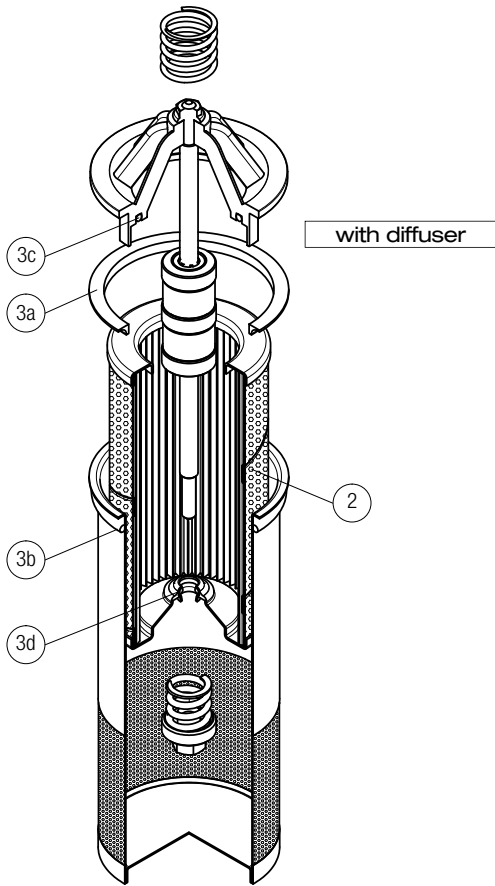
Dimensions



MPI SPARE PARTS

Order number for spare parts

MPI 100



Q.ty: 1 pc.

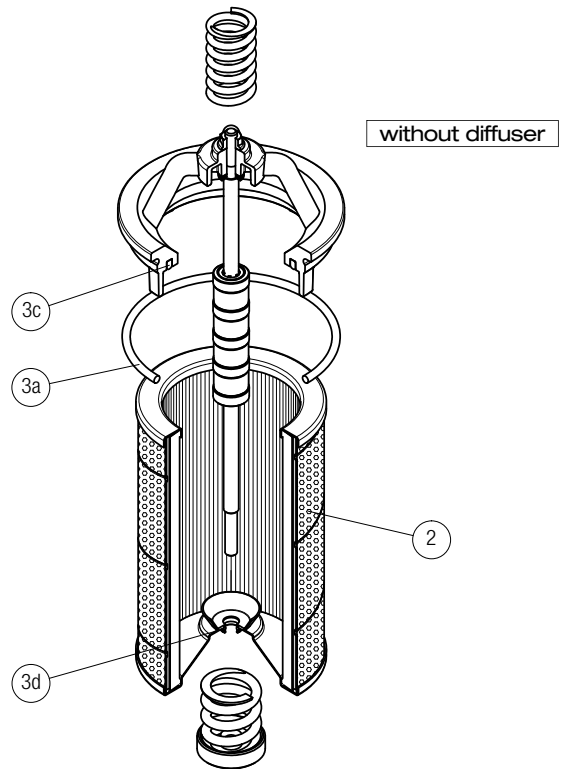
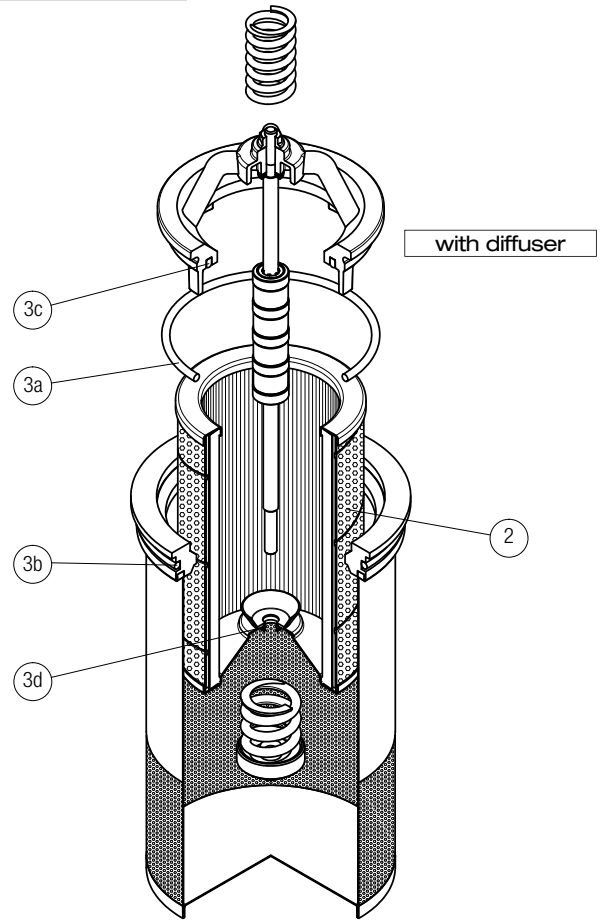
2

Q.ty: 1 pc.

3 (3a ÷ 3d)

Item:	Filter series	Filter element	Seal Kit code number NBR	FPM
MPI 100	See order table	See order table	02050145	02050146

MPI 250 - 630



Q.ty: 1 pc.

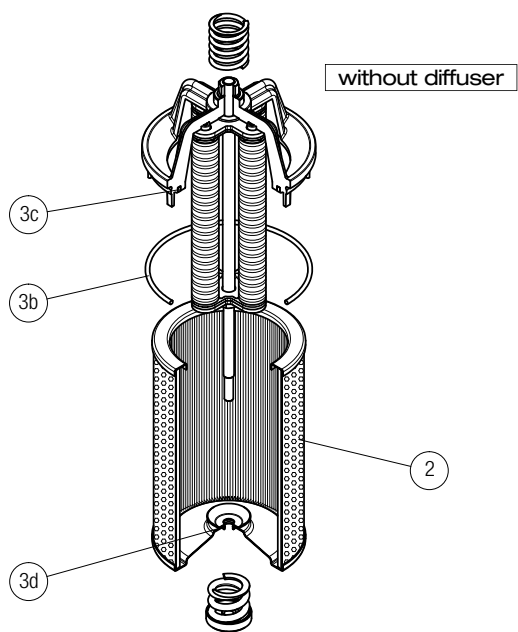
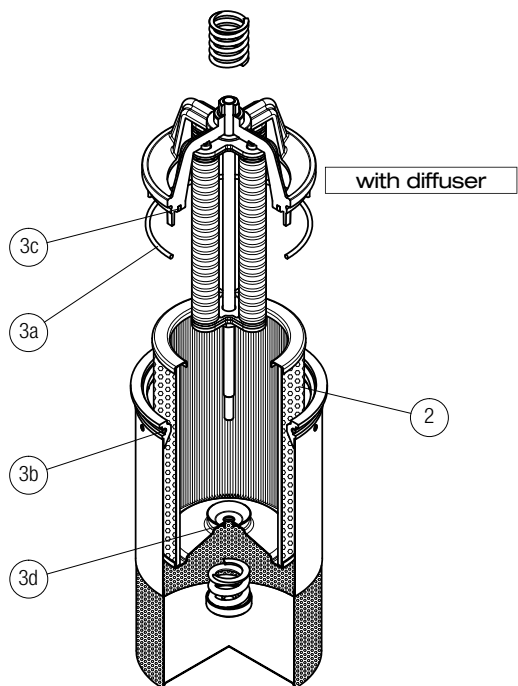
2

Q.ty: 1 pc.

3 (3a ÷ 3d)

Item:	Filter series	Filter element	Seal Kit code number NBR	FPM
MPI 250	See order table	See order table	02050147	02050148
MPI 630	See order table	See order table	02050112	02050113

MPI 850



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (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 1500 l/min



Description

Technical data

Return filter

Maximum working pressure up to 2 MPa (20 bar)
Flow rate up to 1500 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 1500 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

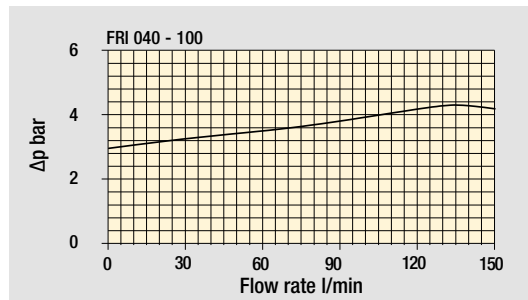
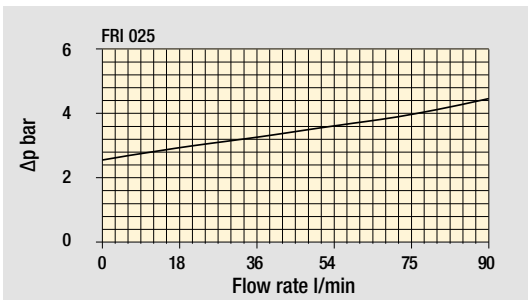
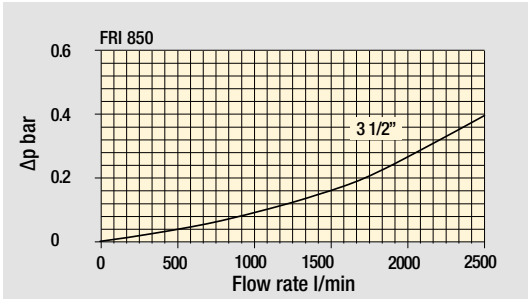
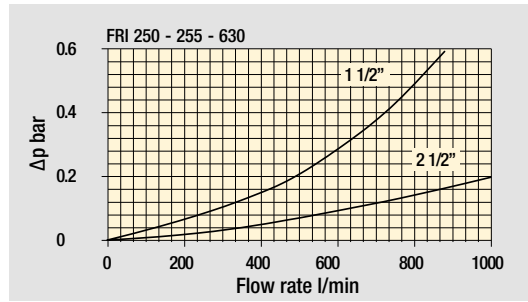
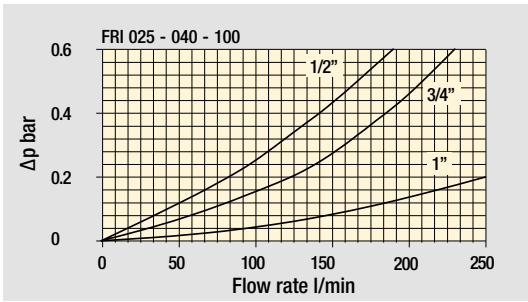
FRI filters are provided for vertical mounting



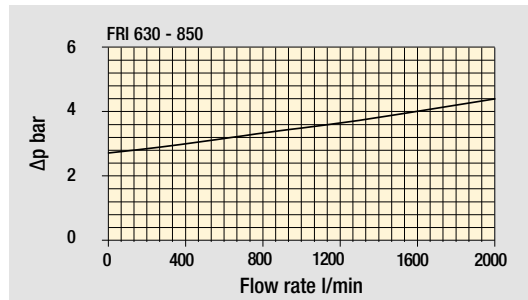
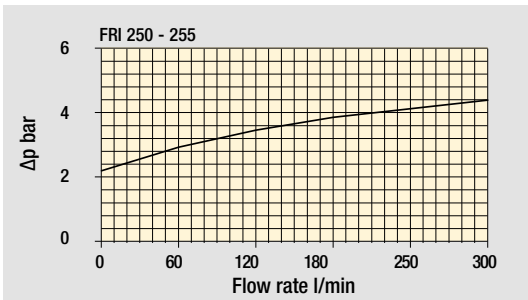
Weights [kg] and volumes [dm³]

Filter series	Weights [kg]		Volumes [dm ³]	
	Length	1	Length	1
FRI 025		1.0		0.28
FRI 040		2.0		0.70
FRI 100		3.8		1.09
FRI 250		6.3		2.60
FRI 255		4.2		3.20
FRI 630		13.8		7.05
FRI 850		48.0		21.50

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
 Δp varies proportionally with density.

FRI GENERAL INFORMATION

Flow rates [l/min]

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
FRI 025	1	6	10	17	19	43	122	43	47
FRI 040	1	19	23	43	45	94	155	94	102
FRI 100	1	32	34	89	92	187	260	187	206
FRI 250	1	144	179	271	300	448	645	448	490
FRI 255	1	144	179	271	300	448	645	448	490
FRI 630	1	242	279	508	577	834	1446	834	911
FRI 850	1	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.

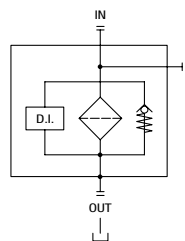
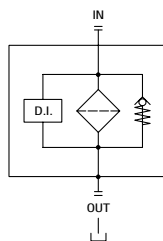
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style 1 connection + Diff. indic.	Style 2 connections + Diff. indic.
FRI 025		•
FRI 040		•
FRI 100		•
FRI 250		•
FRI 255	•	
FRI 630		•
FRI 850	•	



Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1: FRI025 B A G1 A25 N P01						
FRI025	Configuration example 2: FRI040 S W G2 M25 N P01						
FRI040							
Bypass valve							
B With bypass							
S Without bypass							
Seals and treatments	Filtration rating						
A NBR	Axx	Mxx	Pxx				
V FPM	•	•	•				
W NBR head anodized	•	•					
Z FPM head anodized	•	•					
	filter element compatible with fluids HFA-HFB-HFC						
Connections for FRI025	Connections for FRI040						
G1 G 1/2"	G 3/4"						
G2 1/2" NPT	3/4" NPT						
G3 SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 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			
				Element Δp	Execution		
				N 10 bar	P01 MP Filtri standard		
					Pxx Customized		

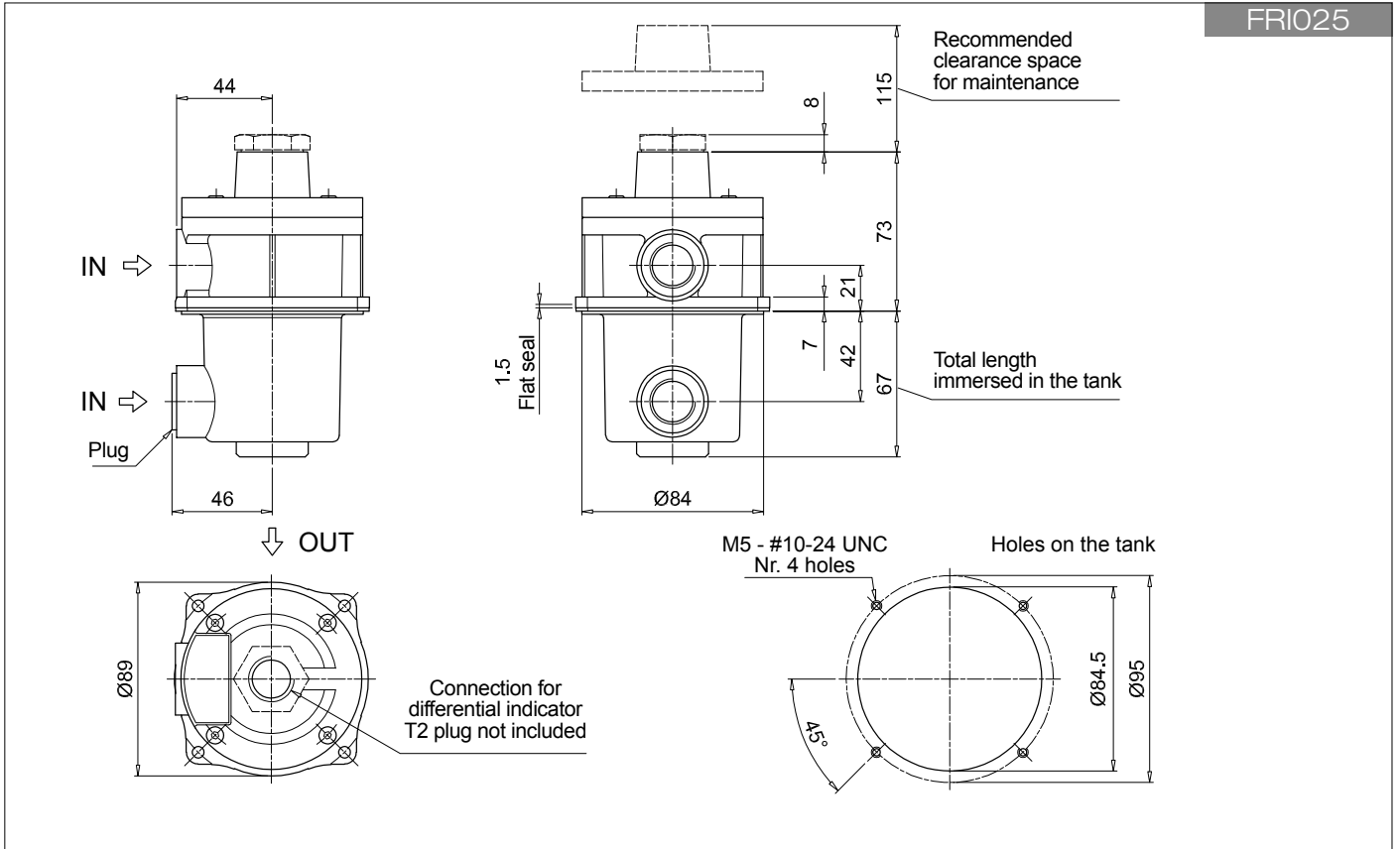
FILTER ELEMENT

Element series and size	Configuration example 1: CU025 A25 N P01			
CU025	Configuration example 2: CU040 M25 W P01			
CU040				
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 and treatments	Filtration rating			
N NBR	Axx	Mxx	Pxx	
V FPM	•	•	•	
W NBR	•	•		
Z FPM	•	•		
	filter element compatible with fluids HFA-HFB-HFC			
				Execution
				P01 MP Filtri standard
				Pxx Customized

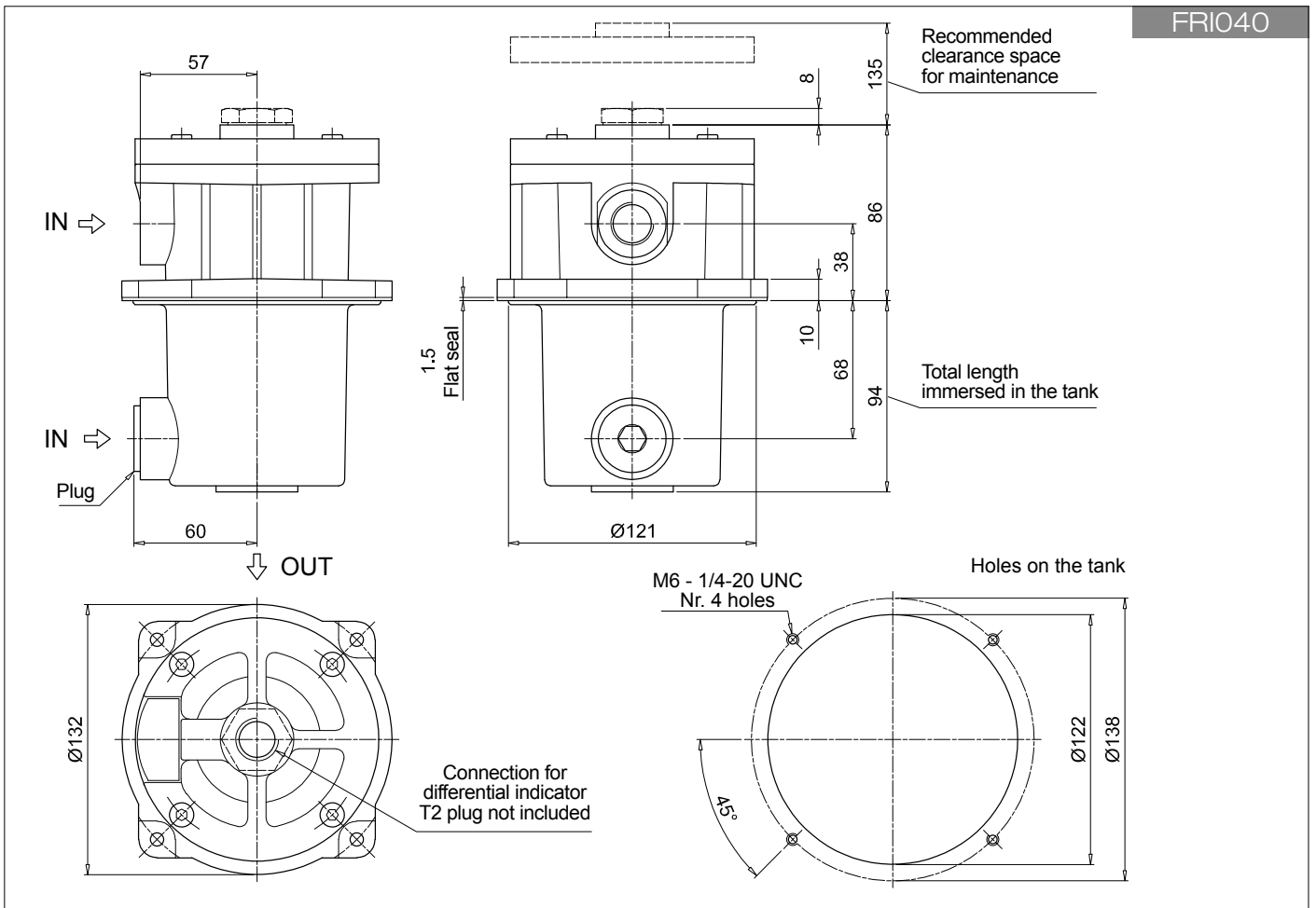
ACCESSORIES

Indicators	page		page
DEA Electrical differential indicator	242	DTA Electronic differential indicator	245
DEM Electrical differential indicator	242-243	DVA Visual differential indicator	245
DLA Electrical / visual differential indicator	243-244	DVM Visual differential indicator	245
DLE Electrical / visual differential indicator	244		
Additional features	page		
T2 Plug	246		

FRI025



FRI040



FRI FRI100 - FRI250 - FRI630

Designation & Ordering code

COMPLETE FILTER

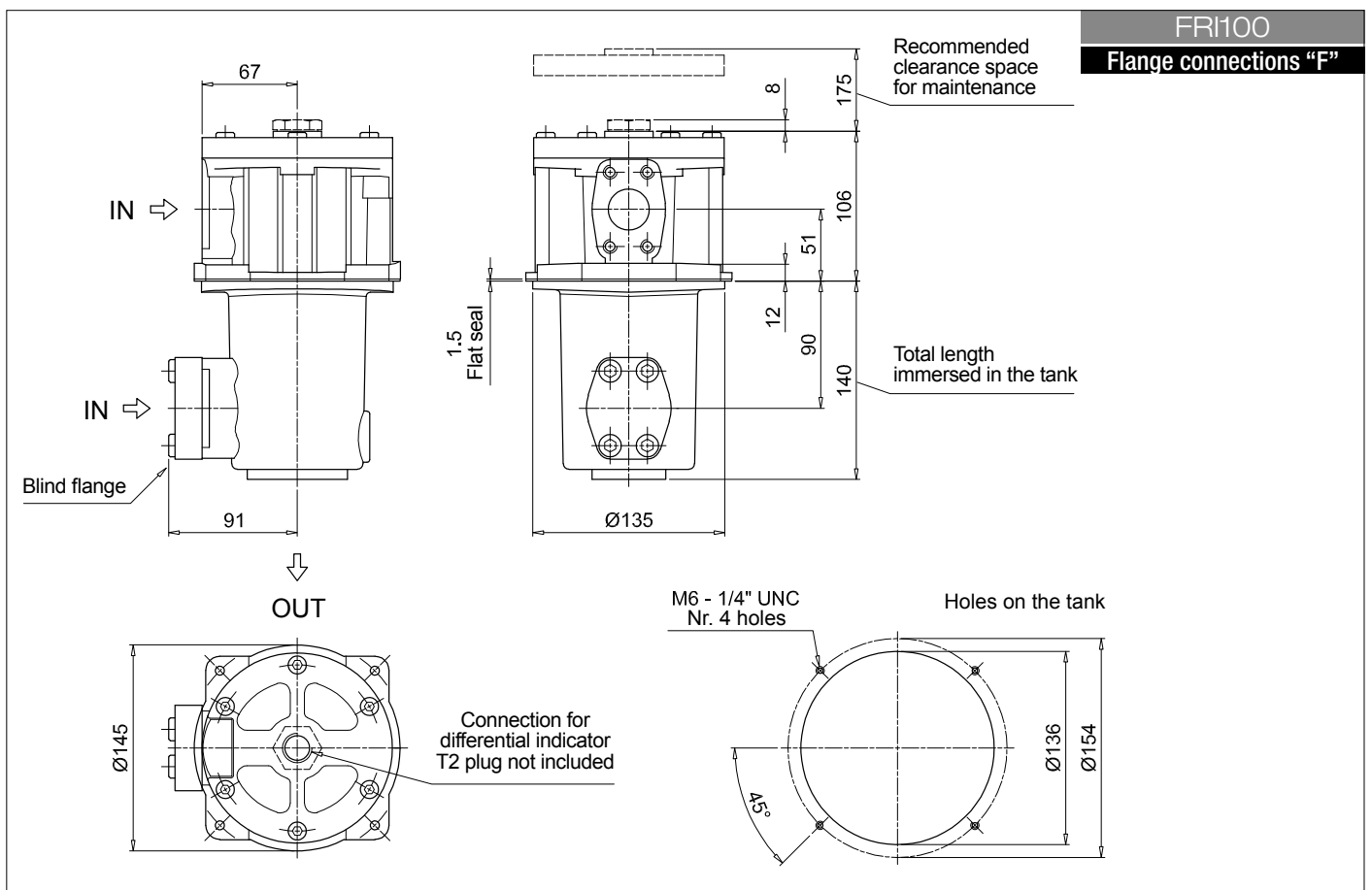
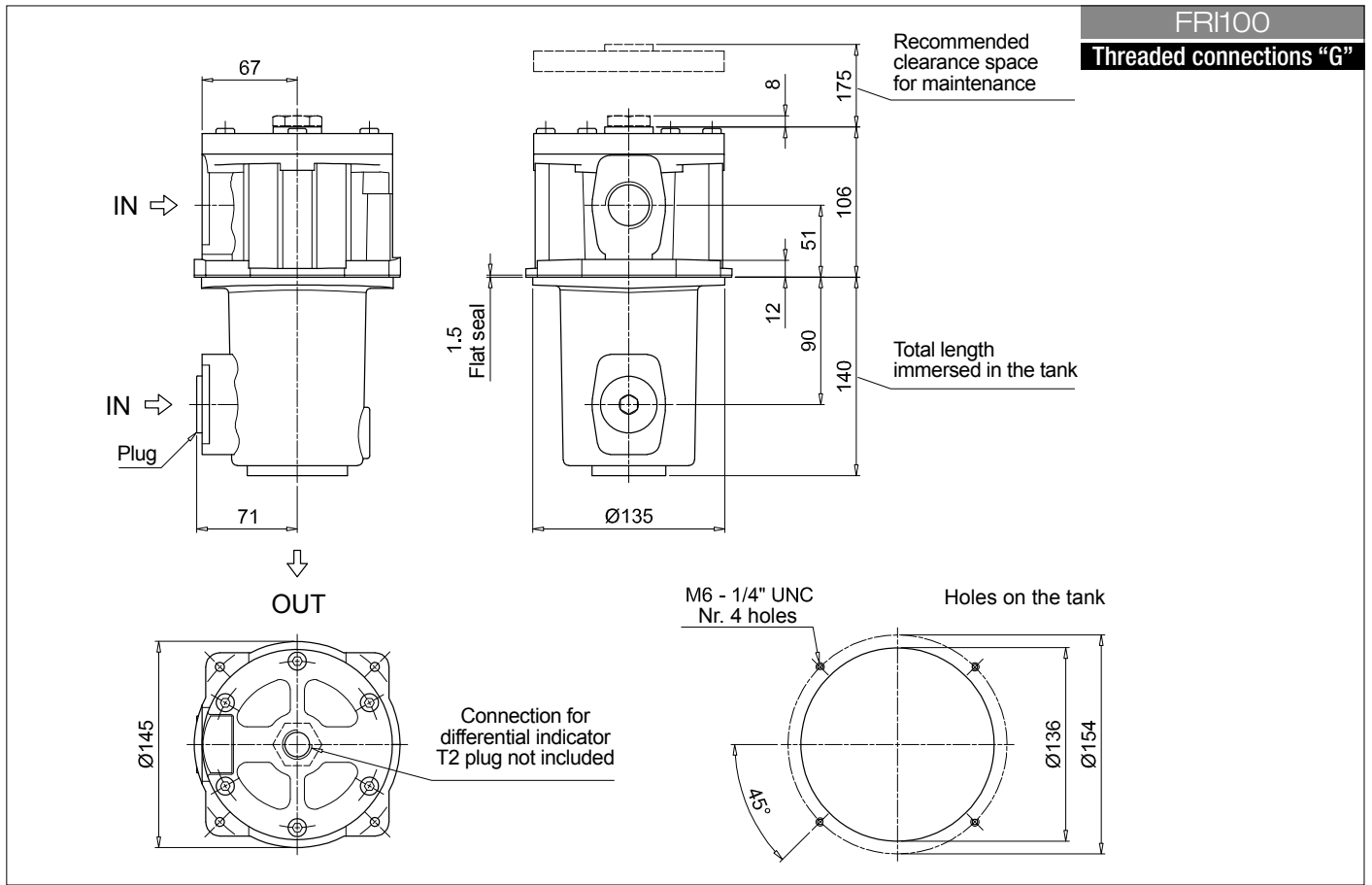
Series and size	Configuration example 1: FRI100 B A G1 A25 N P01						
FRI100	Configuration example 2: FRI630 S W F2 M25 N P01						
FRI250							
FRI630							
Bypass valve							
B	With bypass						
S	Without bypass						
Seals and treatments							
		Filtration rating					
A	NBR	Axx	Mxx	Pxx			
V	FPM	•	•	•			
W	NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC		
Z	FPM head anodized	•	•				
Connections for FRI100		Connections for FRI250		Connections for FRI630			
G1	G 1"	G 1 1/2"	G 1 1/2"	G 2 1/2"			
G2	1" NPT	1 1/2" NPT	1 1/2" NPT	2 1/2" NPT			
G3	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN	SAE 24 - 1 7/8" - 12 UN	SAE 32 - 2 1/2" - 12 UN			
F1	1" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M	2 1/2" SAE 3000 psi/M			
F2	1" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC	2 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		
				Element Δp		Execution	
				N		P01	
				10 bar		MP Filtri standard	
						Pxx Customized	

FILTER ELEMENT

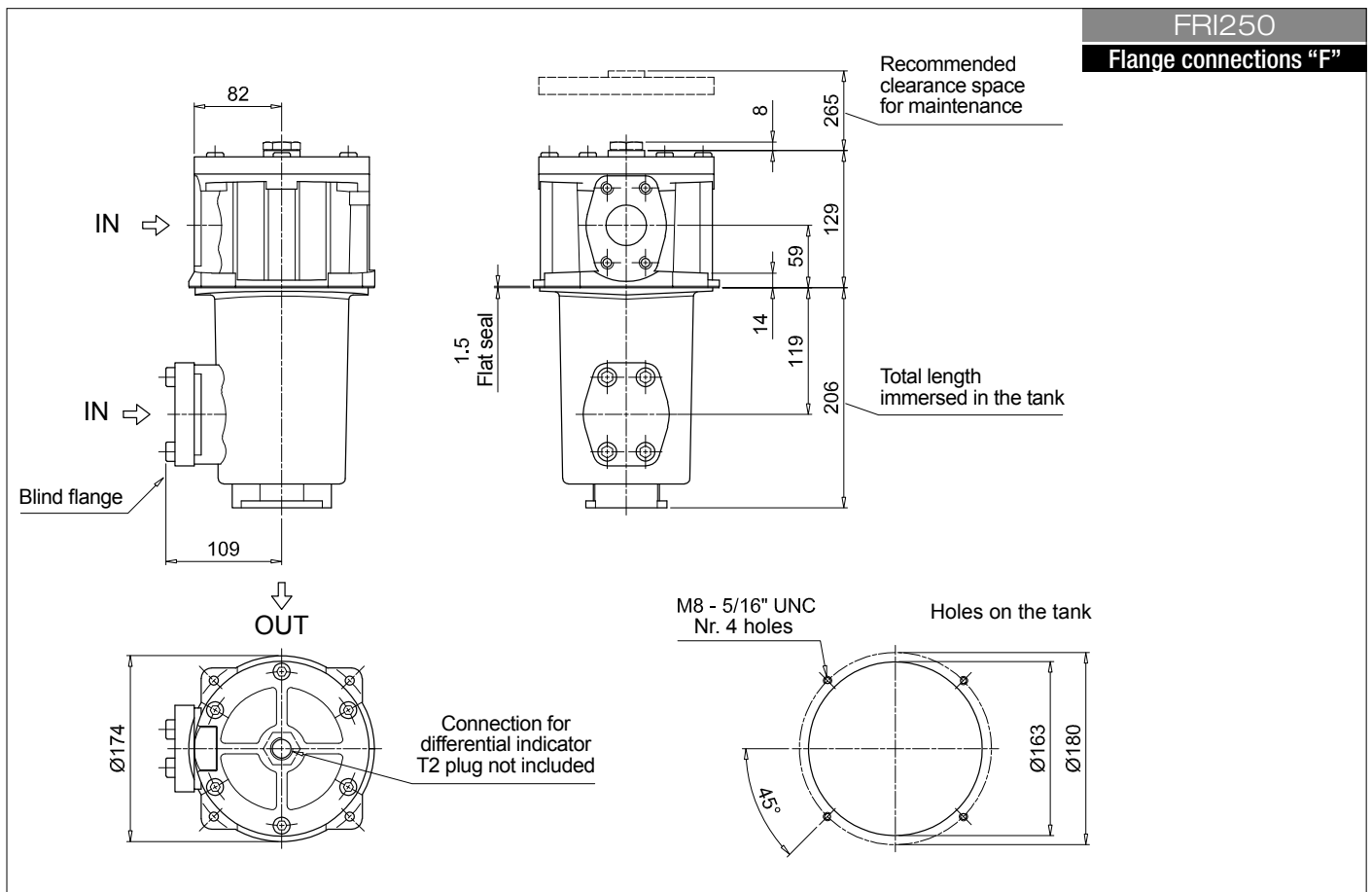
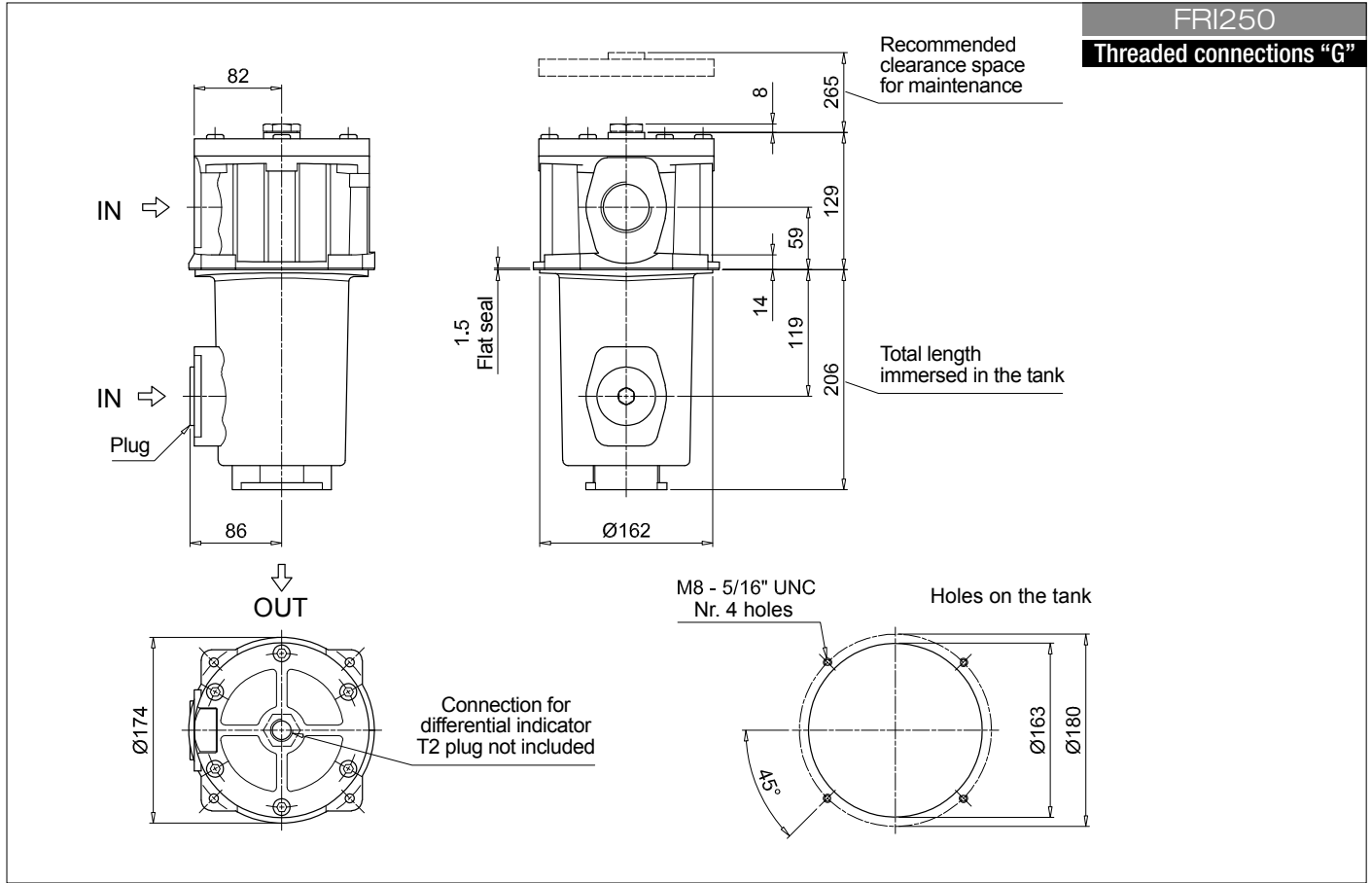
Element series and size	Configuration example 1: CU100 A25 N P01			
CU100	Configuration example 2: CU630 M25 W P01			
CU250				
CU630				
Filtration rating (filter media)				
A03	Inorganic microfiber	3 µm	M25	Wire mesh 25 µm
A06	Inorganic microfiber	6 µm	M60	Wire mesh 60 µm
A10	Inorganic microfiber	10 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 and treatments				
		Filtration rating		
N	NBR	Axx	Mxx	Pxx
V	FPM	•	•	•
W	NBR	•	•	
Z	FPM	•	•	
		filter element compatible with fluids HFA-HFB-HFC		
				Execution
				P01
				MP Filtri standard
				Pxx Customized

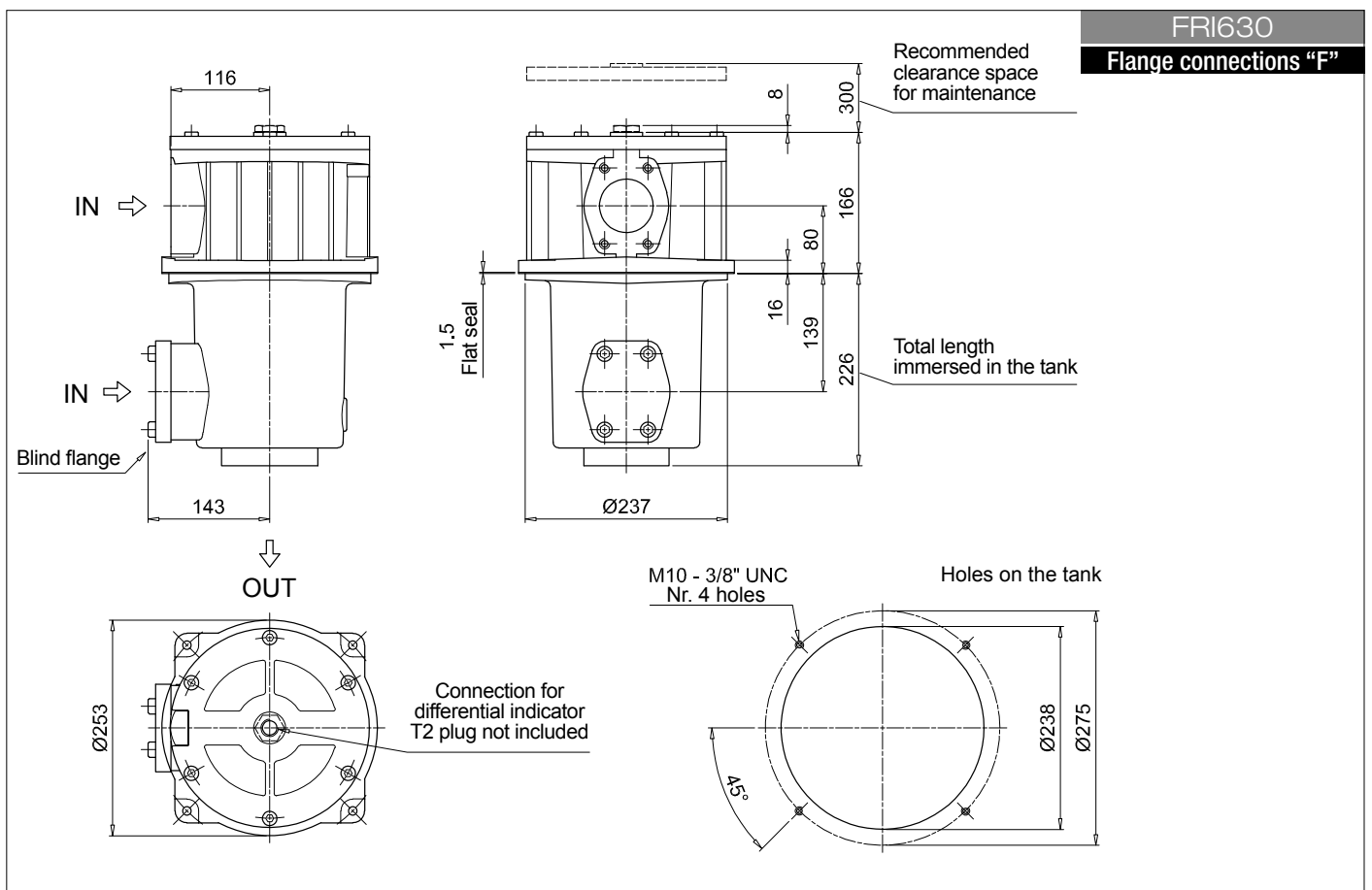
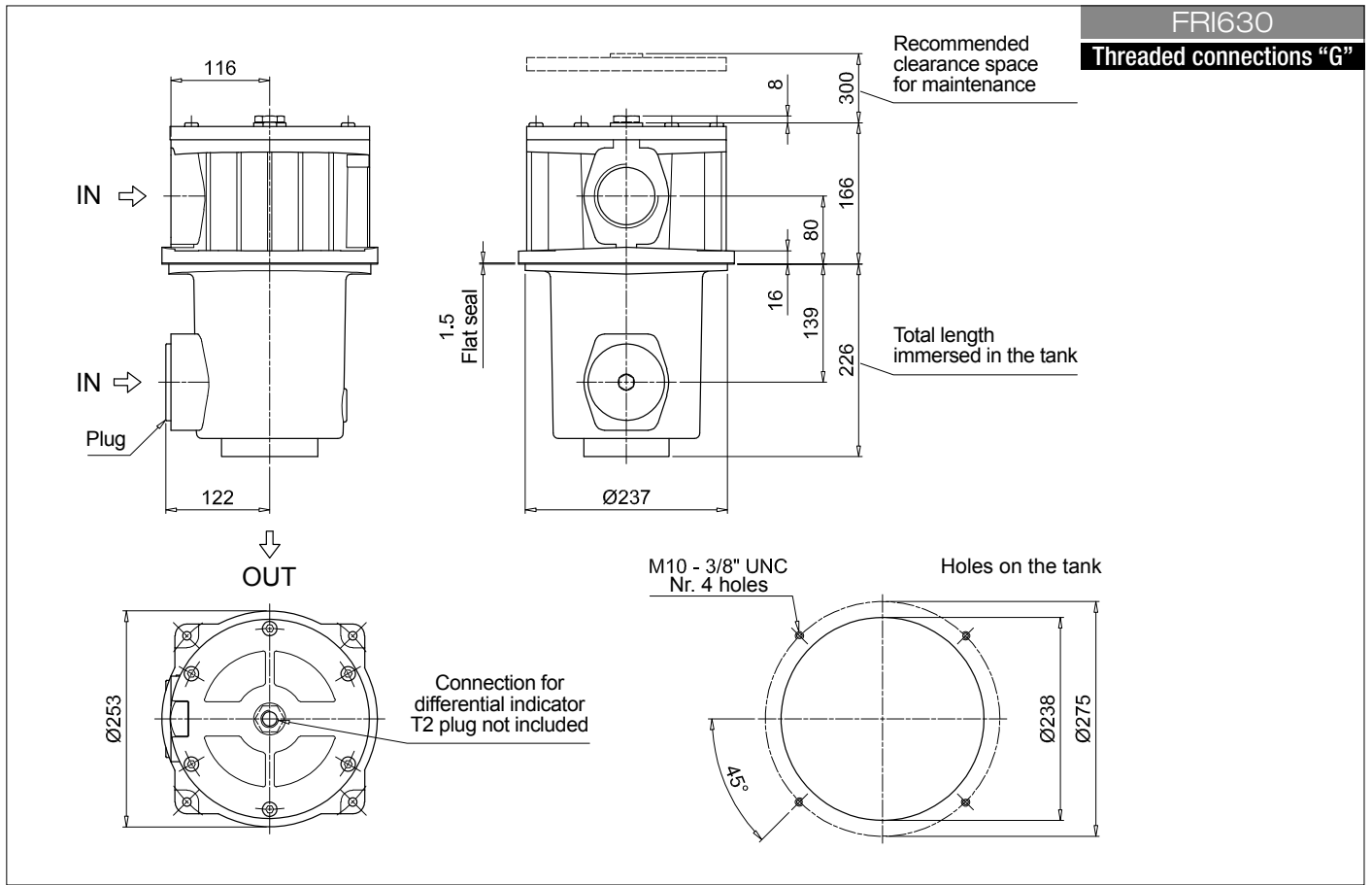
ACCESSORIES

Indicators	page		page
DEA	Electrical differential indicator	242	DTA Electronic differential indicator 245
DEM	Electrical differential indicator	242-243	DVA Visual differential indicator 245
DLA	Electrical / visual differential indicator	243-244	DVM Visual differential indicator 245
DLE	Electrical / visual differential indicator	244	
Additional features	page		
T2	Plug	246	



Dimensions





FRI FRI255 - FRI850

Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example 1: FRI255 S W F2 M25 N P01						
FRI255	Configuration example 2: FRI850 B A F1 A25 N P01						
FRI850							
Bypass valve							
B With bypass							
S Without bypass							
Seals and treatments	Filtration rating						
	Axx	Mxx	Pxx				
A NBR	•	•	•				
V FPM	•	•	•				
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC			
Z FPM head anodized	•	•					
Connections for FRI255	Connections for FRI850						
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							
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			Execution			
	N 10 bar			P01 MP Filtri standard			
				Pxx Customized			

FILTER ELEMENT

Element series and size	Configuration example 1: CU250 M25 W P01						
CU250	Configuration example 2: CU850 A25 N P01						
CU850							
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 and treatments	Filtration rating						
	Axx	Mxx	Pxx				
N NBR	•	•	•				
V FPM	•	•	•				
W NBR	•	•		filter element compatible with fluids HFA-HFB-HFC			
Z FPM	•	•					
	Execution			P01 MP Filtri standard			
				Pxx Customized			

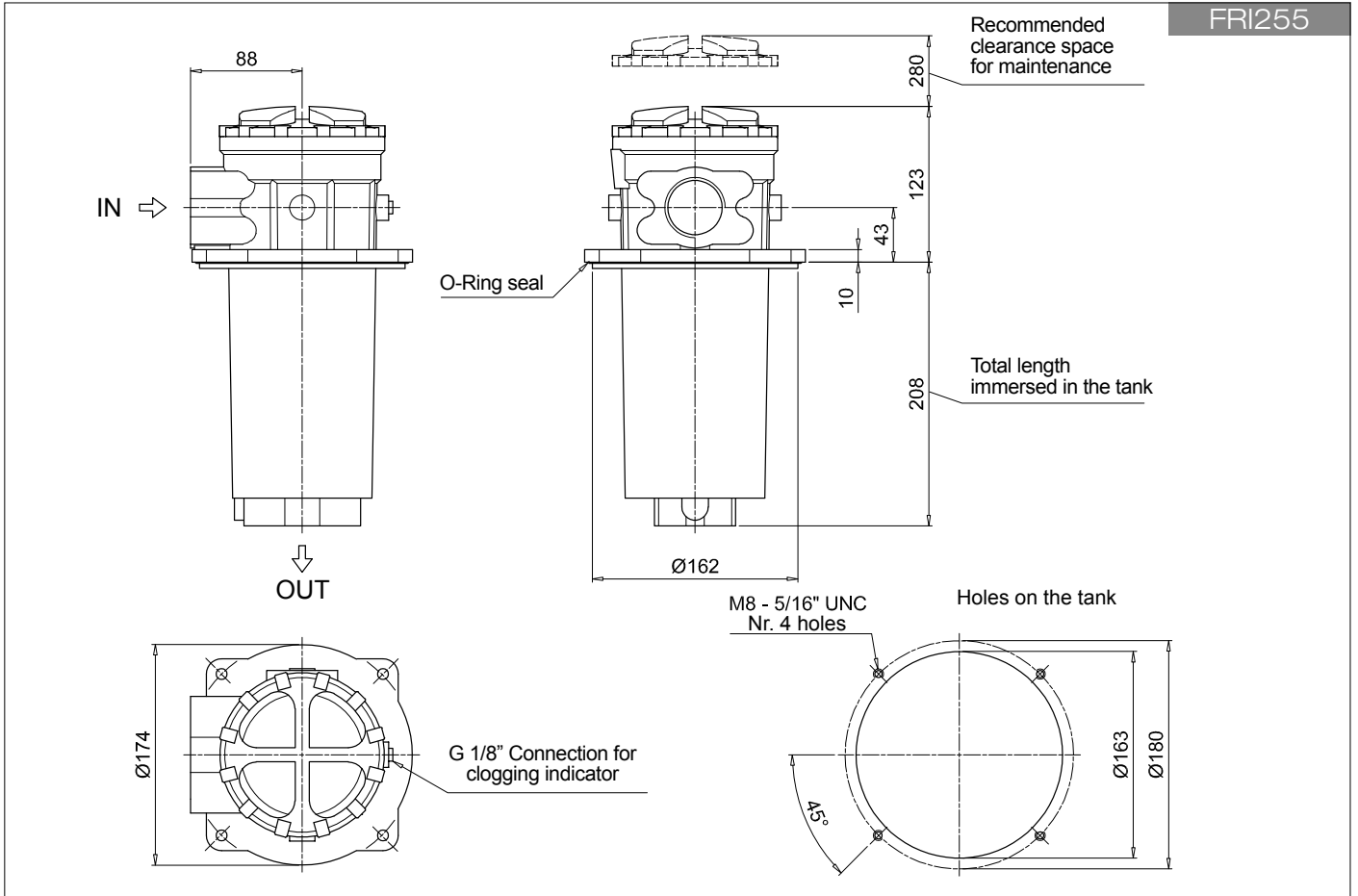
FRI255 ACCESSORIES

Indicators	page			page
BVA Axial pressure gauge	240	BEA Electrical pressure indicator		239
BVR Radial pressure gauge	240	BEM Electrical pressure indicator		239
BVP Visual pressure indicator with automatic reset	241	BLA Electrical / visual pressure indicator		239-240
BVQ Visual pressure indicator with manual reset	241			

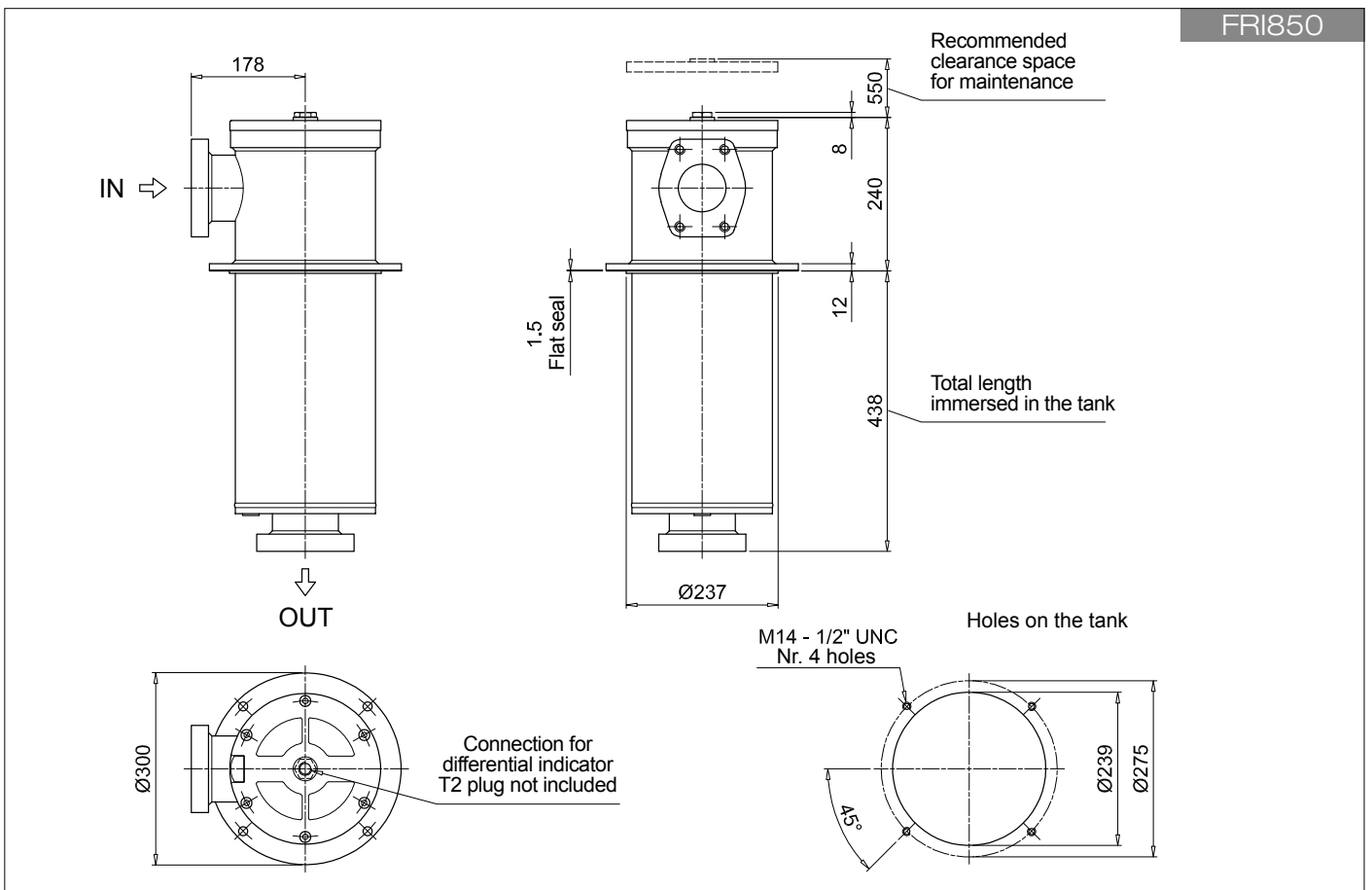
FRI850 ACCESSORIES

Indicators	page			page
DEA Electrical differential indicator	242	DTA Electronic differential indicator		245
DEM Electrical differential indicator	242-243	DVA Visual differential indicator		245
DLA Electrical / visual differential indicator	243-244	DVM Visual differential indicator		245
DLE Electrical / visual differential indicator	244			
Additional features	page			
T2 Plug	246			

FRI255



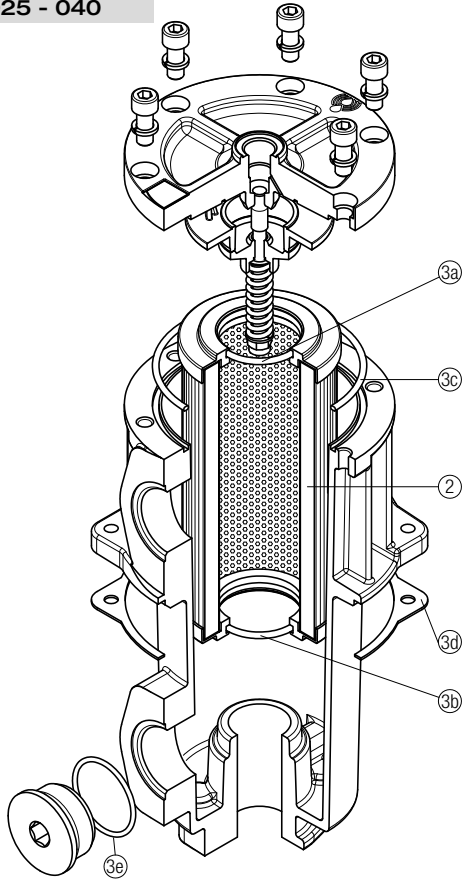
FRI850



FRI SPARE PARTS

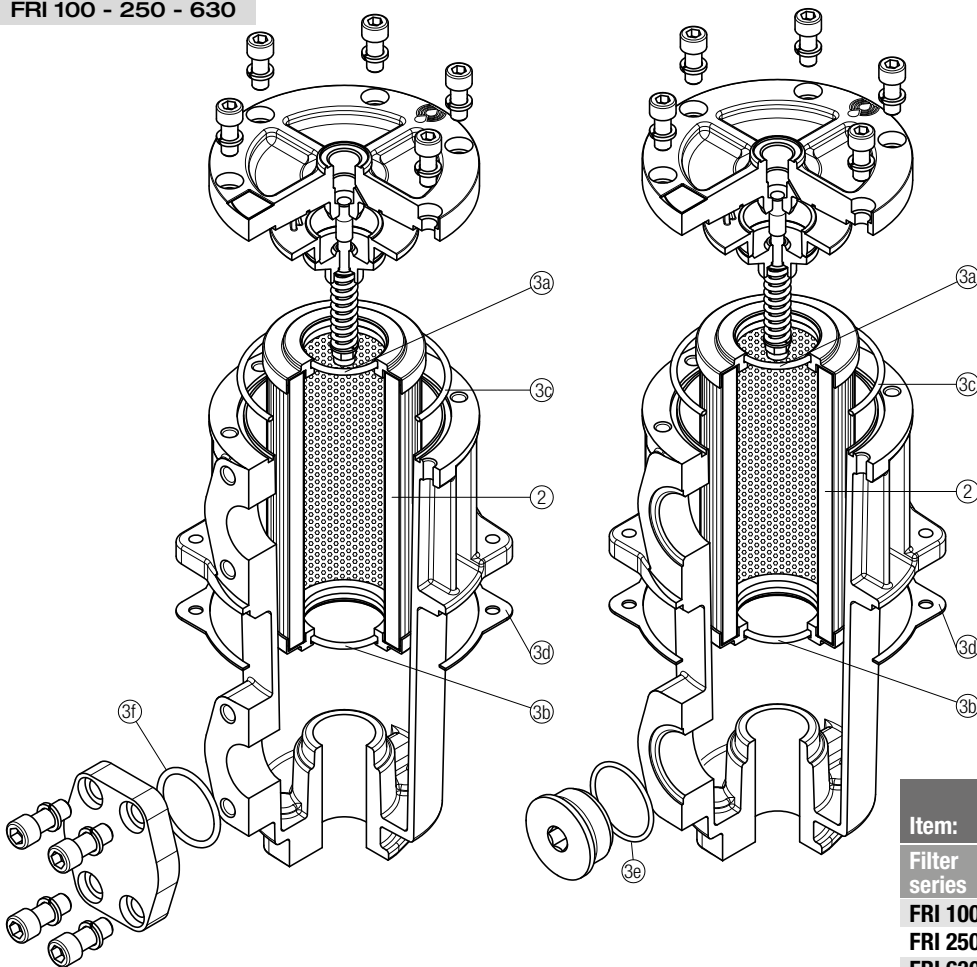
Order number for spare parts

FRI 025 - 040



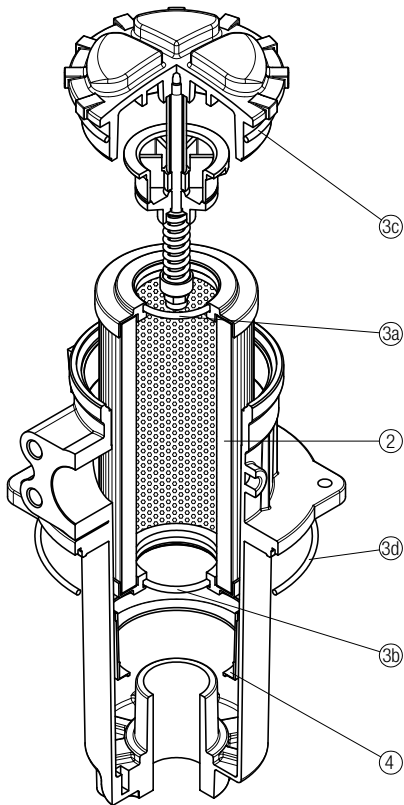
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
	2	3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
FRI 025	See order table	02050213	02050220
FRI 040		02050214	02050221

FRI 100 - 250 - 630



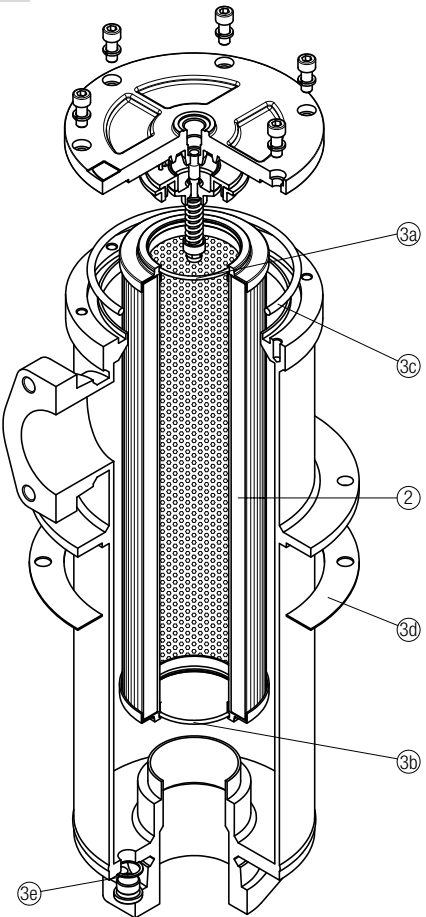
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
	2	3 (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
FRI 100	See order table	02050215	02050222
FRI 250		02050216	02050223
FRI 630		02050217	02050224

FRI 255



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3d)	4
Filter series	Filter element	Seal Kit code number	
	See order table	NBR	FPM
FRI 255		02050013	02050014
		Contamination retainer binder	
		01060301	

FRI 850



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3e)
Filter series	Filter element	Seal Kit code number
	See order table	NBR
FRI 850		02050218
		FPM
		02050225

RF2 series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 350 l/min



Description

Technical data

Return filter

Maximum working pressure up to 2 MPa (20 bar)
Flow rate up to 350 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 350 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic column, to hold the ferrous particles
- Visual, electrical and electronic clogging indicators

Common 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) \pm 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

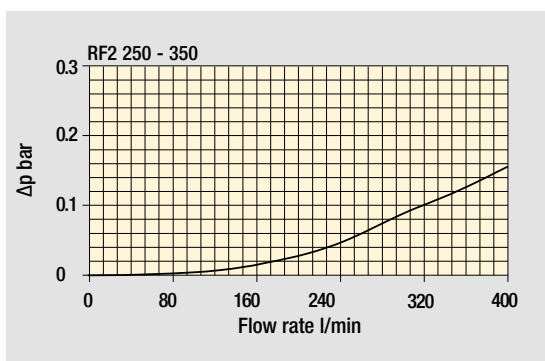
RF2 250-350 filters mounting, see the drawings on page 235 and following



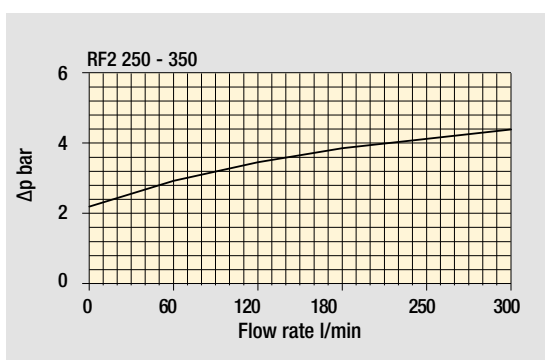
Weights [kg] and volumes [dm³]

Filter series	Weights [kg]		Volumes [dm ³]	
	Length	1	Length	1
RF2 250		2.6		2.0
RF2 350		2.8		2.0

Filter housings Δp pressure drop



Bypass valve pressure drop



The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968. Δp varies proportionally with density.

Flow rates [l/min]

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
RF2 250	1	148	184	278	307	447	615	447	485
RF2 350	1	148	184	278	307	447	615	447	485

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

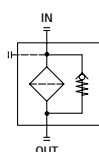
The reference fluid has a kinematic viscosity of $30 \text{ mm}^2/\text{s}$ (cSt) and a density of 0.86 kg/dm^3 .

For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

Please, contact our Sales Department for further additional information.

Hydraulic symbols

Filter series	Style B - E
RF2 250	•
RF2 350	•



RF2 RF2250 - RF2350

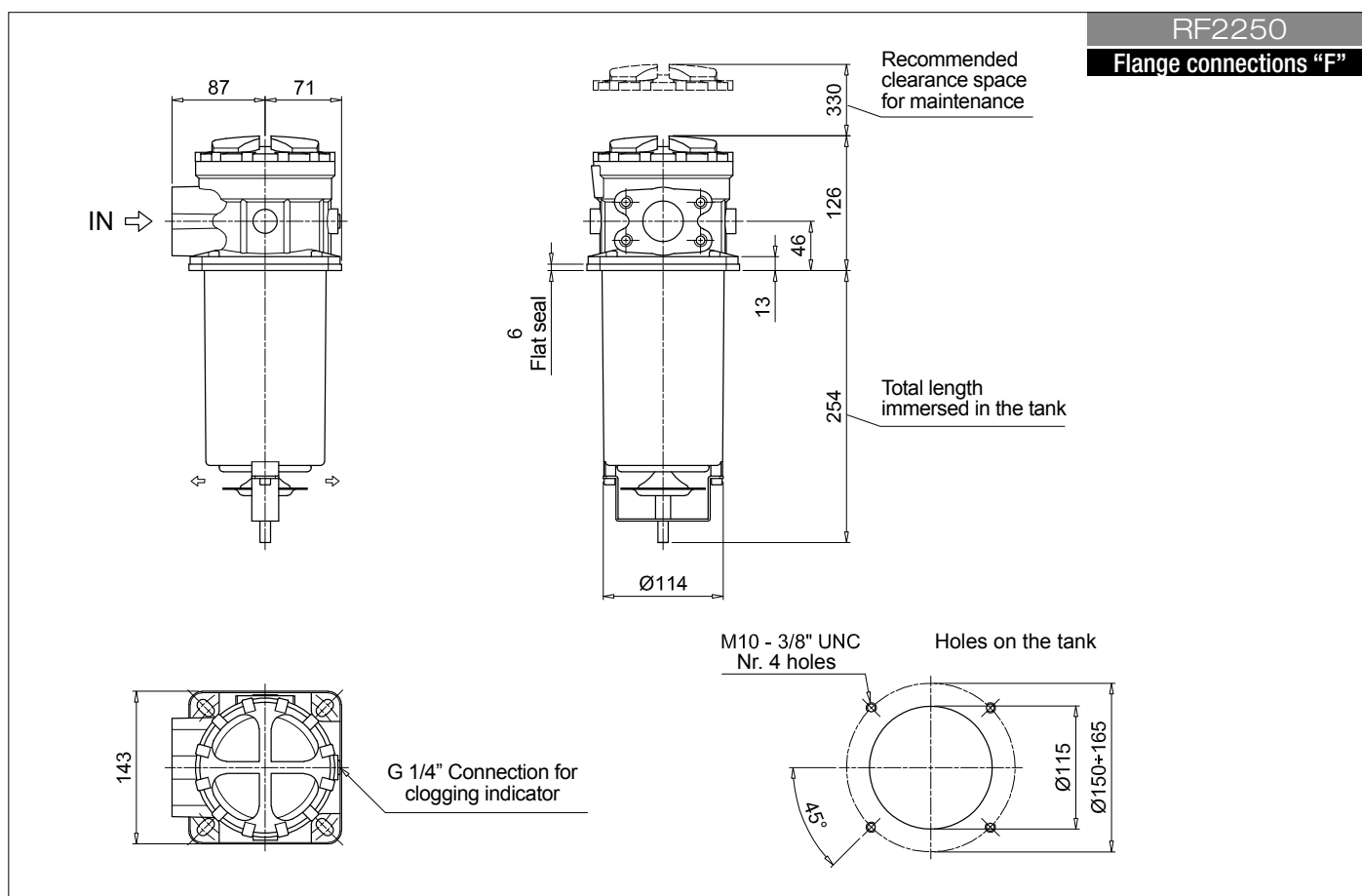
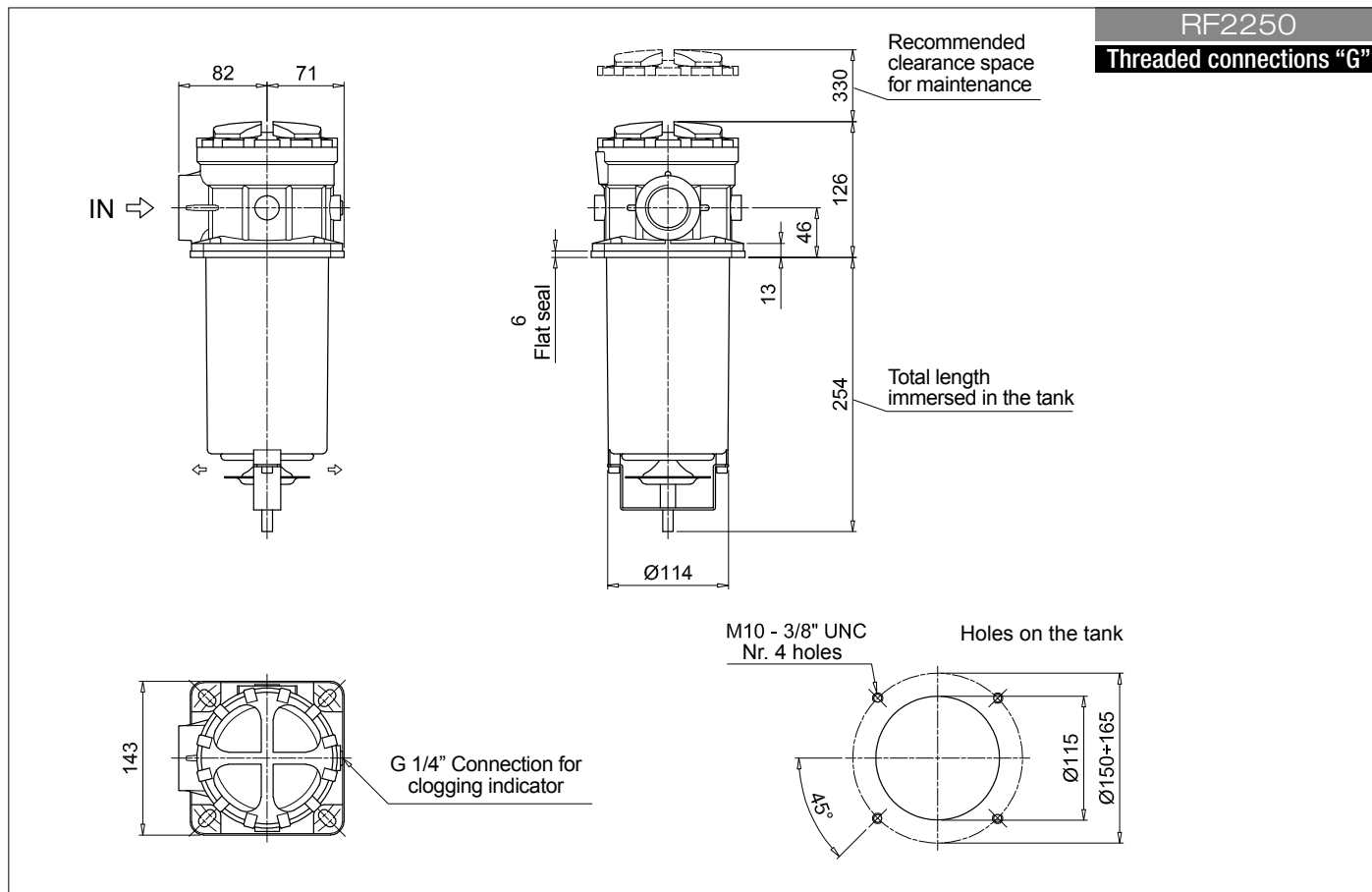
Designation & Ordering code

COMPLETE FILTER

Series and size				Configuration example 1: RF2250 W F2 E M25 P01					
RF2250				Configuration example 2: RF2350 A G1 B A25 P01					
RF2350									
				Filtration rating					
Seals and treatments				Axx	Mxx	Pxx			
A	NBR			•	•	•			
V	FPM			•	•	•			
W	NBR compatible with fluids HFA-HFB-HFC			•	•				
Z	FPM compatible with fluids HFA-HFB-HFC			•	•				
Connections				Aux (only RF2350)		Mxx	Pxx		
G1	G 1 1/2"			G 1"		•	•		
G2	1 1/2" NPT			-		•			
G3	SAE 24 - 1 7/8" - 12 UN			SAE 16 - 1 5/16" - 12 UN		•	•		
G4	G 1 1/4"			-		•			
G5	1 1/4" NPT			-		•			
G6	SAE 20 - 1 5/8" - 12 UN			-		•			
G7	G 1"			-		•			
G8	1" NPT			-		•			
G9	SAE 16 - 1 5/16" - 12 UN			-		•			
F1	1 1/2" SAE 3000 psi/M			-		•			
F2	1 1/2" SAE 3000 psi/UNC			-		•			
Bypass valve									
B	1.75 bar								
E	3 bar								
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					

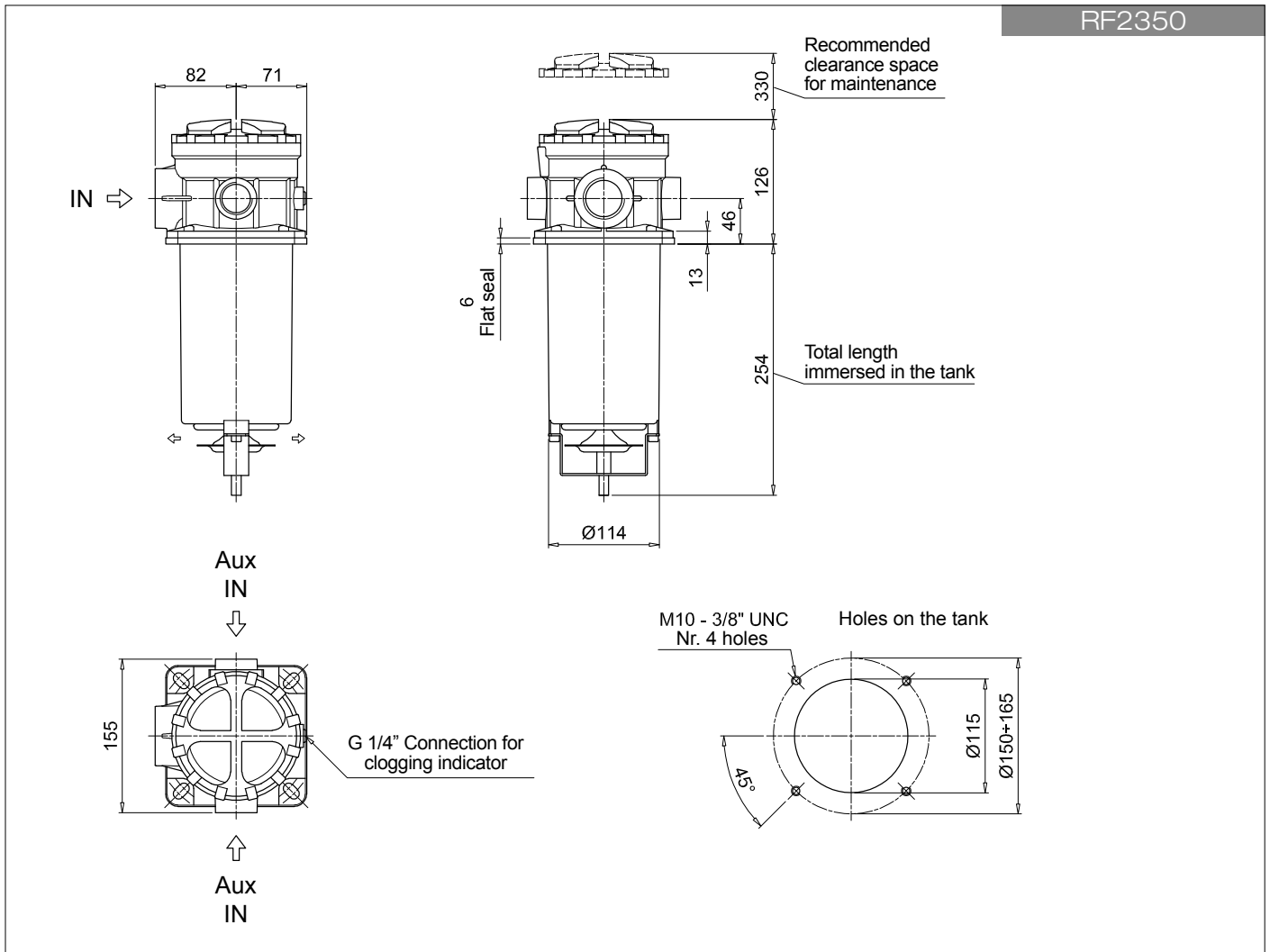
FILTER ELEMENT

Element series and size				Configuration example 1: CU250 M25 W P01					
CU250				Configuration example 2: CU250 A25 N P01					
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 and treatments				Filtration rating					
				Axx	Mxx	Pxx			
N	NBR			•	•	•			
V	FPM			•	•	•			
W	NBR head anodized	filter element compatible with fluids HFA-HFB-HFC		•	•				
Z	FPM head anodized	filter element compatible with fluids HFA-HFB-HFC		•	•				
				Execution					
				P01 MP Filtri standard					
				Pxx Customized					

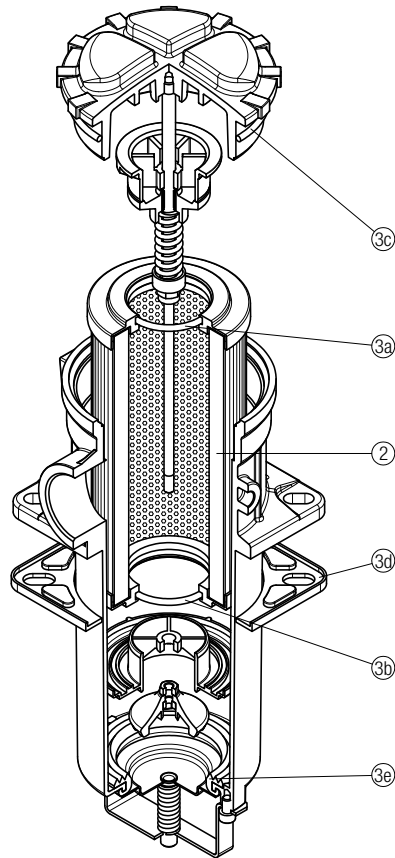


RF2 RF2250 - RF2350

Dimensions



RF2 250 - 350



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
RF2 250	See order table	NBR	FPM
RF2 350	See order table	02050586	02050587

Clogging indicators

Barometric indicators
Differential indicators

Introduction

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

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

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

MP Filtri can supply indicators of the following designs:

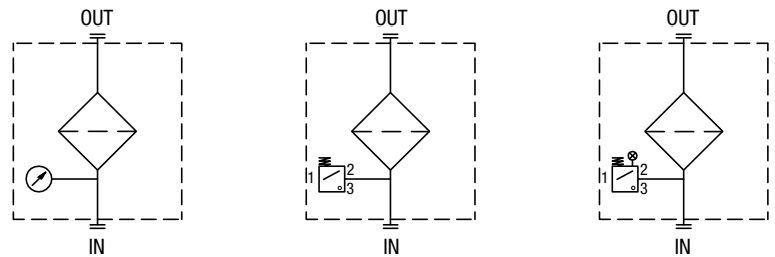
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

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

Suitable indicator types

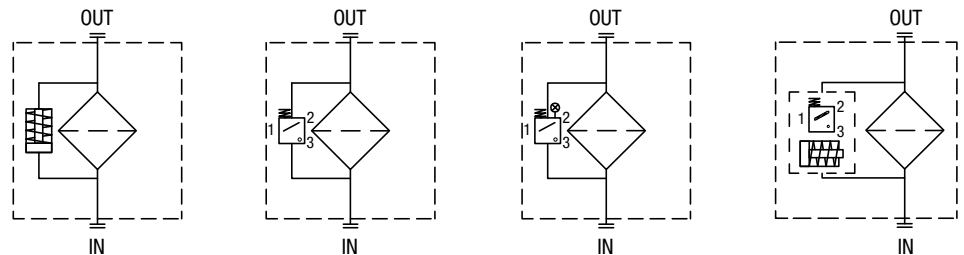
BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficiency of the filter element. They measure the pressure upstream of the filter element. Standard items are produced with R 1/8" EN 10226 connection.



DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficiency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure). Standard items are produced with special connection G 1/2" size. Also available in Stainless Steel models.



Quick reference guide

Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
MPFX-MPTX-MPF-MPT with bypass 1.75 bar MPH with bypass 1.75 bar	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
MPFX-MPTX-MPF-MPT with bypass 3 bar MPH with bypass 2.5 bar FRI 255	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01	
MPLX FRI 025 - 040 - 100 - 250 - 630 - 850	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01

BEA*50	
Electrical Pressure Indicator	
Settings	Ordering code
1.5 bar ±10%	BE A 15 HA 50 P01
2 bar ±10%	BE A 20 HA 50 P01

A/F 27
Max tightening torque: 25 N·m
EN 10226 - R1/8"

Hydraulic symbol

Electrical symbol

Materials

- Body: Brass
- Base: Black Nylon
- 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 HFA, HFB, 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

- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X

- CE certification

BEM*41	
Electrical Pressure Indicator	
Settings	Ordering code
1.5 bar ±10%	BE M 15 HA 41 P01
2 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 Nylon
- 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 HFA, HFB, 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.

BL*51 - BL*52 - BL*53	
Electrical/Visual Pressure Indicator	
Settings	Ordering code
1.5 bar ±10%	BL A 15 HA xx P01
2 bar ±10%	BL A 20 HA xx P01

A/F 27
Max tightening torque: 25 N·m
EN 10226 - R1/8"

Hydraulic symbol

Electrical symbol

Materials

- Body: Brass
- Base: Transparent Nylon
- 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 HFA, HFB, 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

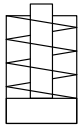
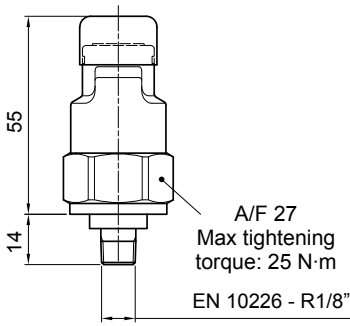
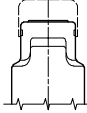
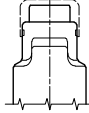
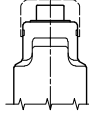
BAROMETRIC INDICATORS

Dimensions

BL*71	
Electrical/Visual Pressure Indicator	
Settings	Ordering code
1.5 bar $\pm 10\%$	BLA 15 HA 71 P01
2 bar $\pm 10\%$	BLA 20 HA 71 P01
<p>Hydraulic symbol</p>	
<p>Electrical symbol</p>	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR 	
<p>Technical data</p> <ul style="list-style-type: none"> - Max working pressure: 40 bar - Proof pressure: 60 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 	
<p>Electrical data</p> <ul style="list-style-type: none"> - Electrical connection: IEC 61076-2-101 D (M12) - Lamps: 24 Vdc - Resistive load: 0.4 A / 24 Vdc 	

BVA	
Axial Pressure Gauge	
Settings	Ordering code
1.4 bar $\pm 10\%$	BVA 14 P01
2.5 bar $\pm 10\%$	BVA 25 P01
<p>Hydraulic symbol</p>	
<p>Dial scale</p> <p>BVA 14 P01</p> <p>BVA 25 P01</p>	
<p>Materials</p> <ul style="list-style-type: none"> - Case: Painted Steel - Window: Transparent plastic - Dial: Painted Steel - Pointer: Painted Aluminium - Pressure connection: Brass - Pressure element: Bourdon tube Cu-alloy soft soldered 	
<p>Technical data</p> <ul style="list-style-type: none"> - Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar - Working temperature: From -40 °C to +60 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Accuracy: Class 2.5 according to EN 13190 - Degree of protection: IP31 according to EN 60529 	

BVR	
Radial Pressure Gauge	
Settings	Ordering code
1.4 bar $\pm 10\%$	BV R 14 P01
2.5 bar $\pm 10\%$	BV R 25 P01
<p>Hydraulic symbol</p>	
<p>Dial scale</p> <p>BV R 14 P01</p> <p>BV R 25 P01</p>	
<p>Materials</p> <ul style="list-style-type: none"> - Case: Painted Steel - Window: Transparent plastic - Dial: Painted Steel - Pointer: Painted Aluminium - Pressure connection: Brass - Pressure element: Bourdon tube Cu-alloy soft soldered 	
<p>Technical data</p> <ul style="list-style-type: none"> - Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar - Working temperature: From -40 °C to +60 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Accuracy: Class 2.5 according to EN 13190 - Degree of protection: IP31 according to EN 60529 	

BVP - BVQ		Hydraulic symbol	Materials	
Visual Pressure Indicator				
Setting	Ordering code			
1.5 bar ±10%	BV P 15 H P01 BV Q 15 H P01		Technical data - Reset: BVP - Automatic reset BVQ - Manual reset - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree of protection: IP45 according to EN 60529	
2 bar ±10%	BV P 20 H P01 BV Q 20 H P01			
		Signals		
		 Absence of pressure (no indicator)	 Presence of pressure (green button rises gradually)	 Clogged filter element (red button risen)

DESIGNATION & ORDERING CODE

Series	Configuration example 1:	BE	M	15	H	A	41	P01
BE Electrical pressure indicator	Configuration example 2:	BL	A	20	H	A	71	P01
BL Electrical/Visual pressure indicator	Configuration example 3:	BV	R	14				P01
BV Visual pressure indicator	Configuration example 4:	BV	P	20	H			P01

Type	BE	BL	BV
A Standard type	•	•	A Axial connection pressure gauge
M With wired electrical connection	•		R Radial connection pressure gauge
			P Visual indicator with automatic reset
			Q Visual indicator with manual reset

Pressure setting	BEA-BEM	BLA	BVA-BVR	BVP-BVQ
14 1.4 bar			•	
15 1.5 bar	•	•		
20 2 bar	•	•		•
25 2.5 bar			•	

Seals	BE	BLA	BVA-BVR	BVP-BVQ
H HNBR	•	•		•

Thermostat	BEA-BEM	BLA	BV
A Without	•	•	

Electrical connections	BEA	BEM	BL	BV
10 Connection AMP Superseal series 1.5				
30 Connection Deutsch DT-04-2-P				
41 Connection via four-core cable		•		
50 Connection EN 175301-803	•			
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc			•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•	

Option
P01 MP Filtri standard
Pxx Customized

DIFFERENTIAL INDICATORS

Dimensions

DEA*50	
Electrical Differential Indicator	
Settings 2 bar ±10%	Ordering code DE A 20 x A 50 P01
<p>Hydraulic symbol</p>	
<p>Electrical symbol</p>	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653 	
<p>Electrical data</p> <ul style="list-style-type: none"> - Electrical connection: EN 175301-803 - Resistive load: 0.2 A / 115 Vdc 	

DEM*10	
Electrical Differential Indicator	
Settings 2 bar ±10%	Ordering code DE M 20 xx 10 P01
<p>Hydraulic symbol</p>	
<p>Electrical symbol</p>	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 	
<p>Electrical data</p> <ul style="list-style-type: none"> - 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*20	
Electrical Differential Indicator	
Settings 2 bar ±10%	Ordering code DEM20xx20P01
<p>Hydraulic symbol</p>	
<p>Electrical symbol</p>	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 	
<p>Electrical data</p> <ul style="list-style-type: none"> - 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") 	

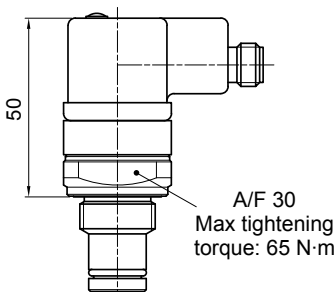
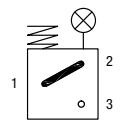
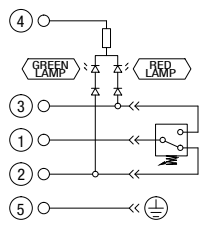
DEM*30		Hydraulic symbol	Materials - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM
Electrical Differential Indicator			
Settings	Ordering code		
2 bar ±10%	DE M 20 xx 30 P01	Electrical symbol 	
<p>75</p> <p>A/F 28 Max tightening torque: 65 N·m</p>			

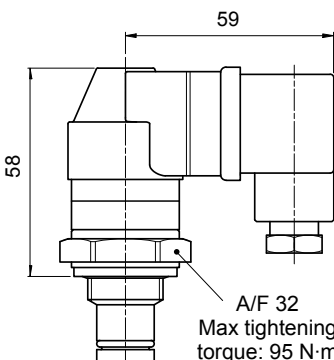
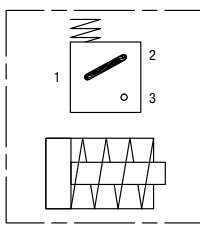
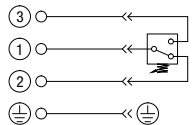
DEM*35		Hydraulic symbol	Materials - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM
Electrical Differential Indicator			
Settings	Ordering code		
2 bar ±10%	DE M 20 xx 35 P01	Electrical symbol 	
<p>min. 60</p> <p>30</p> <p>A</p> <p>A/F 28 Max tightening torque: 65 N·m</p> <p>flexible cable: 240 to "A"</p>			

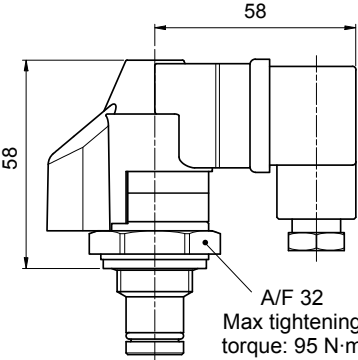
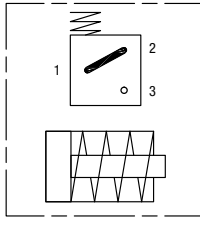
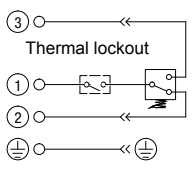
DLA*51 - DLA*52		Hydraulic symbol	Materials - Body: Brass - Base: Transparent Nylon - Contacts: Silver - Seal: HNBR - FPM
Electrical/Visual Differential Indicator			
Settings	Ordering code		
2 bar ±10%	DL A 20 x A xx P01	Electrical symbol 	
<p>53</p> <p>A/F 30 Max tightening torque: 65 N·m</p>			

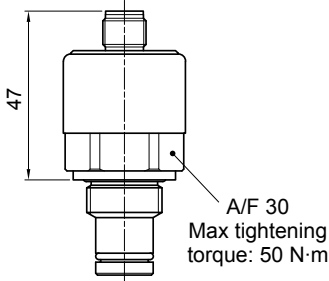
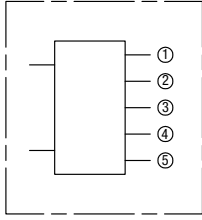
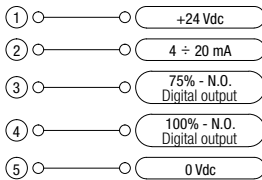
DIFFERENTIAL INDICATORS

Dimensions

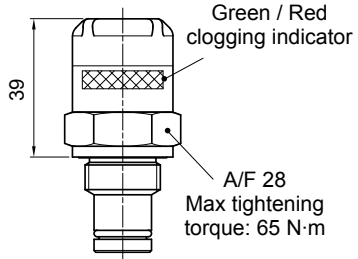
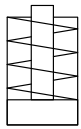
DLA*71	
Electrical/Visual Differential Indicator	
Settings 2 bar ±10%	Ordering code DLA 20 x A 71 P01
 <p>A/F 30 Max tightening torque: 65 N·m</p>	
<p>Hydraulic symbol</p> 	
<p>Electrical symbol</p> 	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653 	
<p>Electrical data</p> <ul style="list-style-type: none"> - Electrical connection: IEC 61076-2-101 D (M12) - Lamps: 24 Vdc - Resistive load: 0.4 A / 24 Vdc 	

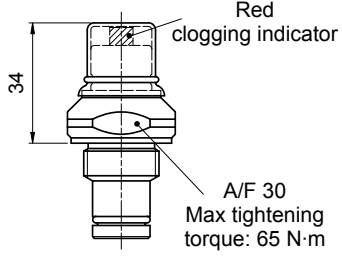
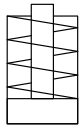
DLE*A50	
Electrical/Visual Differential Indicator	
Settings 2 bar ±10%	Ordering code DLE 20 x A 50 P01
 <p>A/F 32 Max tightening torque: 95 N·m</p>	
<p>Hydraulic symbol</p> 	
<p>Electrical symbol</p> 	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529 	
<p>Electrical data</p> <ul style="list-style-type: none"> - Electrical connections: EN 175301-803 - Resistive load: 5 A / 250 Vac - Available the connector with lamps 	

DLE*F50	
Electrical/Visual Differential Indicator	
Settings 2 bar ±10%	Ordering code DLE 20 x F 50 P01
 <p>A/F 32 Max tightening torque: 95 N·m</p>	
<p>Hydraulic symbol</p> 	
<p>Electrical symbol</p> 	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Base: Black Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529 	
<p>Electrical data</p> <ul style="list-style-type: none"> - Electrical connections: EN 175301-803 - Resistive load: 5 A / 250 Vac - Thermal lockout setting: +30 °C 	

DTA*70	
Electronic Differential Indicator	
Settings	Ordering code
2 bar ±10%	DT A 20 x x 70 P01
	
<p>Hydraulic symbol</p> 	
<p>Electrical symbol</p> 	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Internal parts: Brass - Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree protection: IP67 according to EN 60529 	
<p>Electrical data</p> <ul style="list-style-type: none"> - 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	
Visual Differential Indicator	
Settings	Ordering code
2 bar ±10%	DV A 20 x P01
	
<p>Hydraulic symbol</p> 	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Internal parts: Brass - Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529 	

DVM	
Visual Differential Indicator	
Settings	Ordering code
2 bar ±10%	DV M 20 x P01
	
<p>Hydraulic symbol</p> 	
<p>Materials</p> <ul style="list-style-type: none"> - Body: Brass - Internal parts: Brass - Nylon - Contacts: Silver - Seal: HNBR - FPM 	
<p>Technical data</p> <ul style="list-style-type: none"> - 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 HFA, HFB, HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529 	

DIFFERENTIAL INDICATORS

Dimensions

T2	
Indicator plug	
Seal	Ordering code
HNBR	T2 H
FPM	T2 V

A/F 30
Max tightening torque: 50 N·m

Materials

- Body: Phosphatized steel
- Seal: HNBR / FPM

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Series	Configuration example 1:						
DE Electrical differential indicator	DE	M	20	H	F	50	P01
DL Electrical/Visual differential indicator	DL	E	20	V	A	71	P01
DT Electronic differential indicator	DT	A	20	H	F	70	P01
DV Visual differential indicator	DV	M	20	V			P01

Type	DE	DL	DT	DV
A Standard type	•	•	•	A With automatic reset
M With wired electrical connection	•			M With manual reset
E For high power supply		•		

Pressure setting	DEA	DEM	DLA	DLE	DT	DV
20 2 bar						

Seals	DEA	DEM	DLA	DLE	DT	DV
H HNBR	•	•	•	•		
V FPM		•		•	•	

Thermostat	DEA	DEM	DLA	DLE	DT	DV
A Without		•	•	•		
F With thermostat				•	•	

Electrical connections	DEA	DEM	DLA	DLE	DT	DV
10 Connection AMP Superseal series 1.5		•				
20 Connection AMP Timer Junior		•				
30 Connection Deutsch DT-04-2-P		•				
35 Connection Deutsch DT-04-3-P		•				
50 Connection EN 175301-803	•			•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•			
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•			
70 Connection IEC 61076-2-101 D (M12)					•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•			

Option
P01 MP Filtri standard
Pxx Customized

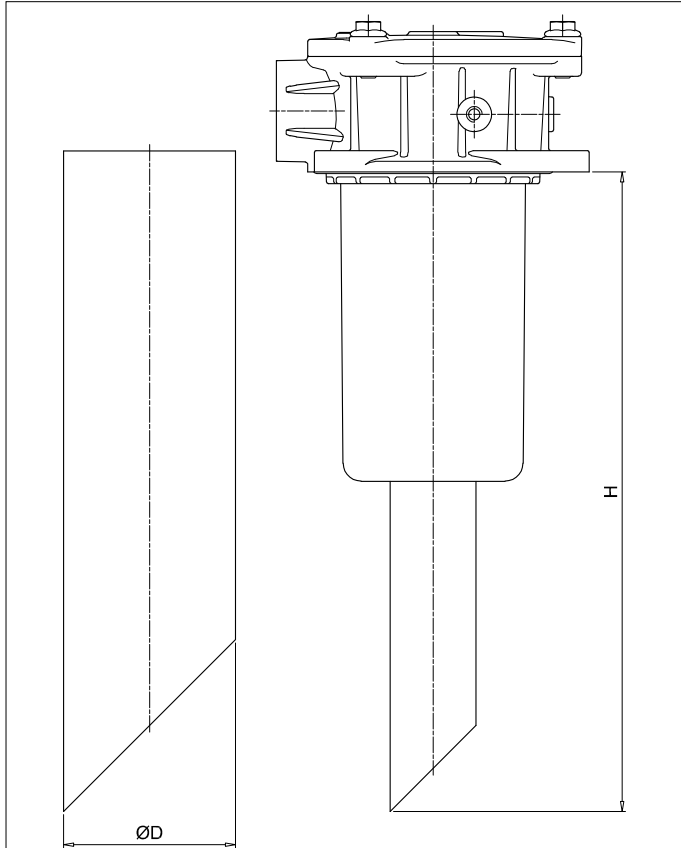
DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Series	Configuration example	
T2 Indicator plug	T2	H

Seals
H HNBR
V FPM

Accessories

STEEL EXTENSION TUBE



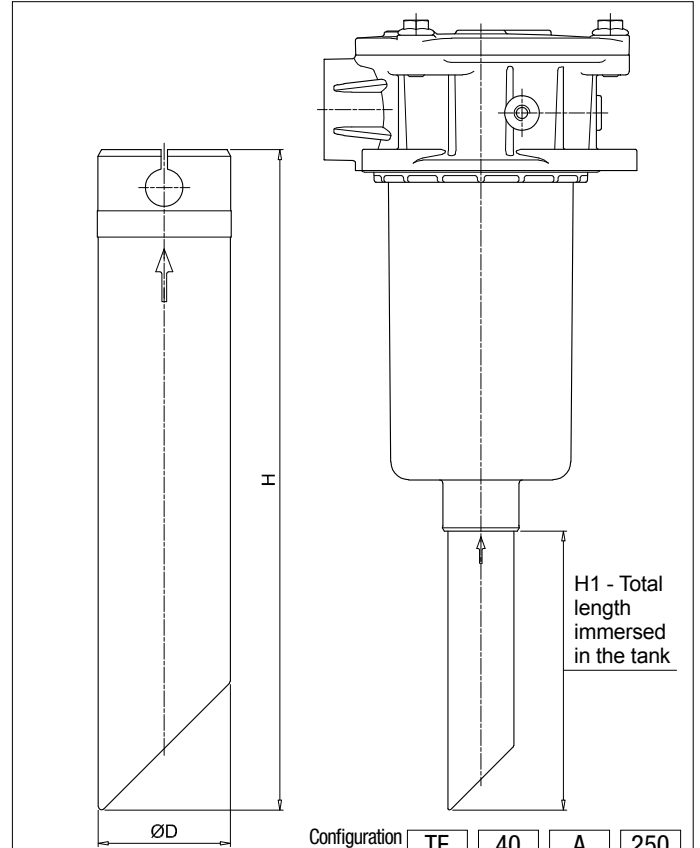
Configuration example:

MPF191 2 A F1 A10 H B S60

Length	H [mm]
S30	300
S35	350
S40	400
S45	450
S50	500
S60	600
S70	700
S80	800
S90	900

COMPATIBILITY TABLE						Ø D [mm]	
Filter series	Filter size				Filter Length	52	65
MPF	191	192	194		2	•	
	400	410	450	451	1	•	
					2		•
					3		
	750			1		•	

NYLON EXTENSION TUBE



Configuration example: TE 40 A 250

Series	Size	Material	Length	H [mm]	H1 [mm]
TE	25	A Nylon	200	200	174
	32		250	250	224
	40		300	300	274
			350	350	324
			400	400	374
			450	450	424
			500	500	474

COMPATIBILITY TABLE									
Filter series	Filter size			Filter Length	TE25	TE32	TE40		
MPF - MPFX	30			1	•				
MPF	100	104	110	2		•			
				3					
				4			•		
				1					
MPFX	100	104	110	2			•		
				3					
				4					
				1			•		
MPF - MPFX	181	182	184	1			•		
MPT - MPTX	025		027		2	•			
					3				
					1			•	
MPT	101	104	110	114	120	2			
						3			
						4			•
						1			
MPTX	101	104	110	114	120	2			
						3			
						4			•
						1			

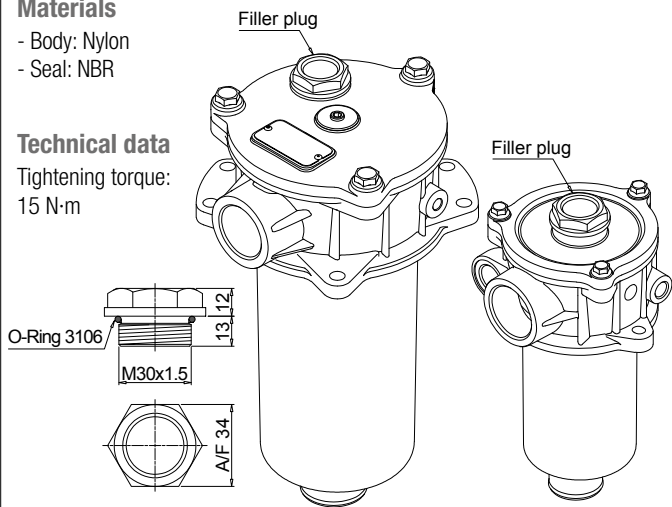
FILLER PLUG

Materials

- Body: Nylon
- Seal: NBR

Technical data

Tightening torque:
15 N·m



For any further information, please, contact our commercial dept.

DIFFUSER WITH FAST LOCK CONNECTION

Configuration example: **DFS** **32** **A** **250**

Series	Size	Version	Length
DFS			
	32		
	40		
		A	
			075

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	101	104	110	114	120	1	•	
						2		
						3		
						4		•
MPTX	101	104	110	114	120	1		
						2		•
						3		
						4		

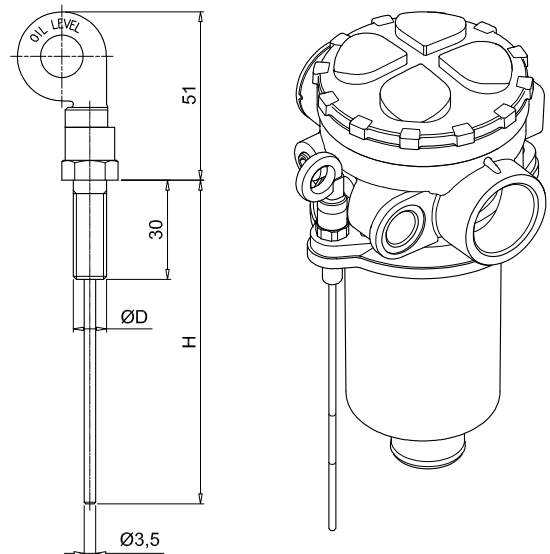
DIPSTICK

Materials

- Screw: phosphatized steel
- Stick: phosphatized steel
- Handle: Nylon

Technical data

Working temperature:
From -25 °C to +110 °C



Configuration example:

DPT **20** **M10** **A** **P01**

Series

DPT

Length H [mm]

15	134
20	184
25	234
30	284
35	334

Fastening

M8 Fastening with screws $\varnothing D = M8$

M10 Fastening with screws $\varnothing D = M10$

Seals

A NBR

V FPM

Execution

P01 MP Filtri standard

Pxx Customized

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

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

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

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

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

MP Filtri can supply indicators of the following designs:

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

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

The electronic differential pressure clogging indicator is also available.

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

Clogging Indicators



Clogging indicators



Suitable indicator types

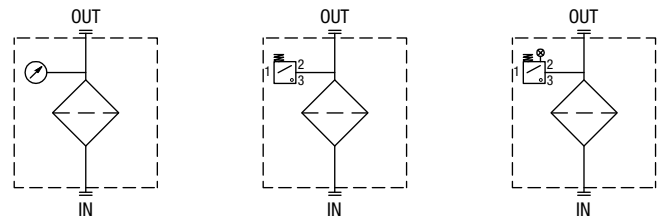
VACUUM INDICATORS

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

They measure the pressure downstream of the filter element.

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

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

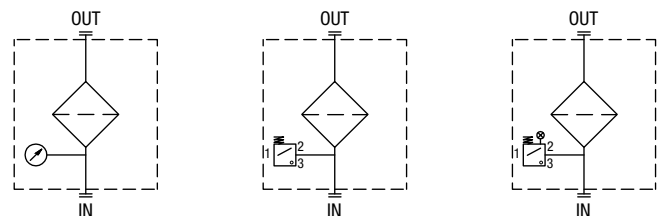


BAROMETRIC INDICATORS

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

They measure the pressure upstream of the filter element.

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



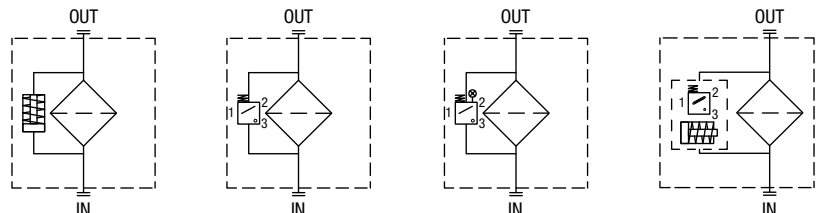
DIFFERENTIAL INDICATORS

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

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

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

Also available in Stainless Steel models.



Filter family	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
SUCTION FILTERS	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540	WA16P01 VVR16P01	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01	
RETURN FILTERS	MPFX-MPTX-MPF-MPT with bypass 1.75 bar MPH with bypass 1.75 bar	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
	MPFX-MPTX-MPF-MPT with bypass 3 bar MPH with bypass 2.5 bar FRI 255	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01	
	MPLX FRI 025 - 040 - 100 - 250 - 630 - 850	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
RETURN / SUCTION FILTERS	Suction line MRSX 116 - 165 - 166	WB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
	Return line MRSX 116 - 165 - 166 LMP 124 MULTIPOINT	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01	
SPIN-ON FILTERS	Suction line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	WB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
	Return line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
	In-line MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01	
LOW & MEDIUM PRESSURE FILTERS	With bypass valve LMP 110 - 112 - 116 - 118 - 119 MULTIPOINT LMP 120 - 122 - 123 MULTIPOINT 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	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
	Without bypass valve LMP 110 - 112 - 116 - 118 - 119 MULTIPOINT LMP 120 - 122 - 123 MULTIPOINT 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	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01
HIGH PRESSURE FILTERS	With bypass valve FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 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 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
	Without bypass valve FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 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 DVM70xP01	DEA70xA50P01 DEM70xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
STAINLESS STEEL HIGH PRESSURE FILTERS	With bypass valve FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
	Without bypass valve FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01

Hazardous area electronic indicator

NEW

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