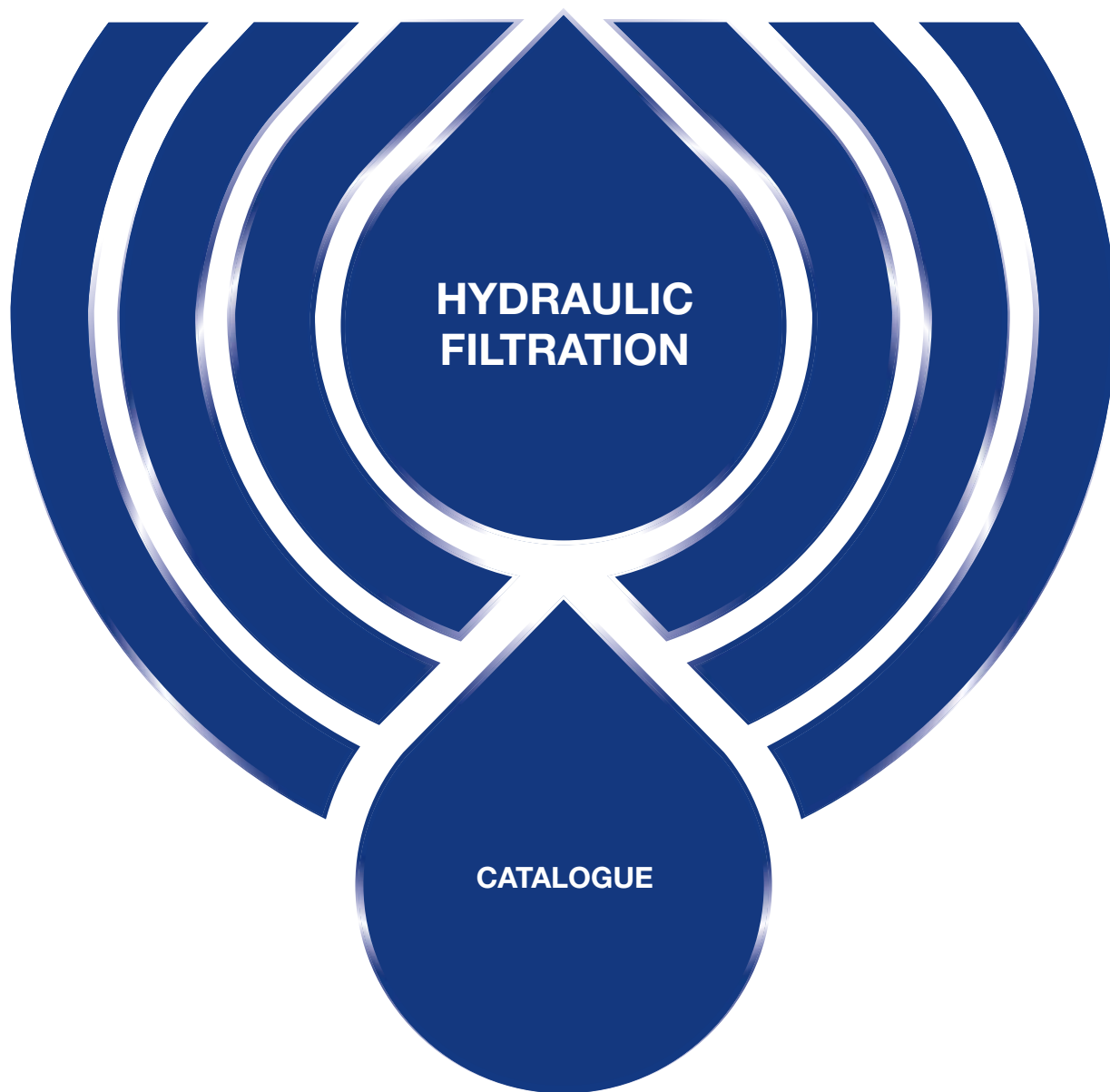




MPFILTRI®

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.

HYDRAULIC FILTRATION PRODUCTS

1	page	INTRODUCTION
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30	page	SUCTION FILTERS		up to Q_{max}
				l/min gpm
33	STRC & MPAC	Submerged suction filter, with bypass or magnetic filter		1000 264
41	SFEX	In-line filter with plastic bowl		100 26
51	SFMC	Semi-submerged positive head suction filter, low flow rate		160 42
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			bar psi	l/min gpm
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720		CLOGGING INDICATORS		

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			bar psi	l/min gpm
273	MRSX	Unique TANK TOP filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit	10 145	250 66
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			bar psi	l/min gpm
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			bar	psi	l/min	gpm		
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349	LMP 112 - 123 MULTIPORT	In-line filter with Multiport design for multiple choice connection	80	1160	175	46		
365	LMP 210 - 211	In-line low & medium pressure filter, low flow rate	60	870	365	96		
375	LMP 400 - 401	In-line low & medium pressure filter, high flow rate	60	870	780	206		
383	LMP 430 - 431	In-line low & medium pressure filter, high flow rate	60	870	780	206		
393	LMP 950 - 951	In-line filter, available with 2 and up to 6 different heads	30	435	2400	634		
399	LMP 952 - 953 - 954	In-line low pressure filter specifically designed to be mounted in series	25	363	4500	1189		
411	LMD 211	In-line duplex medium pressure filter	60	870	200	53		
419	LMD 400 - 401 & 431	In-line duplex low pressure filter	16	232	600	159		
435	LMD 951	In-line duplex filter, available with 2 up to 6 different heads	16	232	1200	317		
443		Filters featuring filter elements designed according to DIN24550						
445	LDP - LDD	In-line and duplex medium pressure filter	60	870	360	95		
455	LMP 900 - 901	In-line low pressure filter	30	435	2000	528		
463	LMP 902 - 903	In-line filter specifically designed to be mounted in series	20	290	3000	793		
472		ACCESSORIES						
726		CLOGGING INDICATORS						

			up to P _{max}		up to Q _{max}	
474	page	HIGH PRESSURE FILTERS	bar	psi	l/min	gpm
477	FMMX	Typical high pressure filter for mobile applications, low flow rate	420	6092	300	79
487	FMM	Typical high pressure filter for mobile applications, low flow rate	420	6092	300	79
497	FHA	Filter optimized for use in high pressure operating systems, low flow rate	560	8122	150	40
505	FMP 039	Filter high pressure, low flow rate applications	110	1595	80	21
513	FMP	Filter high pressure, high flow rate applications	320	4641	500	132
525	FHP	Typical high pressure filter for mobile applications, high flow rate	420	6092	630	166
545	FHM	High pressure filter with intermediate manifold construction	320	4641	400	106
565	FHB	High pressure for block mounting	320	4641	485	128
577	FHF	In-line manifold top mounting according to SAE J2066	350	5076	550	145
587	FHD	In-line duplex high pressure filter	350	5076	250	66
601	HPB	Pressure filter kits for integration in control manifolds	420	6092	300	79
727	CLOGGING INDICATORS					

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

			up to P _{max}		up to Q _{max}	
(668) page	FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE		bar	psi	l/min	gpm
671	FMMX	Typical high pressure filter for mobile applications, low flow rate	420	6092	300	79
681	FZP	In-line pressure filter with threaded mount	420	6092	160	42
691	FZH	In-line pressure filter with threaded mount for higher pressure	700	10153	80	21
701	FZX	In-line pressure filter with threaded mount up to 1000 bar	1000	14504	10	3
729	CLOGGING INDICATORS					

709 page	CLOGGING INDICATORS	up to P _{max}		up to Q _{max}	
		bar	psi	l/min	gpm
714	QUICK REFERENCE GUIDE				
718	DESIGNATION AND ORDERING CODES				
730	TECHNICAL DATA				

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.

MARKET
LEADER



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



Scan or click me!

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

The Group boasts **9** business branches



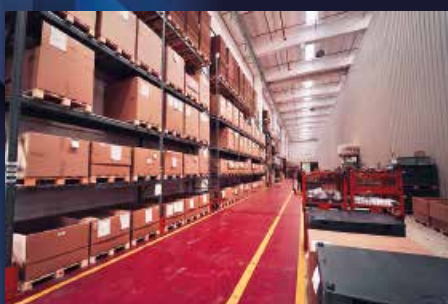
TECHNOLOGY

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



AND PRODUCTION

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





SUCTION FILTERS

Mounting:

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



RETURN FILTERS

Mounting:

- In-Line
- Tank top
- In single and duplex designs



RETURN / SUCTION FILTERS

Mounting:

- In-Line
- Tank top



SPIN-ON FILTERS

Mounting:

- In-Line
- Tank top



LOW & MEDIUM PRESSURE FILTERS

Mounting:

- In-Line
- Parallel manifold version
- In single and duplex designs



HIGH PRESSURE FILTERS

Mounting:

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

PRODUCT RANGE

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

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

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

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



STAINLESS STEEL HIGH PRESSURE FILTERS

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



FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Mounting:
- In-Line



CONTAMINATION CONTROL SOLUTIONS

- Off-line, in-line particle analyser
- Off-line bottle sampling products
- Fully calibrated using relevant ISO standards
- A wide range of variants to support fluid types and communication protocols
- Mobile Filtration Units with flow rates from 15 l/min up to 200 l/min



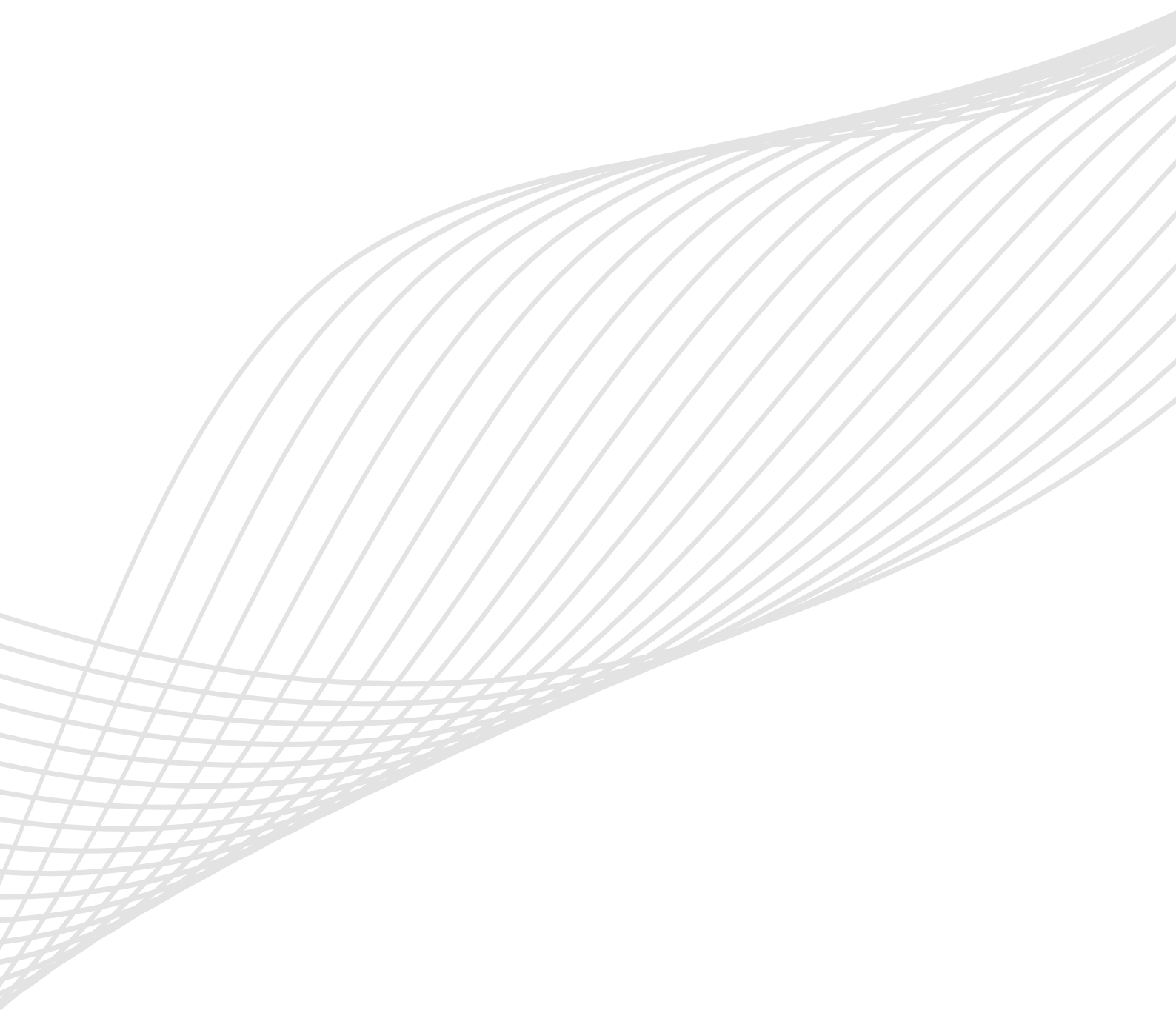
POWER TRANSMISSION PRODUCTS

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



TANK ACCESSORIES

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



CONTAMINATION MANAGEMENT

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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 important classification system for hydraulic fluids is the one defined by International Organization for Standardization (ISO), which established a classification system within their standard: "ISO 6743-4 Lubricants, Industrial Oils and Related Products". In particular, the parts of interest for hydraulic fluids are:

- Lubricants, industrial oils and related products (class L)
- Classifications - Part 4L - Family H (Hydraulic systems)

The ISO 6743-4 classification system can be generally applied to the three primary classes of hydraulic fluids:

- Mineral Oils (i.e.: petroleum) Hydraulic Fluids (i.e.: HH: Mineral lubricants without corrosion inhibitors; HL: HH-type lubricants with oxidation reduction and anticorrosive additives; HM: HL-type lubricants with anti-wear additives; HV: HM-type lubricants with a higher viscosity grade and temperature properties; and others).
- Biodegradable Hydraulic Fluids (HExx), also defined as "Environmentally acceptable hydraulic fluids".
- Fire Resistant Hydraulic Fluids (HFxx), which could be further split into: Fire-resistant aqueous fluids (HFAx, HFB; HFC); Fire-resistant synthetic anhydrous fluids (HFDx).

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

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

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

- **DYNAMIC VISCOSITY**
It identifies the fluid's resistance to sliding due to the impact of the particles forming it.
- **KINEMATIC VISCOSITY**
It is a widespread formal dimension in the hydraulic field.
It is calculated with the ratio between the dynamic viscosity and the fluid density.
Kinematic viscosity varies with temperature and pressure variations.
- **VISCOSITY INDEX**
This value expresses the ability of a fluid to maintain viscosity when the temperature changes.
A high viscosity index indicates the fluid's ability to limit viscosity variations by varying the temperature.
- **FILTERABILITY INDEX**
It is the value that indicates the ability of a fluid to cross the filter materials.
A low filterability index could cause premature clogging of the filter material.
- **WORKING TEMPERATURE**
Working temperature affects the fundamental characteristics of the fluid.
As already seen, some fluid characteristics, such as cinematic viscosity, vary with the temperature variation.

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

- **COMPRESSIBILITY MODULE**
Every fluid subjected to a pressure contracts, increasing its density.
The compressibility module identifies the increase in pressure required to cause a corresponding increase in density.
- **HYDROLYTIC STABILITY**
It is the characteristic that prevents galvanic pairs that can cause wear in the plant/system.
- **ANTIOXIDANT STABILITY AND WEAR PROTECTION**
These features translate into the capacity of a hydraulic oil to avoid corrosion of metal elements inside the system.
- **HEAT TRANSFER CAPACITY**
It is the characteristic that indicates the capacity of hydraulic oil to exchange heat with the surfaces and then cool them.

2 FLUID CONTAMINATION

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

- **INITIAL CONTAMINATION**
Caused by the introduction of contaminated fluid into the circuit, or by incorrect storage, transport or transfer operations.
- **PROGRESSIVE CONTAMINATION**
Caused by factors related to the operation of the system, such as metal surface wear, sealing wear, oxidation or degradation of the fluid, the introduction of contaminants during maintenance, corrosion due to chemical or electrochemical action between fluid and components, cavitation.
The contamination of hydraulic systems can be of different nature:
- **SOLID CONTAMINATION**
For example rust, slag, metal particles, fibers, rubber particles, paint particles or additives
- **LIQUID CONTAMINATION**
For example, the presence of water due to condensation or external infiltration or acids
- **GASEOUS CONTAMINATION**
For example, the presence of air due to inadequate oil level in the tank, drainage in suction ducts, incorrect sizing of tubes or tanks.

3 FLUID COMPATIBILITY CHARTS

For more detailed information on specific fluid compatibility please refer to the fluid compatibility charts on our website:



Scan or click me!

4 EFFECTS OF CONTAMINATION ON HYDRAULIC COMPONENTS

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

CONTAMINATION IN PRESENCE OF LARGE TOLERANCES



CONTAMINATION IN PRESENCE OF NARROW TOLERANCES



Solid contamination mainly causes surface damage and component wear.

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

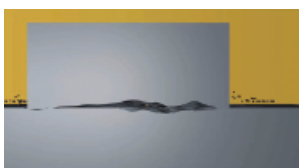
ABRASION



EROSION



ADHESION



FATIGUE



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

DISSOLVED WATER

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

FREE WATER - ADDITIONAL EFFECTS

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

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

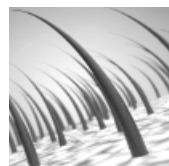
Gaseous contamination mainly results in decay of system performance.

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

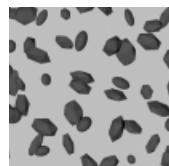
5 MEASURING THE SOLID CONTAMINATION LEVEL

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

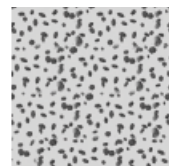
What is the size of the contaminating particles that we must handle in our hydraulic circuit?



HUMAN HAIR
(75 µm)



MINIMUM DIMENSION
VISIBLE WITH HUMAN
EYES
(40 µm)



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

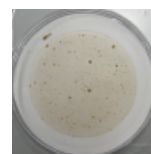
Contamination level analysis is significant only if performed with a uniform and repeatable method, conducted with standard test methods and suitably calibrated equipment. To this end, ISO has issued a set of standards that allow tests to be conducted and express the measured values in the following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

- GRAVIMETRIC LEVEL - ISO 4405

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



CLEAN
MEMBRANE



CONTAMINATED
MEMBRANE

CONTAMINATION MANAGEMENT

- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4406

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

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

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

NAS 1638 is still used although obsolete.

Classification example according to ISO 4406

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

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

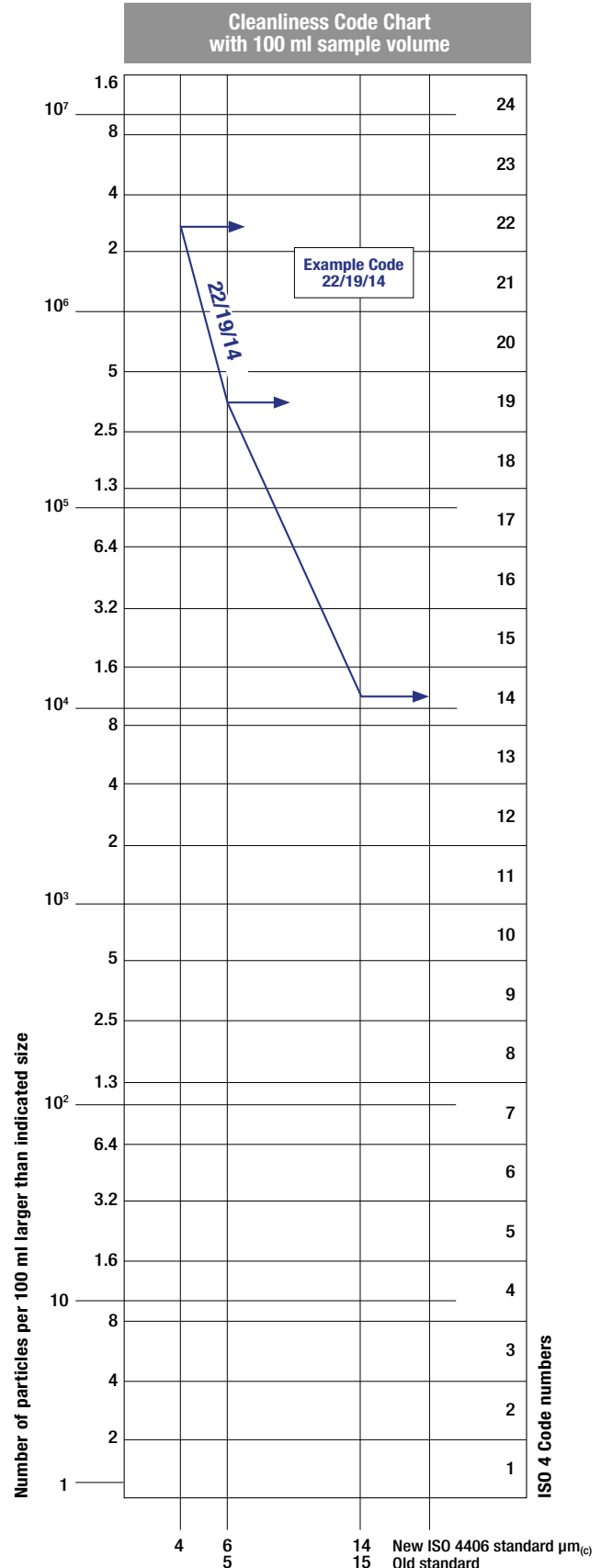
ISO 4406 - Allocation of Scale Numbers

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

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

ISO 4406 Cleanliness Code System

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



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

Classification example according to SAE AS4059 - Rev. G

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

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

Table 1 - Class for differential measurement

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

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

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

Table 2 - Class for cumulative measurement

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

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

* cumulative particle count

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

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

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

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

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

Size Range Classes (in microns)

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

- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4407

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

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

MICROSCOPE CONTROL
AND MEASUREMENT



Example figure 1 and 2

COMPARISON PHOTOGRAPH'S
1 graduation = 10µm



Fig. 1



Fig. 2



Scan or click me!

For other comparison photographs for contamination classes see the "Filtration and Particle Analyser Handbook".

- CLEANLINESS CODE COMPARISON

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

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

6 FILTRATION TECHNOLOGIES

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

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

- SURFACE FILTRATION

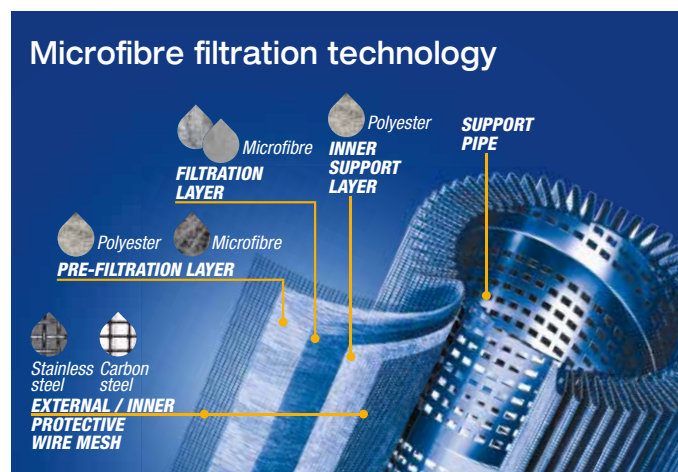
It is by direct interception. The filter prevents particles larger than the pores from continuing in the plant / system. Surface filters are generally manufactured with metal canvases or meshes.

- DEPTH FILTERING

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

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

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



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

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

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



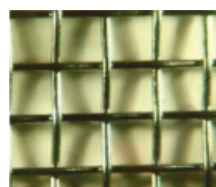
Value ($\beta_{x(c)}$)	2	10	75	100	200	1000
Efficiency	50%	90%	98.7%	99%	99.5%	99.9%

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

In addition to the filtration efficiency value during the Multipass test, other important features, such as filtration stability (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.

WIRE MESH FILTRATION



PAPER FILTRATION



MICROFIBER FILTRATION



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

7 RECOMMENDED CONTAMINATION CLASSES

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

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

Example of recommended contamination levels for pressures below 140 bar.

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

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

8 TYPES OF FILTERS

Suction filters

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

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

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

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

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

There are two types of suction filters:

- IMMERSION FILTERS

Simple filter element screwed on the suction pipe

- FILTERS WITH CONTAINER

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

Delivery (or Pressure) filters

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

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

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

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

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

Return filters

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

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

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

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

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

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

Combined filters

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

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

Only excess fluid returns to the tank through the valve.

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

Off-line filters

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

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

Venting filters

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

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

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

9 FILTER SIZING PARAMETERS

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

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

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

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

The advantages of proper positioning and sizing of the filters are

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

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

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

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

- **PRESSURE DROP (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.

10 APPLICABLE STANDARDS FOR FILTER DEVELOPMENT

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

ISO 2941

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

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

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

ISO 2942

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

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

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

ISO 2943

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

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

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

ISO 3723

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

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

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

ISO 3968

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

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

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

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

ISO 16889

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

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

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

ISO 23181

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

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

ISO 11170

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

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

ISO 10771-1

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

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

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

Saturation Levels

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

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

TYPICAL WATER SATURATION LEVEL FOR NEW OILS

Examples:

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

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

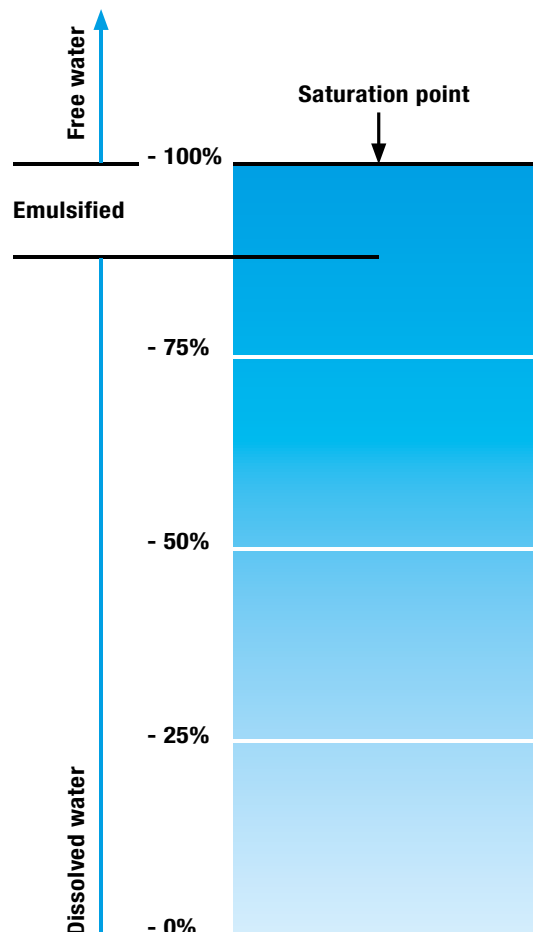
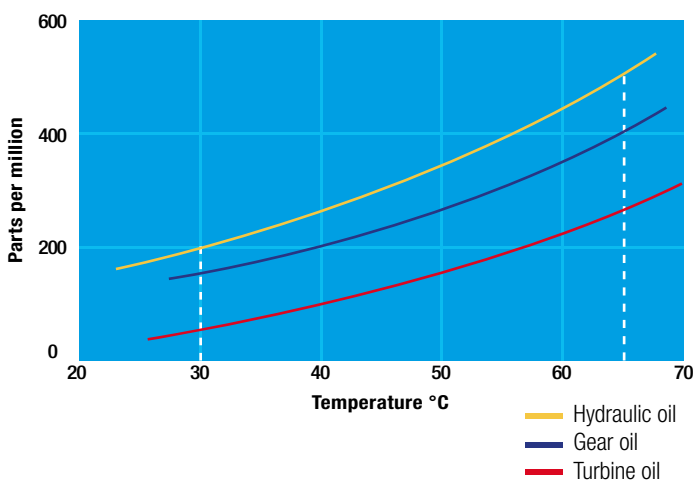
11 WATER IN HYDRAULIC AND LUBRICATING FLUIDS

Water Content

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

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

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



WATER REMOVAL

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

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

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

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

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

Filter Media

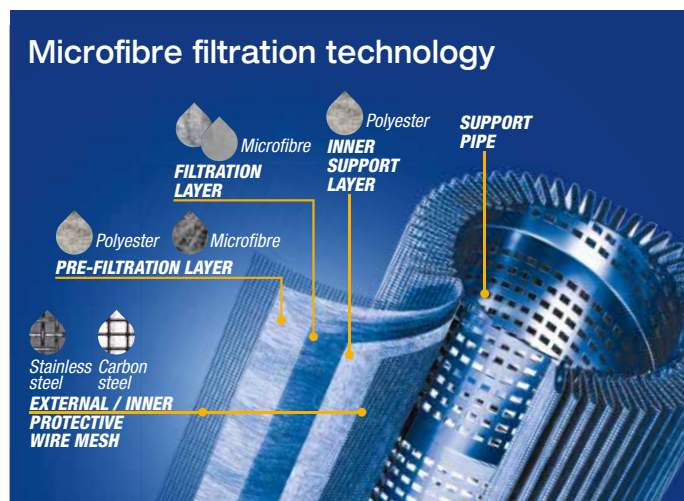


Fabric that absorbs water

Absorber media layer



The Filter Media has absorbed water



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



Scan or click me!

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

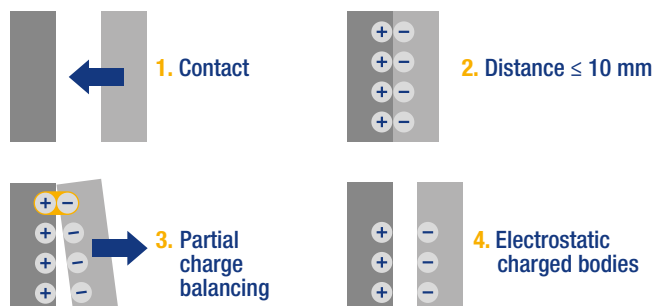
12 THE ANTI-STATIC FILTERS

zerospark®

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

THE TRIBOELECTRIC EFFECT

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



Scan or click me!

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

FILTER SIZING

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FILTER SIZING Calculation

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

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

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop Δp_c of the housing is proportional to the fluid density (kg/dm^3 / lb/ft^3). The filter element pressure drop Δp_e is proportional to its viscosity (mm^2/s / SUS), the corrective factor Y have to be used in case of an oil viscosity different than $30 \text{ mm}^2/\text{s}$ (cSt) / 150 SUS .

Sizing data for single filter element, head at top

Δp_c = Filter housing pressure drop [bar / psi]

Δp_e = Filter element pressure drop [bar / psi]

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

Q = flow rate (l/min - gpm)

V_1 reference oil viscosity = $30 \text{ mm}^2/\text{s}$ (cSt) / 150 SUS

V_2 = operating oil viscosity in mm^2/s (cSt) / SUS

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

International system:

$$\Delta p_e = Y : 1000 \times Q \times (V_2:V_1)$$

Imperial system:

$$\Delta p_e = Y : 17.2 \times Q \times (V_2:V_1)$$

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

Verification formula

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

Maximum total pressure drop (Δp_{max}) allowed by a new and clean filter

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

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

Filter pressure drop calculation example

Application data:

Selected filter: tank top return filter - MPT110 series with bypass valve and G 1 1/4" inlet connection.

Selected filter element: **MF100 length 4**

Required filtration efficiency = **25 μm** absolute filtration with microfibre

Pressure P_{max} = 10 bar / 145.03 psi

Flow rate Q = 120 l/min / 31.7 gpm

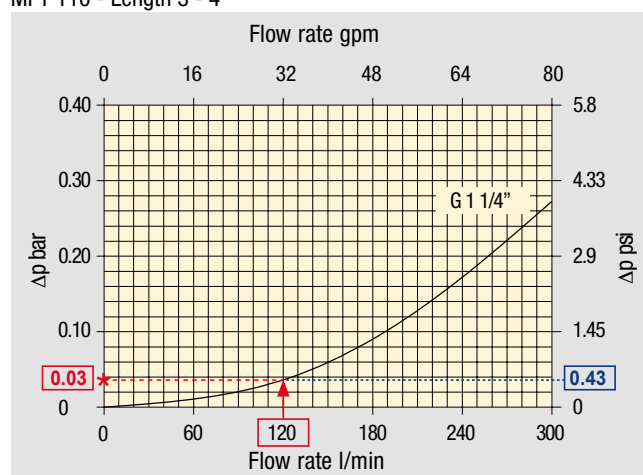
Viscosity V_2 = 46 mm^2/s (cSt) / 216 SUS

Oil density = 0.86 kg/dm^3 / 53.68 lb/ft^3

Calculation:

$$\Delta p_c = \mathbf{0.03 \text{ bar}} / \mathbf{0.43 \text{ psi}}$$
 (see graphic below)

MPT 110 - Length 3 - 4



Filter housings Δp 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.

Filter element		Absolute filtration H Series					Nominal filtration N Series		
Type		A03	A06	A10	A16	A25	P(00)10	P(00)25	M(00)10 M(00)6 M(00)9
Return filters									
MF 020		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
MF 100 MFX 100									3.40
	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

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

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

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

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

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

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

SUCTION FILTERS

Filter element		Nominal filtration Filter element ΔP Series : A - C					
Type	Length	P0010	P0025	M0025	M0060	M0090	M0250
SMC 250	10	0.65	0.20	0.10	0.08	0.05	0.03
SSC 503	10	-	-	0.17	0.11	0.11	0.11
SSC 504	10	-	-	0.11	0.08	0.08	0.08
SSC 505	10	-	-	0.23	0.18	0.18	0.18
SSC 510	10	-	-	0.18	0.14	0.14	0.14
SSC 535	10	-	-	0.08	0.05	0.05	0.05
SSC 540	10	-	-	0.05	0.04	0.04	0.04
FEX 060	10	4.58	3.22	1.02	0.89	0.63	0.63
	20	1.97	1.38	0.62	0.45	0.29	0.29
FEX 110	10	1.33	1.12	0.22	0.18	0.14	0.14
	20	0.90	0.76	0.15	0.10	0.09	0.09

RETURN FILTERS

Filter element		Absolute filtration Filter element ΔP Series: H					Nominal filtration Filter Element ΔP Series: N		
Type	Length	A03	A06	A10	A16	A25	P10	P25	M25 - M60 - M90
MF 020	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	2	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
	3	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
MF 030 MFX 030	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MF 100 MFX 100	1	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	2	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	3	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	4	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82
MF 180 MFX 180	1	3.67	3.05	1.64	1.56	1.24	1.18	1.06	0.26
	2	1.69	1.37	0.68	0.54	0.51	0.43	0.39	0.12
MF 190 MFX 190	2	1.69	1.37	0.60	0.49	0.44	0.35	0.31	0.11
MF 400 MFX 400	1	3.20	2.75	1.39	1.33	1.06	0.96	0.87	0.22
	2	2.00	1.87	0.88	0.85	0.55	0.49	0.45	0.13
	3	1.90	1.60	0.63	0.51	0.49	0.39	0.35	0.11
MF 750 MFX 750	1	1.08	0.84	0.49	0.36	0.26	0.21	0.19	0.06
MLX 250	2	3.00	3.04	1.46	1.25	1.17	-	-	M25 0.20
MLX 660	2	1.29	1.26	0.52	0.44	0.38	-	-	M25 0.10
CU 025		78.00	48.00	28.00	24.00	9.33	9.33	8.51	1.25
CU 040		25.88	20.88	10.44	10.00	3.78	3.78	3.30	1.25
CU 100		15.20	14.53	5.14	4.95	2.00	2.00	0.17	1.10
CU 250		3.25	2.55	1.55	1.35	0.71	0.71	0.59	0.25
CU 630		1.96	1.68	0.85	0.72	0.24	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04

TO BE CONTINUED >>

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

FILTER SIZING Corrective factor

RETURN FILTERS

Filter element		Absolute filtration Filter element ΔP Series: H					Nominal filtration Filter Element ΔP Series: N		
Type	Length	A03	A06	A10	A16	A25	P10	P25	M25 - M60 - M90
MR 250	2	3.61	4.08	1.81	1.71	1.35	-	-	M25 0.55
	4	2.10	1.70	1.14	0.77	0.53	-	-	0.60
MR 100	1	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	2	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	3	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	4	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	5	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MR 250	1	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	2	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	3	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	4	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MR 630	1	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	2	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	3	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	4	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	5	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MR 850	1	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	2	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	3	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	4	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

RETURN / SUCTION FILTERS

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

Filter element		Absolute filtration Filter Element ΔP Series: N							
Type	Length	A03	A06	A10	A16	A25	P10	P25	M25 - M60 - M90
CU 110	1	16.25	15.16	8.75	8.14	5.87	2.86	2.65	0.14
	2	12.62	10.44	6.11	6.02	4.16	1.60	1.49	0.12
	3	8.57	7.95	5.07	4.07	2.40	1.24	1.15	0.11
	4	5.76	4.05	4.05	2.36	1.14	0.91	0.85	0.05

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

LOW & MEDIUM PRESSURE FILTERS

Filter element		Absolute filtration Filter Element ΔP Series: N - W					Nominal filtration Filter Element ΔP Series: N		
Type	Length	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	3.14	2.55	1.46	1.22	0.78	0.75	0.64	0.19
	3	2.15	1.70	0.94	0.78	0.50	0.40	0.34	0.10
	4	1.60	1.28	0.71	0.61	0.40	0.34	0.27	0.08
	5	1.00	0.83	0.47	0.34	0.20	0.24	0.19	0.06
	6	0.82	0.58	0.30	0.27	0.17	0.22	0.18	0.105
CU 900	1	0.86	0.63	0.32	0.30	0.21	-	-	0.05
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

HIGH PRESSURE FILTERS

Filter element		Absolute filtration Filter Element ΔP Series: N - R					Nominal filtration Filter El. ΔP Series: N
Type	Length	A03	A06	A10	A16	A25	M25
HP 010 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 HPX 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 HPX 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

TO BE CONTINUED >>

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

HIGH PRESSURE FILTERS

Filter element		Absolute filtration Filter Element ΔP Series: N - R					Nominal filtration Filter El. ΔP Series: N
Type	Length	A03	A06	A10	A16	A25	M25
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
HP 325	1	3.65	2.95	2.80	1.80	0.90	0.38
	2	2.03	1.73	1.61	1.35	0.85	0.36
	3	1.84	1.42	1.32	1.22	0.80	0.35

Filter element		Absolute filtration Filter Element ΔP Series: S - H - U				
Type	Length	A03	A06	A10	A16	A25
HP 010 HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.35	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
HP 050 HPX 050	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	10.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.90	4.44
	3	8.96	7.46	4.89	4.16	3.07
HP 320	1	13.00	12.19	6.80	6.40	3.32
	2	6.45	5.31	3.01	2.89	1.73
	3	4.13	3.14	1.90	1.78	1.17
	4	3.17	2.71	1.80	1.70	1.10
HP 500	1	9.70	8.81	4.55	4.47	2.80
	2	5.46	4.63	2.88	2.68	2.20
	3	3.90	3.74	2.22	2.07	1.53
	4	3.10	2.84	1.56	1.53	1.02
	5	1.93	1.83	1.14	1.08	0.69

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

STAINLESS STEEL HIGH PRESSURE FILTERS

Filter element		Absolute filtration Filter Element ΔP Series: N - R					Nominal filtration Filter El. ΔP Series: N
Type	Length	A03	A06	A10	A16	A25	M25
HP 010 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 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

Filter element		Absolute filtration Filter Element ΔP Series: S - H - U				
Type	Length	A03	A06	A10	A16	A25
HP 010 HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.35	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
HP 050	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	10.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.90	4.44
	3	8.96	7.46	4.89	4.16	3.07

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

FILTER SIZING Corrective factor

FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

Filter element		Absolute filtration Filter Element ΔP Series: N - R					Nominal filtration Filter El. ΔP Series: N
Type	Length	A03	A06	A10	A16	A25	M25
HP 010 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
HPX 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 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

Filter element		Absolute filtration Filter Element ΔP Series: S - H - U				
Type	Length	A03	A06	A10	A16	A25
HP 010 HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.35	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	73.00	57.00	28.00	24.00	17.20
	3	40.90	36.33	21.88	18.80	11.20
	4	31.50	28.22	17.22	9.30	6.70
HPX 050	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	10.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.90	4.44
	3	8.96	7.46	4.89	4.16	3.07

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

Filters sizing software

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

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

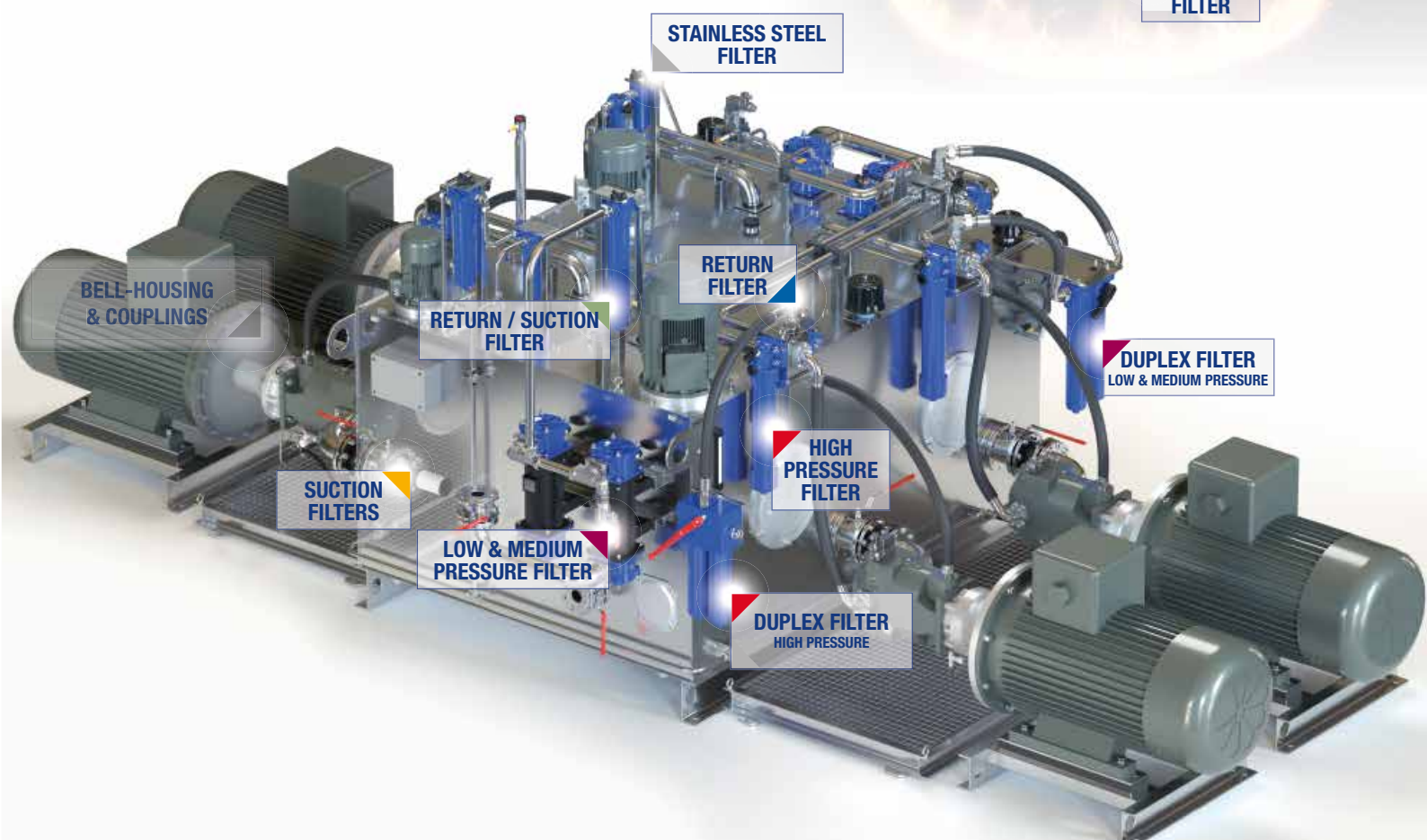
The MP Filtri Selection Tool software program is easy to use with a flexible fast design method and provides improved layout formats with full descriptions.

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

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



Scan or click me!



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 families:

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

FILTER SIZING

For the proper calculation see pag. 22

Return filters



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THE **X** CONCEPT FOR OUR FILTERS

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

RFEX series

with **MYCLEAN** FEX Filter Element



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

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



The products identified as RFEX are protected by:

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

RFEX series

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

ELIXIR®

Description

Technical data

Return filter

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

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

They are mounted in line to limit aeration or foam generation into the reservoir.

Available features:

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

Common applications:

- Light Industrial equipment
- Mobile application

Filter housing materials

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

Bypass valve

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

Δp element type

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

Seals

Standard NBR series A

Temperature

From -25 °C to +110 °C

Note

RFEX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

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

Hydraulic symbols

Filter series	Style S	Style B
RFEX 060	•	•
RFEX 080	•	•
RFEX 110	•	•
RFEX 160	•	•

Flow rates [l/min]

Filter element design - N Series							
Filter series	A10	A16	A25	M60	M90	P10	P25
RFEX 060	60	61	64	87	89	62	77
RFEX 080	69	70	75	91	92	79	93

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

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

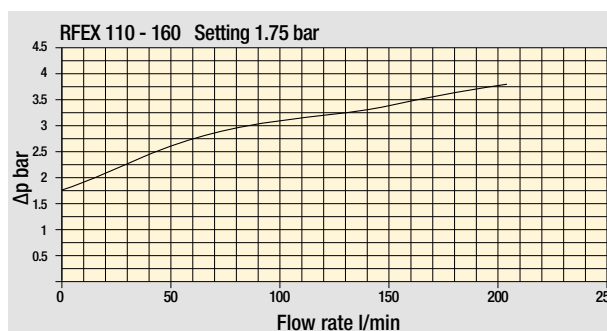
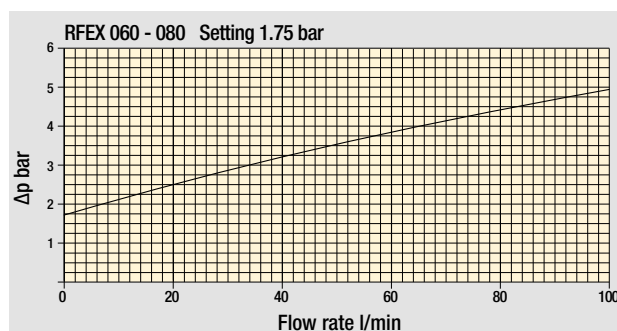
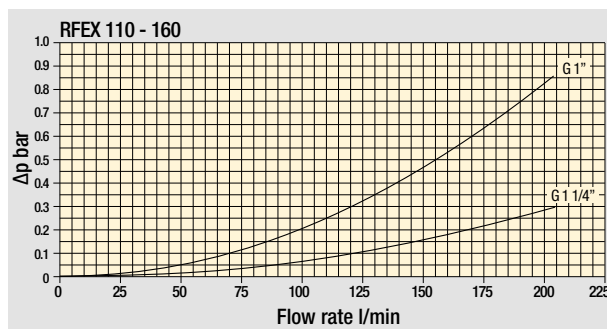
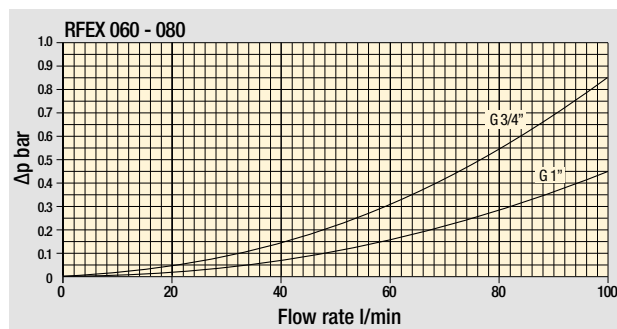
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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.

Pressure drop

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.

Designation & Ordering code

COMPLETE FILTER

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

FILTER ELEMENT

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

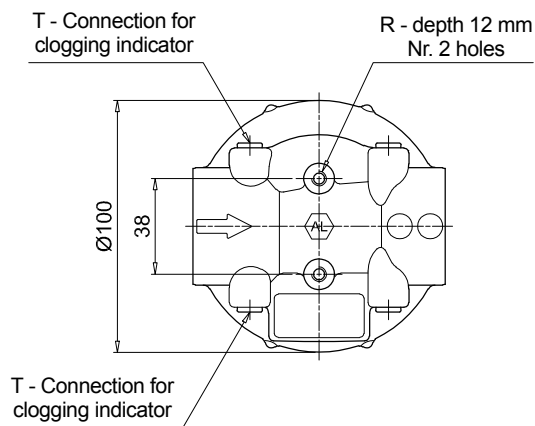
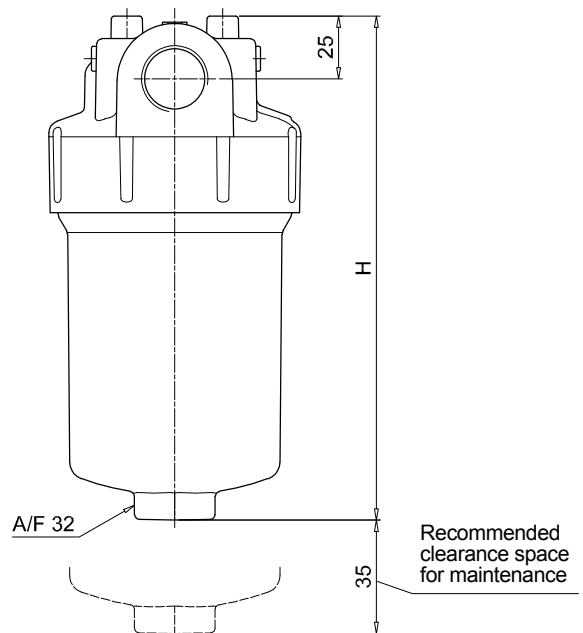
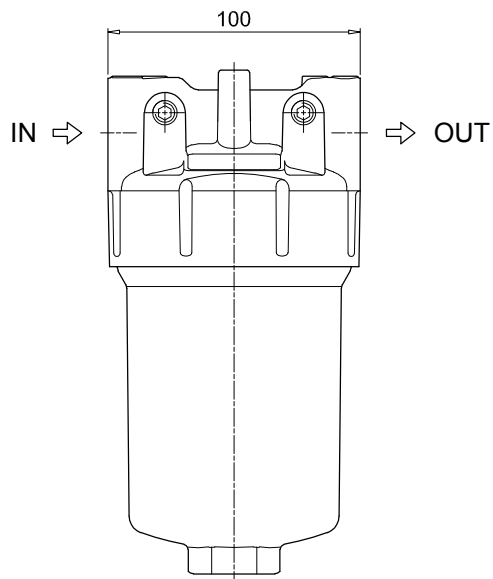
CLOGGING INDICATORS

See page 720-721

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

Filter size	H [mm]
060	202
080	265

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



RFEX RFEX110 - RFEX160

Designation & Ordering code

COMPLETE FILTER

Configuration example: **RFEX110** **B** **A** **A** **6** **A10** **N** **P01**

Series and size		
RFEX110	Filter featuring 	Filter Element
RFEX160	Filter featuring 	Filter Element
Bypass valve		
S	Without bypass	
B	1.75 bar	
Seals and treatments		
A	NBR	
Connections		
A	G 1"	
B	G 1 1/4"	
C	1" NPT	
D	1 1/4" NPT	
E	SAE 16 - 1 5/16" - 12 UN	
F	SAE 20 - 1 5/8" - 12 UN	
Connection for clogging indicator		
6	With plugged connections	
Filtration rating		
A10	Inorganic microfiber 10 µm	P10 Resin impregnated paper 10 µm
A16	Inorganic microfiber 16 µm	P25 Resin impregnated paper 25 µm
A25	Inorganic microfiber 25 µm	
M60	Wire mesh 60 µm	
M90	Wire mesh 90 µm	
Element Δp		Execution
N 8 bar		P01 MP Filtri standard
		Pxx Customized

FILTER ELEMENT

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

Element series and size		
FEX110	Filter Element with 	feature
FEX160	Filter Element with 	feature
Filtration rating		
A10	Inorganic microfiber 10 µm	P10 Resin impregnated paper 10 µm
A16	Inorganic microfiber 16 µm	P25 Resin impregnated paper 25 µm
A25	Inorganic microfiber 25 µm	
M60	Wire mesh 60 µm	
M90	Wire mesh 90 µm	
Seals and treatments		
A	NBR	
Element Δp		Execution
N 8 bar		P01 MP Filtri standard
		Pxx Customized

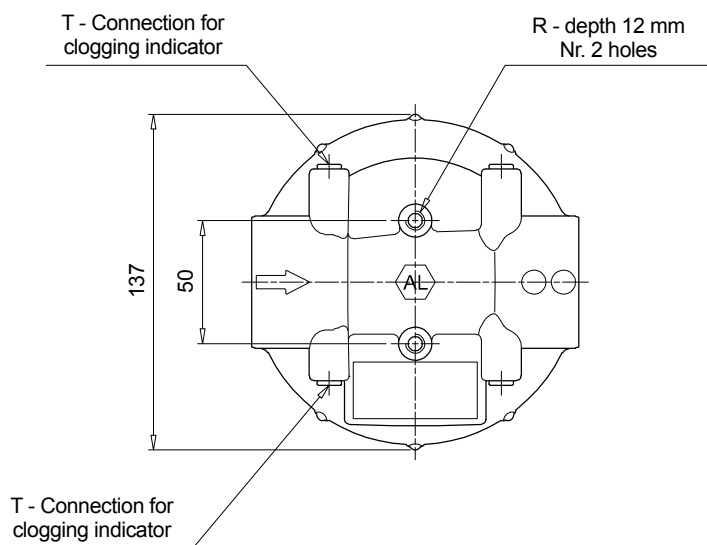
CLOGGING INDICATORS

See page 720-721

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

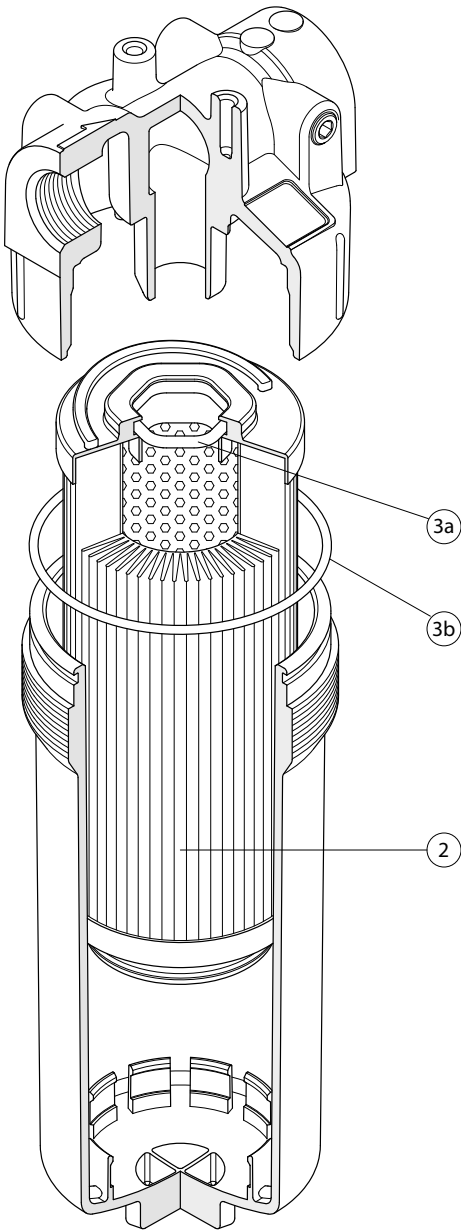
BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

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



RFEX SPARE PARTS

Order number for spare parts



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



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.

Quality and efficiency are fundamental for MP Filtri:

this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MPFX series

with  MFX Filter Element



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

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



The products identified as MPFX are protected by:

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

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

zerospark®
THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS



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

MPFX series

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



MPFX GENERAL INFORMATION

Description

Technical data

Return filter

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

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

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

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

Available features:

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

Common applications:

- Light Industrial equipment
- Mobile application

Filter housing materials

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

Bypass valve

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

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 [dm³]				
	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	-
MPEX 750		6.30	-	-	-		8.45	-	-	-

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.

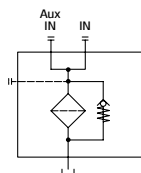
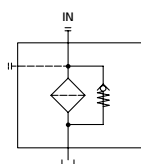
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

Hydraulic symbols

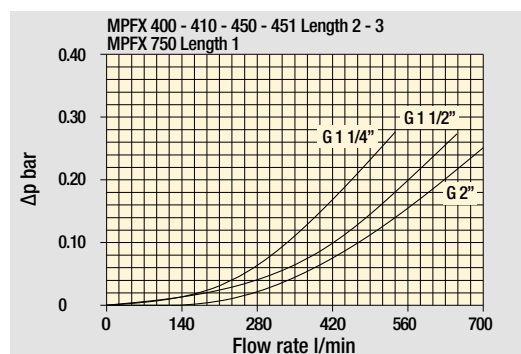
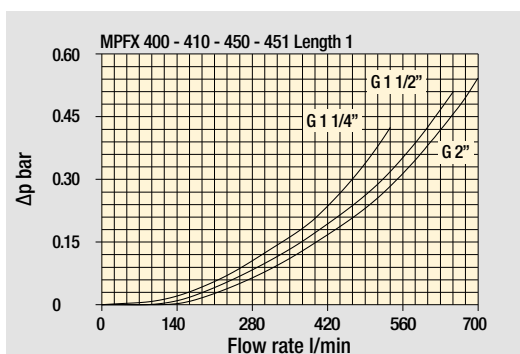
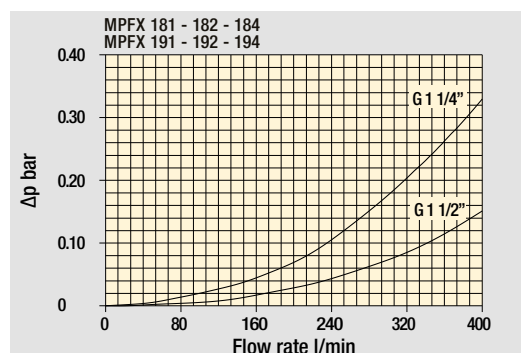
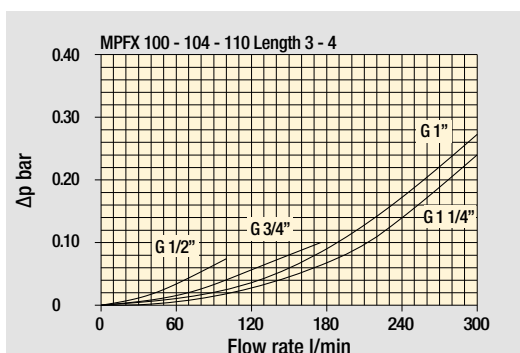
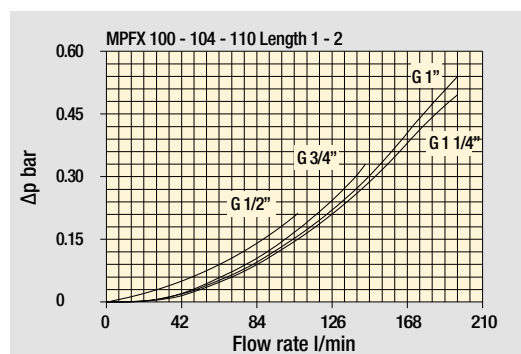
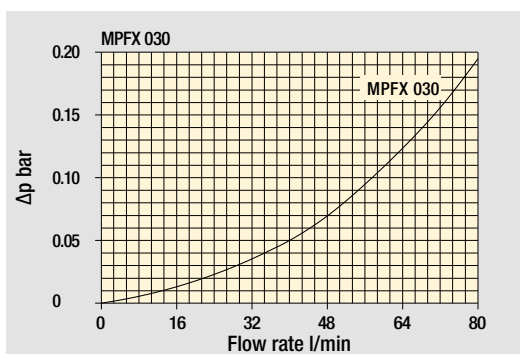
Filter series	Style 1 connection	Style 2 connections
MPFX 030	•	-
MPFX 100	•	-
MPFX 104	•	-
MPFX 110	-	•
MPFX 181	•	-
MPFX 182	-	•
MPFX 184	•	•
MPFX 191	•	-
MPFX 192	•	-
MPFX 194	•	•
MPFX 400	•	-
MPFX 410	-	•
MPFX 450	•	-
MPFX 451	-	•
MPFX 750	•	-



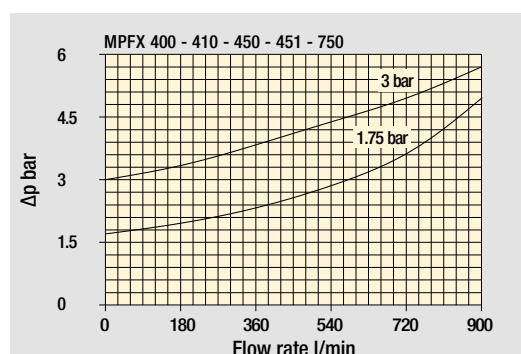
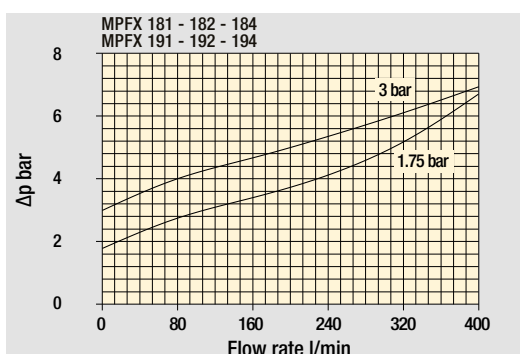
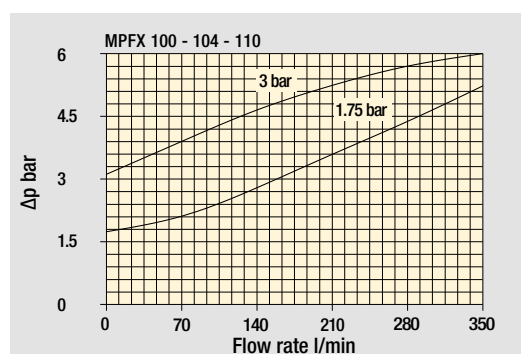
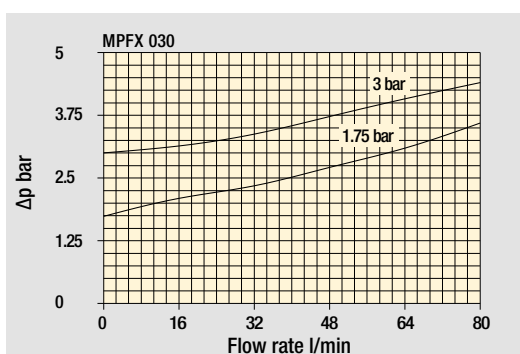
MPFX GENERAL INFORMATION

Pressure drop

Filter housings Δp pressure drop



Bypass valve pressure drop

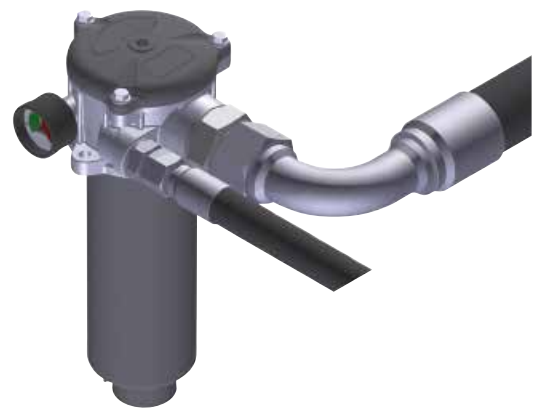


The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

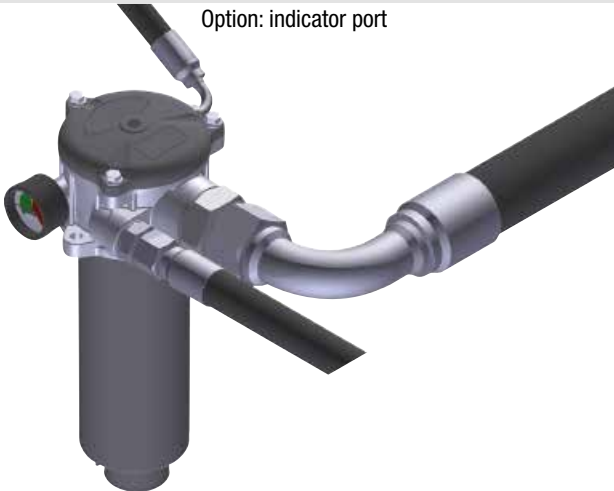
Standard - Single IN port



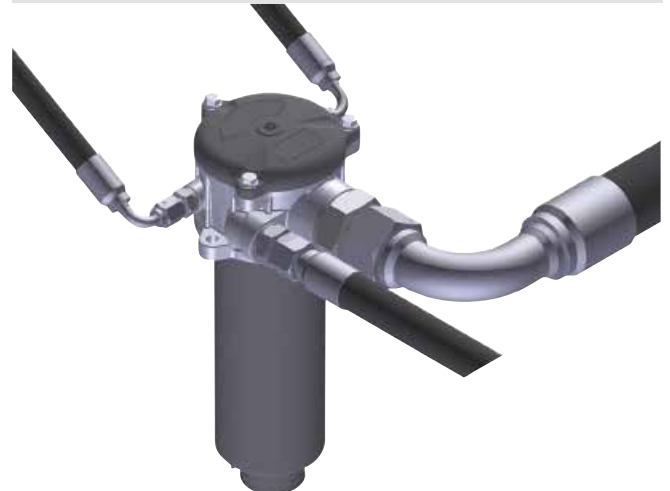
Double IN port
Option: double indicator port



Double IN port - Drain port
Option: indicator port



Double IN port - Double drain port



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example 1: MPFX030 1 V G1 M25 N B P01							
MPFX030 Filter featuring MY CLEAN Filter Element		Configuration example 2: MPFX030 1 A G4 A10 H E P01							
Length									
1									
Seals and treatments									
A NBR									
V FPM									
W NBR head anodized									
Z FPM head anodized									
Connections									
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									
Filter media									
Element Δp	Axx	Mxx	Pxx						
N 10 bar	-	•	•						
H 10 bar	•	-	-						
				Bypass valve		Executions			
				E 3 bar		Base zerospark*			
				B 1.75 bar		P01 Z01* MP Filtri standard			
						Pxx Zxx* Customized			

* Not for Mxx filter media

FILTER ELEMENT

Element series and size		Configuration example 1: MFEX030 1 M25 N V P01							
MFEX030 Filter Element with MY CLEAN feature		Configuration example 2: MFEX030 1 A10 H B E 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									
Filter media									
Element Δp	Axx	Mxx	Pxx						
N 10 bar	-	•	•						
H 10 bar	•	-	-						
				Seals		Bypass valve			
				B NBR		E 3 bar			
				V FPM		- 1.75 bar			
						Executions			
						Base zerospark*			
						P01 Z01* MP Filtri standard			
						Pxx Zxx* Customized			

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

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

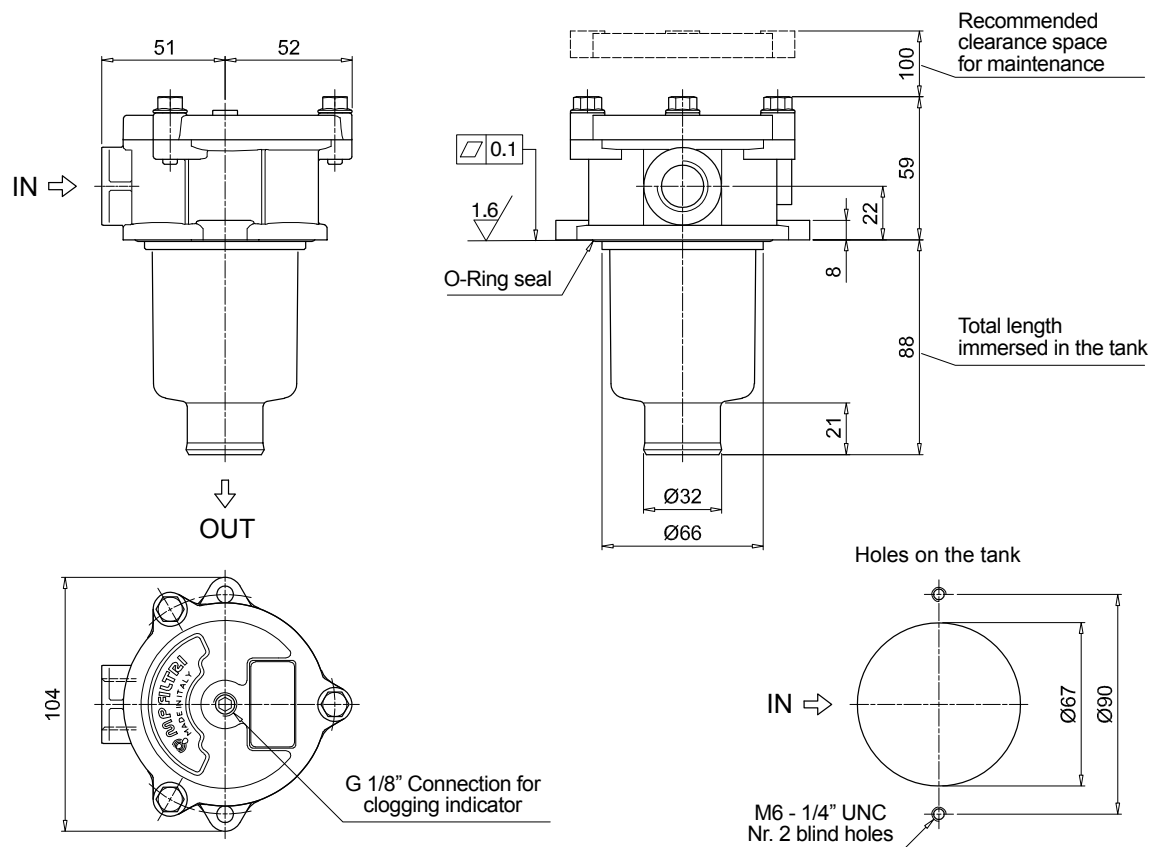
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator

ADDITIONAL FEATURES

See page 268

TE Extension tube
T5 Filler plug M30x1.5

MPFX030

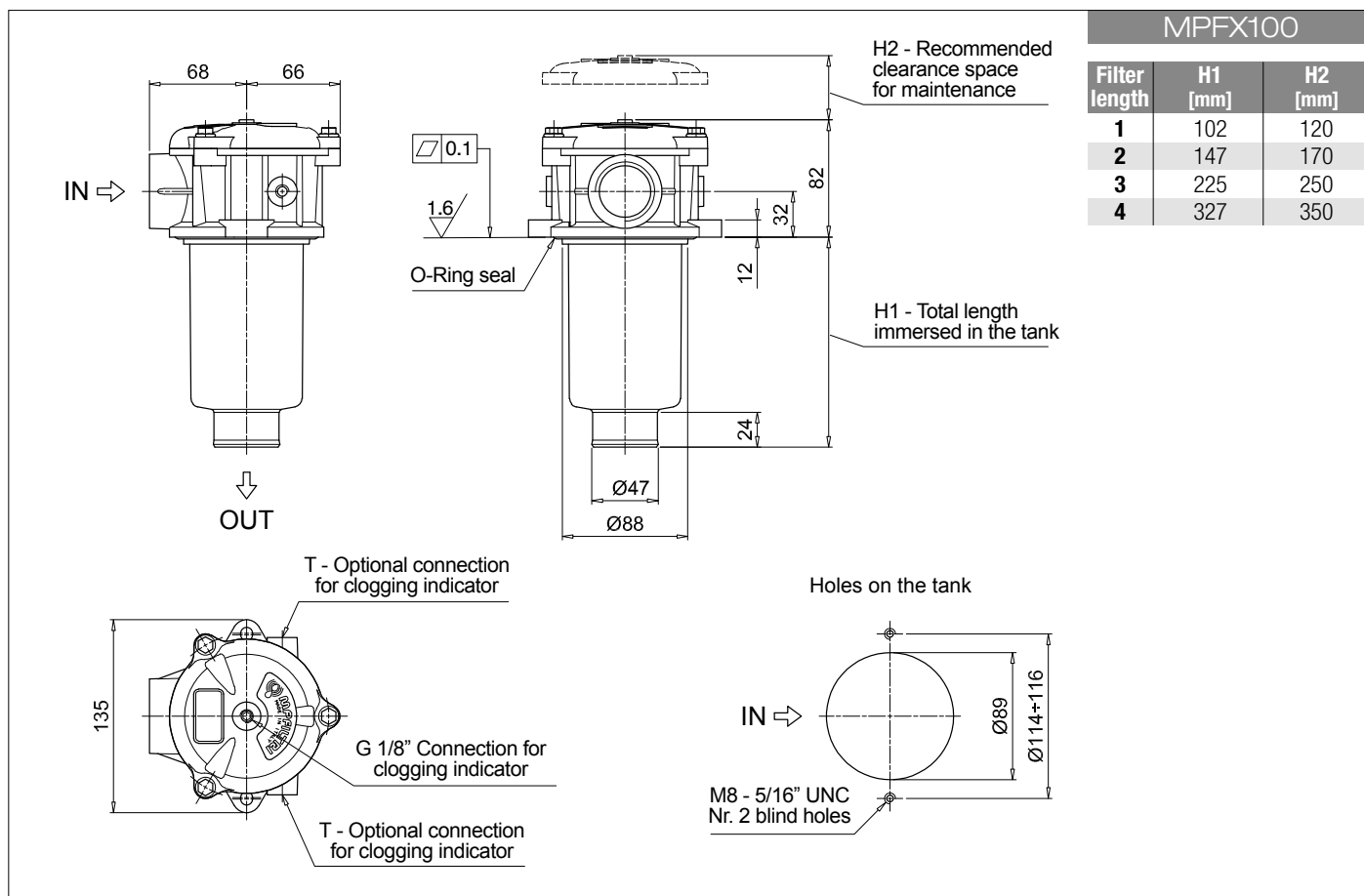


MPFX MPFX100 - MPFX104

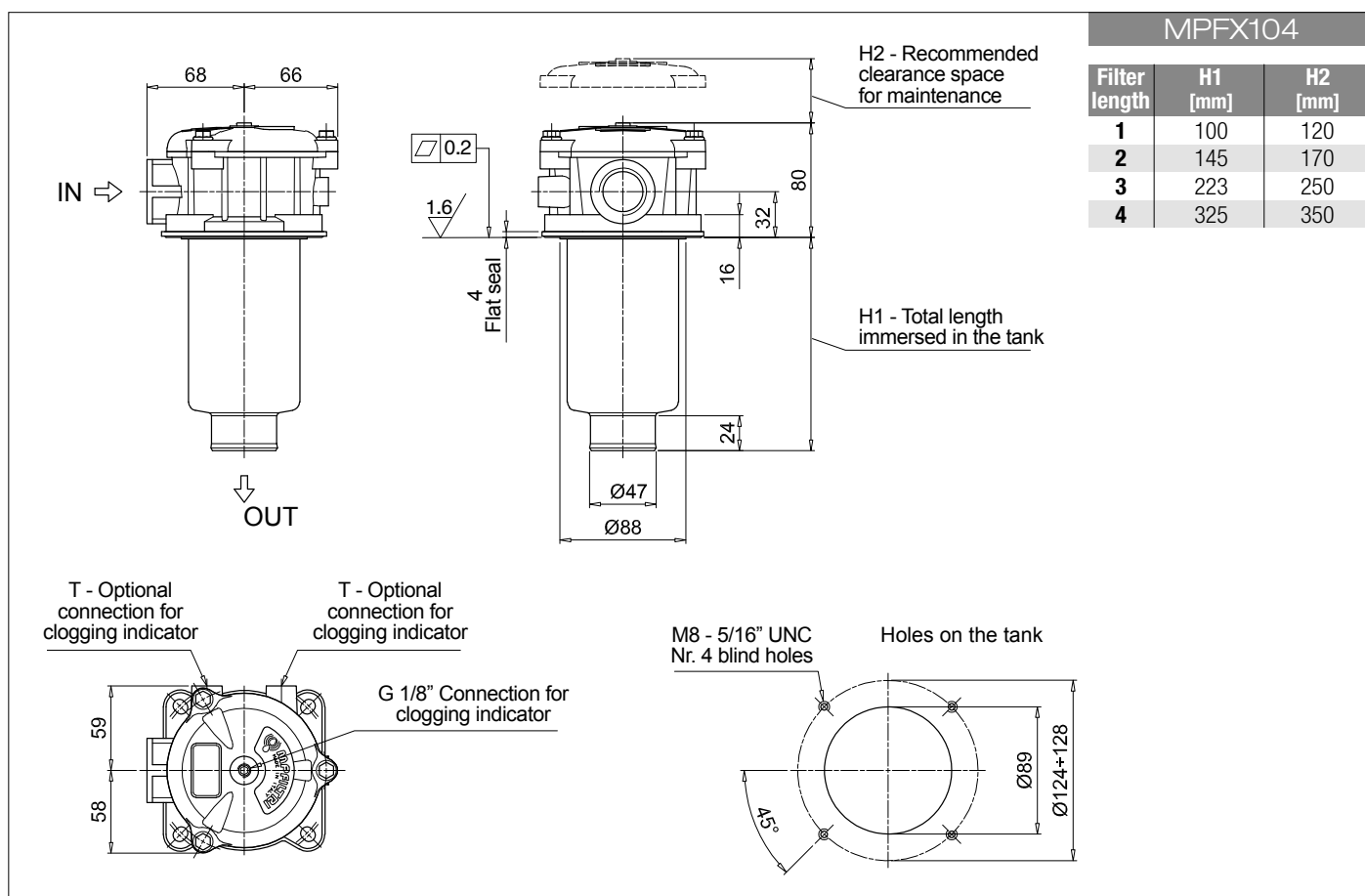
Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1:									
MPFX100 MPFX104 Filter featuring  Filter Element			Configuration example 2:									
			MPFX100	2	W	G3	A06	H	B	P01		
			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							
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			•	•								
G5 3/4" NPT			•	•								
G6 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									
Element Δp			Filter media			Executions						
Axx			Mxx			Base						
Pxx						zerospark						
N 10 bar			-			Bypass valve						
H 10 bar			•			E 3 bar						
						B 1.75 bar						
						P01 Z01* MP Filtri standard						
						Pxx Zxx* Customized						
						* Not for Mxx filter media						



Filter length	H1 [mm]	H2 [mm]
1	102	120
2	147	170
3	225	250
4	327	350



Filter length	H1 [mm]	H2 [mm]
1	100	120
2	145	170
3	223	250
4	325	350

Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1:												MPFX110	3	Z	G4	2	M25	H	B	P01
MPFX110 Filter featuring  Filter Element			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		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																			
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	●	-	-

		Executions	
Bypass valve	Base		
E 3 bar	P01	Z01 *	MP Filtri standard
B 1.75 bar	Pxx	Zxx *	Customized

* Not for Mxx filter media

FILTER ELEMENT

Element series and size

MF

F

X

100

Filter Element with  feature

Configuration example 1:

MF

F

X

100

3

M25

H

V

P01

Configuration example 2:

MF

F

X

100

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		
		Axx	Mxx	Pxx
N	10 bar	-	●	●
H	10 bar	●	-	-

Seals		Bypass valve		Executions		
B NBR	E 3 bar	Base	zerospark[®]	Z01 *	MP Filtri standard	
V FPM	- 1.75 bar	P01		Zxx *	Customized	
		Pxx				

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

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

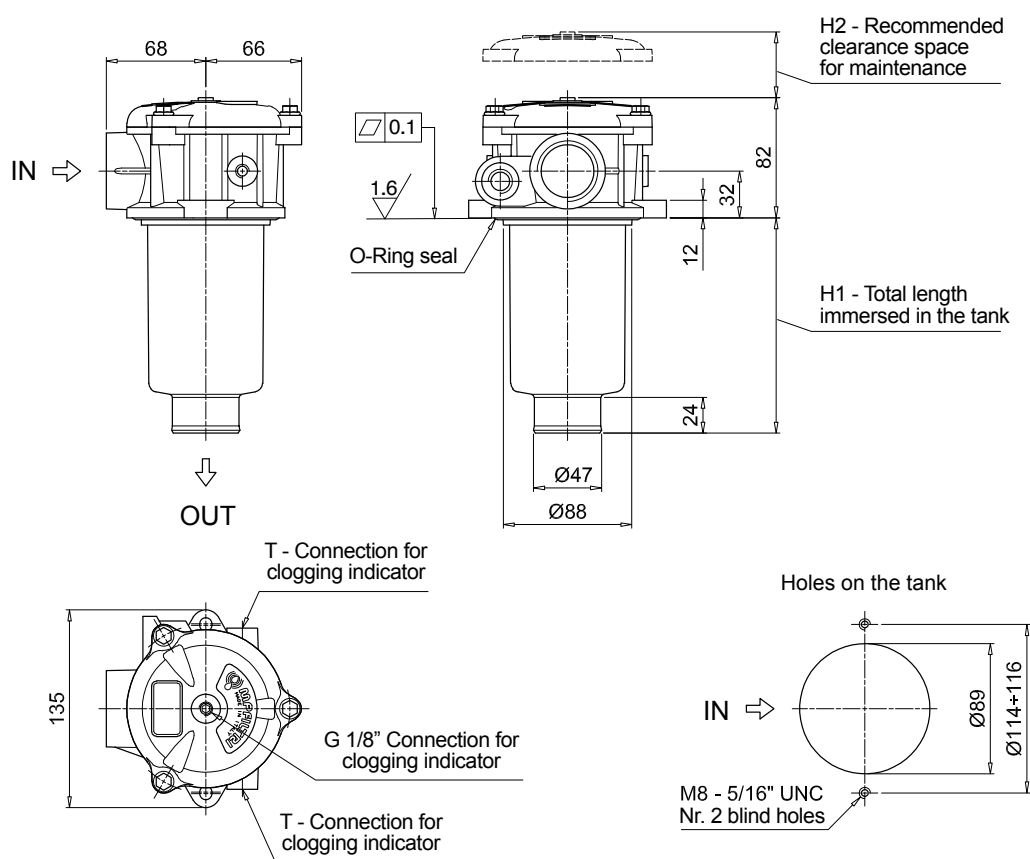
BEA	Electrical pressure indicator
BEM	Electrical pressure indicator
BLA	Electrical / visual pressure indicator

ADDITIONAL FEATURES

See page 268

TE	Extension tube
DFS	Diffuser with fast lock connection

T5	Filler plug M30x1.5
DPT	Dipstick



MPFX110

Filter length	H1 [mm]	H2 [mm]
1	102	120
2	147	170
3	225	250
4	327	350

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

MPFX MPFX181 - MPFX191

Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1:													
MPFX181 MPFX191			Filter featuring			Filter Element	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	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											
Element Δp		Filter media														
N		10 bar	Axx	Mxx	Pxx											
H		10 bar	•	-	-											
					Executions											
					Bypass valve											
					Base											
					zerospark ⁺											
					P01											
					Z01 *											
					MP Filtri standard											
					Pxx											
					Zxx *											
					Customized											
* Not for Mxx filter media																

FILTER ELEMENT

Element series and size				Configuration example 1: MFX180						1	A25	H	B	E	P01		
MFX180 Filter Element with MY CLEAN feature				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													

CLOGGING INDICATORS

See page 720-721

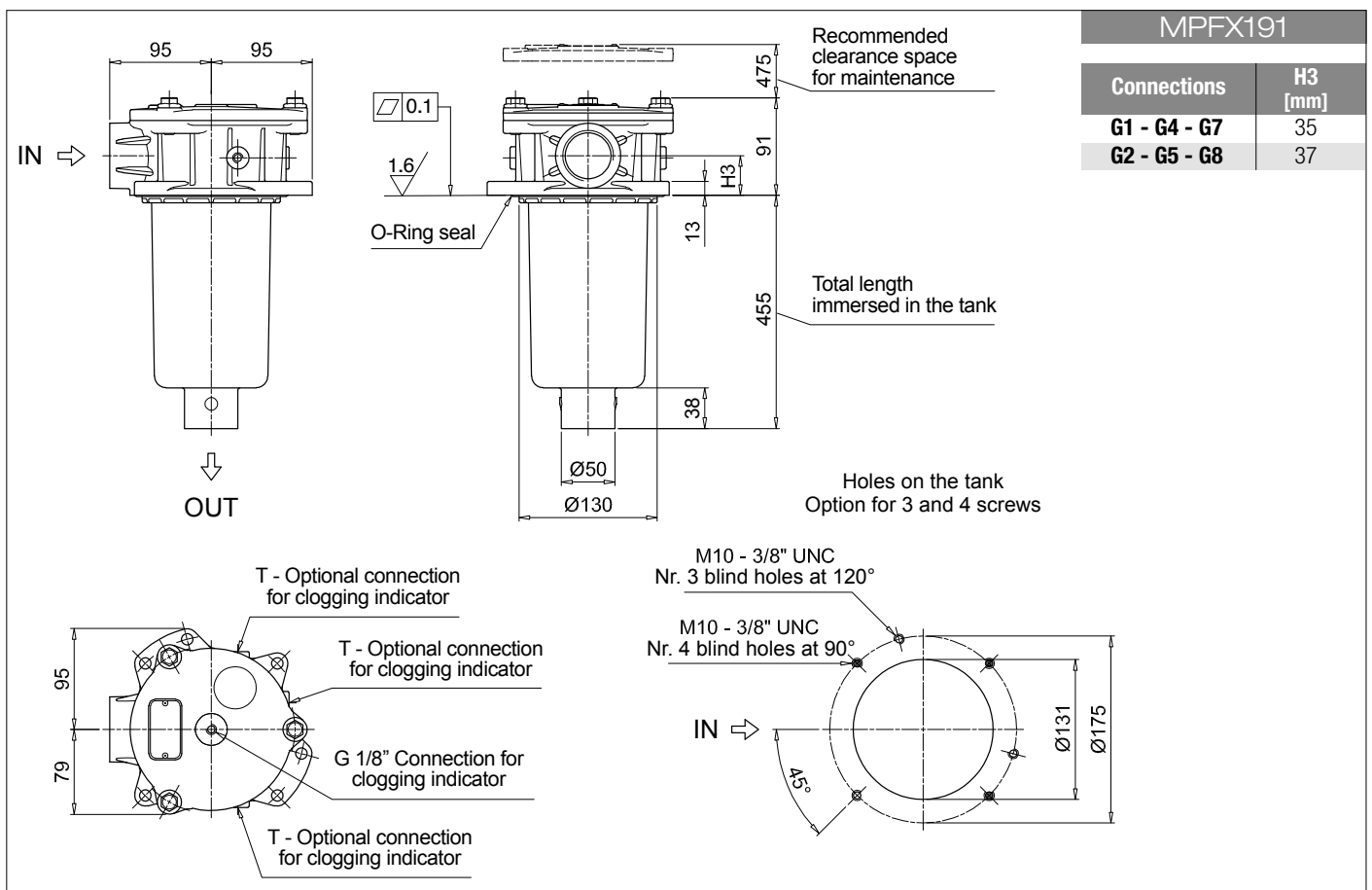
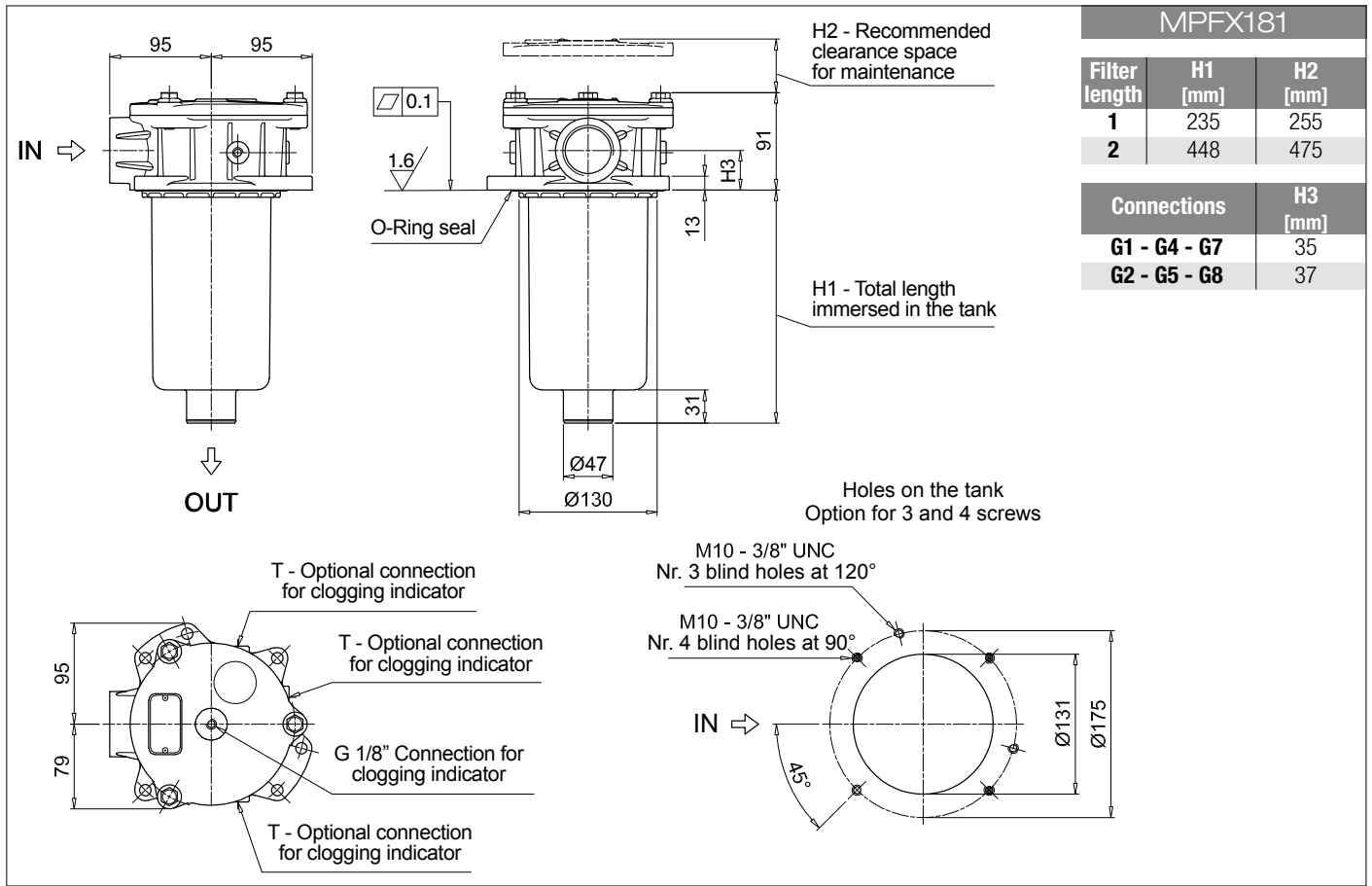
BVA	Axial pressure gauge
BVR	Radial pressure gauge
BVP	Visual pressure indicator with automatic reset
BVQ	Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

TE	Extension tube
T5	Filler plug M30x1.5



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 featuring MY CLEAN Filter Element			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			Executions							
N 10 bar		Axx	Mxx	Pxx	Bypass valve		Base	zerospark ²				
H 10 bar		-	•	•	E 3 bar		P01	Z01 *	MP Filtri standard			
		•	-	-	B 1.75 bar		Pxx	Zxx *	Customized			
* Not for Mxx filter media												

* Not for Mxx filter media

FILTER ELEMENT

Element series and size				Configuration example 1: MFX1801A25HBEP01						
MFX180 Filter Element with MY CLEAN feature				Configuration example 2: MFX1802P10NV P01						
Element length										
12										
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				
N 10 bar			AxxMxxPxx			B NBR				
H 10 bar			•-•			V FPM				
						Bypass valve				
						E 3 bar				
						- 1.75 bar				
						Executions				
						Base				
						P01Z01 *MP Filtri standard				
						PxxZxx *Customized				
* Not for Mxx filter media										

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

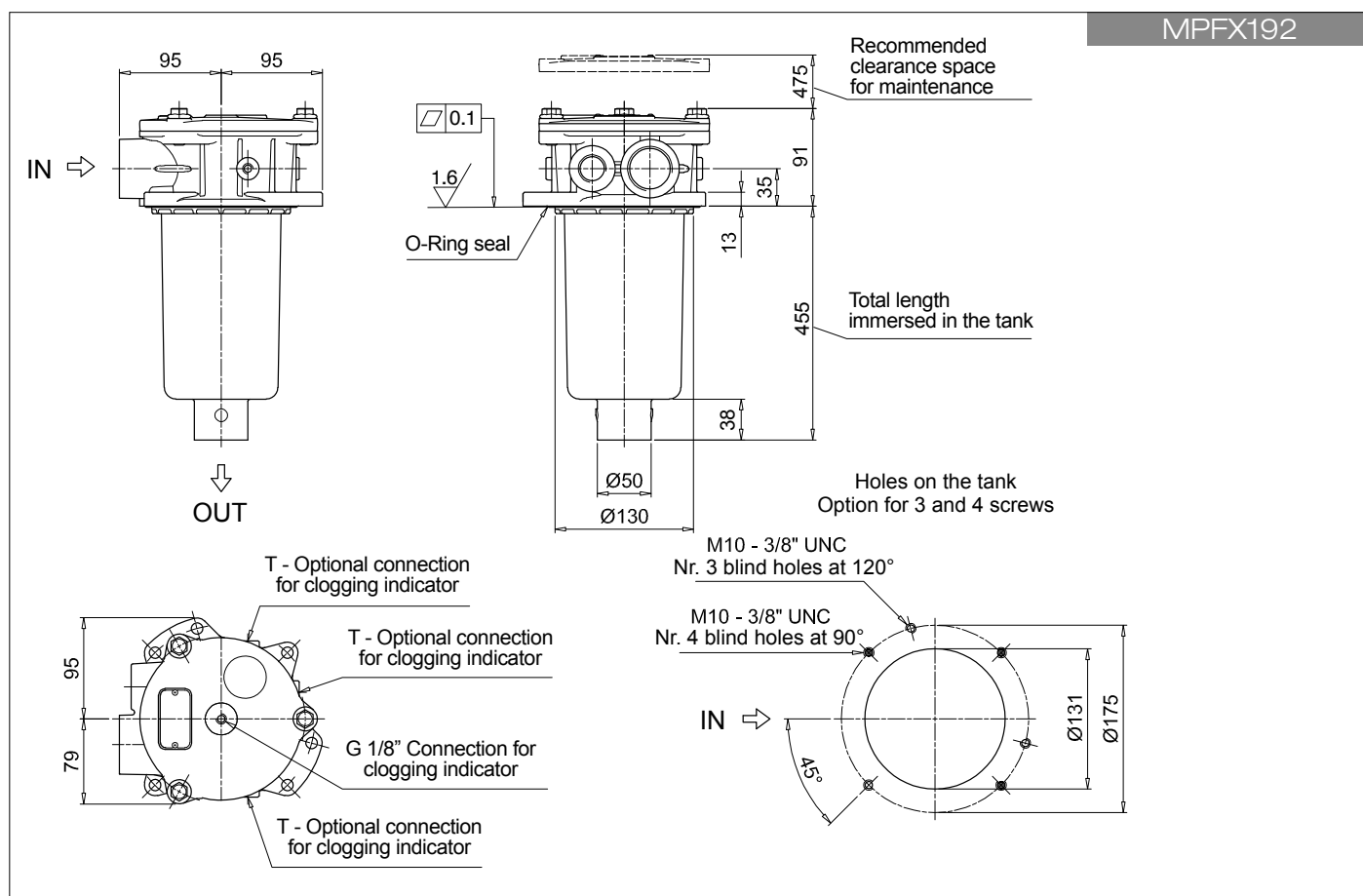
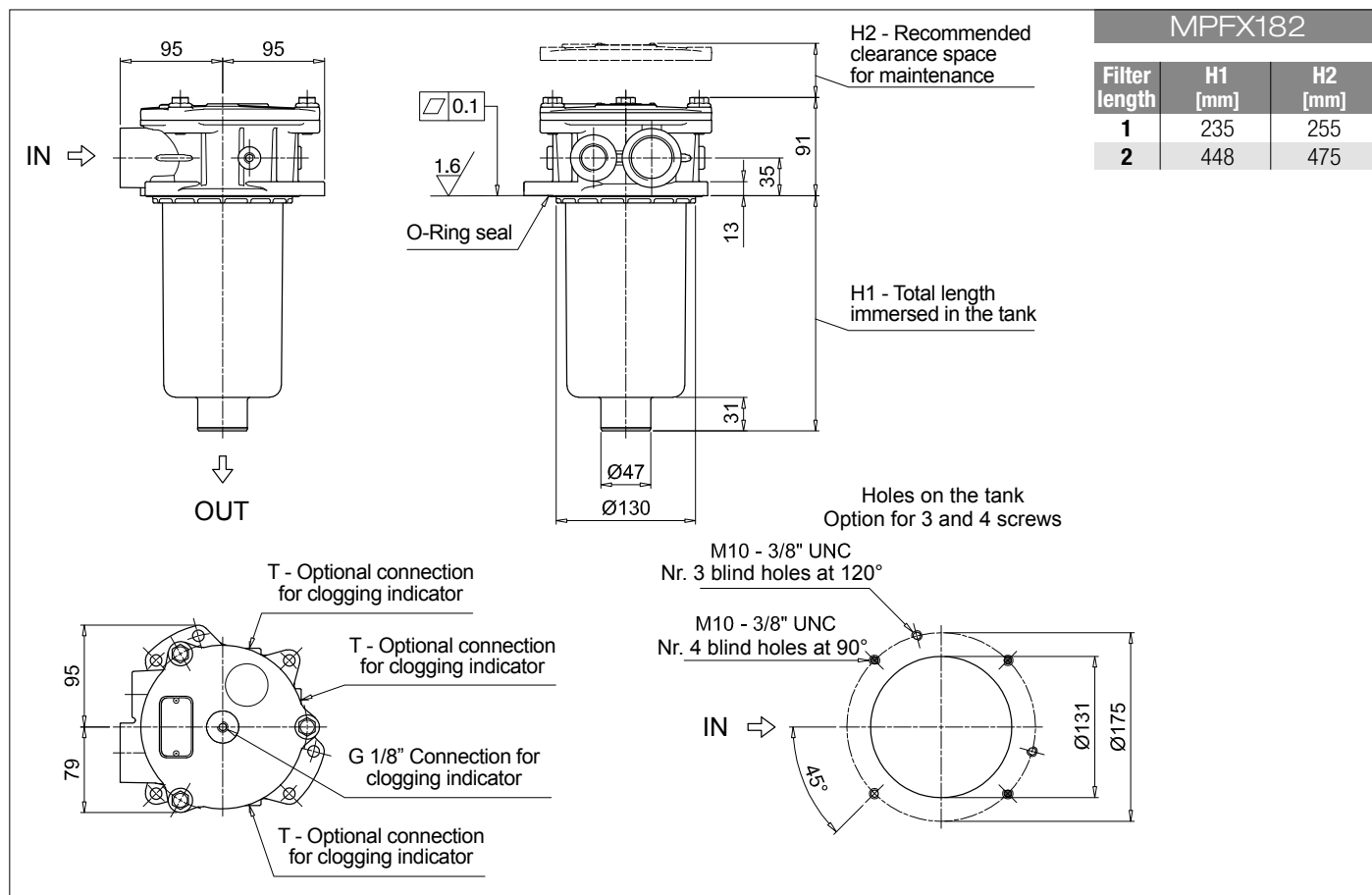
BVA Axial pressure gauge	
BVR Radial pressure gauge	
BVP Visual pressure indicator with automatic reset	
BVQ Visual pressure indicator with manual reset	

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

ADDITIONAL FEATURES

See page 268

TE Extension tube	
T5 Filler plug M30x1.5	



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 featuring MY CLEAN Filter Element			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										
G1 G 1 1/4"										
G2 G 1 1/4"										
G4 1 1/4" NPT										
G5 1 1/4" NPT										
G7 SAE 20 - 1 5/8" - 12 UN										
G8 SAE 20 - 1 5/8" - 12 UN										
G10 SAE 24 - 1 7/8" - 12 UN										
G11 SAE 24 - 1 7/8" - 12 UN										
Rear connections										
-										
G 1 1/4"										
1 1/4" NPT										
1 1/4" NPT										
SAE 20 - 1 5/8" - 12 UN										
SAE 20 - 1 5/8" - 12 UN										
SAE 24 - 1 7/8" - 12 UN										
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										
N 10 bar										
H 10 bar										
Filter media										
Axx										
Mxx										
Pxx										
Bypass valve										
E 3 bar										
B 1.75 bar										
Executions										
Base										
P01										
Z01*										
MP Filtri standard										
Pxx										
Zxx*										
Customized										

* Not for Mxx filter media

FILTER ELEMENT

Element series and size			Configuration example 1: MFEX180 1 A25 H B E P01							
MFEX180 Filter Element with MY CLEAN feature			Configuration example 2: MFEX180 2 P10 N V P01							
Element length										
1										
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										
Element Δp										
N 10 bar										
H 10 bar										
Filter media										
Axx										
Mxx										
Pxx										
Seals										
B NBR										
V FPM										
Bypass valve										
E 3 bar										
- 1.75 bar										
Executions										
Base										
P01										
Z01*										
MP Filtri standard										
Pxx										
Zxx*										
Customized										

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

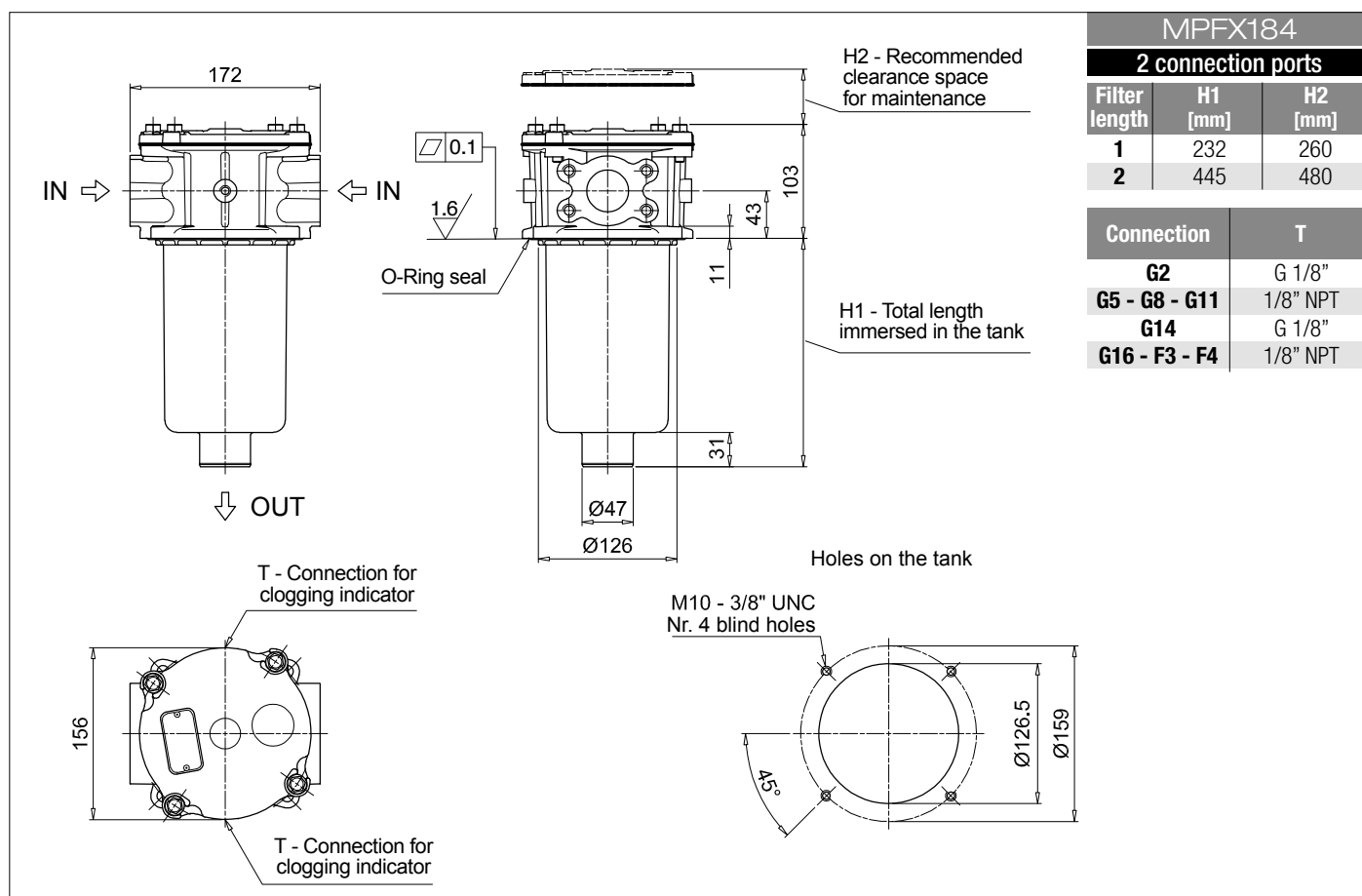
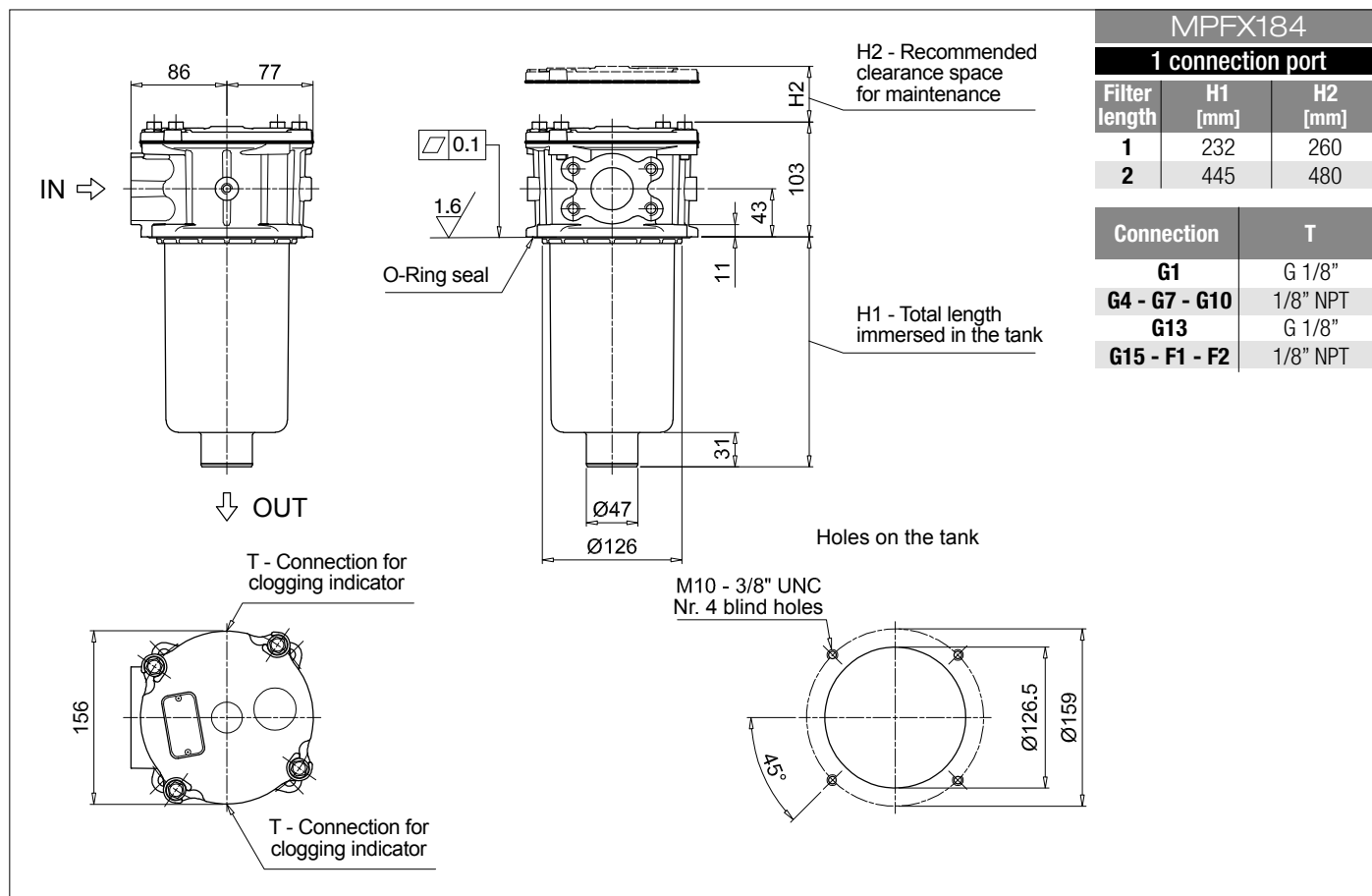
BVA	Axial pressure gauge
BVR	Radial pressure gauge
BVP	Visual pressure indicator with automatic reset
BVQ	Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

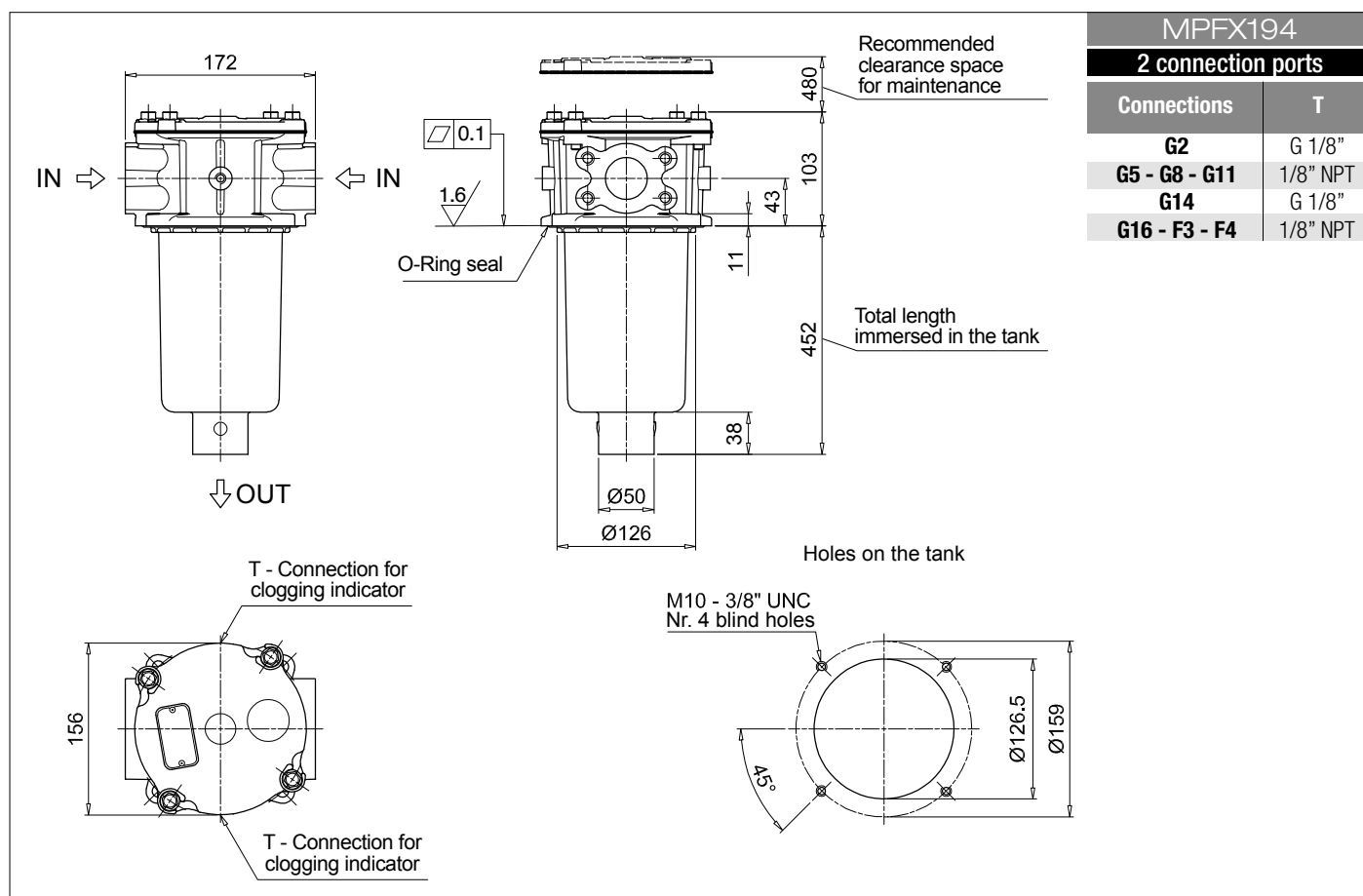
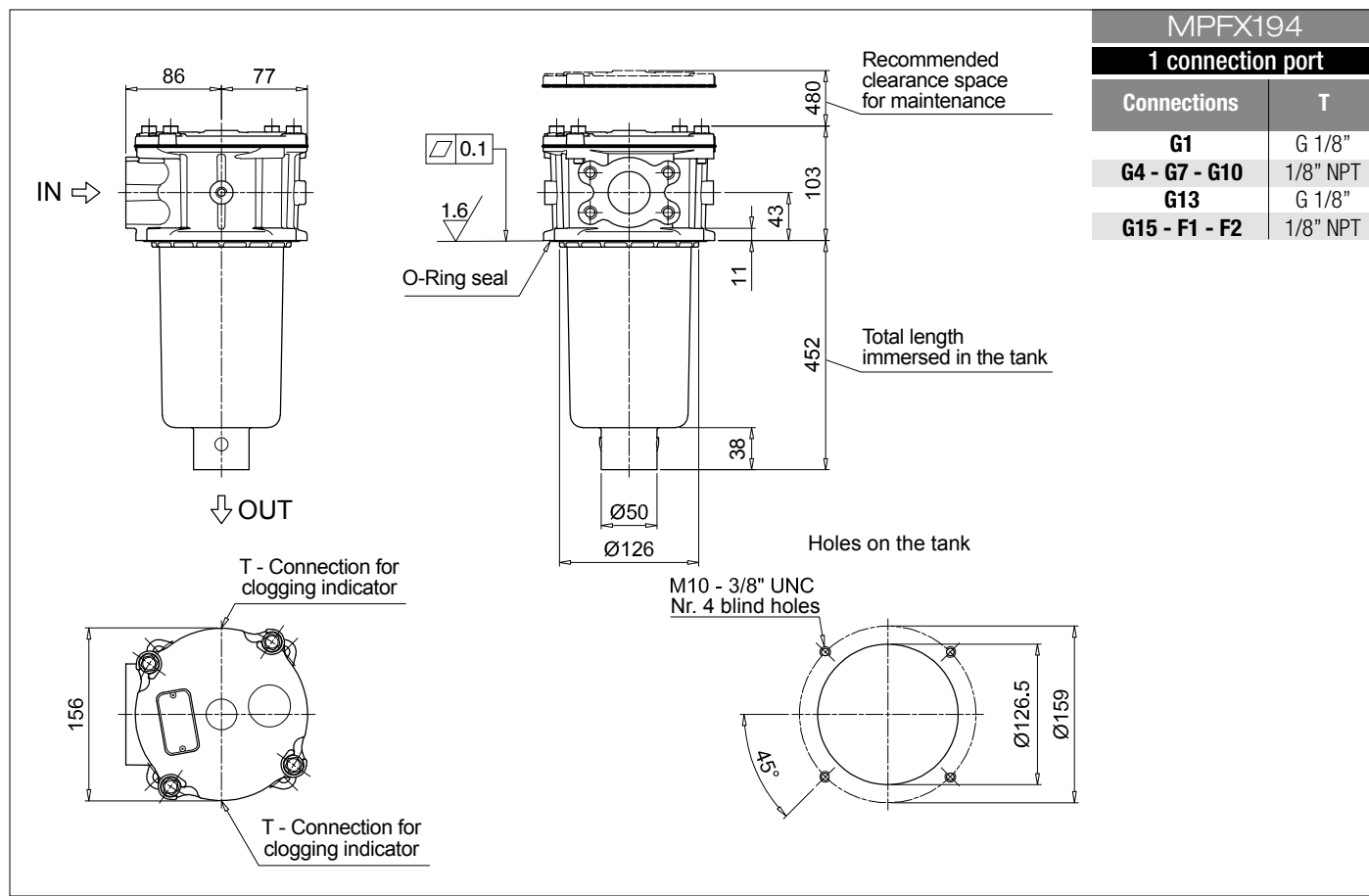
See page 268

TE	Extension tube
T5	Filler plug M3



MPFX MPFX184 - MPFX194

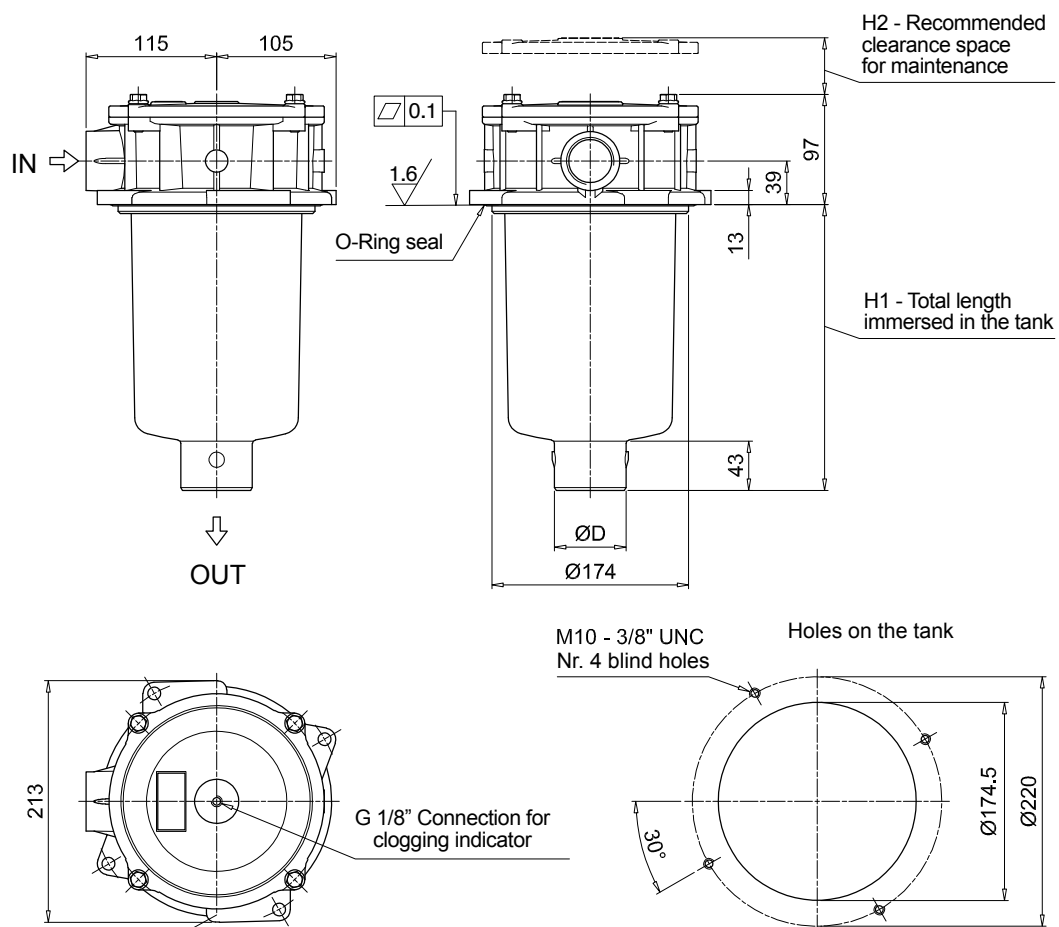
Dimensions



Designation & Ordering code

COMPLETE FILTER

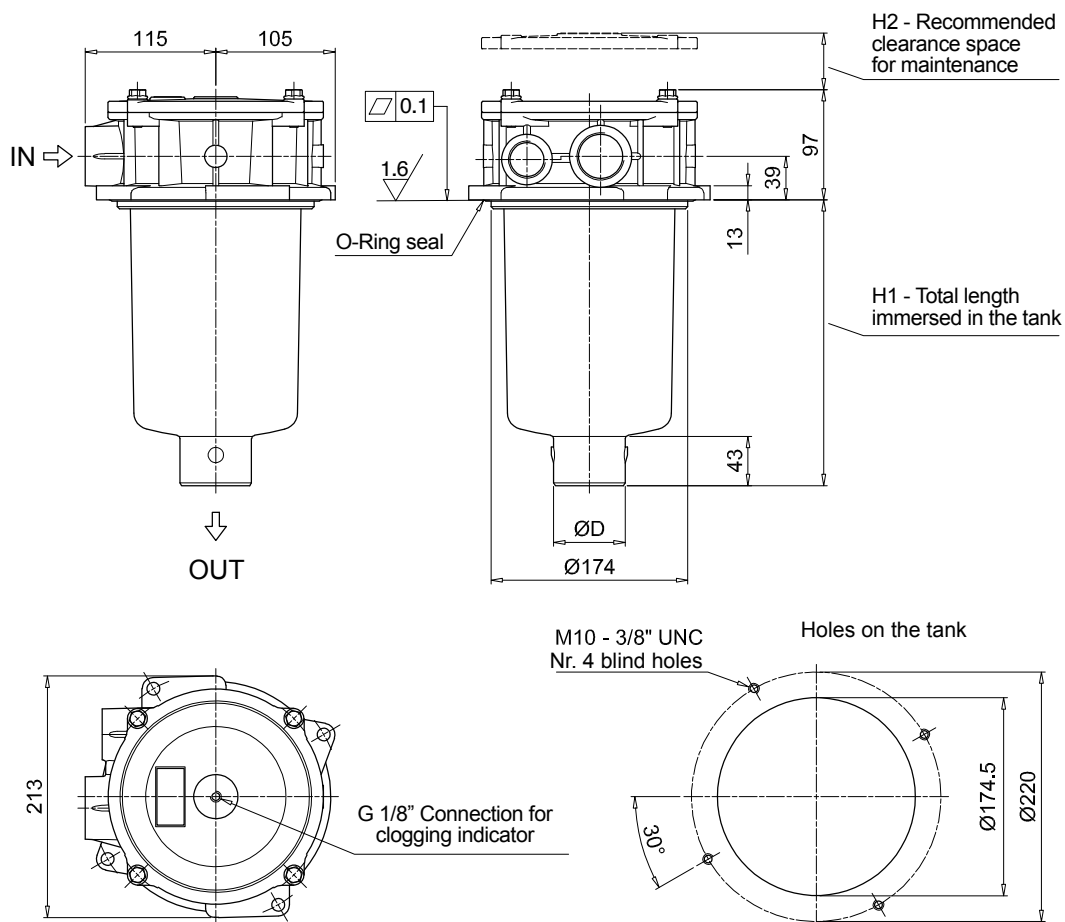
Series and size				Configuration example 1: MPFX400							1	A	G9	A25	H	B	P01							
MPFX400 Filter featuring  Filter Element				Configuration example 2: MPFX400							2	V	G4	P10	N	E	P01							
Length																								
1				2							3													
Seals and treatments																								
A NBR																								
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							Bypass valve							Executions						
N 10 bar				Axx Mxx Pxx							E 3 bar							Base P01 Z01* MP Filtri standard						
H 10 bar											B 1.75 bar							Pxx Zxx* Customized						
																		* Not for Mxx filter media						



MPFX400			
Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

MPFX410

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63



MPFX MPFX450 - MPFX451 - MPFX750

Designation & Ordering code

COMPLETE FILTER

Series and size				Configuration example 1: MPFX450							
MPFX450 MPFX451 MPFX750				Configuration example 2: MPFX750							
Filter featuring  Filter Element				1	A	G1	A25	H	B	P01	
Length	MPFX 450	MPFX 451	MPFX 750	1	V	F2	P10	N	E	P01	
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/UNC	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									
N	10 bar	Axx	Mxx	Pxx							
H	10 bar	•	-	-							
					Executions						
					Bypass valve		Base 				
					E 3 bar		P01		Z01 *		MP Filtri standard
					B 1.75 bar		Pxx		Zxx *		Customized
* Not for Mxx filter media											

* Not for Mxx filter media

FILTER ELEMENT

Element series and size				Configuration example 1: MFX400 1 A25 H B P01							
MFX400 MFX750 Filter Element with MY CLEAN feature				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	•	-	-							
Seals		Bypass valve		Executions							
B NBR		E 3 bar		Base zerospark [®]							
V FPM		- 1.75 bar		P01 Z01 * MP Filtri standard							
				Pxx Zxx * Customized							
* Not for Mxx filter media											

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

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

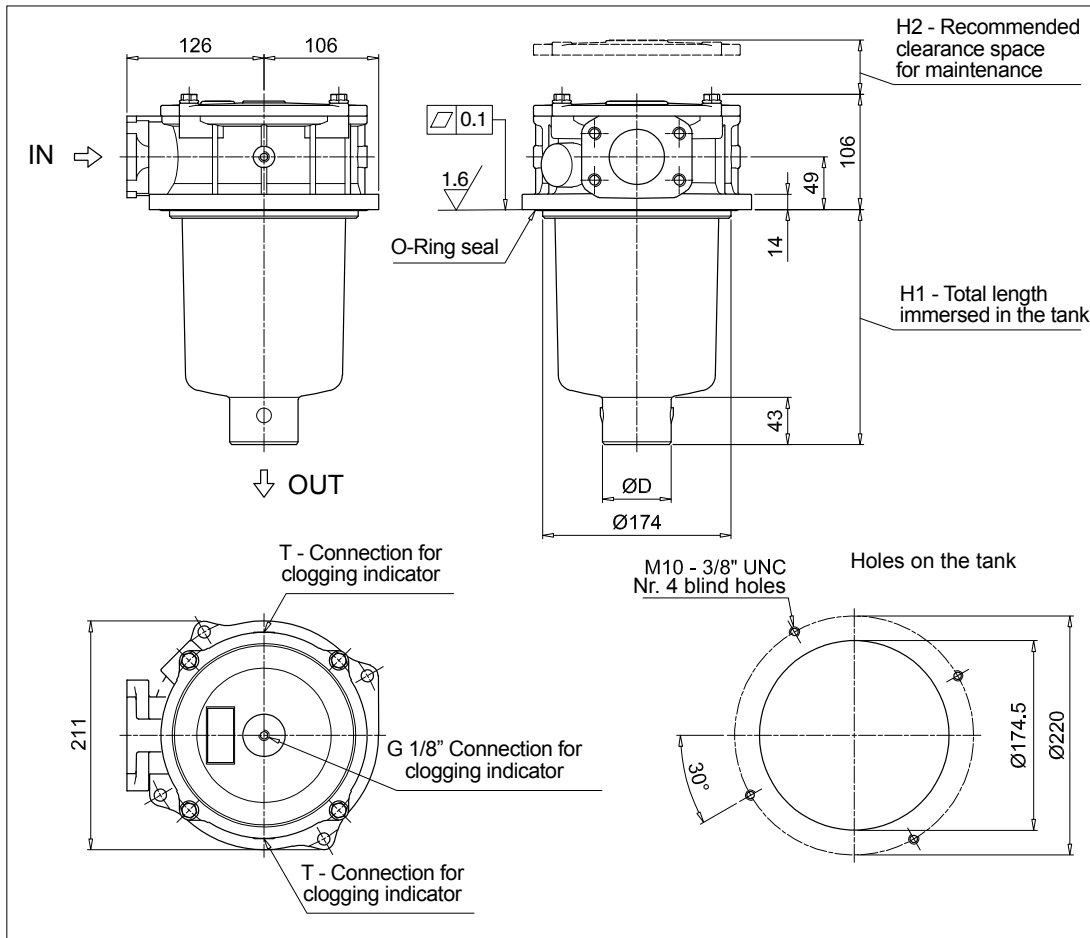
BEA	Electrical pressure indicator
BEM	Electrical pressure indicator
BLA	Electrical / visual pressure indicator

ADDITIONAL FEATURES

See page 268

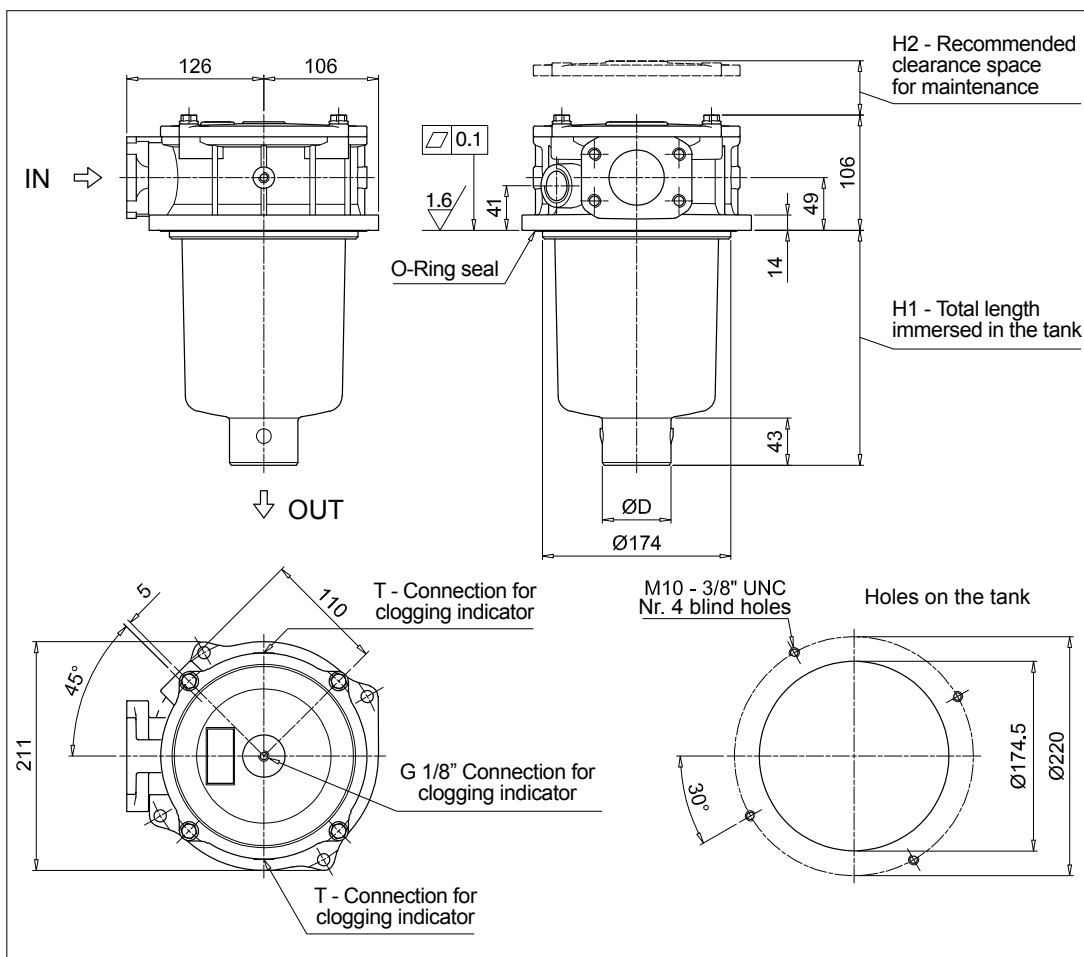
TE	Extension tube
-----------	----------------

T5	Filler plug M30x1.5
-----------	---------------------



MPFX450			
Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

Connections	T
G1	G 1/8"
G4 - G7	1/8" NPT
F1	G 1/8"
F2	1/8" NPT



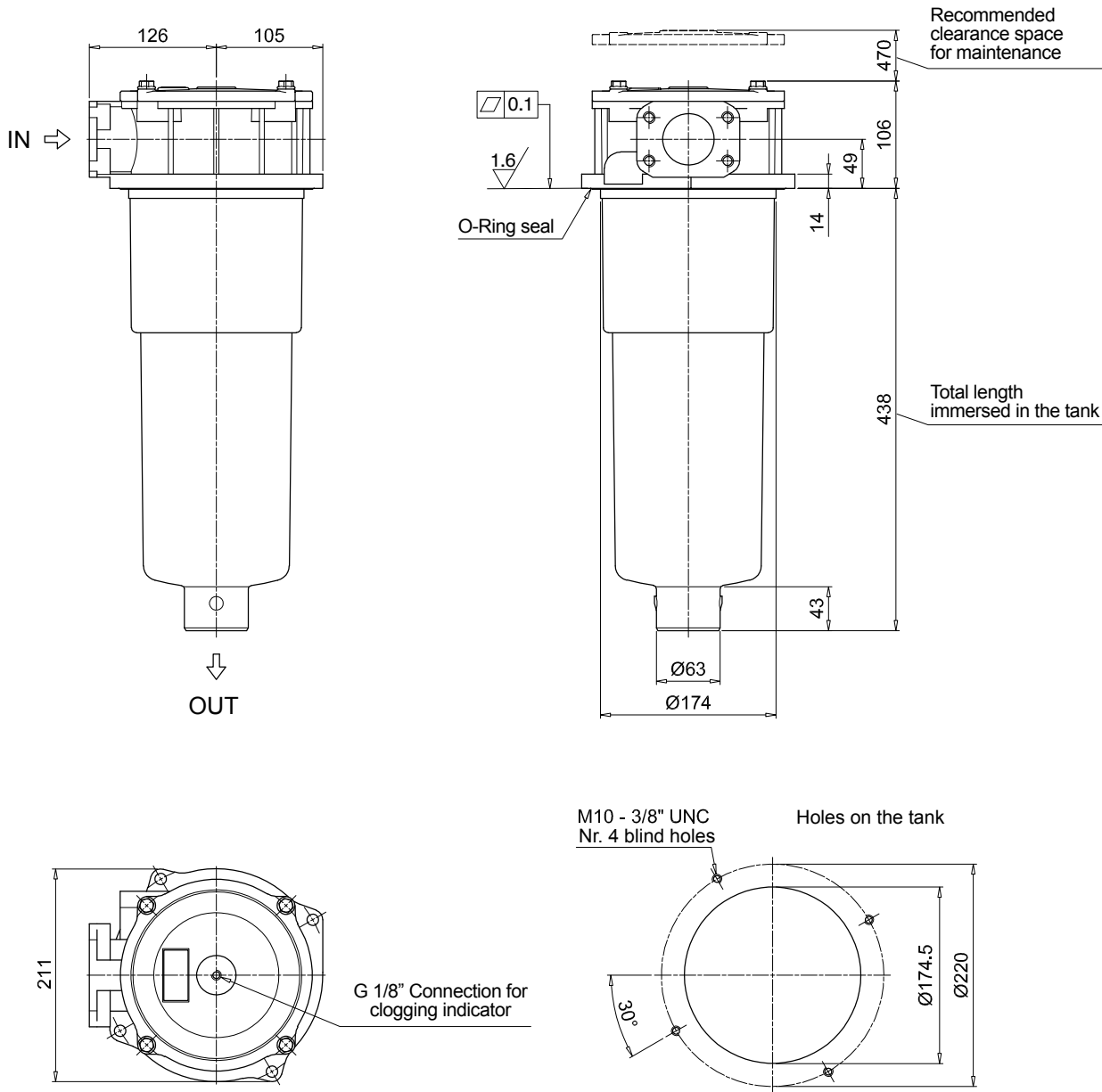
MPFX451			
Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

Connections	T
G1	G 1/8"
G4 - G7	1/8" NPT
F1	G 1/8"
F2	1/8" NPT

MPFX MPFX450 - MPFX451 - MPFX750

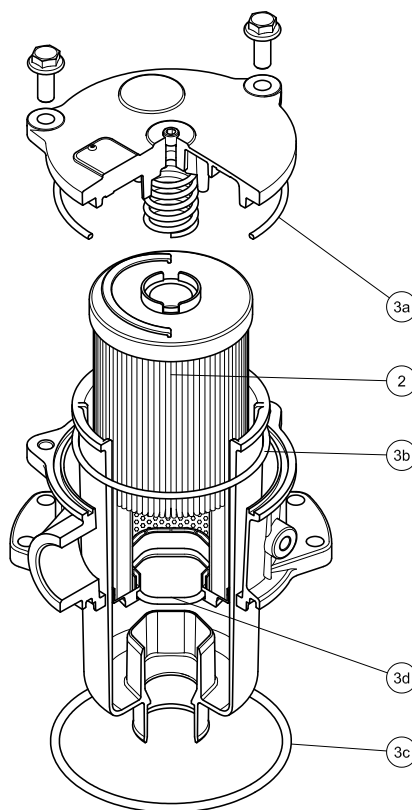
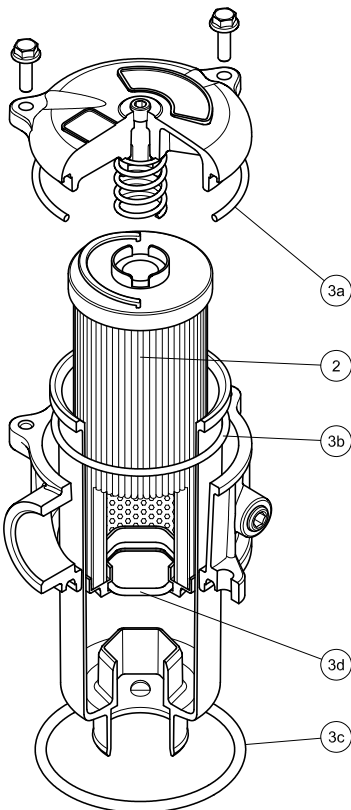
Dimensions

MPFX750



MPFX 100

MPFX 181

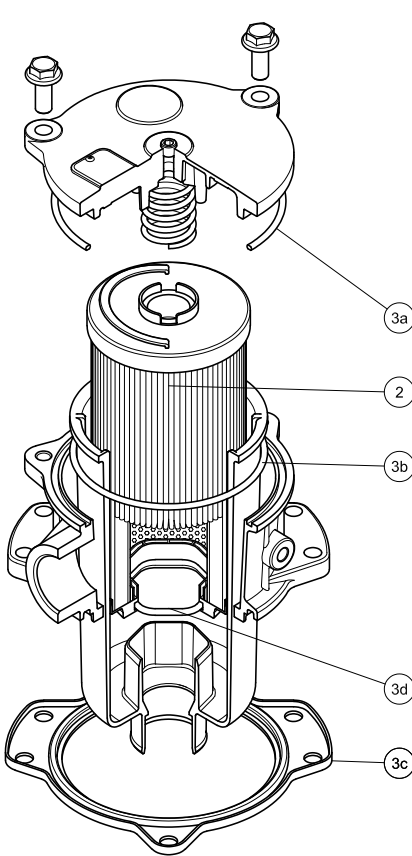
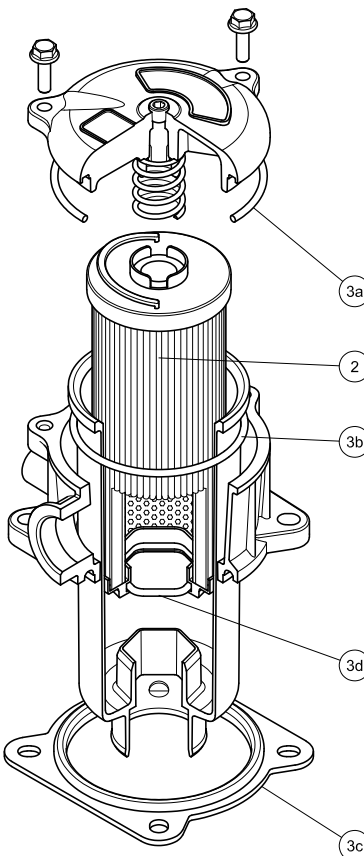


O-RING SEAL

Q.ty: 1 pc.		Q.ty: 1 pc.	
Item: 2		Item: 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		Item: 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



THE **X** CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.

Quality and efficiency are fundamental for MP Filtri:

this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MPLXseries

with **MYCLEAN** MLX Filter Element



● **Protects the machine from improper use of non-original products.**

● **Safety of constant quality protection & reliability**

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



The products identified as MPLX are protected by:

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

MPLX series

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



Description

Technical data

Return filter

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

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

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

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

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

Available features:

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

Common applications:

- Heavy duty industrial equipment
- Heavy duty mobile equipment

Filter housing materials

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

Bypass valve

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

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

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 $\Delta p = 0.5$ bar.

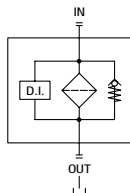
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

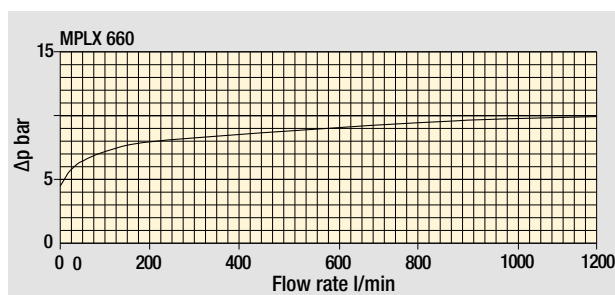
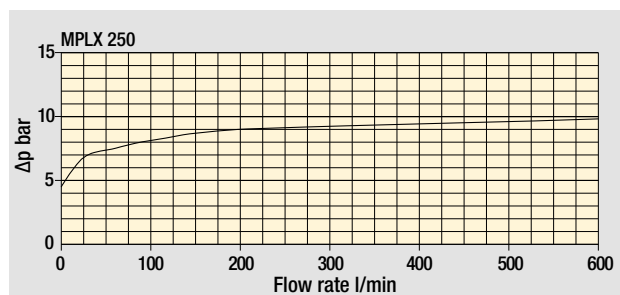
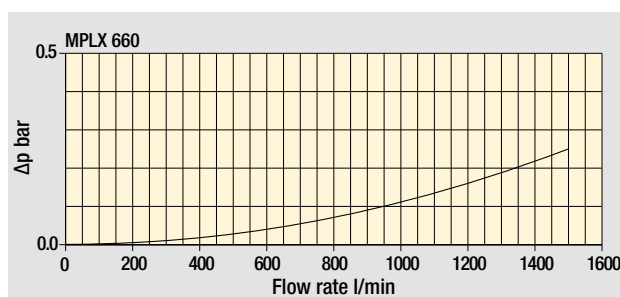
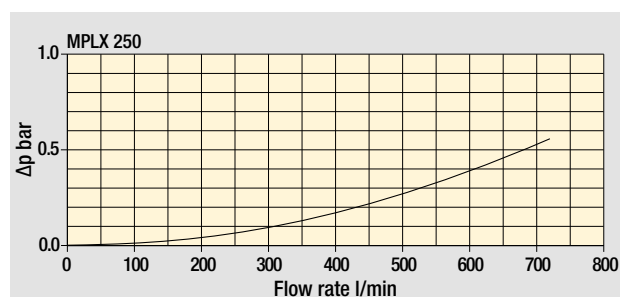
Hydraulic symbols

Filter series	Style 1 connection + Diff. indic.
MPLX 250	•
MPLX 660	•



Pressure drop

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.

MPLX MPLX250 - MPLX660

Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example 1: MPLX250 2 D S V A 6 M25 P01									
MPLX250 MPLX660 Filter featuring  Filter Element		Configuration example 2: MPLX660 2 D D A B 6 A10 P01									
Length											
2											
By-pass valve											
D 4.5 bar											
Diffuser											
S Without diffuser											
D With standard diffuser											
Seals and treatments											
A NBR											
V 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 pressure indicator											
6 With plugged connection											
Filtration rating (filter media)											
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm									
		Execution									
		P01 MP Filtri standard									
		Pxx Customized									

FILTER ELEMENT

Element series and size		Configuration example 1: MLX250 2 M25 V P01				
MLX250 MLX660 Filter Element with  feature		Configuration example 2: MLX660 2 A10 A P01				
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						
A NBR						
V FPM						
		Execution				
		P01 MP Filtri standard				
		Pxx Customized				

CLOGGING INDICATORS

See page 720-721

DEA Electrical differential pressure indicator

DEM Electrical differential pressure indicator

DEU Electrical differential pressure indicator

DLE Electrical / visual differential pressure indicator

DTA Electronic differential pressure indicator

DVA Visual differential pressure indicator

DVM Visual differential pressure indicator

DLE Electrical / visual differential pressure indicator

DTA Electronic differential pressure indicator

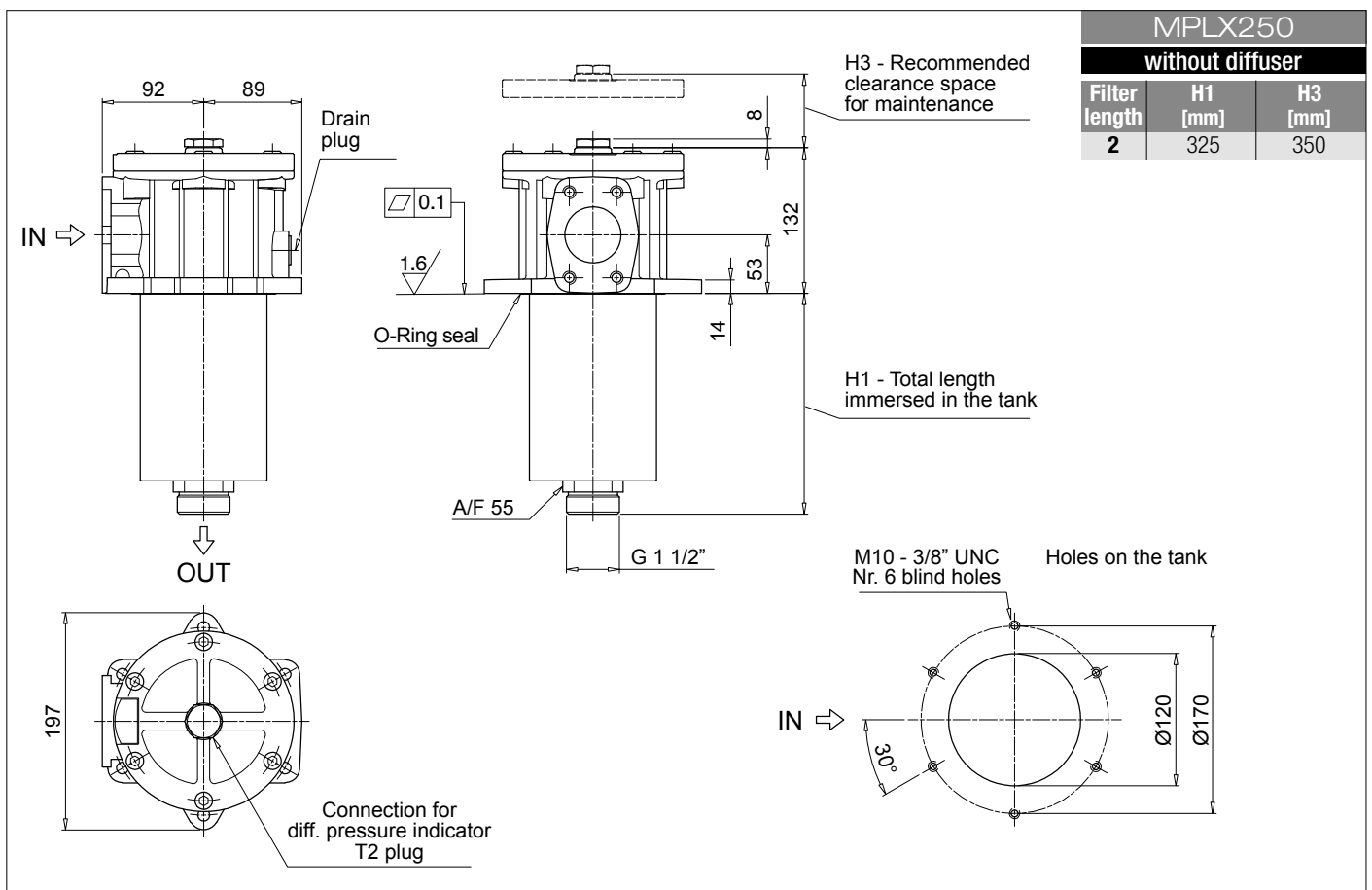
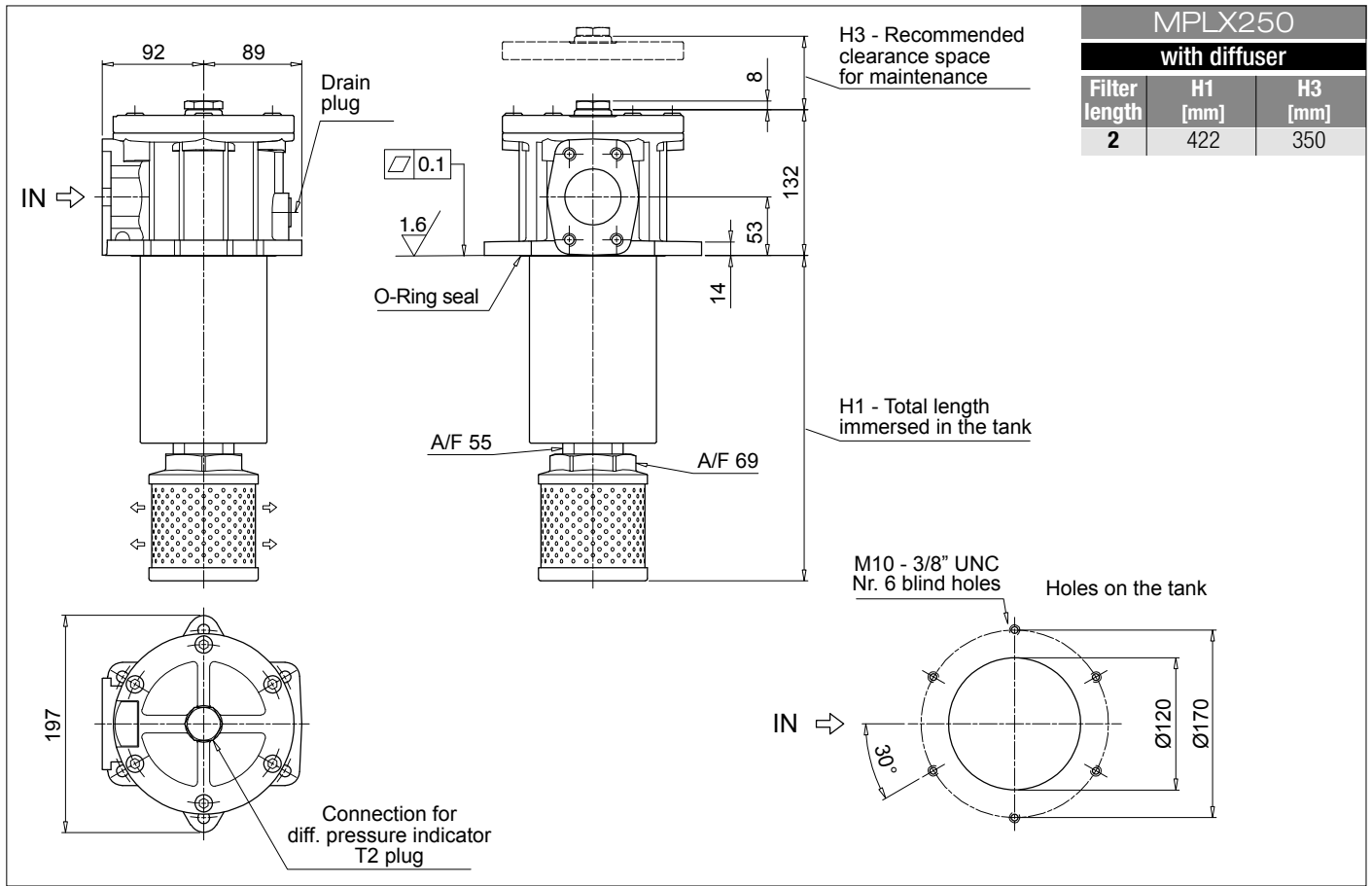
DVA Visual differential pressure indicator

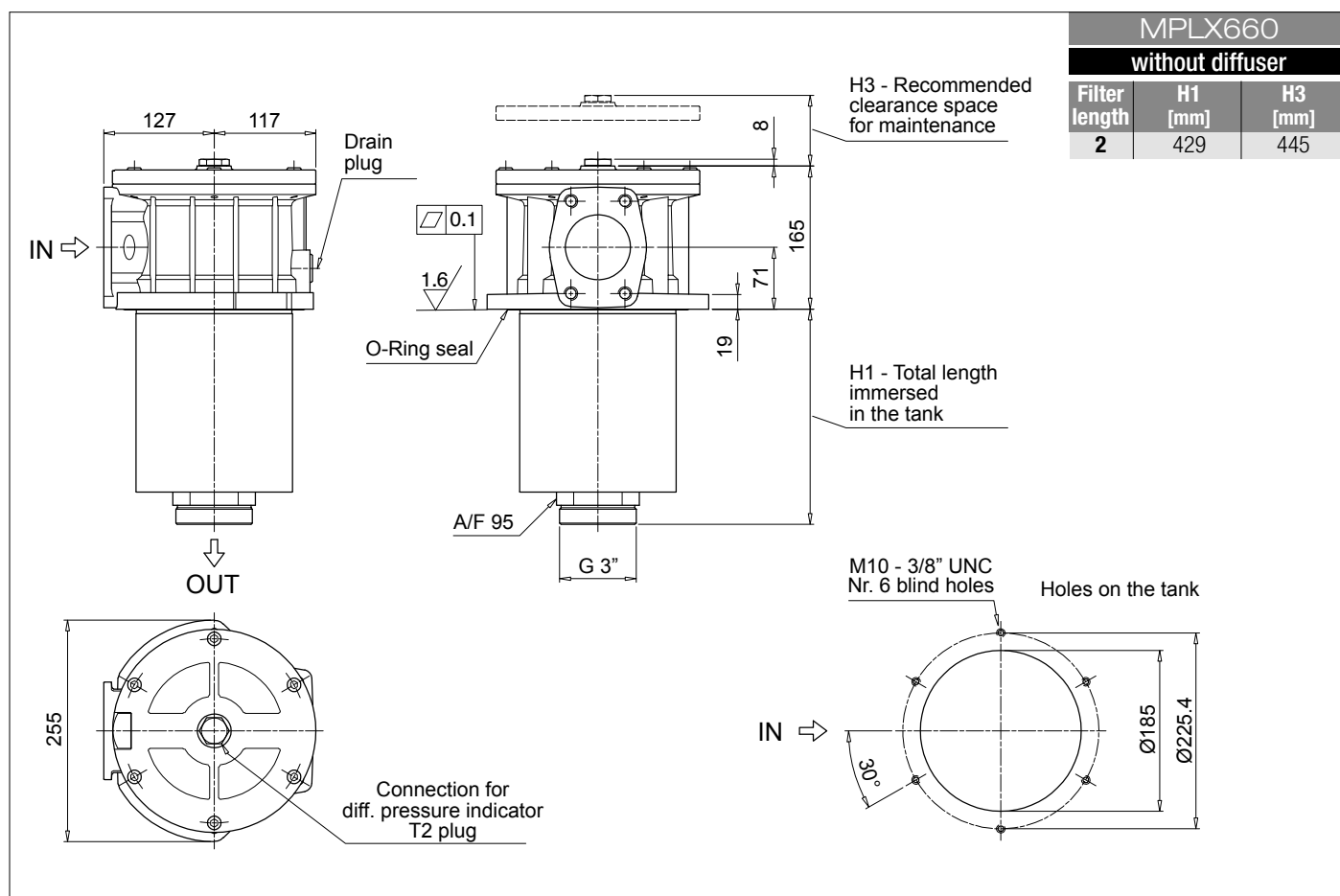
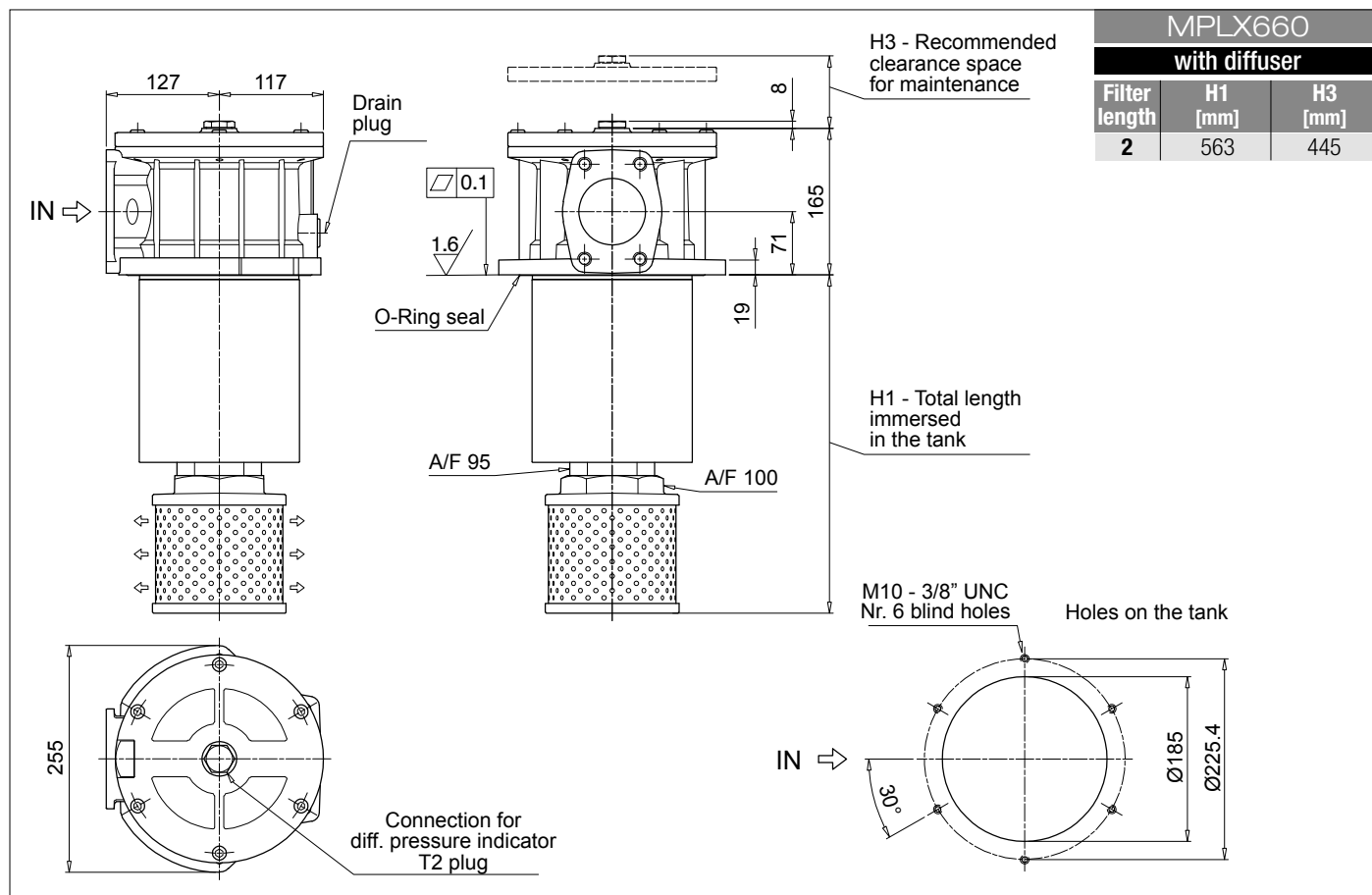
DVM Visual differential pressure indicator

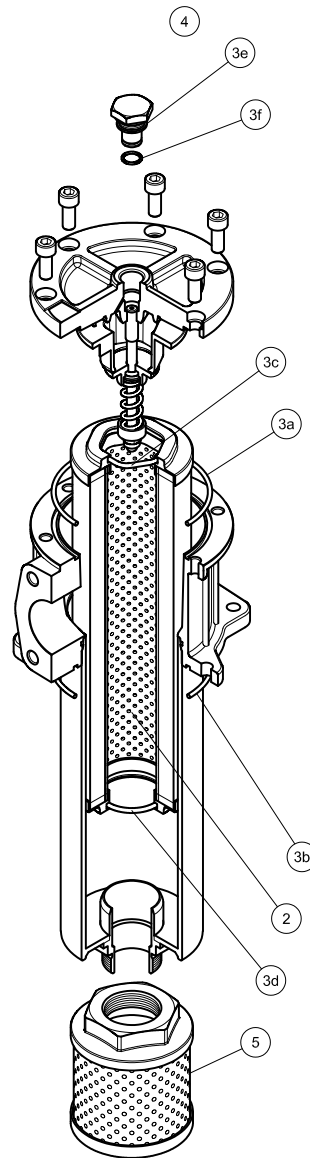
PLUGS

See page 747

T2 Plug







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



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.

Quality and efficiency are fundamental for MP Filtri:

this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MPTX series

with  MFX Filter Element



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

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



The products identified as MPTX are protected by:

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

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

zerospark®
THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS

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



MPTX series

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



Return filter

Maximum working pressure up to 800 kPa (8 bar)

Flow rate up to 300 l/min

MPTX is a range of return filters with integrated breather filter, for protection of the reservoir against the system contamination. They are directly fixed to the reservoir, in immersed or semi-immersed position. The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:

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

Common applications:

- Light industrial equipment
- Mobile application

Filter housing materials

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

Bypass valve

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

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.

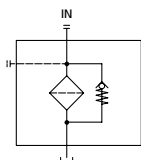
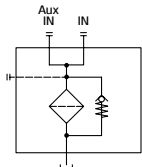
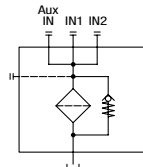
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

Hydraulic symbols

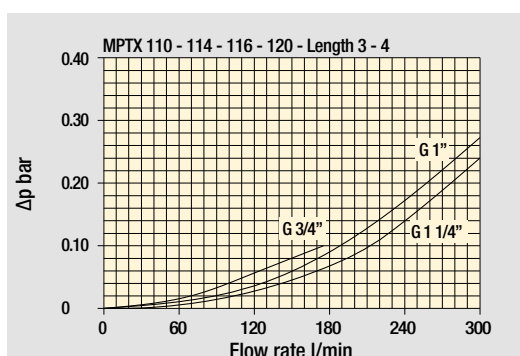
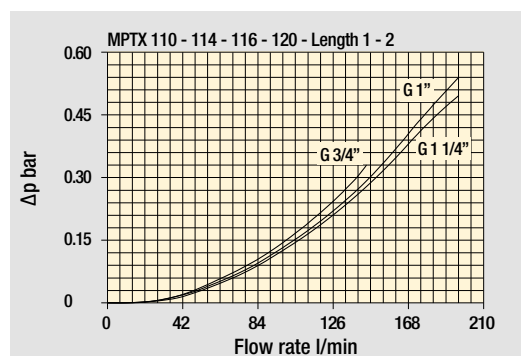
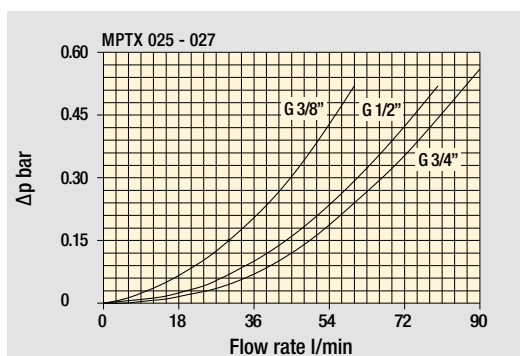
Filter series	Style 1 connection	Style 2 connections	Style 3 connections
MPTX 025	•	-	-
MPTX 027	•	-	-
MPTX 110	-	•	-
MPTX 114	•	-	-
MPTX 116	•	-	-
MPTX 120	-	-	•

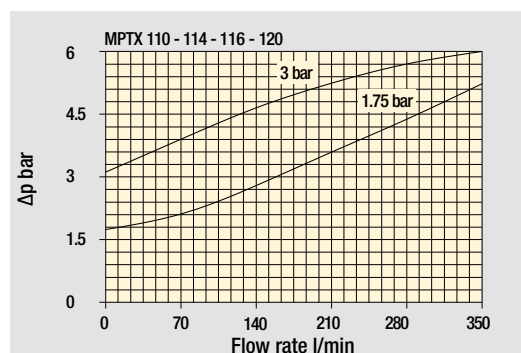
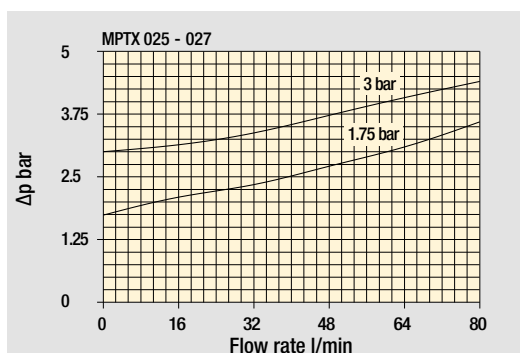
MPTX GENERAL INFORMATION

Pressure drop

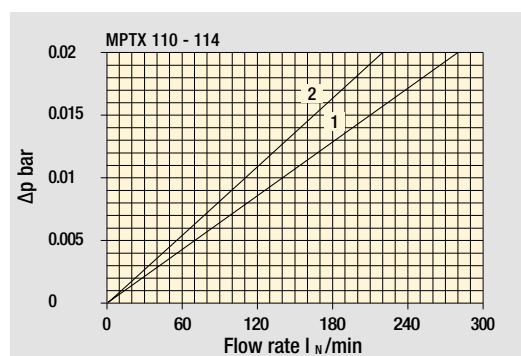
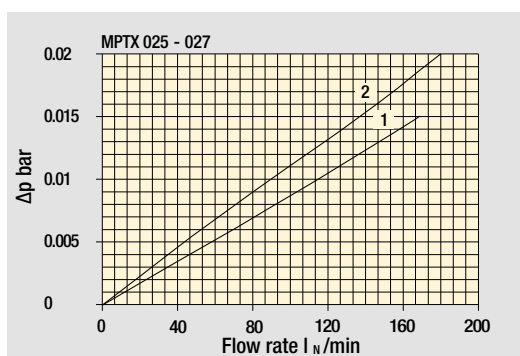
Filter housings Δp pressure drop



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.

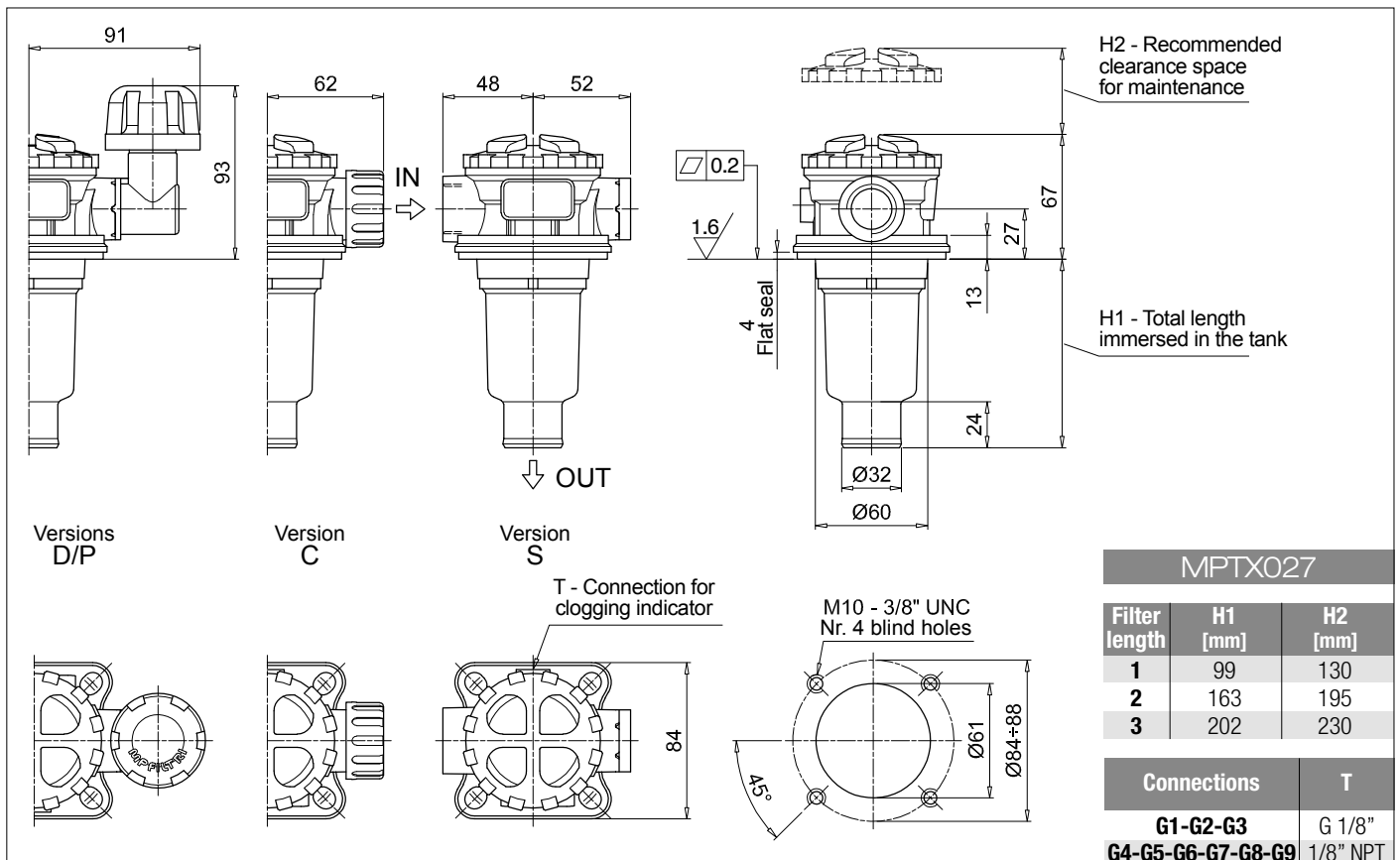
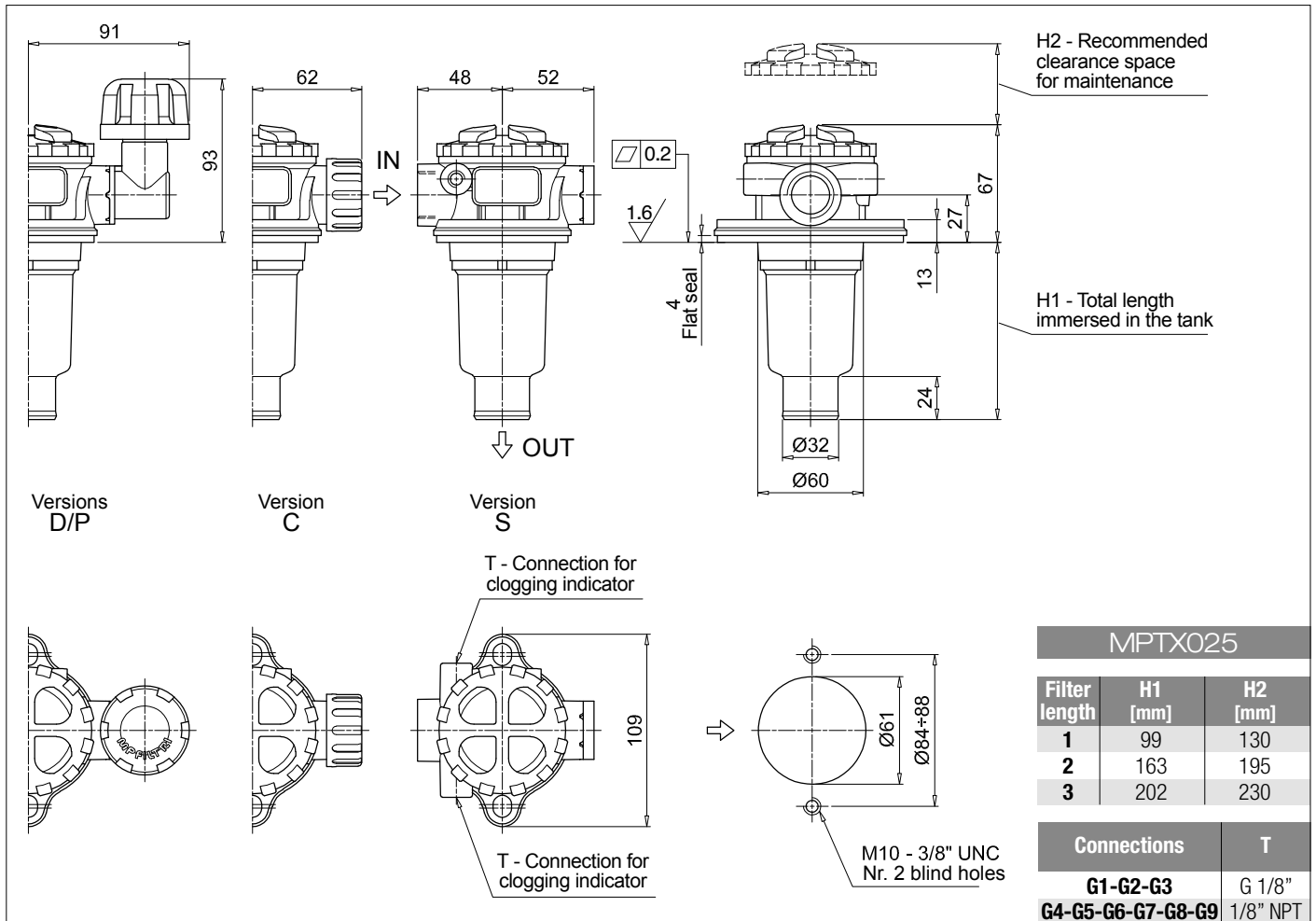
MPTX 025 -027		
Air breather port plugged Indicator port	Air breather standard Indicator port	Anti-splash air breather & pressurized Double indicator port
		

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





Designation & Ordering code

COMPLETE FILTER

Series and size				Configuration example 1:								
MPTX110 Filter featuring  Filter Element				Configuration example 2:								
				MPTX110	1	S	A	G1	0	A06	E	P01
Length					3	P	V	G4	1	M25	B	P01
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												

* Not for Mxx filter media

FILTER ELEMENT

Element series and size				Configuration example 1:							1	A06	H	B	E	P01	
MFX100 Filter Element with MYCLEAN feature				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															
N 10 bar		Axx	Mxx	Pxx													
H 10 bar																	

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

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

ADDITIONAL FEATURES

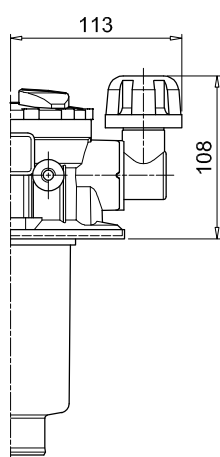
See page 268

TE Extension tube	DPT Dipstick
DFS Diffuser with fast lock connection	

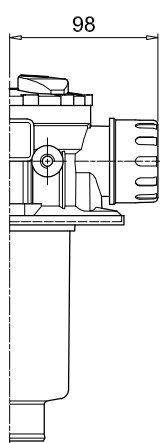
MPTX110

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

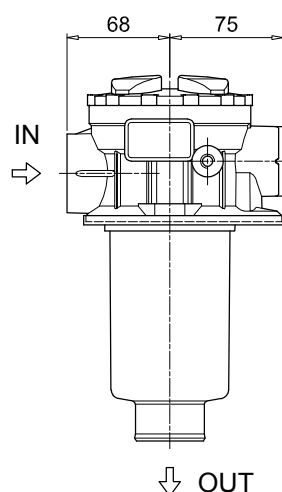
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



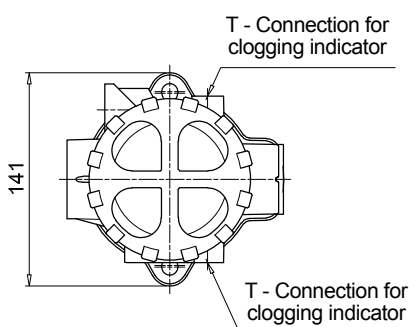
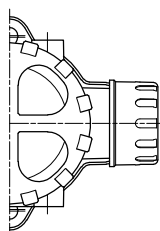
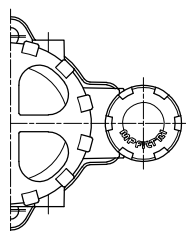
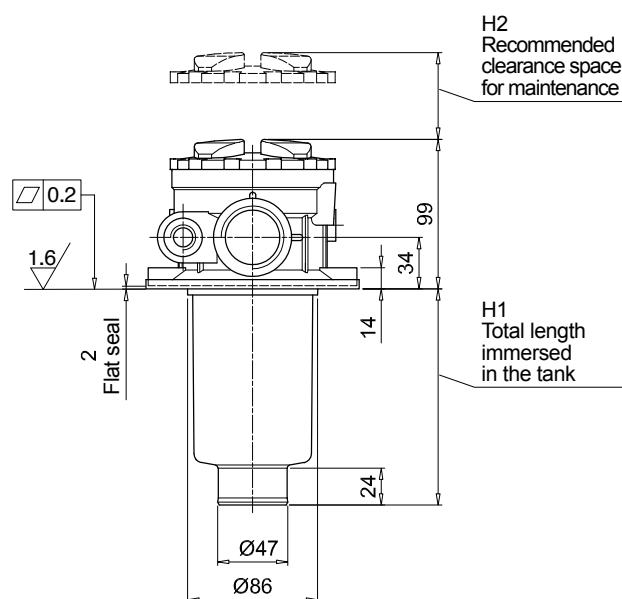
Versions
D/P



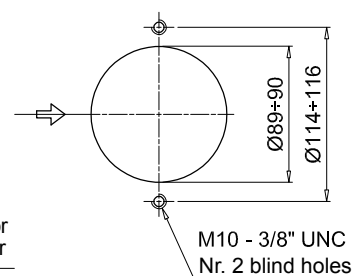
Version
C



Version
S



Holes on the tank



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example 1: MPTX114 4 S A G3 A10 E P01									
MPTX114 Filter featuring  Filter Element		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									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
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			Executions						
					Base	zerospark [®]					
E 3 bar					P01	Z01 *		MP Filtri standard			
B 1.75 bar					Pxx	Zxx *		Customized			

* Not for Mxx filter media

* Not for Mxx filter media

FILTER ELEMENT

Element series and size		Configuration example 2: MFX100 4 A10 H B E P01							
MFX100 Filter Element with  feature		Configuration example 1: MFX100 3 A03 N 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		•	-	-					
		Seals			Bypass valve			Executions	
								Base	zerospark [®]
B NBR					E 3 bar			P01	Z01 *
V FPM					- 1.75 bar			Pxx	Zxx *
								MP Filtri standard	
								Customized	

* Not for Mxx filter media

CLOGGING INDICATORS

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

See page 720-721

ADDITIONAL FEATURES

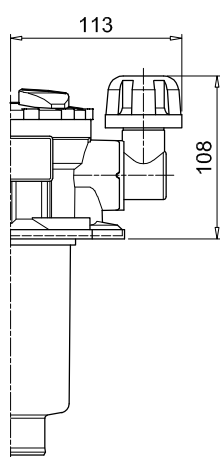
TE Extension tube	DPT Dipstick
DFS Diffuser with fast lock connection	

See page 268

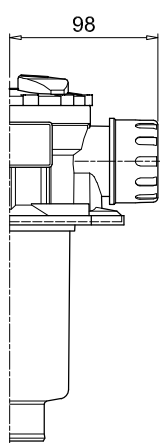
MPTX114

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

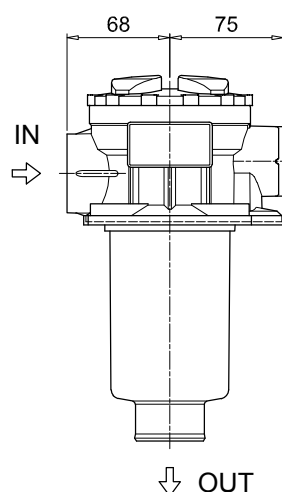
Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



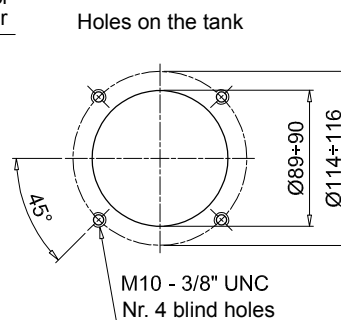
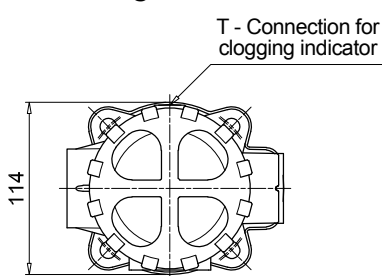
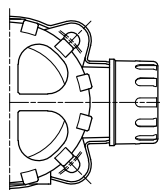
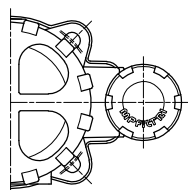
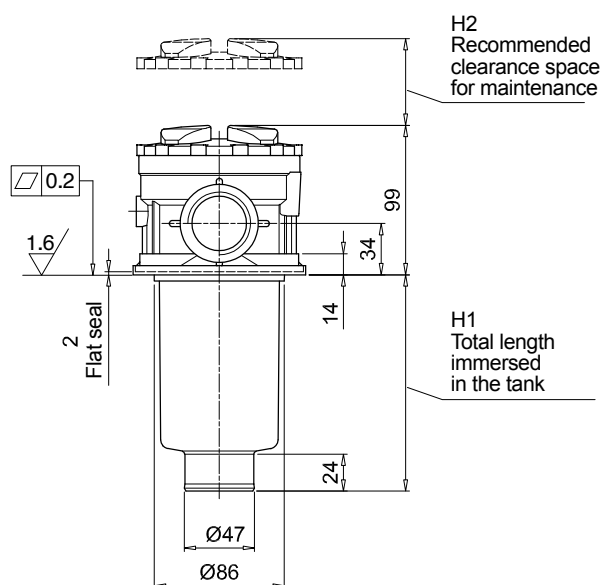
Versions
D/P



Version
C



Version
S



Designation & Ordering code

COMPLETE FILTER

Series and size

MPTX116 Filter featuring  Filter Element

Configuration example 1: **MPTX116** | 1 | S | A | G1 | M90 | E | P01

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

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

E 3 bar
B 1.75 bar

Executions

Base	zero spark *
P01	Z01 * MP Filtri standard
Pxx	Zxx * Customized

* Not for Mxx filter media

FILTER ELEMENT

Element series and size

MFx100 Filter Element with  feature

Configuration example 2: **MFx100** | 1 | M90 | N | B | E | P01

Configuration example 1: **MFx100** | 2 | A03 | H | 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	Axx	Mxx	Pxx
N 10 bar	-	•	•
H 10 bar	•	-	-

Seals

B NBR
V FPM

Bypass valve

E 3 bar
- 1.75 bar

Executions

Base	zero spark *
P01	Z01 * MP Filtri standard
Pxx	Zxx * Customized

* Not for Mxx filter media

CLOGGING INDICATORS

See page 720-721

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

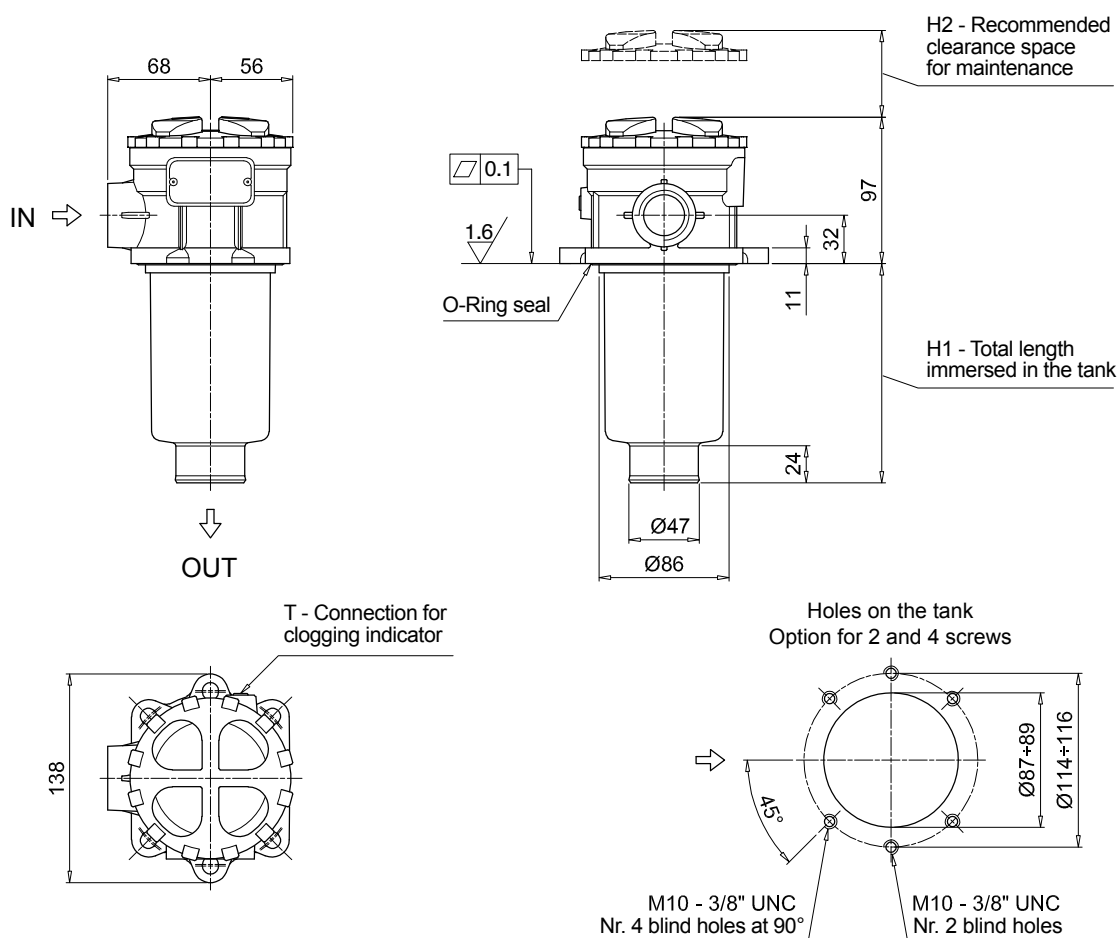
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator

ADDITIONAL FEATURES

See page 268

TE Extension tube
DFS Diffuser with fast lock connection

DPT Dipstick



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

Series and size

MPTX120 Filter featuring  Filter Element

Length

1

2

3

4

Seals and treatments

A NBR

V FPM

W NBR head anodized

Z FPM head anodized

Filtration rating

Axx

Mxx

Pxx

Main Connections

G1 G 3/4"

G2 G 1"

G3 G 1 1/4"

G4 3/4" NPT

G5 1" NPT

G6 1 1/4" NPT

G7 SAE 12 - 1 1/16" - 12 UN

G8 SAE 16 - 1 5/16" - 12 UN

G9 SAE 20 - 1 5/8" - 12 UN

Rear connections

G 3/4"

G 1"

G 3/4"

3/4" NPT

1" NPT

3/4" NPT

SAE 12 - 1 1/16" - 12 UN

SAE 16 - 1 5/16" - 12 UN

SAE 12 - 1 1/16" - 12 UN

Aux size 1

G 3/8"

3/8" NPT

SAE 6 - 9/16" - 18 UNF

Aux size 2

G 1/2"

1/2" NPT

SAE 8 - 3/4" - 16 UNF

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

Configuration example 1:

MPTX120

1

A

G1

0

A06

E

P01

Configuration example 2:

MPTX120

3

V

G4

1

M25

B

P01

Bypass valve

E 3 bar

B 1.75 bar

Executions

Base

P01

Pxx

Z01 *

Zxx *

MP Filtri standard

Customized

* Not for Mxx filter media

Element series and size

MFX100	Filter Element with MY CLEAN feature
--------	---

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

	Axx	Mxx	Pxx
N 10 bar	-	•	•
H 10 bar	•	-	-

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
-	1.75 bar

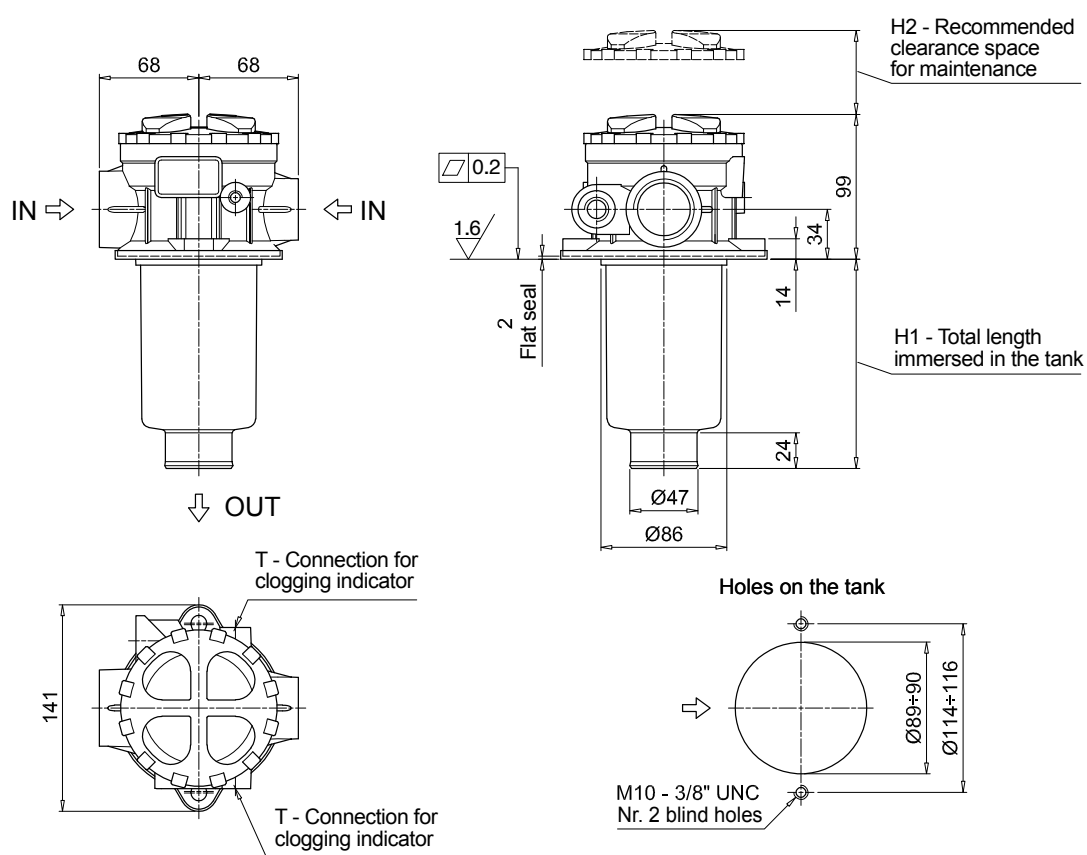
Executions

Base	zospark	
P01	Z01 *	MP Filtri standard
Pxx	Zxx *	Customized

* Not for Mxx filter media

CLOGGING INDICATORS		See page	720-721
BVA	Axial pressure gauge	BEA	Electrical pressure indicator
BVR	Radial pressure gauge	BEM	Electrical pressure indicator
BVP	Visual pressure indicator with automatic reset	BLA	Electrical / visual pressure indicator
BVO	Visual pressure indicator with manual reset		

ADDITIONAL FEATURES		See page 268
TE	Extension tube	DPT Dipstick
DFS	Diffuser with fast lock connection	



MPTX120

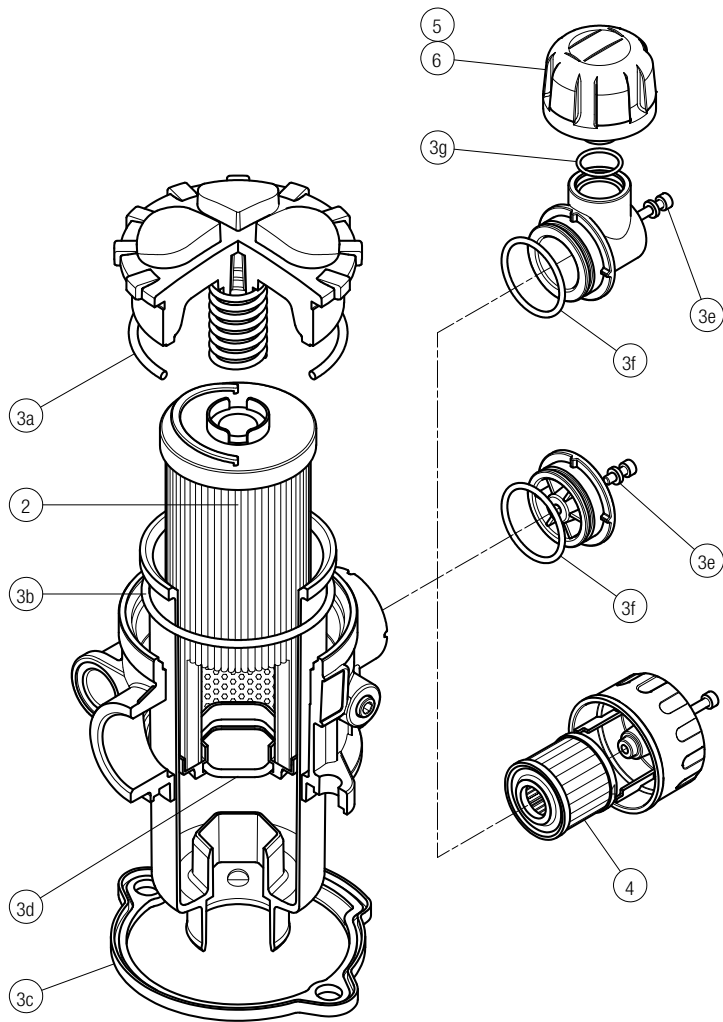
Filter length	H1 [mm]	H2 [mm]
1	99	120
2	144	170
3	222	250
4	324	350

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

MPTX SPARE PARTS

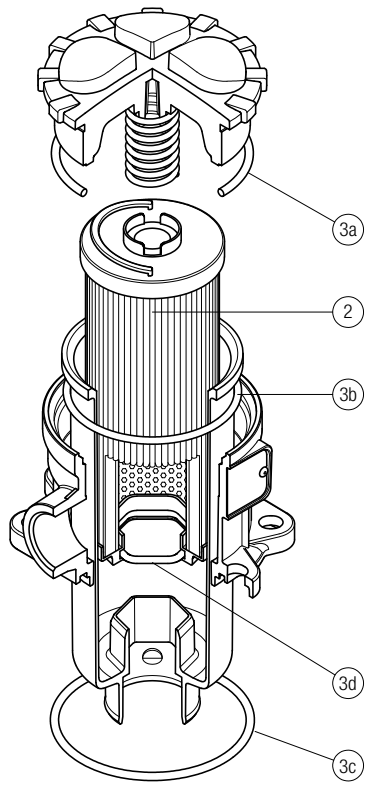
Order number for spare parts

MPTX 025 - 027 - 110



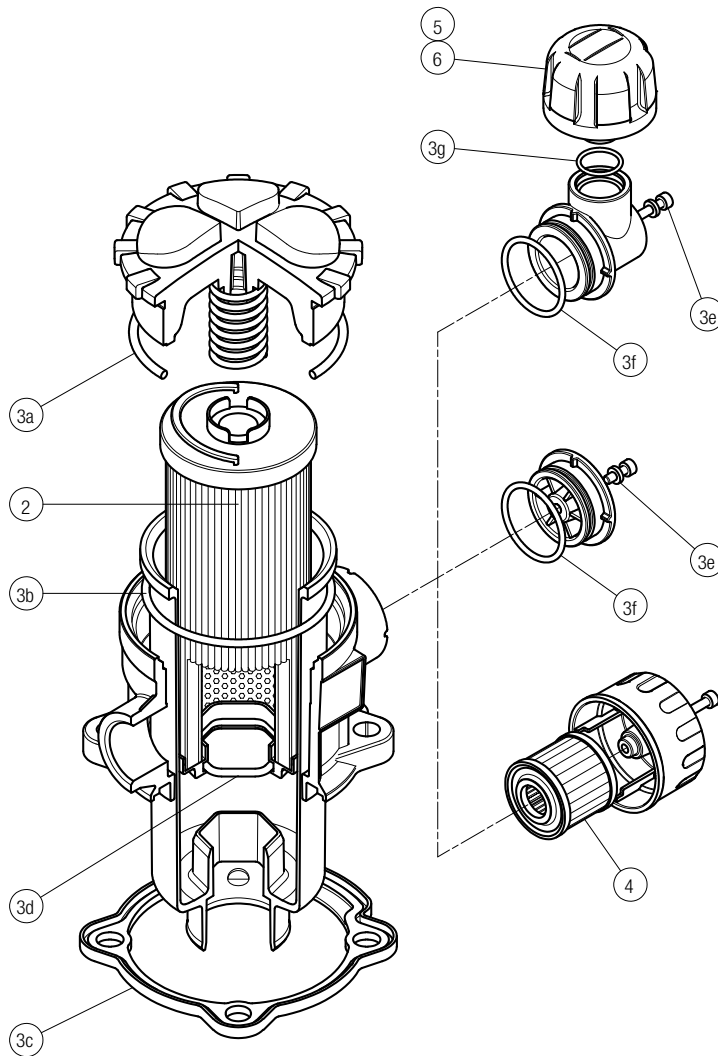
Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Item:		2		3 (3a ÷ 3g)	4	5
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		
		NBR	FPM	C	D	P
MPTX 025	See order table	02050701	02050702	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPTX 027		02050703	02050704	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPTX 110		02050709	02050710	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

MPTX 116

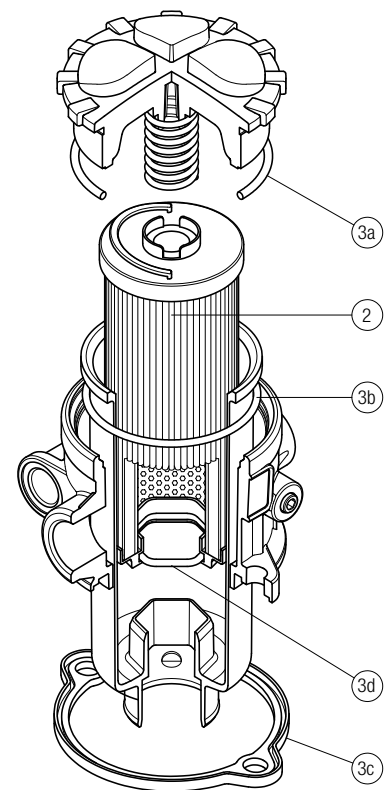


Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:		3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPTX 116	See order table	02050737	02050738

MPTX 114



MPTX 120



Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Item:	2	3	(3a ÷ 3g)	4	5	6	
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:			
		NBR	FPM	C	D	P	
MPTX 114	See order table	02050707	02050708	10 µm ASL03	10 µm SAP50G3L03A0P01	10 µmm SAP50G3L03A1P01	

Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3	(3a ÷ 3d)
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPTX 120	See order table	02050711	02050712



THE X CONCEPT FOR OUR FILTERS

Protect the performance of your system with MYclean.

Quality and efficiency are fundamental for MP Filtri:

this exclusive new filter element possesses polygon shape geometry and specific seal that ensures only original spare parts can be used - ensuring correct operation and higher system reliability.

MFBX series

with  MFX Filter Element



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

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



The products identified as MFBX are protected by:

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

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

zerospark®
THE ANTI-STATIC FILTERS

THE Z CONCEPT FOR OUR FILTERS

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



MFBX series

BOWL ASSEMBLY

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



Return filter Bowl assembly

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

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

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

Treaded or flanged covers can be provided.

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

Available features:

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

Common applications:

Mobile machines

Bowl assembly materials

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

- Bowl: Polyamide

Filter element materials

- Caps: Polyamide
- Spring: Spring steel

Bypass valve

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

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	-	-

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
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.

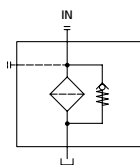
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

Hydraulic symbols

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



Designation & Ordering code

COMPLETE FILTER

Series and size

MFBX020 | **MFBX100** | **MFBX190** Filter featuring

MFBX030 | **MFBX180**  Filter Element

Configuration example 1: **MFBX100**

1 **A** **2** **A10** **H** **E** **P01**

Configuration example 2: **MFBX180**

2 **V** **1** **M25** **N** **B** **P01**

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

Seals

A NBR

V FPM

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

Filtration rating (filter media)

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	•	-	-

Bypass valve	
E	3 bar
B	1.75 bar

Executions		
Base		
P01	Z01 *	MP Filtri standard
Pxx	Zxx *	Customized

* Not for Mxx filter media

FILTER ELEMENT

Element series and size

MFXX020 | **MFXX100** | **MFXX030** | **MFXX180** Filter Element with  feature

Configuration example 1: **MFXX180**

2 **M25** **H** **V** **P01**

Configuration example 2: **MFXX100**

1 **A10** **N** **B** **E** **P01**

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

Filtration rating (filter media)

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	•	-	-

Seals	
B	NBR
V	FPM

Bypass valve	
E	3 bar
-	1.75 bar

Executions		
Base		
P01	Z01 *	MP Filtri standard
Pxx	Zxx *	Customized

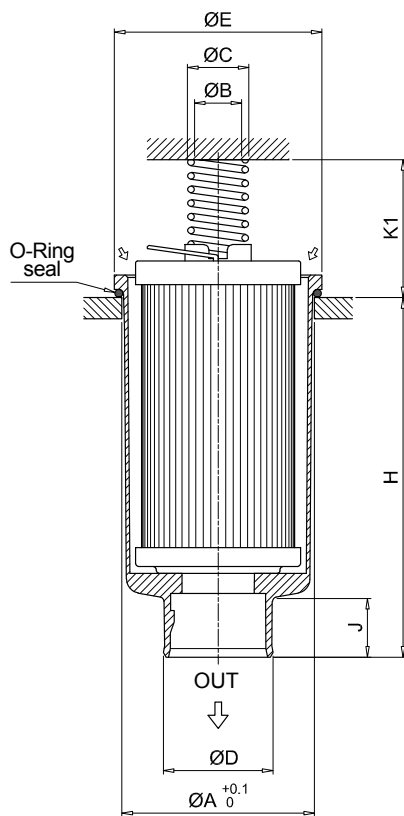
* Not for Mxx filter media

ACCESSORIES

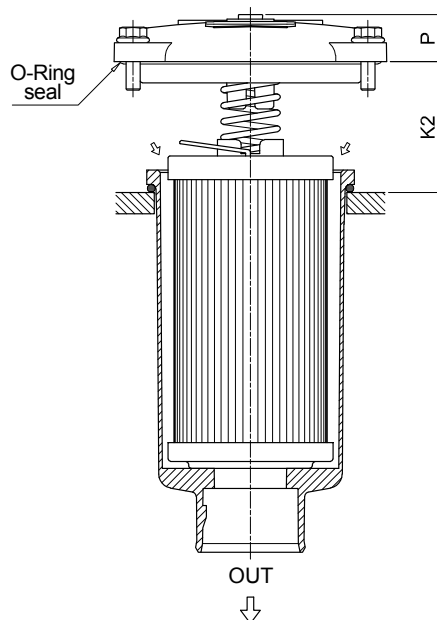
See page 268-269

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

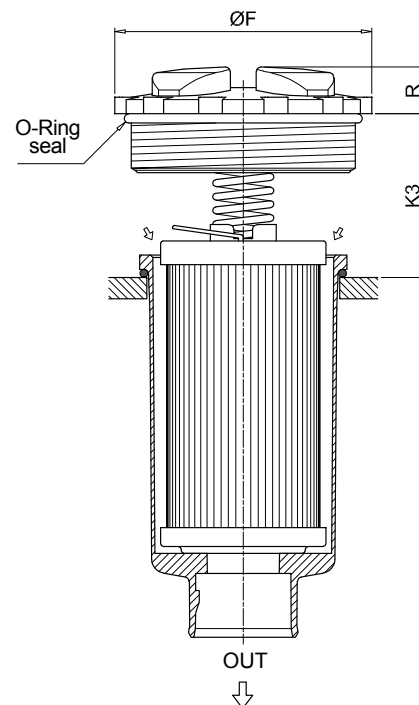
MFBX



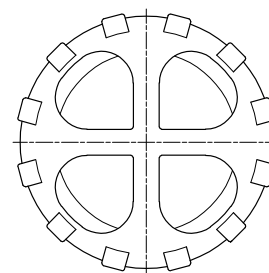
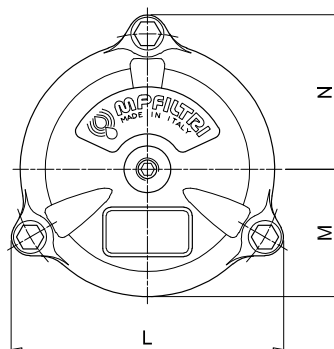
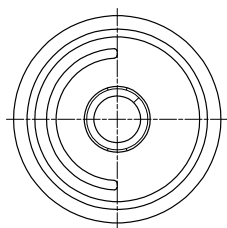
Version 1



Version 2



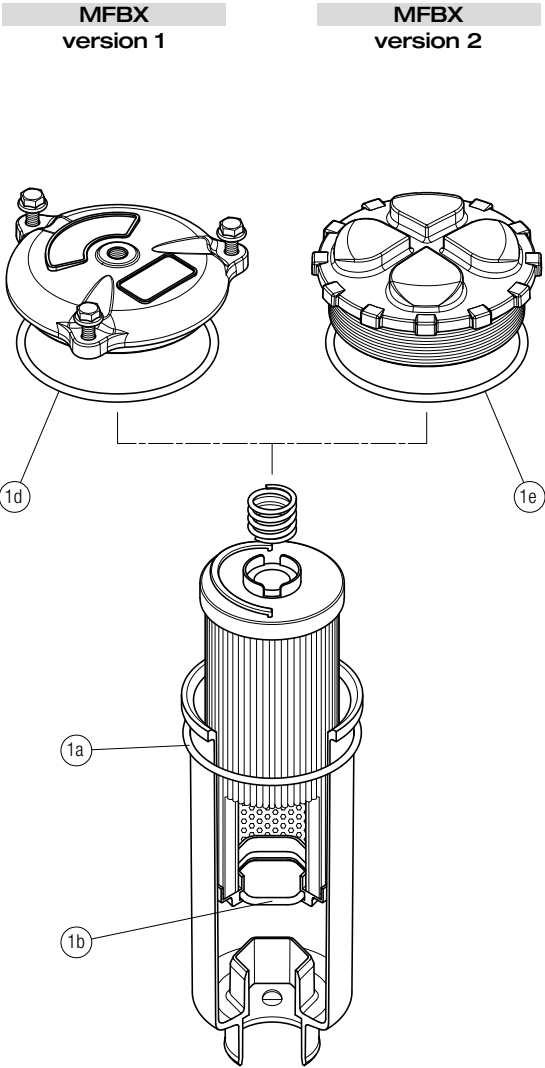
Version 3



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	-
100	1	80.5	20	26	47	88	111	109	24	58	55	69	116	54	66	20	20
	2	80.5	20	26	47	88	111	154	24	58	55	69	116	54	66	20	20
	3	80.5	20	26	47	88	111	232	24	58	55	69	116	54	66	20	20
	4	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.		
Item: 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 900 l/min



Description

Technical data

Return filter

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

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

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

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

Available features:

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

Common applications:

- Light industrial equipment
- Mobile application

Filter housing materials

- Head: Aluminium

- Cover

Polyamide: MPF 020-030-100-104-110

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

- Bowl: Polyamide

Bypass valve

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

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

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	-	-	-

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.

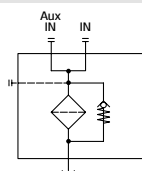
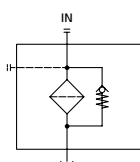
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

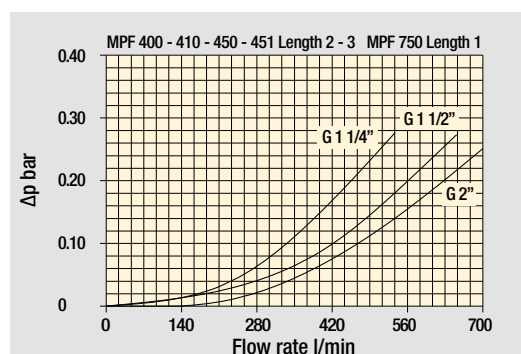
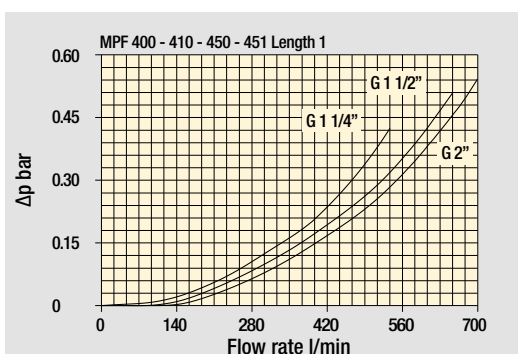
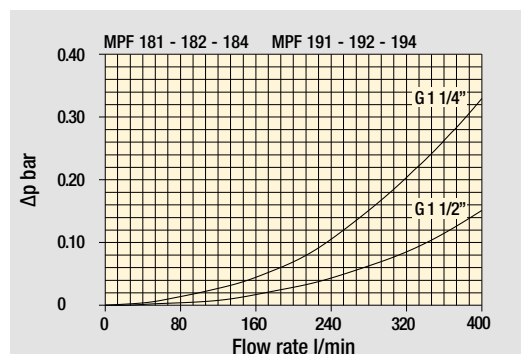
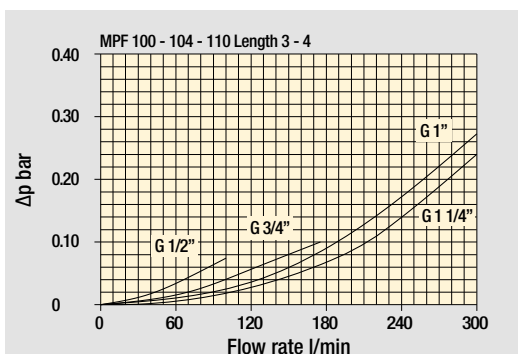
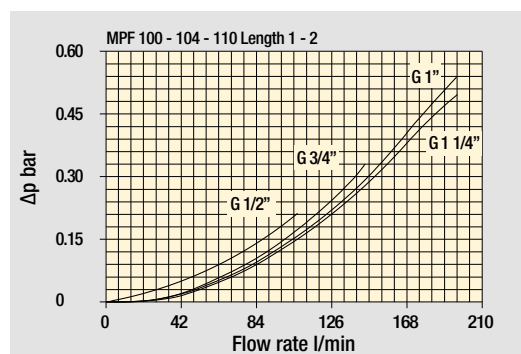
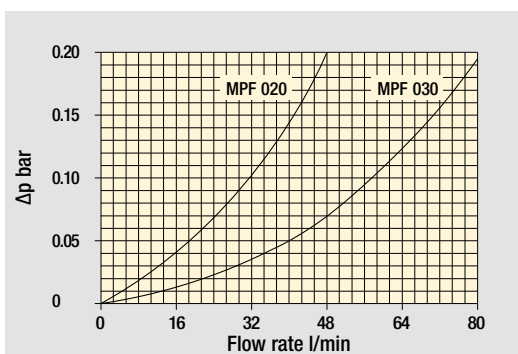
Hydraulic symbols

Filter series	Style 1 connection	Style 2 connections
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	•	-

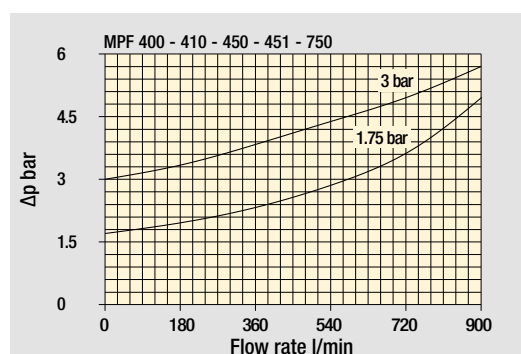
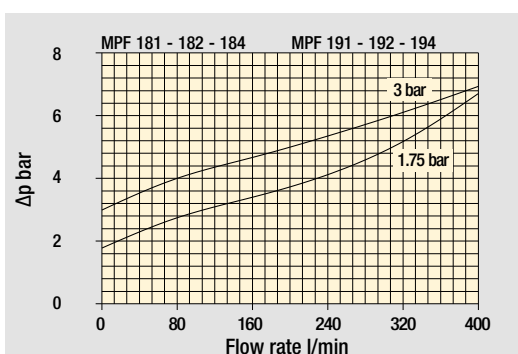
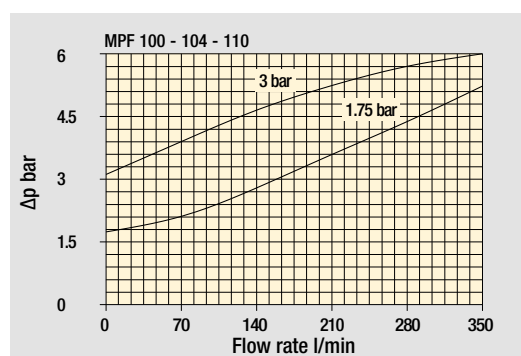
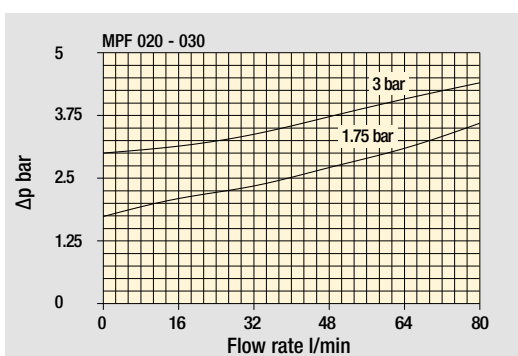


Pressure drop

Filter housings Δp pressure drop



Bypass valve pressure drop

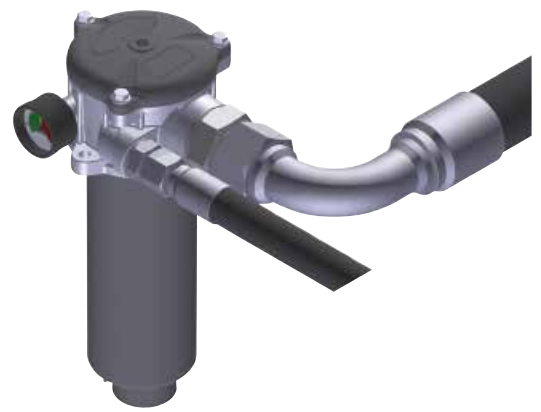


The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

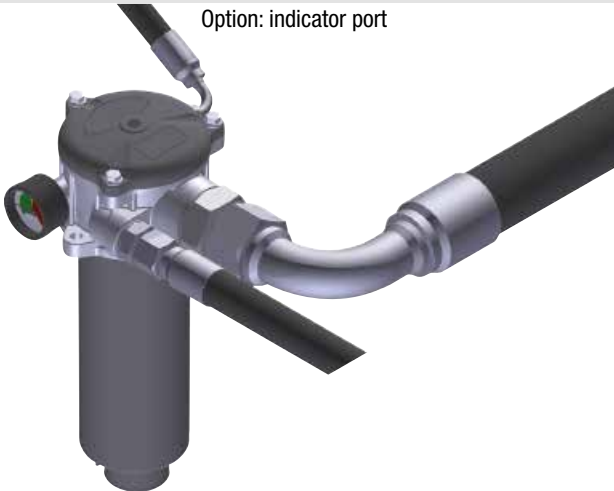
Standard - Single IN port



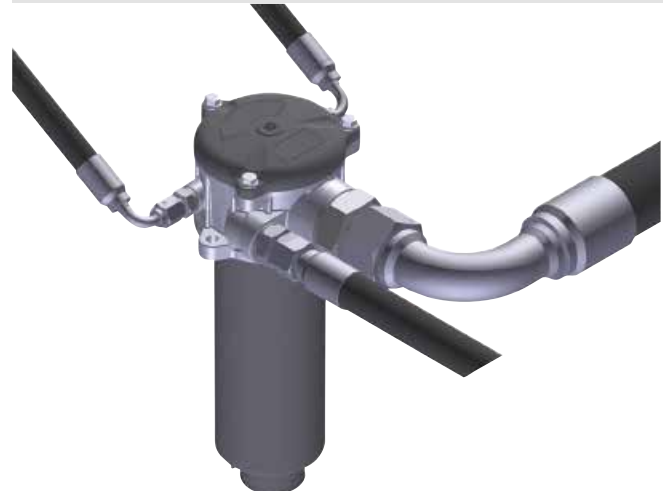
Double IN port
Option: double indicator port



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	MPF030	Filter element with standard spigot		Configuration example 2:		MPF020	1	A	P1	A10	H	E	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			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 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		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		

CLOGGING INDICATORS

See page 720-721

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

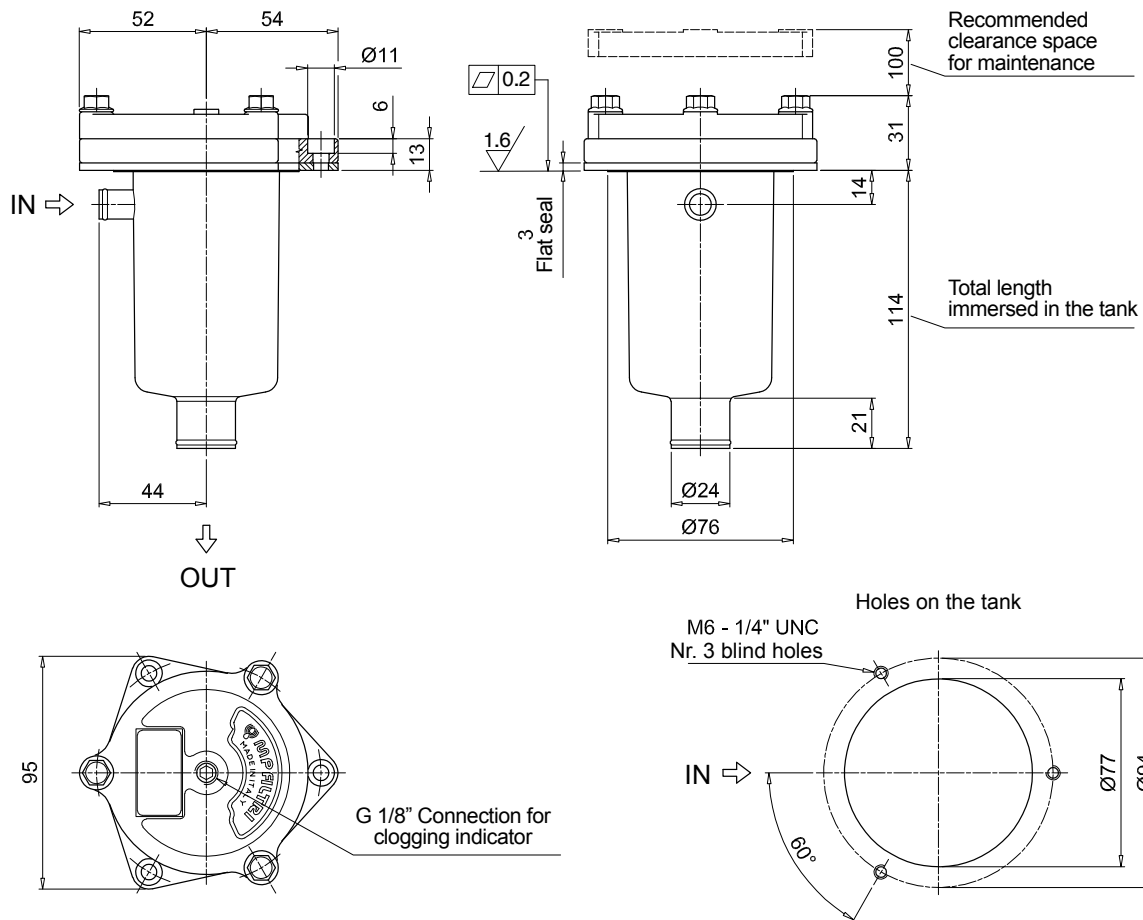
BEA	Electrical pressure indicator
BEM	Electrical pressure indicator
BLA	Electrical / visual pressure indicator

ADDITIONAL FEATURES

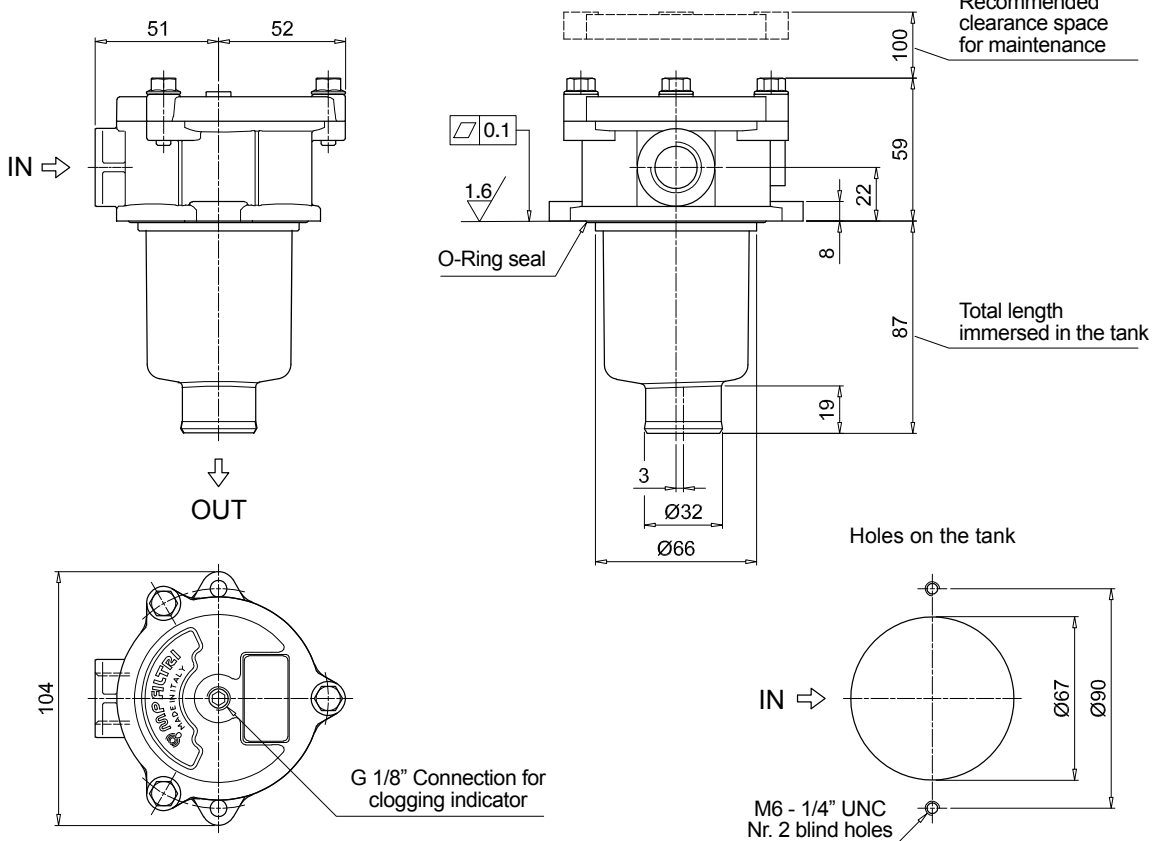
See page 268

TE	Extension tube
T5	Filler plug M30x1.5

MPF020



MPF030



MPF MPF100 - MPF104

Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1:		Configuration example 2:		Configuration example 3:		Configuration example 4:		Configuration example 5:		Configuration example 6:		Configuration example 7:	
MPF100 MPF104 Filter element with standard spigot			MPF100		MPF104		2		4		W		A		G8	
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			•		•											
G5 3/4" NPT			•		•											
G6 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		P10 Resin impregnated paper 10 µm	
			A16 Inorganic microfiber 16 µm		P25 Resin impregnated paper 25 µm											
Element Δp			Axx		Mxx		Pxx		Bypass valve		Execution					
N 10 bar			-		•		•		E 3 bar		P01 MP Filtri standard					
H 10 bar			•		-		-		B 1.75 bar		Pxx Customized					

FILTER ELEMENT

Element series and size		Configuration example 1:		MF100	2	A06	H	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	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	
N	10 bar	Axx	Mxx	Pxx	B	NBR	E	3 bar	P01	MP Filtri standard
H	10 bar	•	-	-	V	FPM	-	1.75 bar	Pxx	Customized

CLOGGING INDICATORS

See page 720-721

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

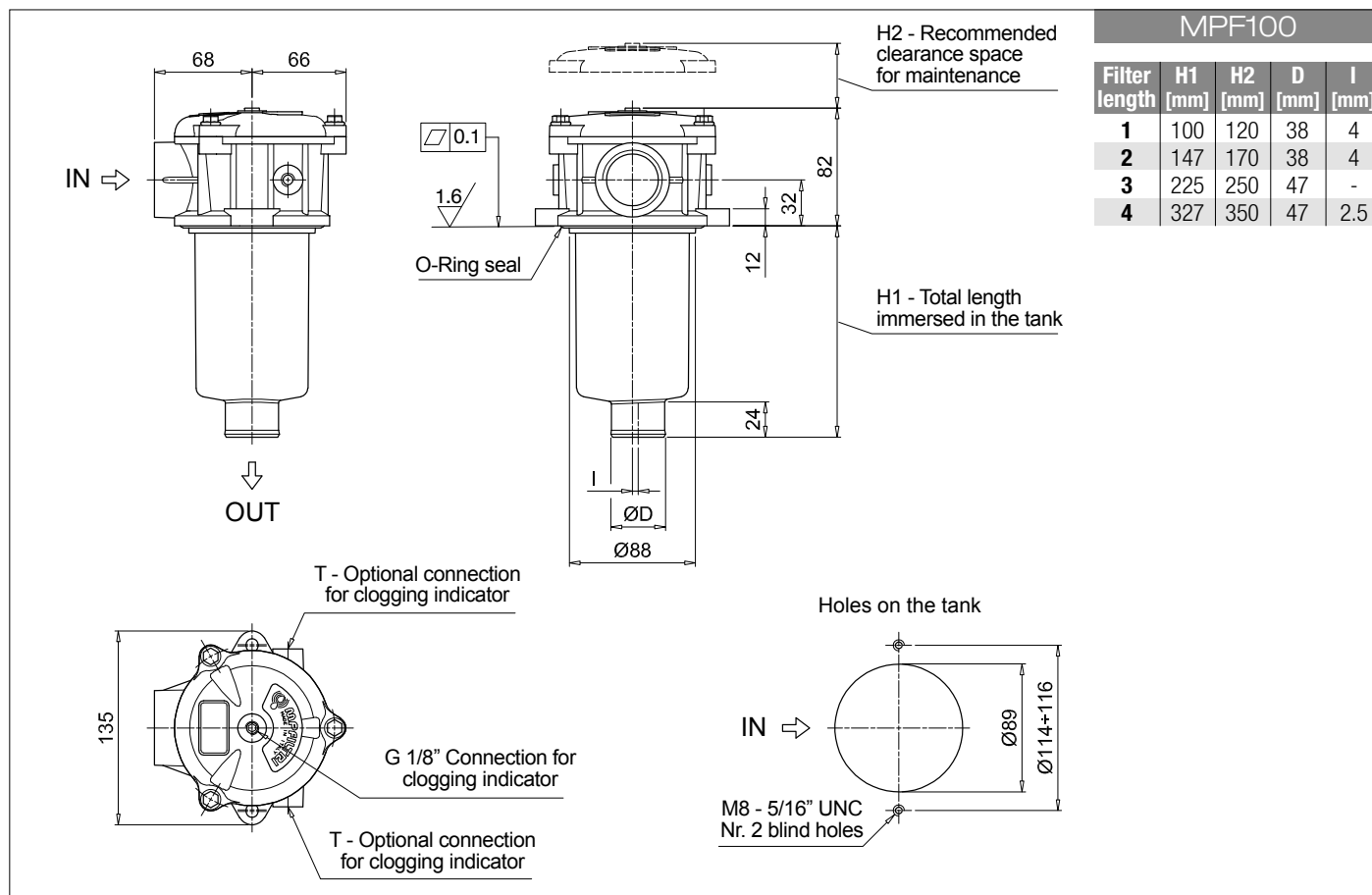
BEA	Electrical pressure indicator
BEM	Electrical pressure indicator
BLA	Electrical / visual pressure indicator

ADDITIONAL FEATURES

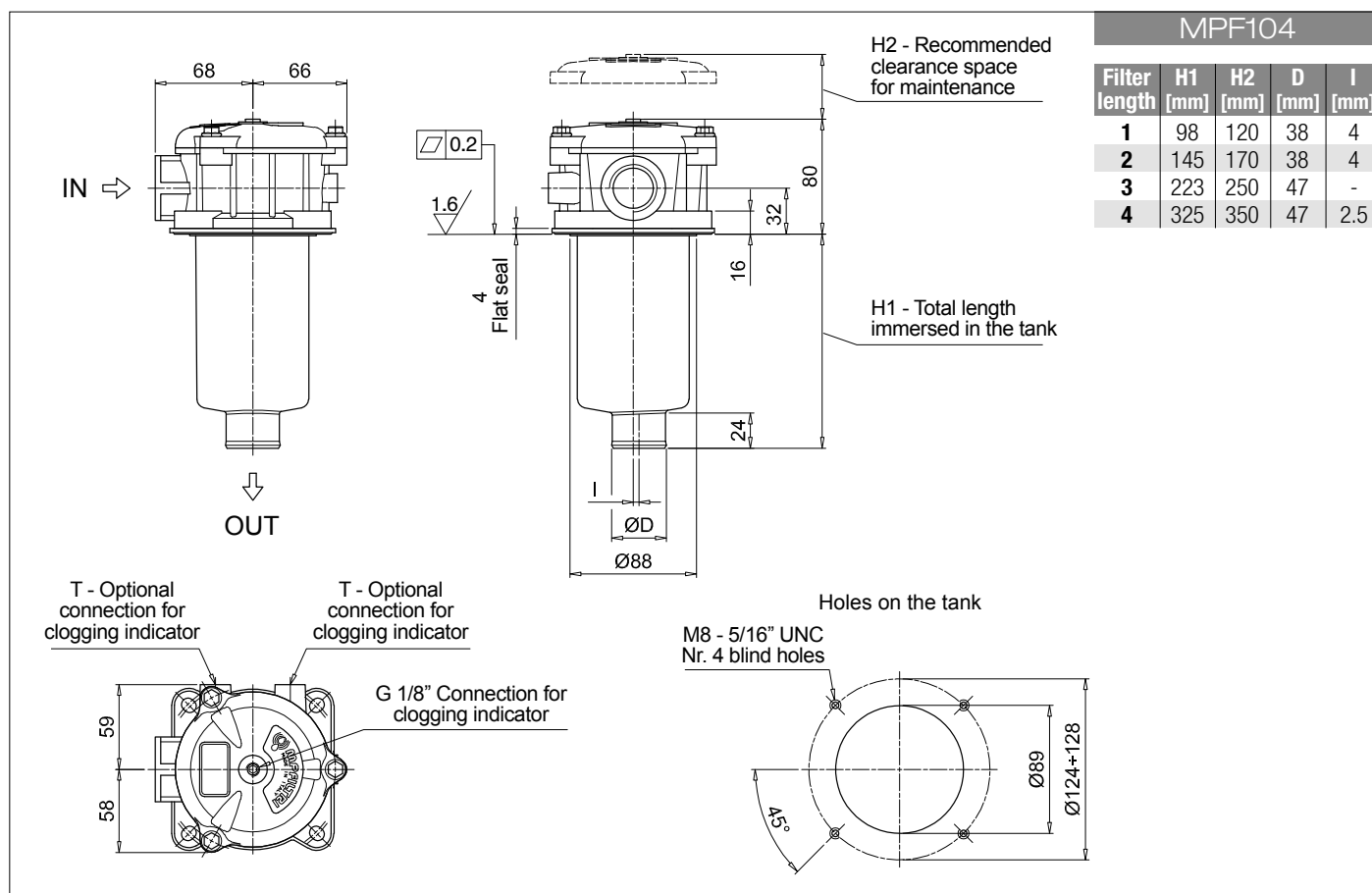
See page 268

TE	Extension tube
DFS	Diffuser with fast lock connection

T5	Filler plug M30x1.5
DPT	Dipstick



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



Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	98	120	38	4
2	145	170	38	4
3	223	250	47	-
4	325	350	47	2.5

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

CLOGGING INDICATORS

See page 720-721

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

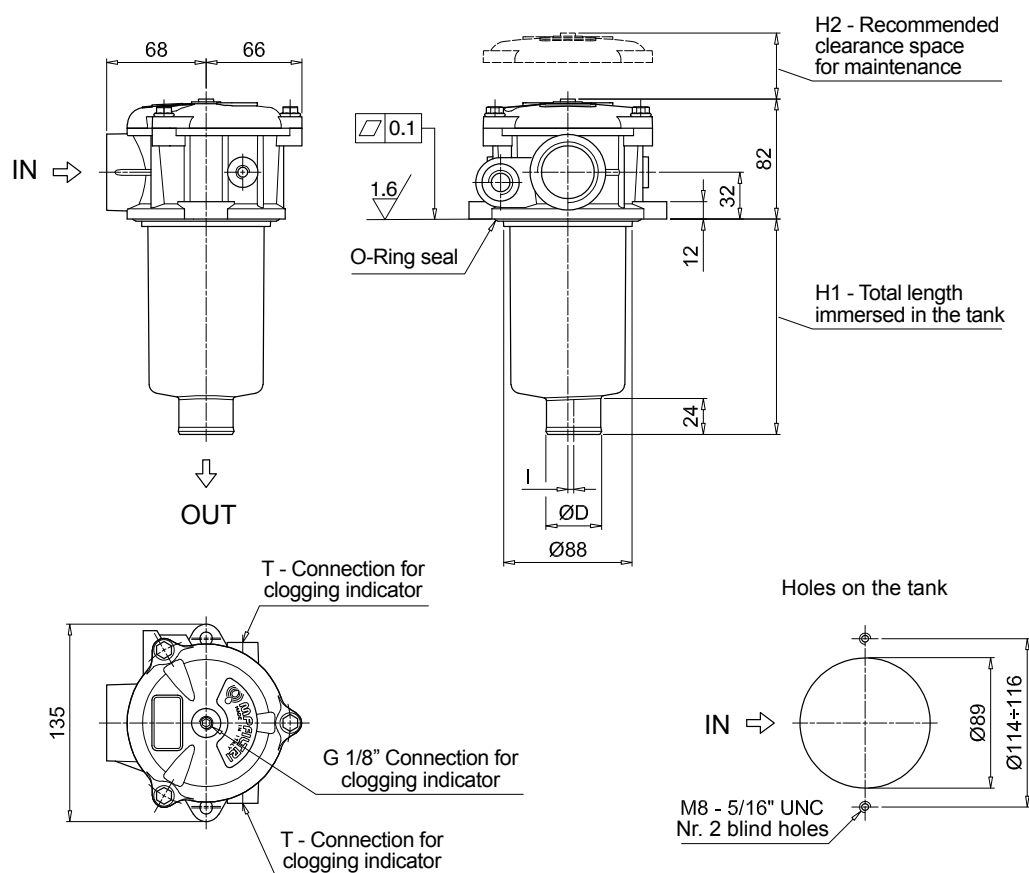
BEA Electrical pressure indicator	
BEM Electrical pressure indicator	
BLA Electrical / visual pressure indicator	

ADDITIONAL FEATURES

See page 268

TE Extension tube	
DFS Diffuser with fast lock connection	

T5 Filler plug M30x1.5	
DPT Dipstick	



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 MPF191			Filter element with standard spigot													
Length			Size 181		Size 191		Configuration example 2:									
1			•		-		MPF181									
2			•		•		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													
Element Δp			Filter media			Bypass valve		Execution								
N 10 bar			Axx	Mxx	Pxx	E 3 bar		P01 MP Filtri standard								
H 10 bar			•	-	-	B 1.75 bar		Pxx Customized								

FILTER ELEMENT

Element series and size			Configuration example 1: MF180										
MF180 MF190			Filter element with standard spigot										
Element length		Size 180	Size 190	Configuration example 2: MF190				1	A25	H	B	E	P01
1		•	-	2	P10	N	V						P01
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			
N	10 bar		Axx	Mxx	Pxx	B	NBR	E	3 bar	P01	MP Filtri standard		
H	10 bar		•	-	-	V	FPM	-	1.75 bar	Pxx	Customized		

CLOGGING INDICATORS

See page 720-721

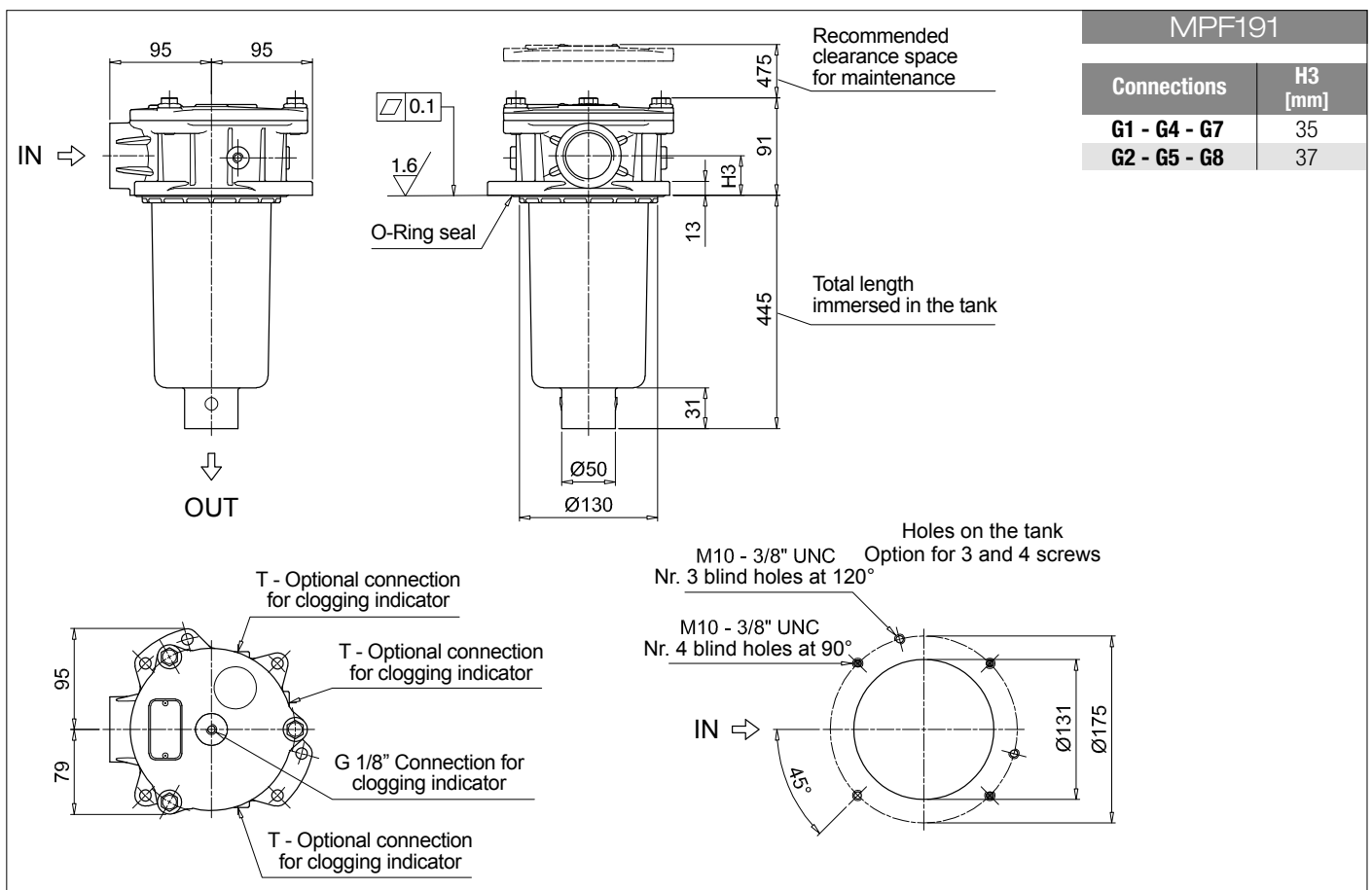
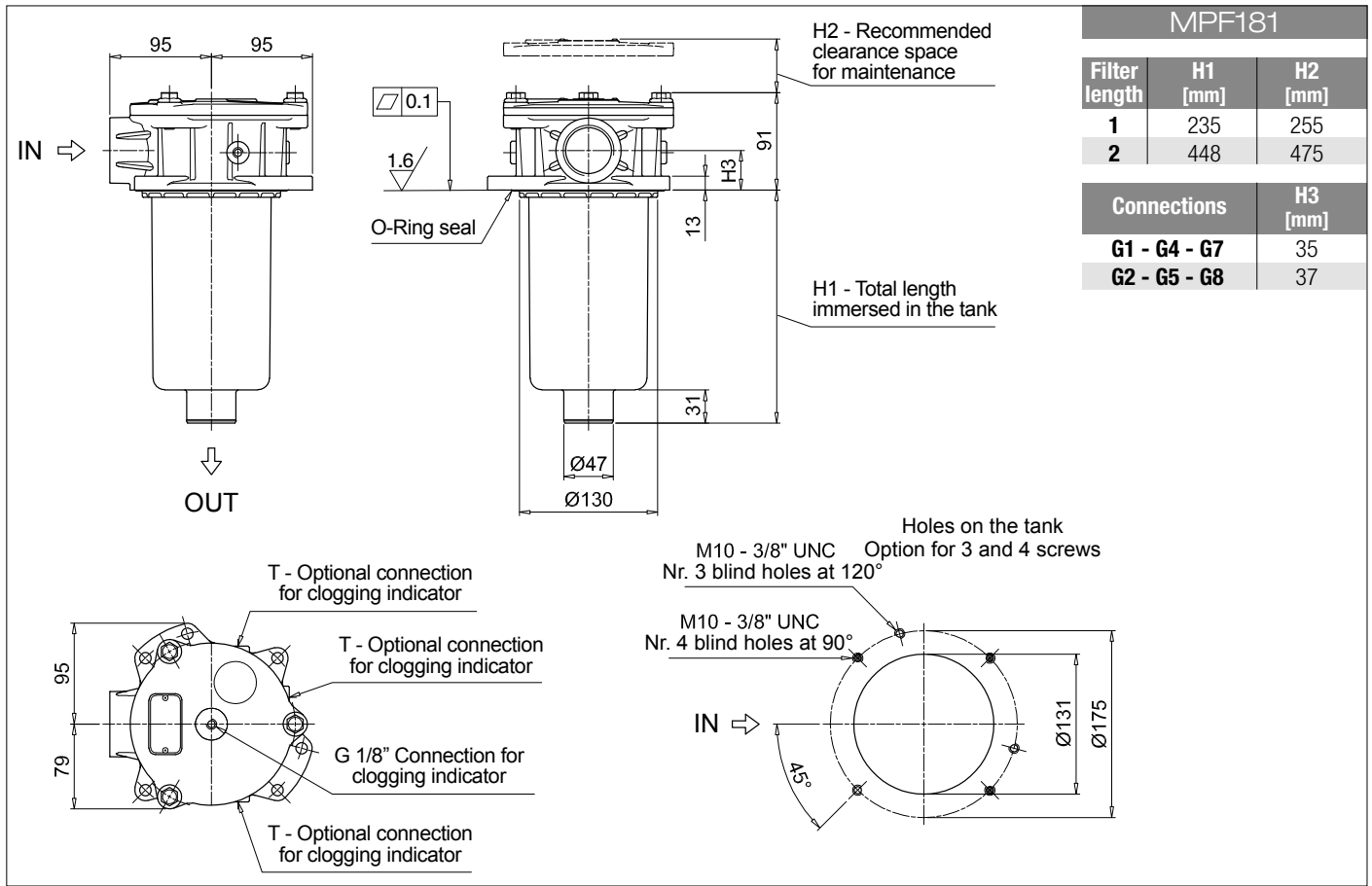
BVA Axial pressure gauge	
BVR Radial pressure gauge	
BVP Visual pressure indicator with automatic reset	
BVQ Visual pressure indicator with manual reset	

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

ADDITIONAL FEATURES

See page 268

TE Extension tube	
Sxx Extension tube	
T5 Filler plug M30x1.5	



MPF MPF182 - MPF192

Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1:									
MPF182 MPF192			Filter element with standard spigot									
			Configuration example 2:									
			MPF182	1	A	G1	1	A25	H	E	P01	
			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			Bypass valve		Execution			
N 10 bar				Axx	Mxx	Pxx	E 3 bar		P01 MP Filtri standard			
H 10 bar				•	-	-	B 1.75 bar		Pxx Customized			

FILTER ELEMENT

Element series and size			Configuration example 1: MF1801A25HBEP01									
MF180MF190Filter element with standard spigot			Configuration example 2: MF1902P10NV									
Element length		Size 180	Size 190									
1		•	-									
2		•	•									
Filtration rating (filter media)												
A03Inorganic microfiber3 µm			M25Wire mesh 25 µm									
A06Inorganic microfiber6 µm			M60Wire mesh 60 µm									
A10Inorganic microfiber10 µm			M90Wire mesh 90 µm									
A16Inorganic microfiber16 µm			P10Resin impregnated paper 10 µm									
A25Inorganic microfiber25 µm			P25Resin impregnated paper 25 µm									
Element Δp			Filter media			Seals		Bypass valve		Execution		
N10 bar			Axx-	Mxx•	Pxx•	BNBR		E3 bar		P01MP Filtri standard		
H10 bar			•	-	-	VFPM		-1.75 bar		PxxCustomized		

CLOGGING INDICATORS

See page 720-721

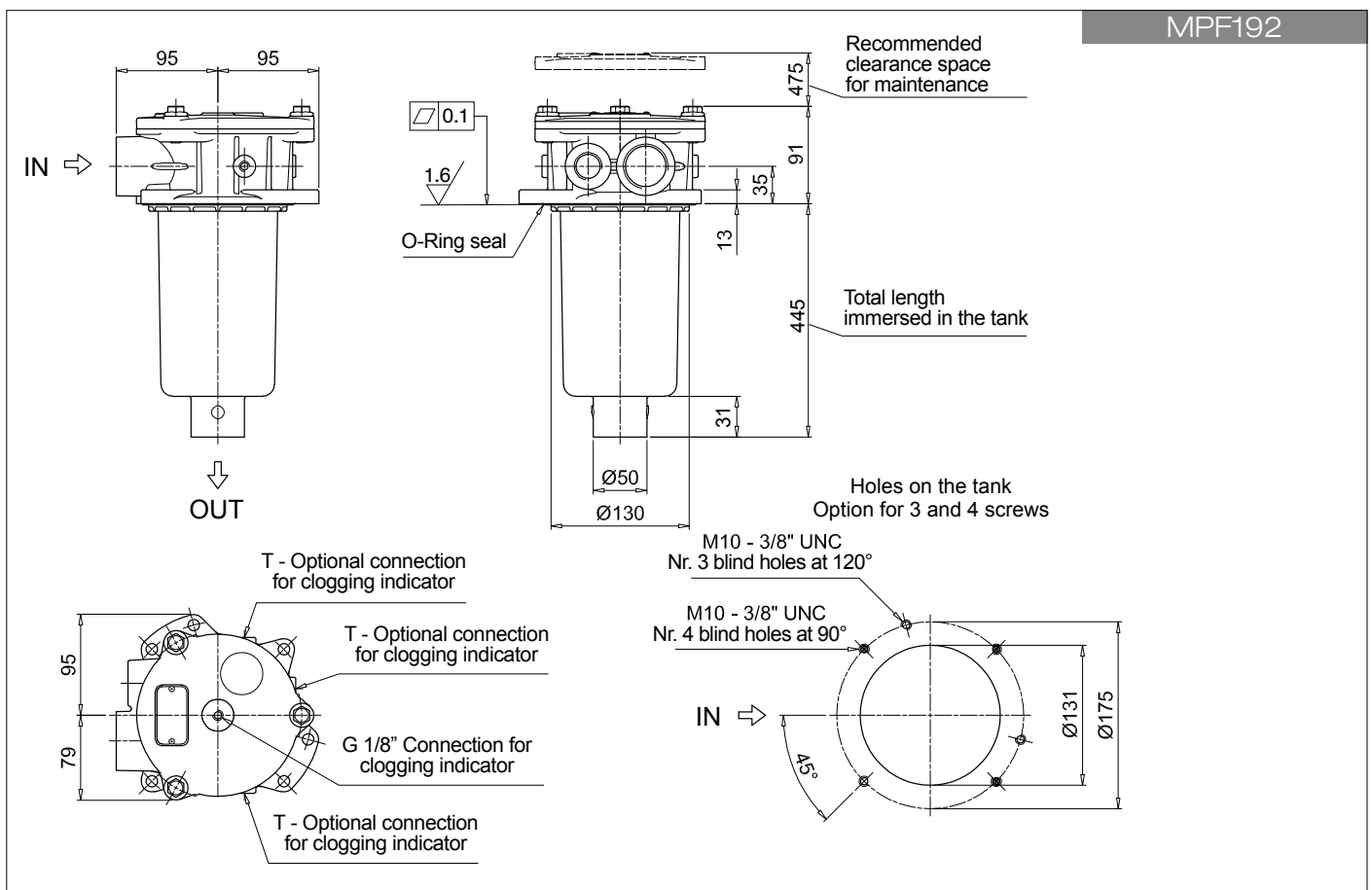
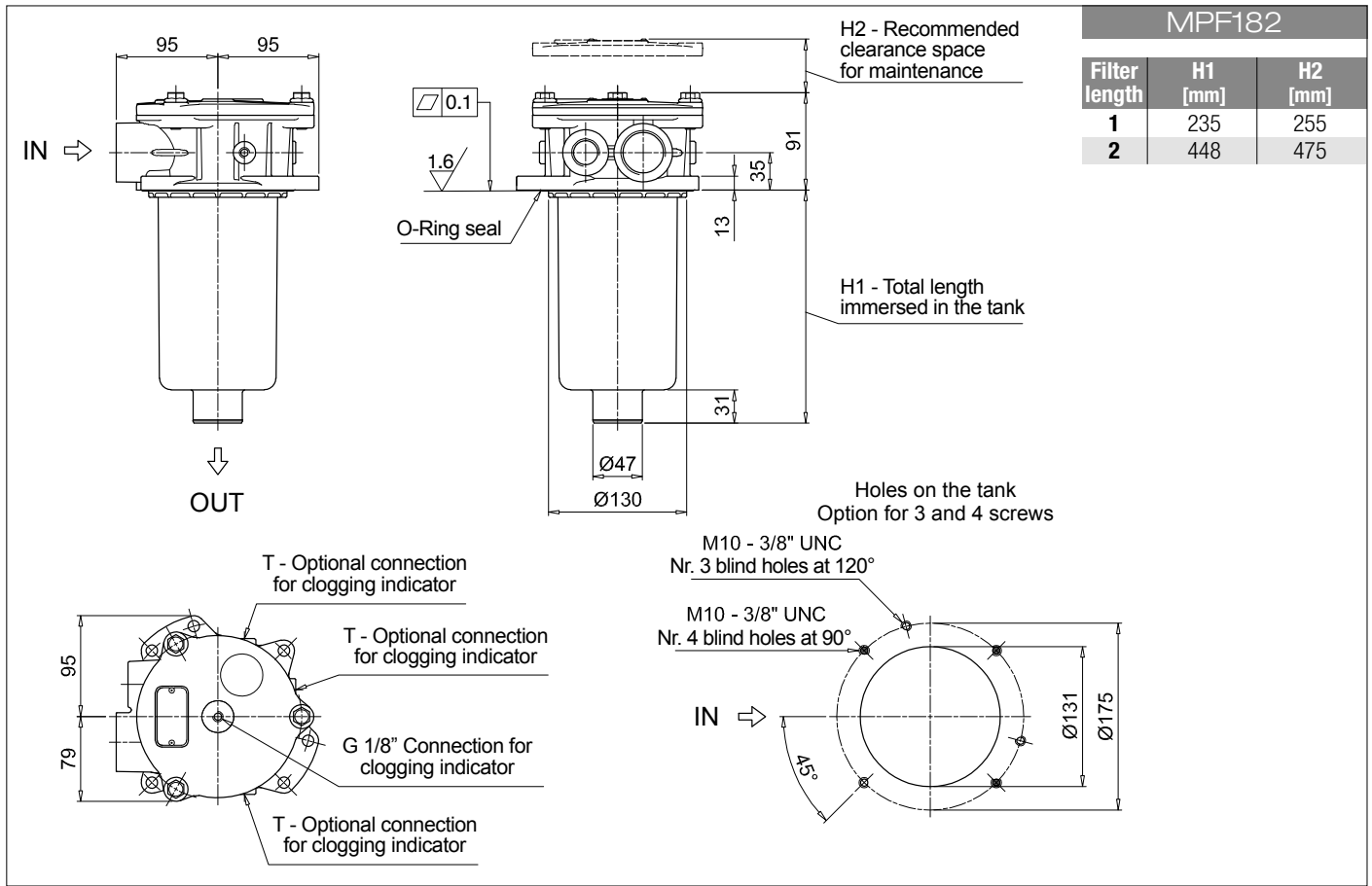
BVA	Axial pressure gauge
BVR	Radial pressure gauge
BVP	Visual pressure indicator with automatic reset
BVQ	Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

TE	Extension tube
Sxx	Extension tube
T5	Filler plug M30x1.5



MPF MPF184 - MPF194

Designation & Ordering code

COMPLETE FILTER

Series and size			Configuration example 1:									
MPF184 MPF194			Filter element with standard spigot									
			Configuration example 2:									
			MPF184	1	A	G1	A25	H	E	P01		
			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			
N 10 bar			- • -			E 3 bar			P01 MP Filtri standard			
H 10 bar			• - •			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			Bypass valve		Execution			
N	10 bar	-	Axx	Mxx	Pxx	B	NBR	E	3 bar	P01	MP Filtri standard
H	10 bar	•		-	-	V	FPM	-	1.75 bar	Pxx	Customized

CLOGGING INDICATORS

See page 720-721

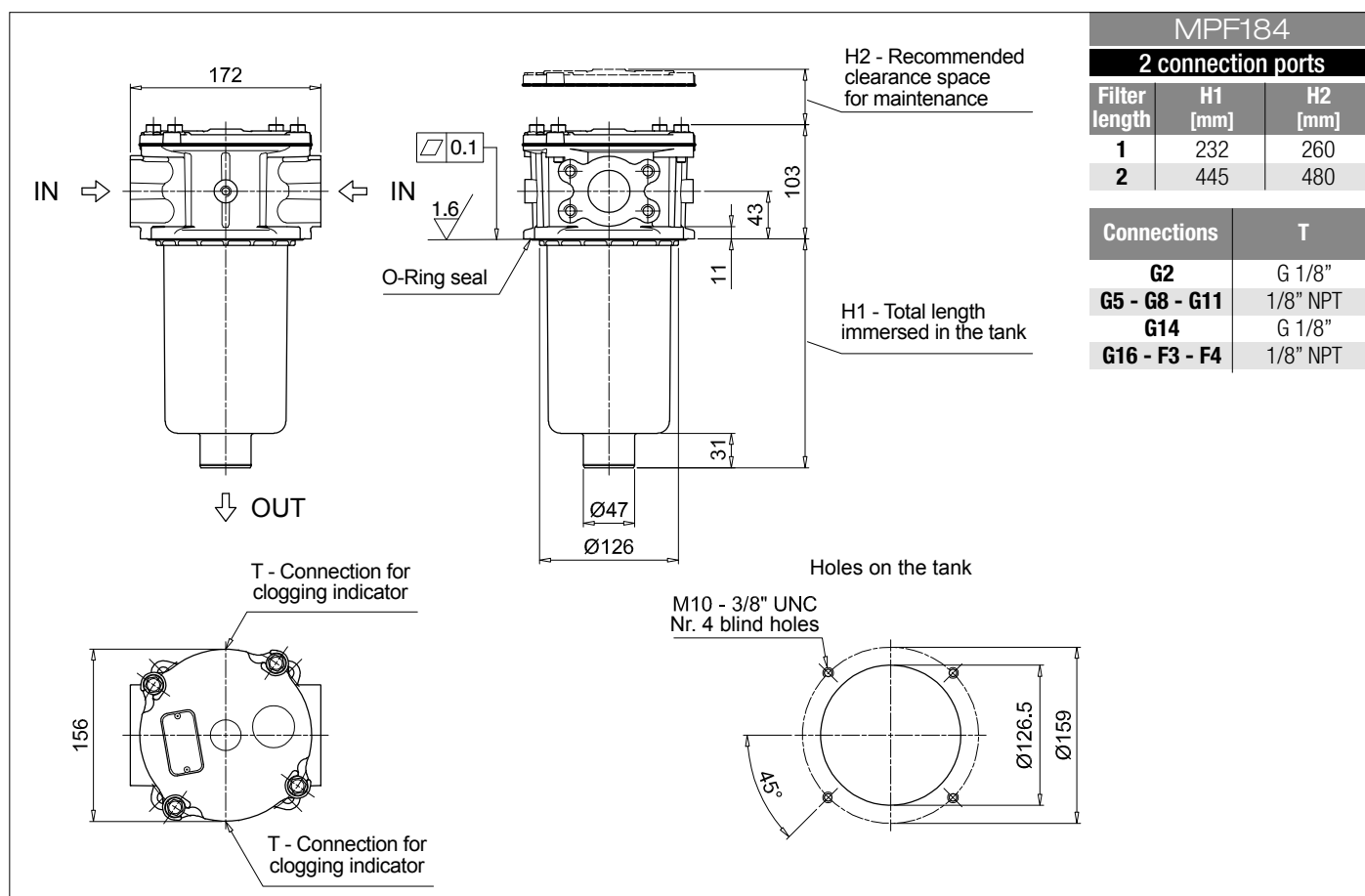
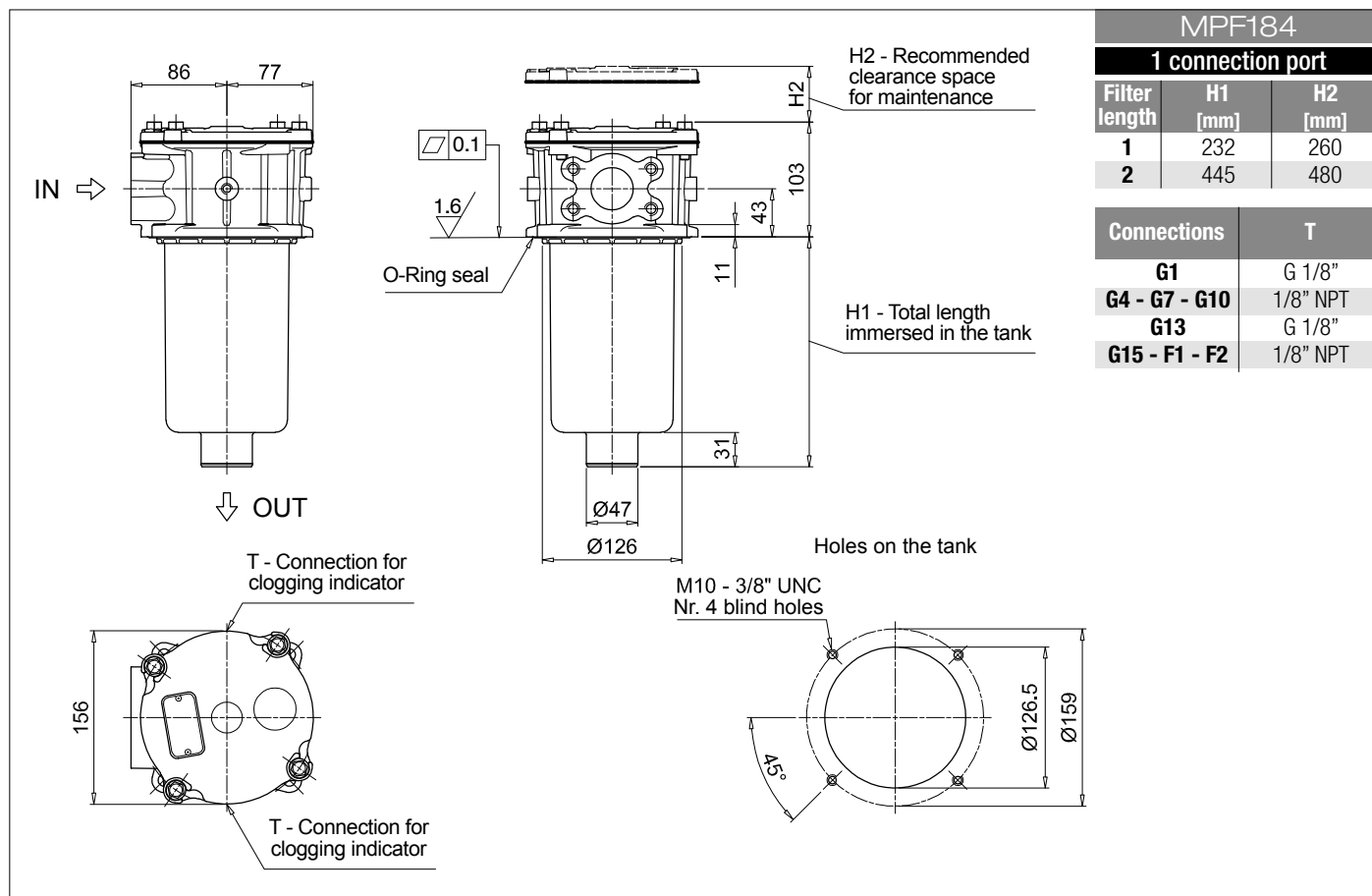
BVA Axial pressure gauge	
BVR Radial pressure gauge	
BVP Visual pressure indicator with automatic reset	
BVQ Visual pressure indicator with manual reset	

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

ADDITIONAL FEATURES

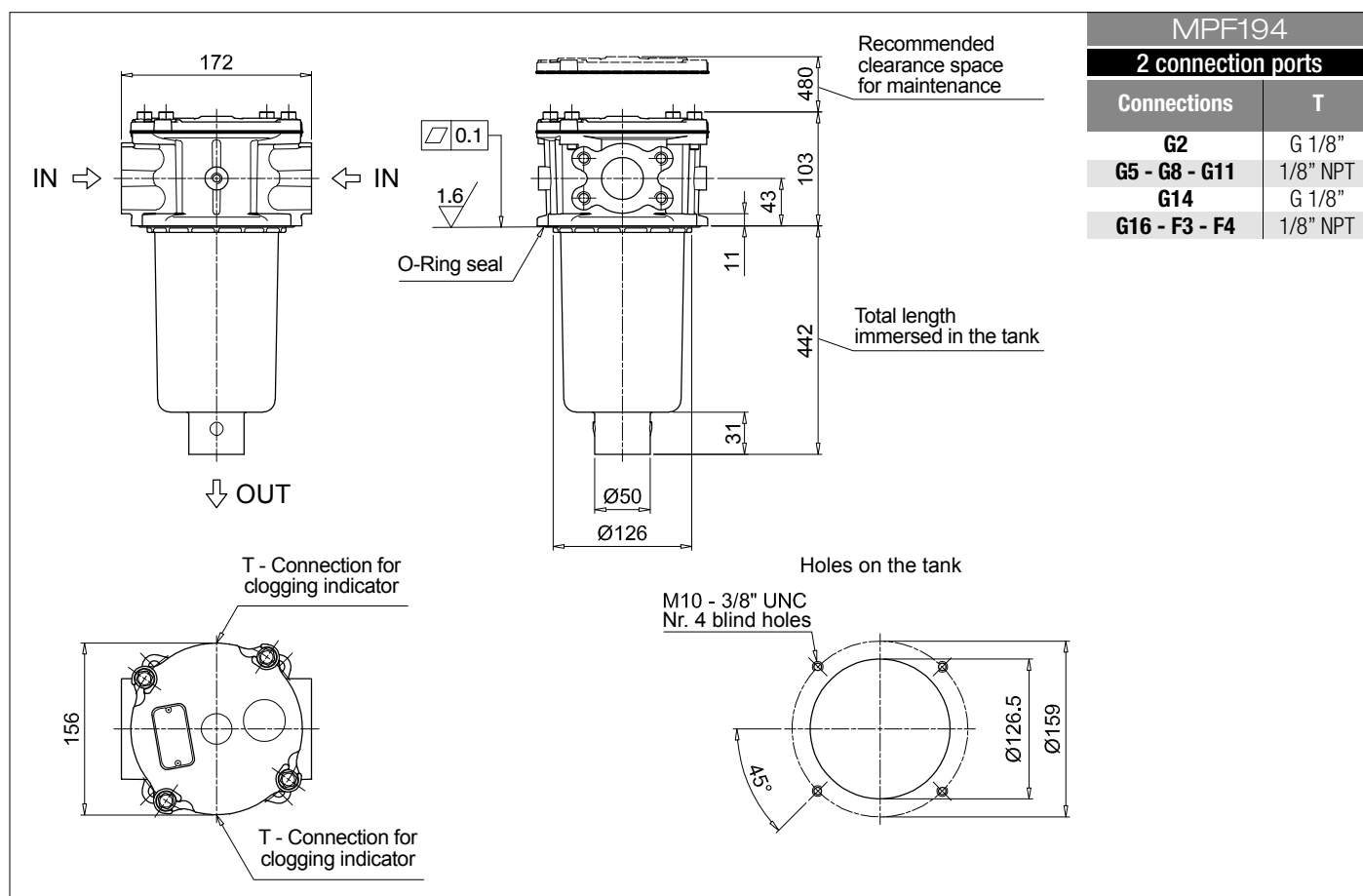
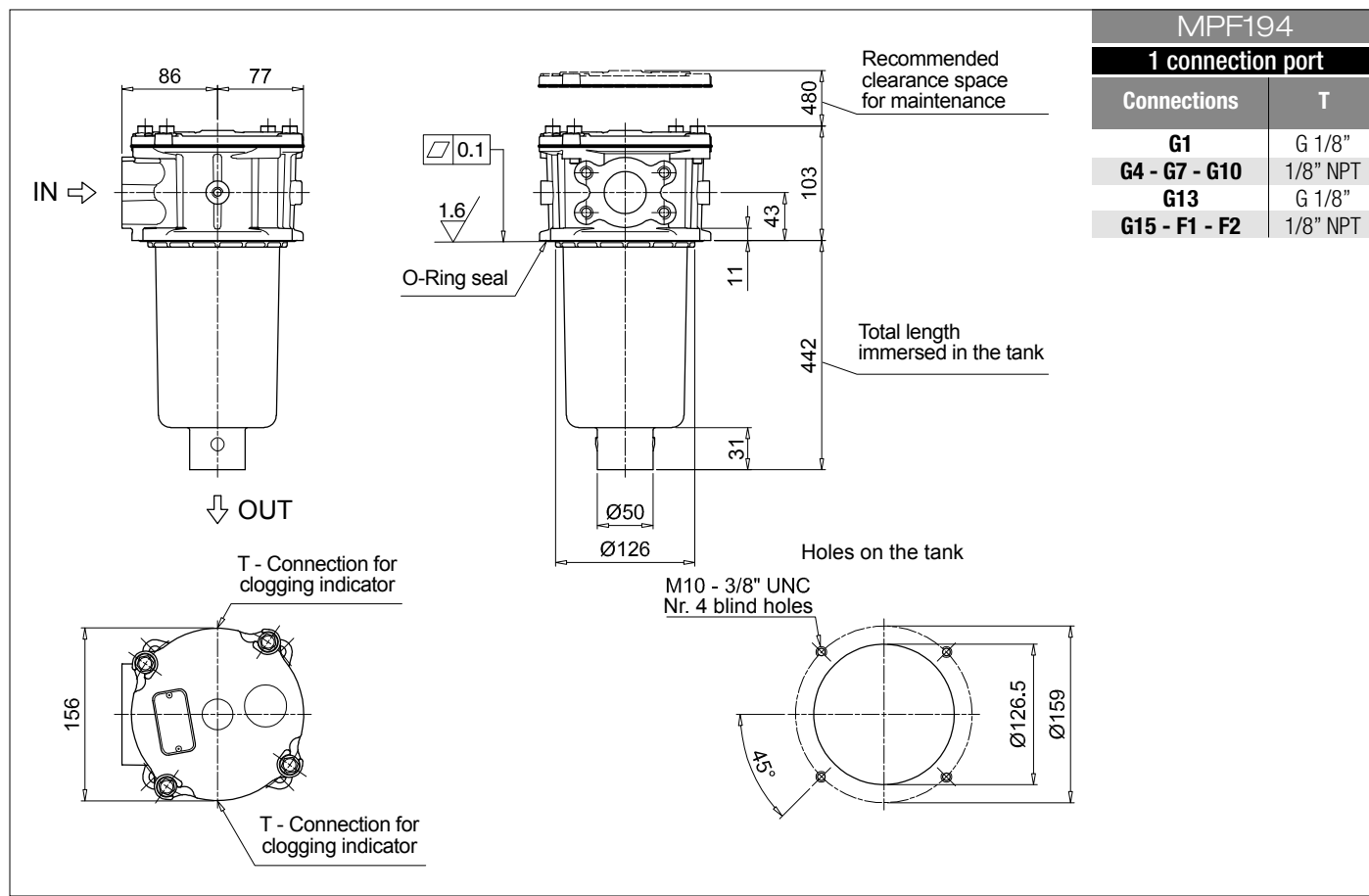
See page 268

TE Extension tube	
Sxx Extension tube	
T5 Filler plug M30x1.5	



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									
Element Δp		Filter media			Bypass valve		Execution			
N 10 bar		Axx	Mxx	Pxx	E 3 bar		P01	MP Filtri standard		
H 10 bar					B 1.75 bar		Pxx	Customized		

FILTER ELEMENT

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

CLOGGING INDICATORS

See page 720-721

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

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

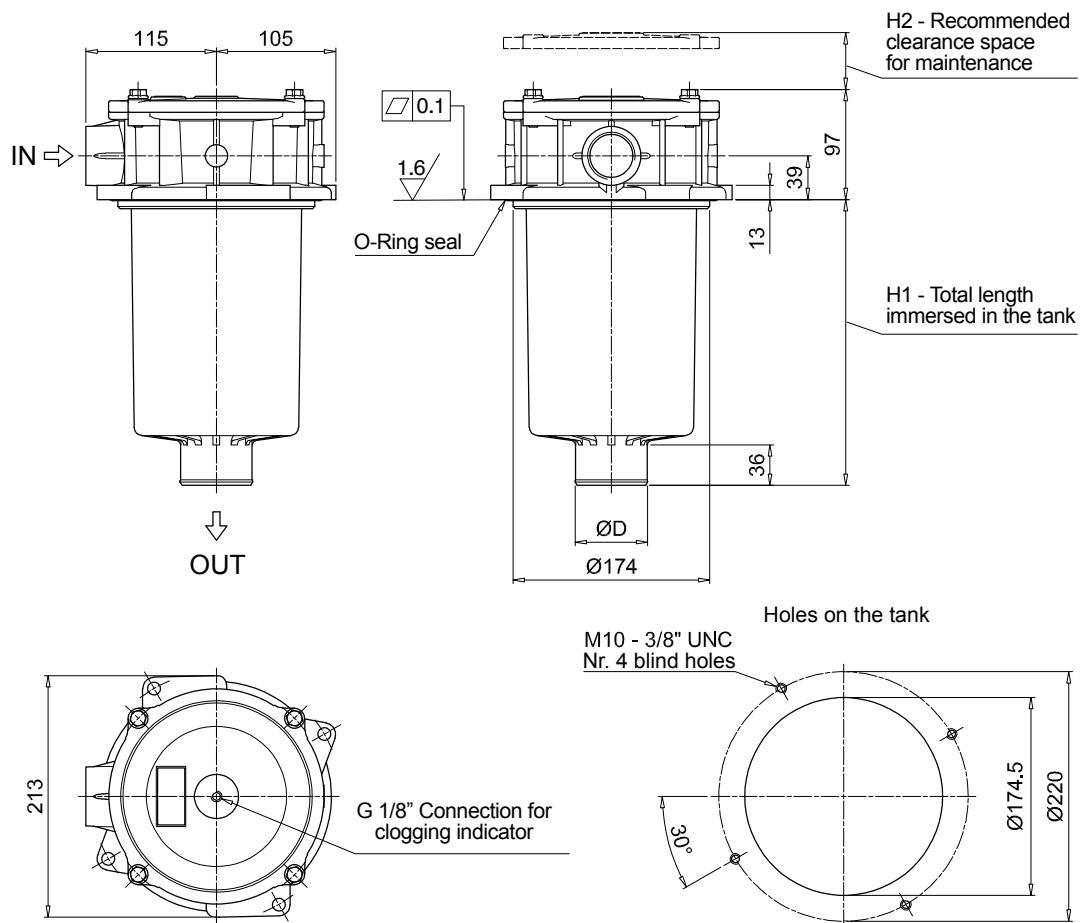
ADDITIONAL FEATURES

See page 268

Sxx Extension tube	
T5 Filler plug M30x1.5	

MPF400

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64



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

FILTER ELEMENT

Element series and size
MF400 Filter element with standard spigot

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

	Axx	Mxx	Pxx
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

CLOGGING INDICATORS

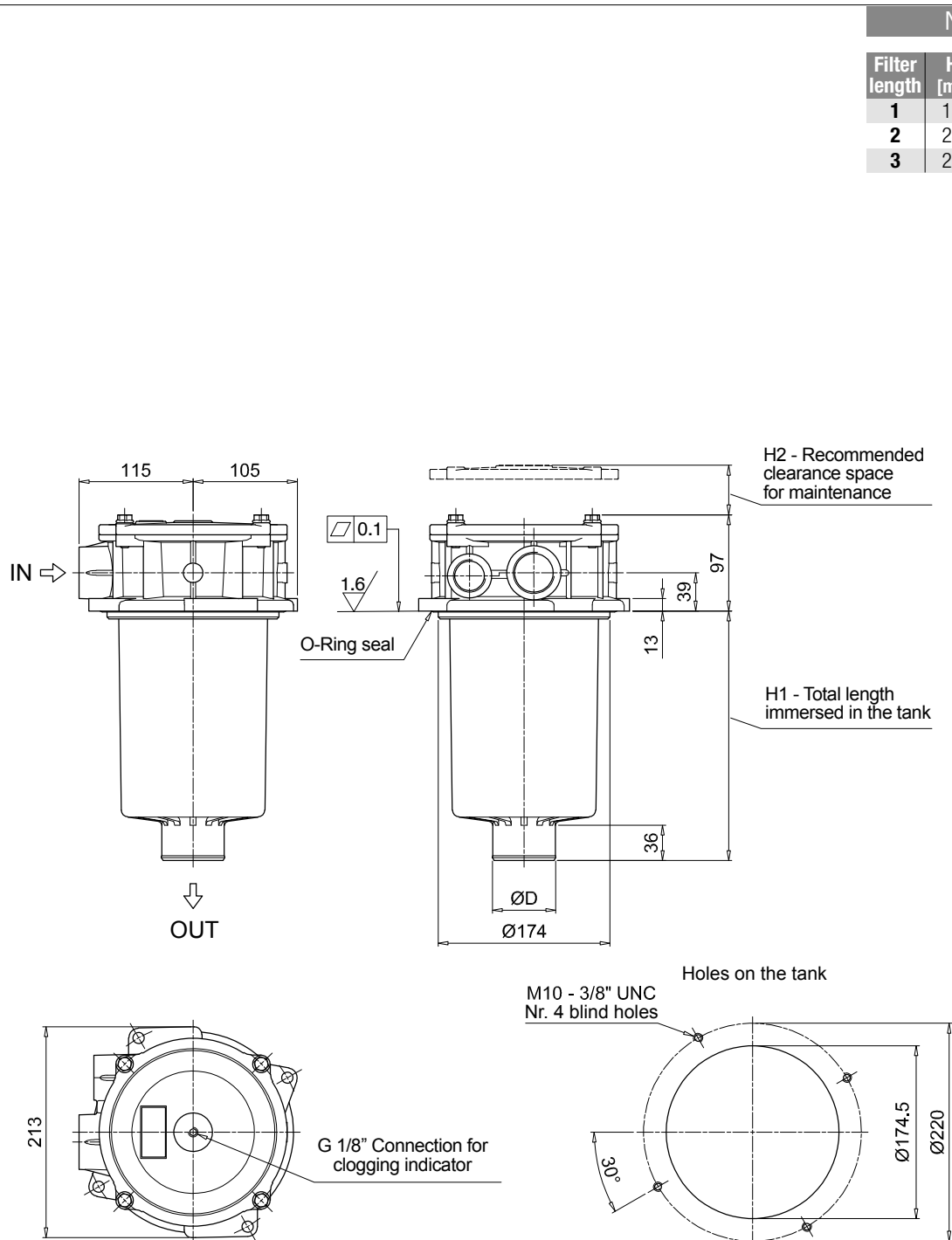
See page 720-721

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

ADDITIONAL FEATURES

See page 268

Sxx	Extension tube
T5	Filler plug M30x1.5



MPF MPF450 - MPF451 - MPF750

Designation & Ordering code

COMPLETE FILTER

Series and size				Configuration example 1:							
MPF450	MPF451	MPF750	Filter element with standard spigot	Configuration example 2:							
				MPF450	1	A	G1	A25	H	B	P01
				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/UNC	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			Bypass valve		Execution		
N	10 bar	-	•	•			E	3 bar	P01	MP Filtri standard	
H	10 bar	•	-	-			B	1.75 bar	Pxx	Customized	

FILTER ELEMENT

Element series and size				Configuration example 1:						
MF400	MF750	Filter element with standard spigot		Configuration example 2:						
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					

CLOGGING INDICATORS

See page 720-721

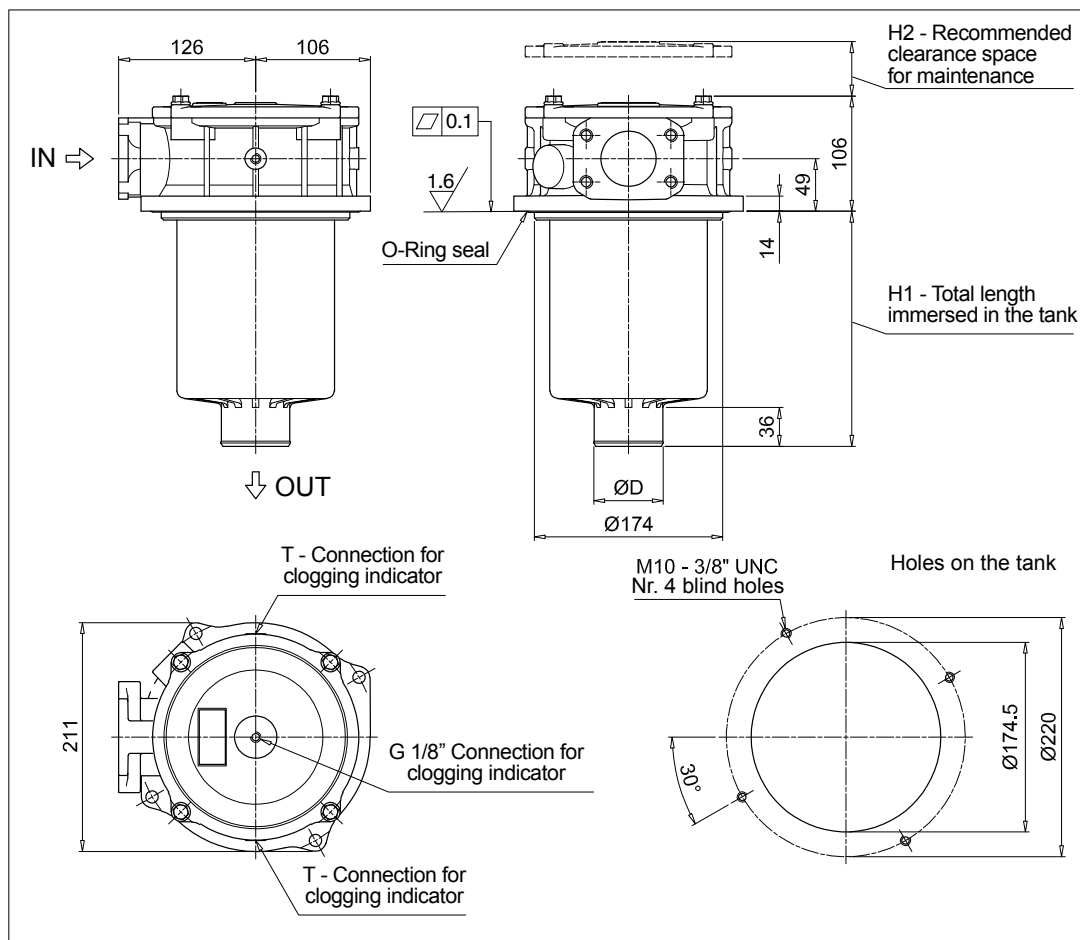
BVA	Axial pressure gauge
BVR	Radial pressure gauge
BVP	Visual pressure indicator with automatic reset
BVQ	Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

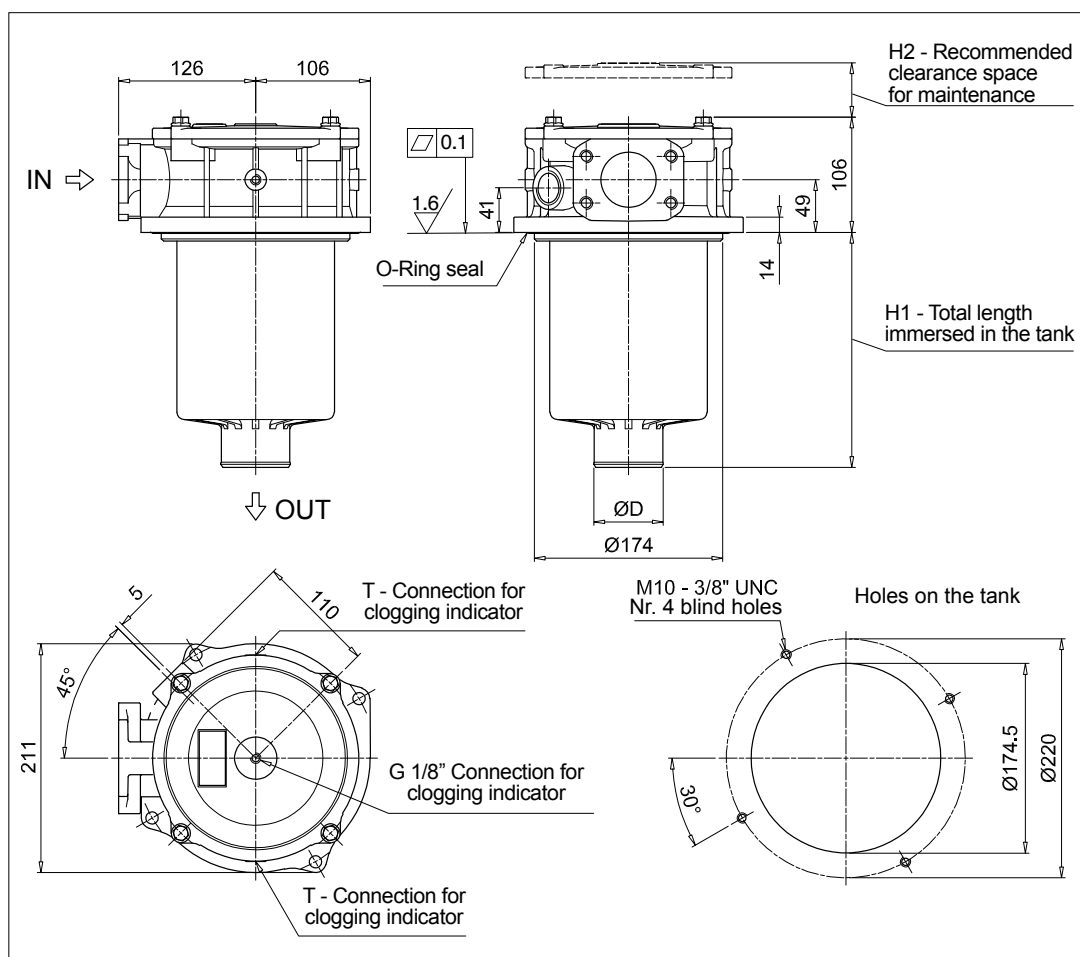
Sxx	Extension tube
T5	Filler plug M30x1.5



MPF450

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64

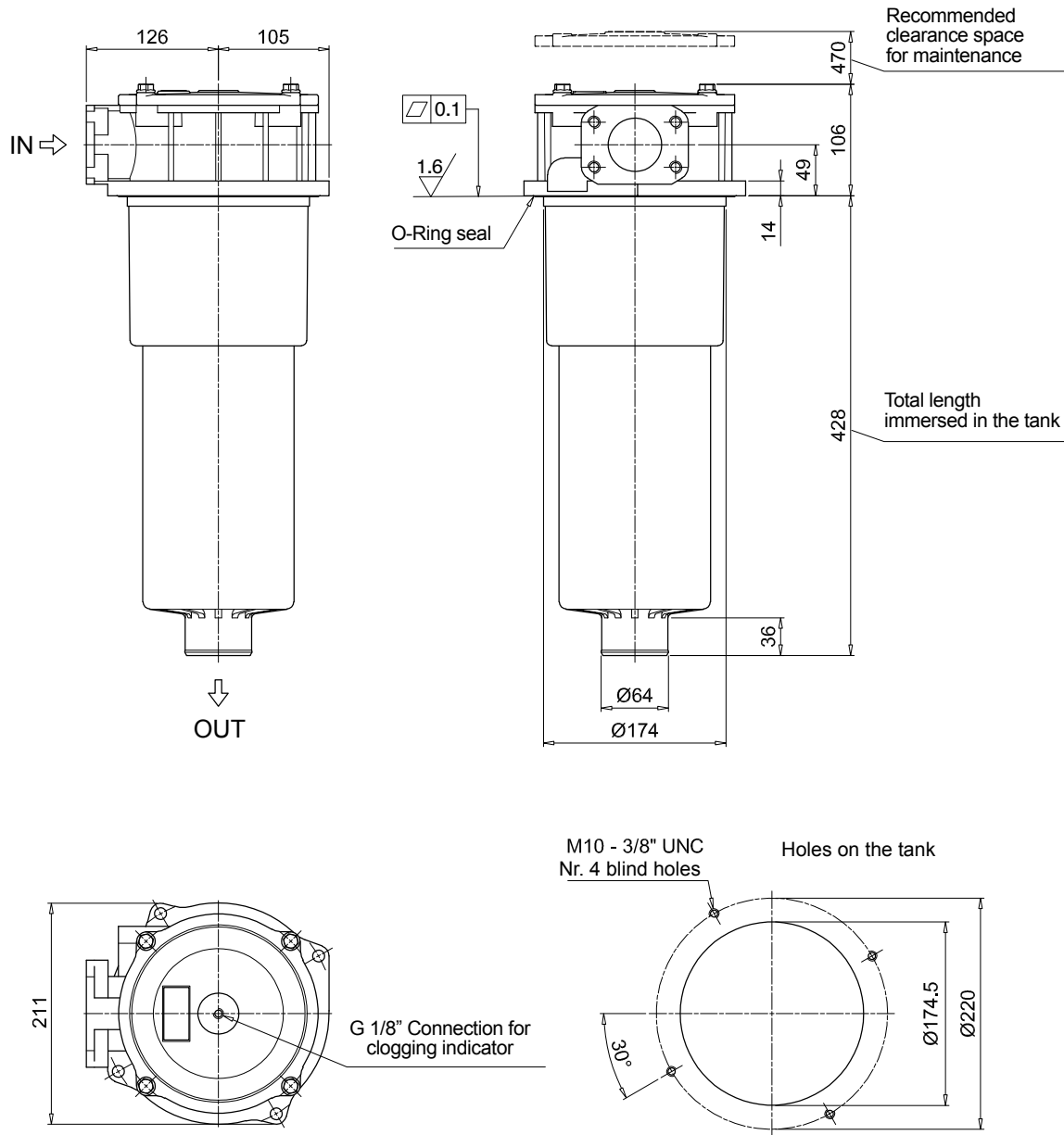
Connections	T
G1	G 1/8"
G4 - G7	1/8" NPT
F1	G 1/8"
F2	1/8" NPT



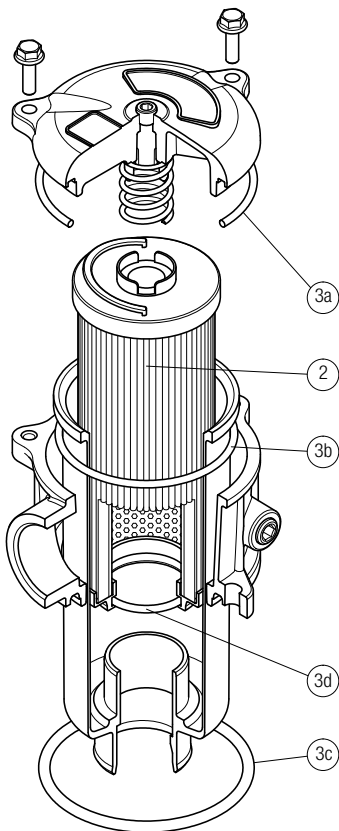
MPF451

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64

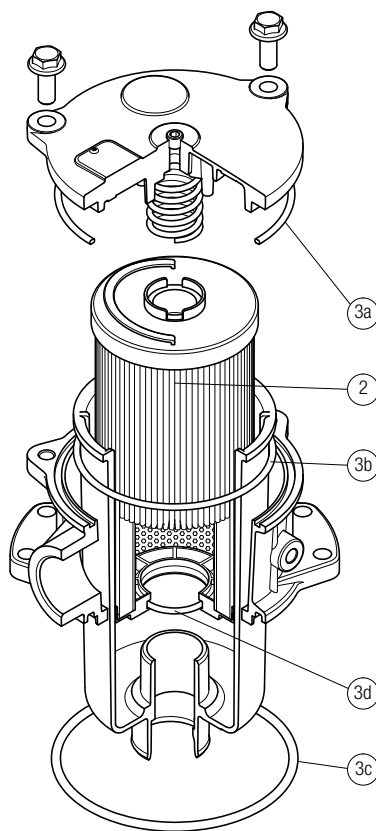
Connections	T
G1	G 1/8"
G4 - G7	1/8" NPT
F1	G 1/8"
F2	1/8" NPT



MPF 100



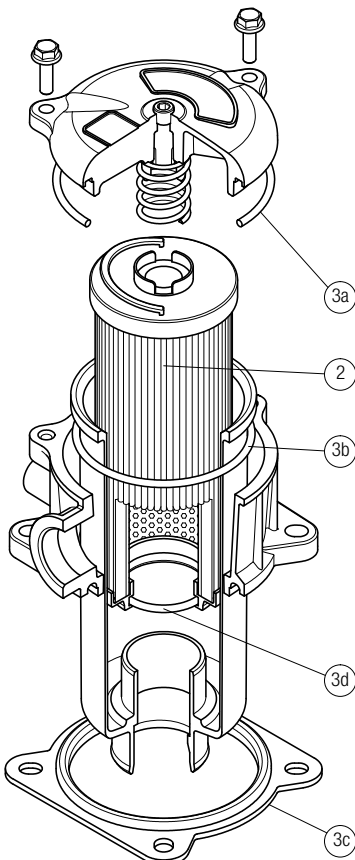
MPF 181



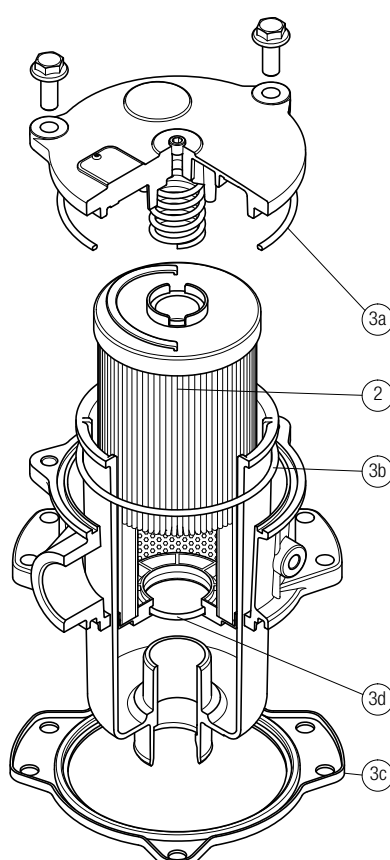
O-RING SEAL

Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
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.		Q.ty: 1 pc.	
		2		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, 3 or 6 fixing holes for installation, to suit a variety of reservoir surfaces
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Screw-in cover with a special shape, to allow the filter element replacement without the use of specific tools
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Integrated breather filter, to clean the air that moves into the reservoir as result of the oil level fluctuation
- Integrated breather filter with pressurization valve, to clean the air that moves into the reservoir as result of the oil level fluctuation and to guarantee the pressurization into the reservoir
- Visual, electrical and electronic clogging indicators

Common applications:

- Light industrial equipment
- Mobile application

Filter housing materials

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

Bypass valve

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

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

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.

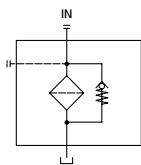
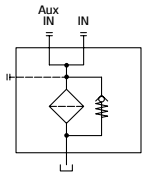
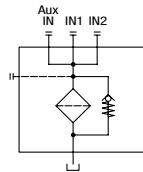
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

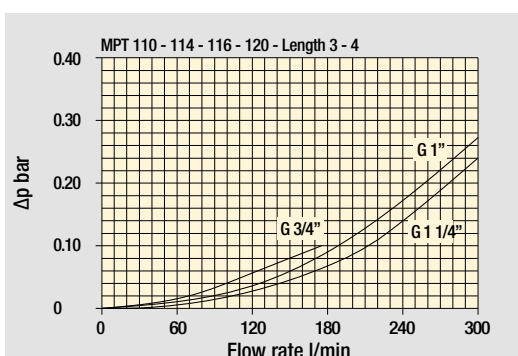
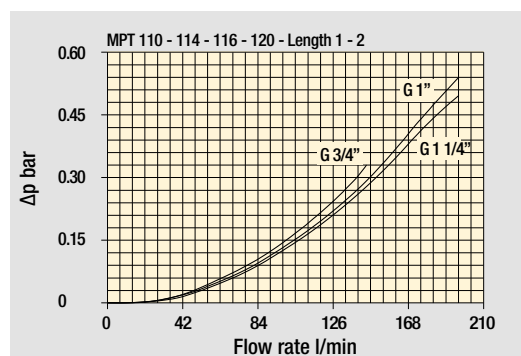
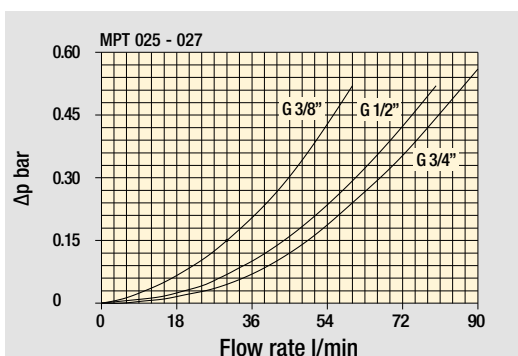
Hydraulic symbols

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

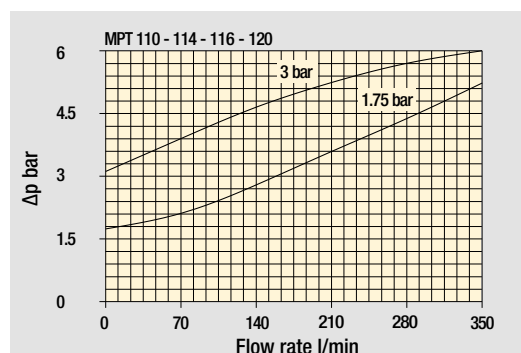
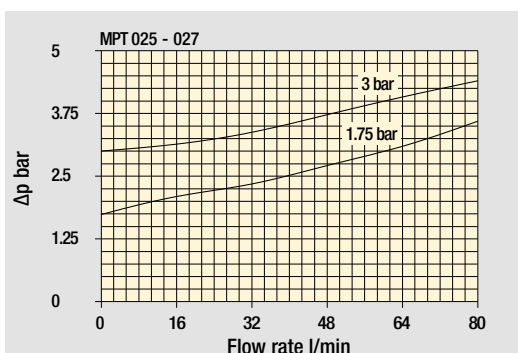




Pressure drop

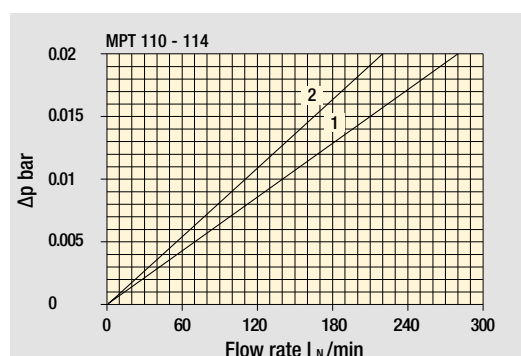
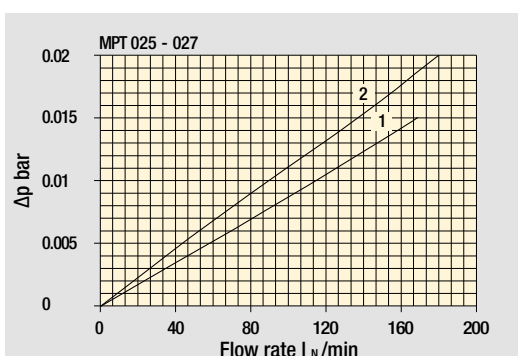
Filter housings Δp pressure drop



Bypass valve pressure drop



Air breather pressure drop



- 1 ☐ With air breather 10 μ m
- 2 ☐ 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 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		Configuration example 1:									
MPT025	MPT027	Filter element with standard spigot									
Length		Configuration example 2:									
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									
		Axx	Mxx	Pxx							
A	NBR	•	•	•							
V	FPM	•	•	•							
W	NBR head anodized	•	•	-							
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		Execution									
E	3 bar	P01 MP Filtri standard									
B	1.75 bar	Pxx Customized									

FILTER ELEMENT

Element series and size				Configuration example 1:		MF020	1	A10	H	B	E	P01
MF020 Filter element with standard spigot				Configuration example 2:		MF020	3	A03	N	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			Seals		Bypass valve		Execution			
N	10 bar	Axx	Mxx	Pxx	B	NBR	E	3 bar	P01	MP Filtri standard		
H	10 bar				V	FPM	-	1.75 bar	Pxx	Customized		

CLOGGING INDICATORS

See page 720-721

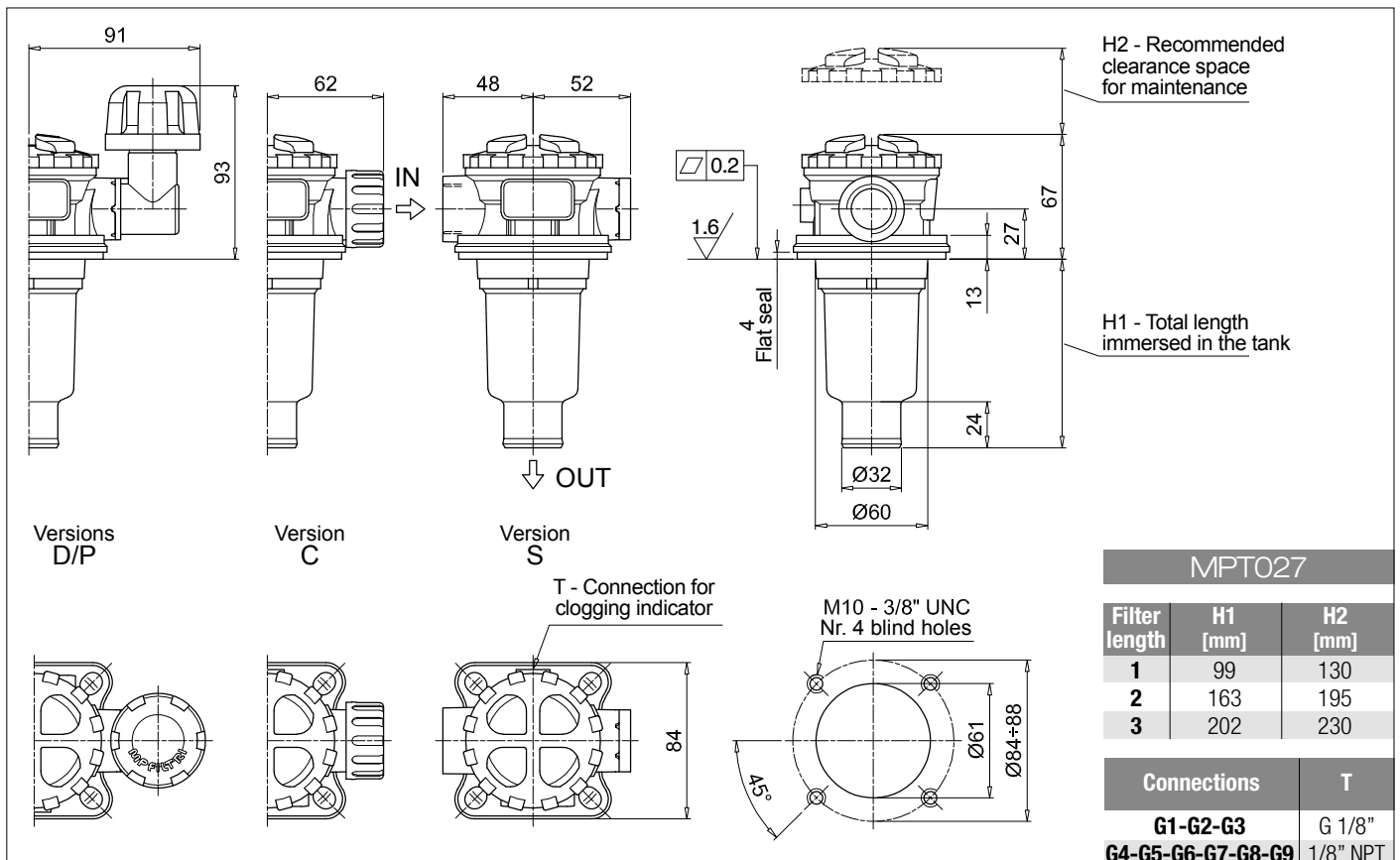
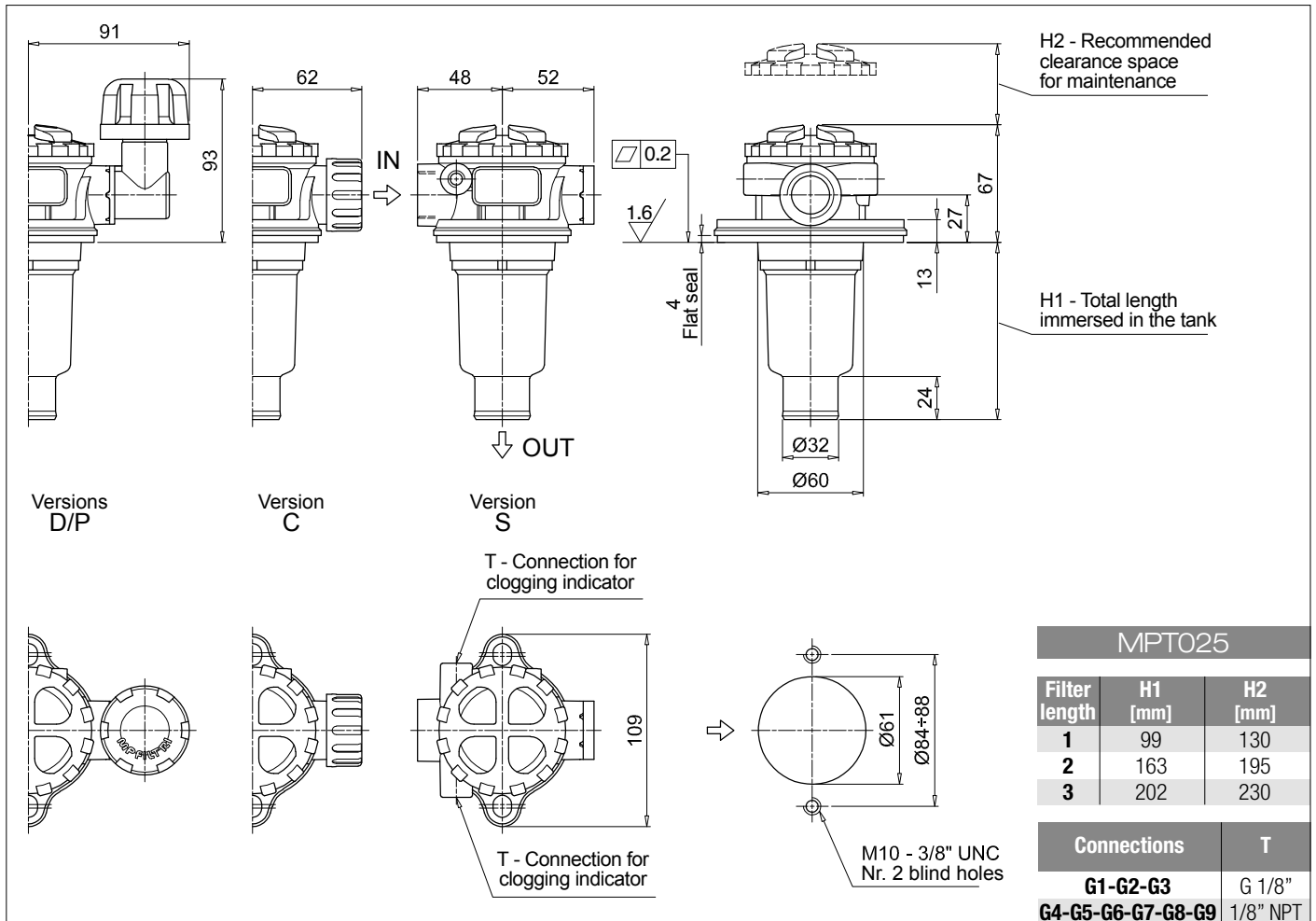
BVA	Axial pressure gauge
BVR	Radial pressure gauge
BVP	Visual pressure indicator with automatic reset
BVQ	Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

TE	Extension tube
DPT	Dipstick



Designation & Ordering code

COMPLETE FILTER

Series and size				Configuration example 1:				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																
				Filtration rating												
Seals and treatments				Axx	Mxx	Pxx										
A NBR				•	•	•										
V FPM				•	•	•										
W NBR head anodized				•	•	-										
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"				G8 SAE 16 - 1 5/16" - 12 UN												
G4 3/4" NPT				G9 SAE 20 - 1 5/8" - 12 UN												
G5 1" NPT		3/8" NPT	1/2" 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:									
MF100 Filter element with standard spigot				Configuration example 2:									
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				Seals		Bypass valve		Execution	
N 10 bar				Axx	Mxx	Pxx	B NBR		E 3 bar		P01 MP Filtri standard		
H 10 bar							V FPM		- 1.75 bar		Pxx Customized		

CLOGGING INDICATORS

See page 720-721

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

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

ADDITIONAL FEATURES

See page 268

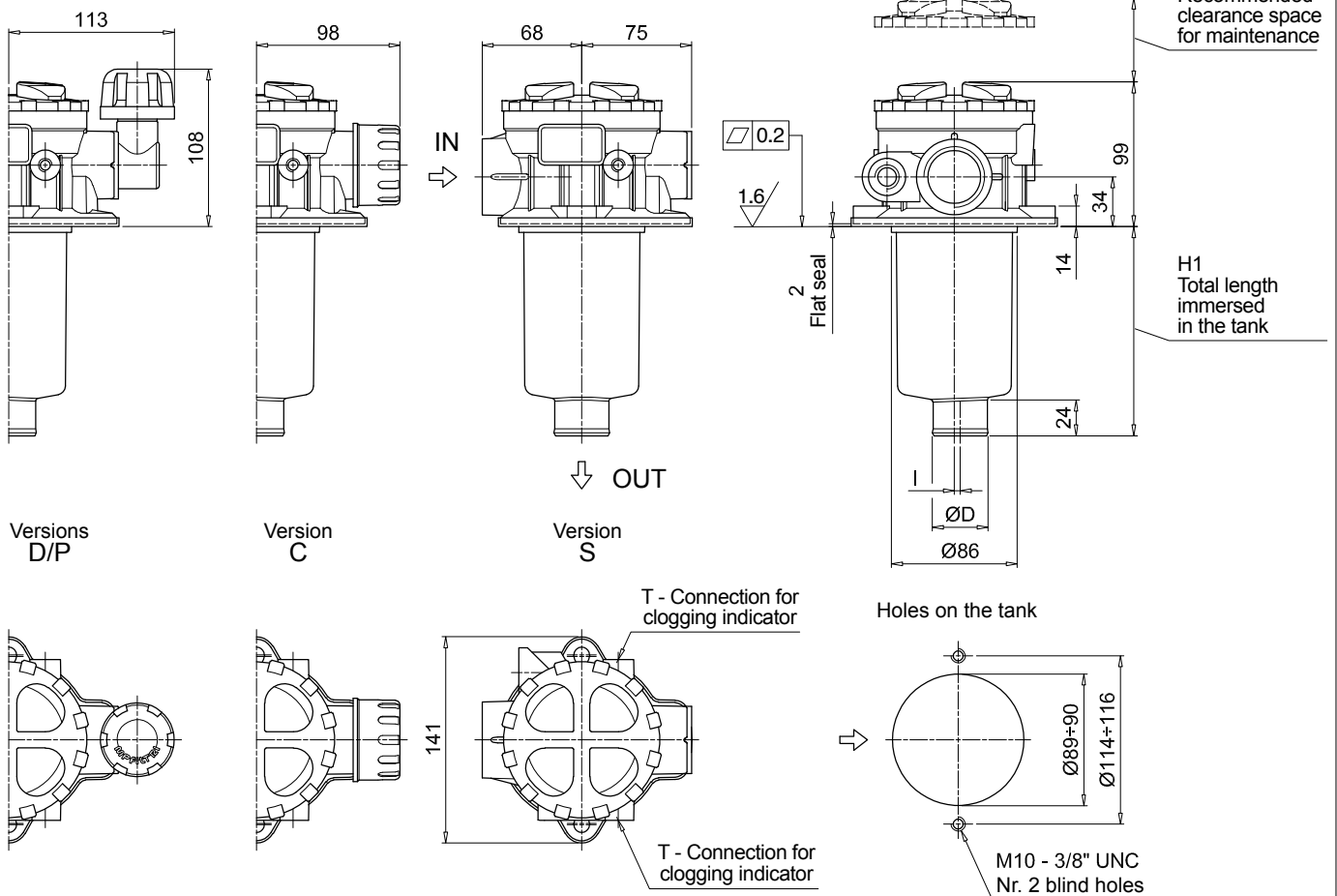
TE Extension tube	
DFS Diffuser with fast lock connection	

DPT Dipstick	
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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



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				• • -							
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:						4	A10	H	B	E	P01
MF100 Filter element with standard spigot	Configuration example 1:						3	A03	N	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						Seals	Bypass valve	Execution			
N 10 bar	Axx	Mxx	Pxx				B NBR	E 3 bar	P01 MP Filtri standard			
H 10 bar	-	•	•				V FPM	- 1.75 bar	Pxx Customized			

CLOGGING INDICATORS

See page 720-721

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

ADDITIONAL FEATURES

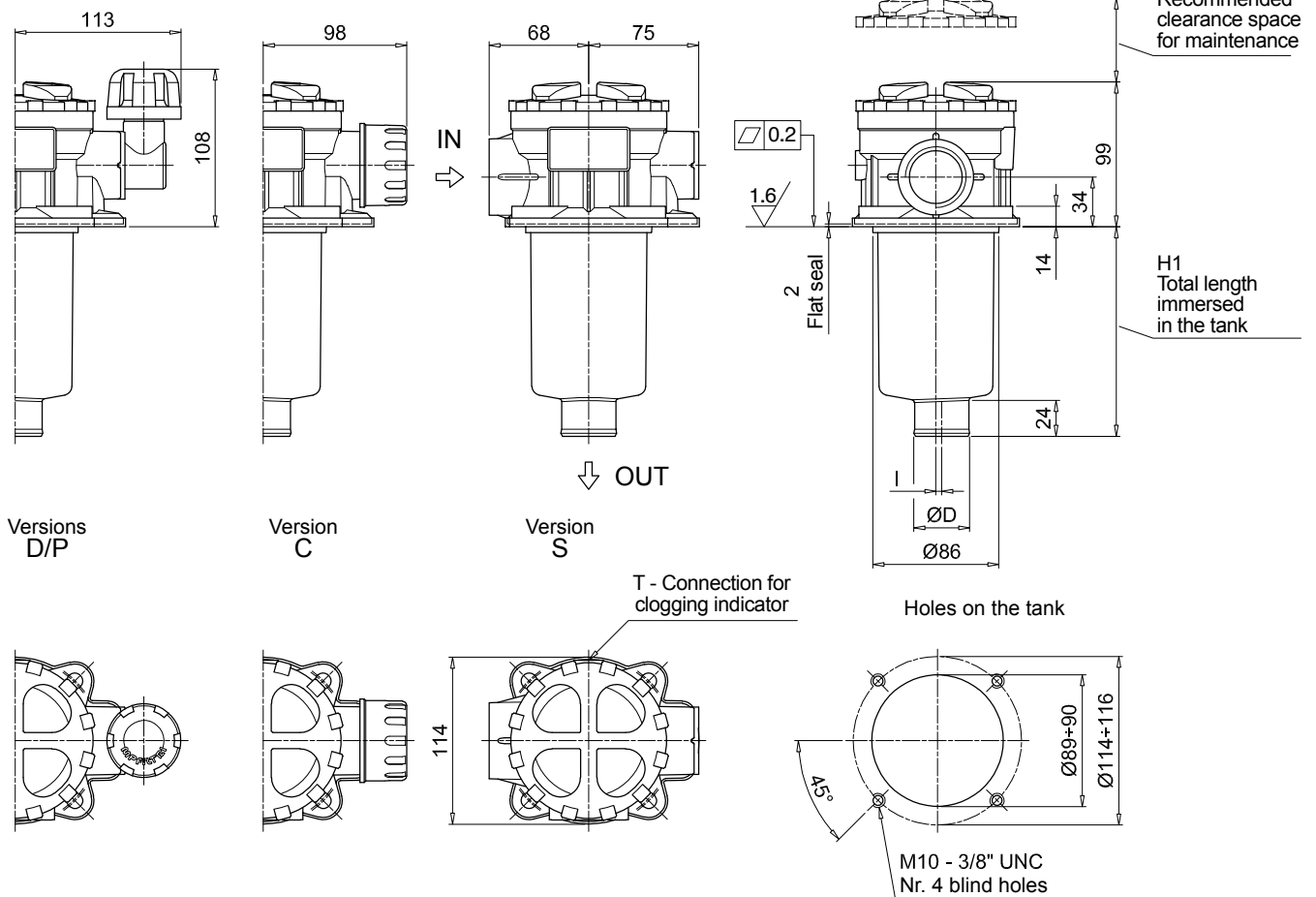
See page 268

TE	Extension tube	DPT	Dipstick
DFS	Diffuser with fast lock connection		

MPT114

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

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



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		•	•	-						
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						

Element series and size

MF100	Filter element with standard spigot
--------------	-------------------------------------

Configuration example 2: MF100

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

Configuration example 1: MF100

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
-	1.75 bar

Execution

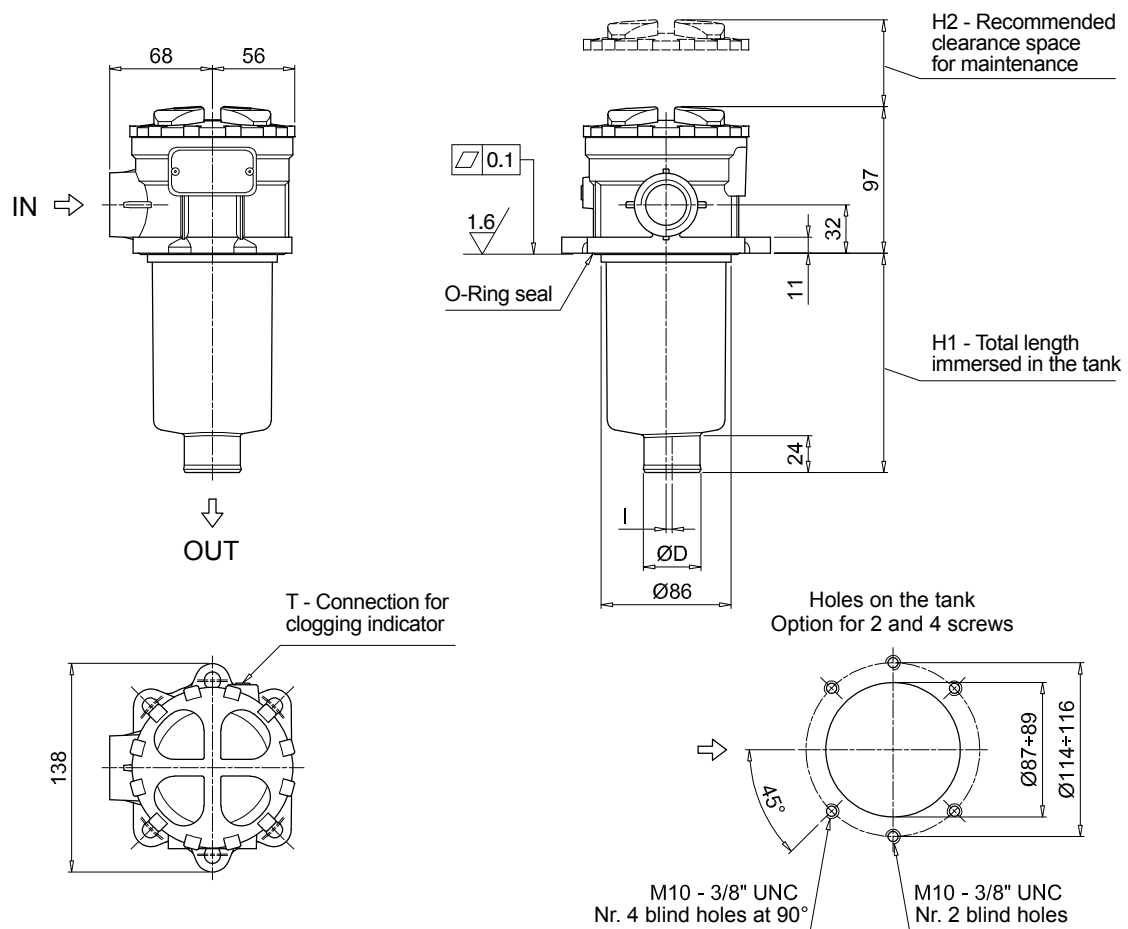
P01	MP Filtri standard
Pxx	Customized

See page 720-721

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

See page 268

TE	Extension tube	DPT	Dipstick
DFS	Diffuser with fast lock connection		



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											
G7	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN		SAE 6 - 9/16" - 18 UNF		SAE 8 - 3/4" - 16 UNF							
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		•	-	-						
		Seals			Bypass valve			Execution		
		B NBR			E 3 bar			P01 MP Filtri standard		
		V FPM			- 1.75 bar			Pxx Customized		

CLOGGING INDICATORS

See page 720-721

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

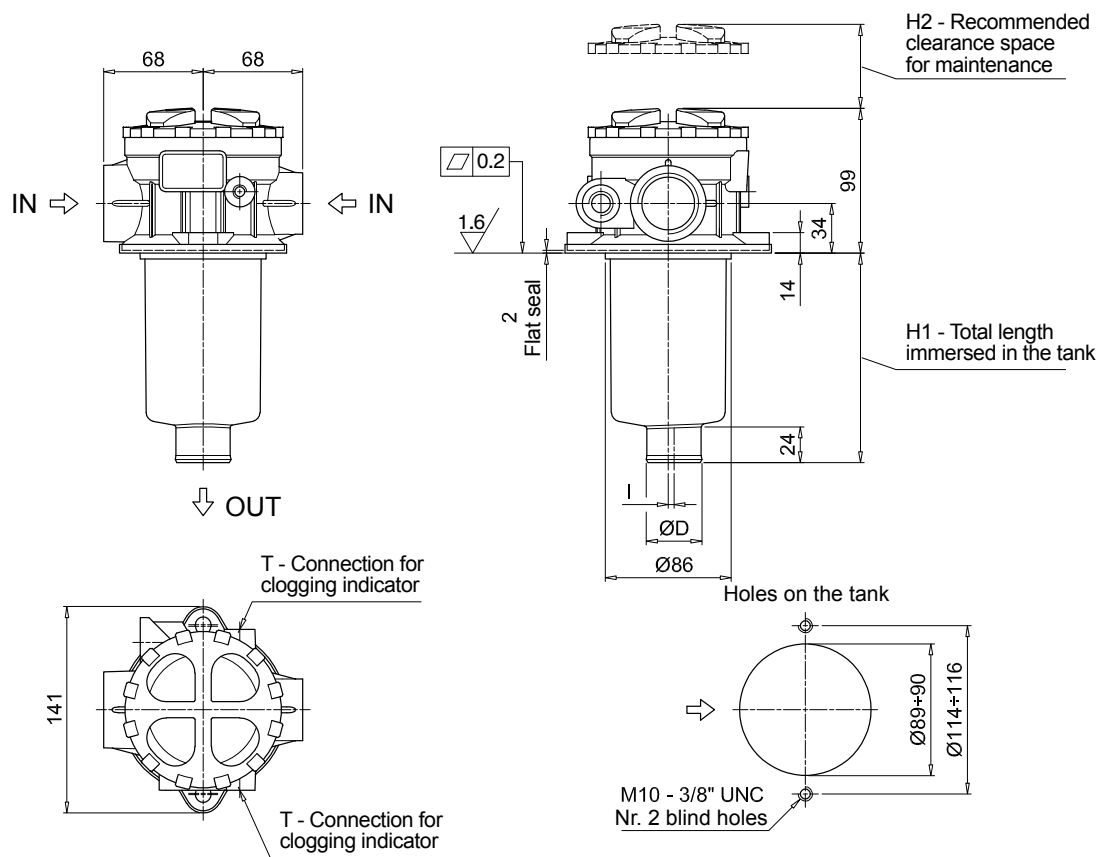
BEA Electrical pressure indicator	
BEM Electrical pressure indicator	
BLA Electrical / visual pressure indicator	

ADDITIONAL FEATURES

See page 268

TE Extension tube	
DFS Diffuser with fast lock connection	

DPT Dipstick	
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MPT120

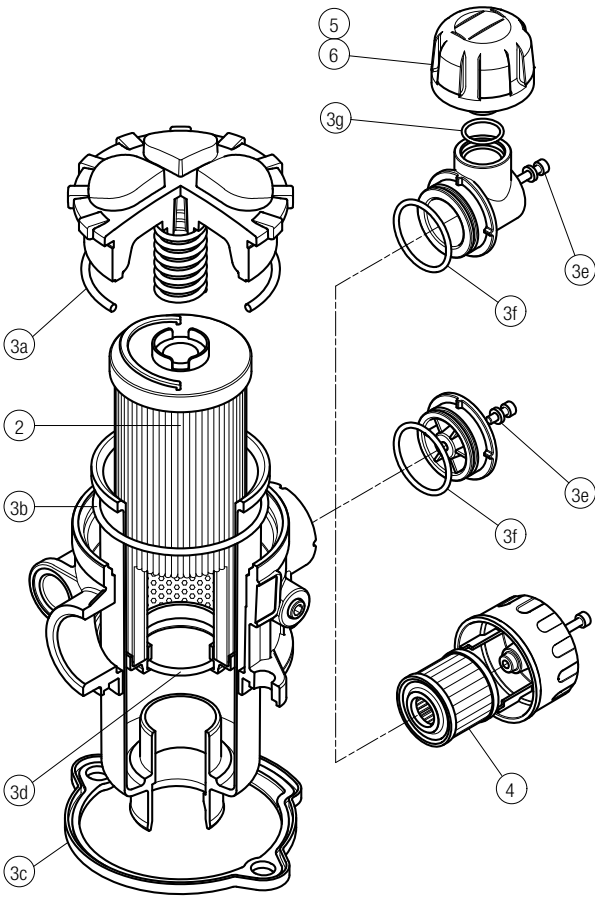
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	97	120	38	4
2	147	170	38	4
3	222	250	47	-
4	324	350	47	2.5

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

MPT SPARE PARTS

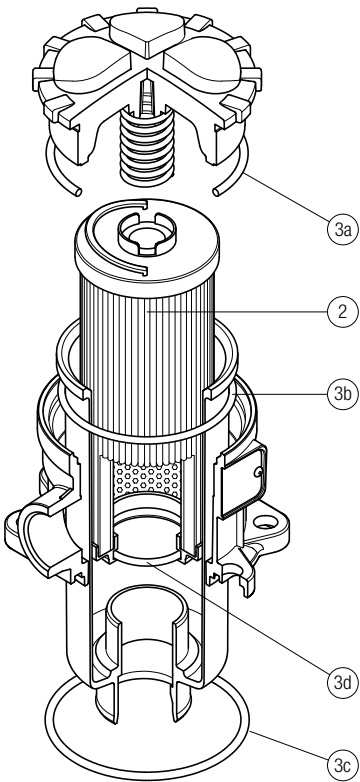
Order number for spare parts

MPT 025 - 027 - 110



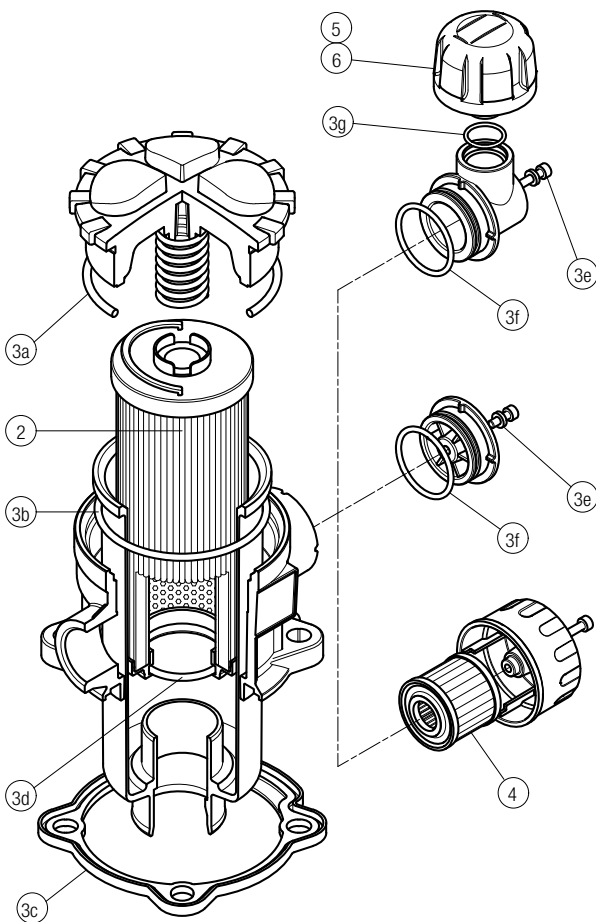
Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Item:		2		3 (3a ÷ 3g)	4	5
Filter series	Filter element	Seal Kit code number		C	D	P
		NBR	FPM			
MPT 025	See order table	02050557	02050558	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 027		02050559	02050560	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 110		02050561	02050562	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

MPT 116

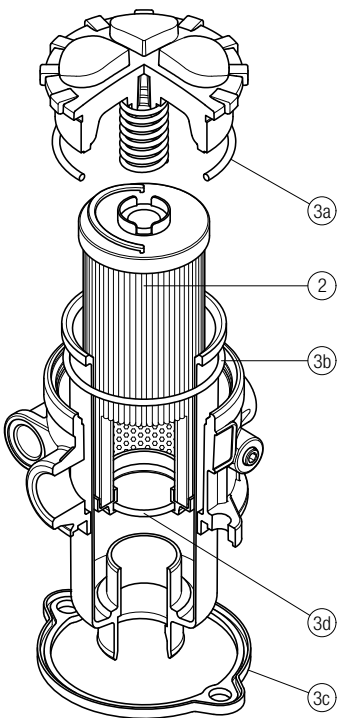


Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:		3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPT 116	See order table	02050466	02050467

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.	
		2		3 (3a ÷ 3g)		4		5		6	
Filter series	Filter element	Seal Kit code number		NBR		FPM		Air breather filter element - version:			
								C		D	
										P	
MPT 114	See order table	02050580	02050581	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01					

Item:		Q.ty: 1 pc.		Q.ty: 1 pc.	
		2		3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number			
MPT 120	See order table	02050563	02050564		

MFB series

BOWL ASSEMBLY

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



Return filter Bowl assembly

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

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

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

Treaded or flanged covers can be provided.

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

Available features:

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

Common applications:

Mobile machines

Bowl assembly materials

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

- Bowl: Polyamide

Filter element materials

- Caps: Polyamide
- Spring: Spring steel

Bypass valve

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

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	-	-

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
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.

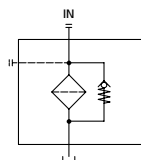
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

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

Please, contact our Sales Department for further additional information.

Hydraulic symbols

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



MFB MFB020 - MFB030 - MFB100 - MFB180 - MFB190

Designation & Ordering code

COMPLETE FILTER

Series and size

MFB020 | MFB030 | MFB100 | MFB180 | MFB190

Filter element with private spigot

Length

MFB020MFB030MFB100MFB180MFB190

1••••-

2•-•••

3•-•- -

4- -•- -

Seals

A NBR

V FPM

Version

MFB020MFB030MFB100MFB180MFB190

1 Without cover•••••

2 With flanged cover type MPF-••••

3 With threaded cover type MPT•-•- -

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

AxxMxxPxx

N 10 bar-••

H 10 bar•- -

Configuration example 1:

MFB1001AV2A10HP01

Configuration example 2:

MFB1802VM25NBP01

Bypass valve

E 3 bar

B 1.75 bar

Execution

P01 MP Filtri standard

Pxx Customized

FILTER ELEMENT

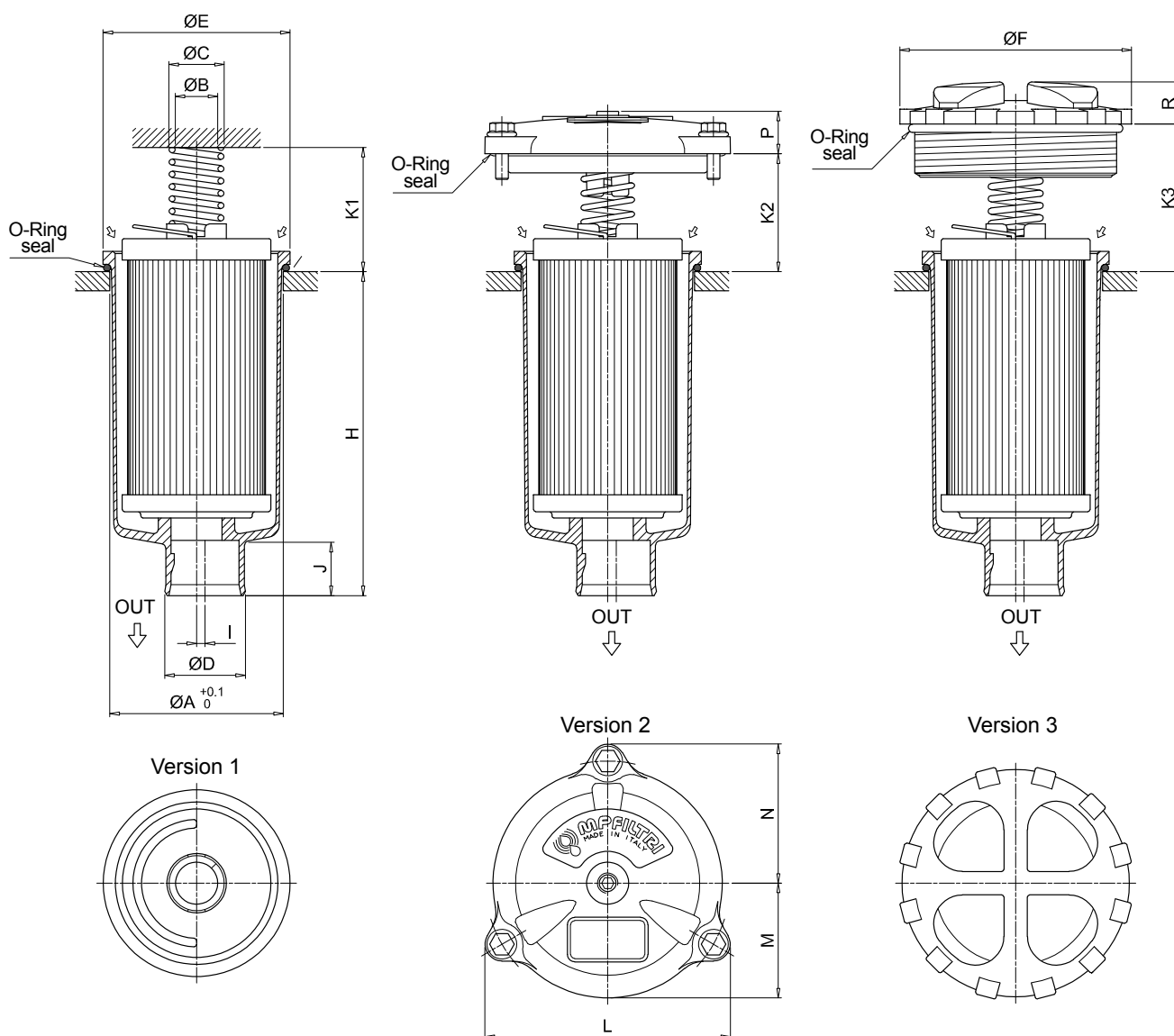
Element series and size						Configuration example 1:						
MF020	MF030	MF100	MF180	MF190		MF180	1	A10	H	B	E	P01
Filter element with private spigot						Configuration example 2:						
Element length	MF020	MF030	MF100	MF180	MF190		2	M25	N	V		P01
1	•	•	•	•	-							
2	•	-	•	•	•							
3	•	-	•	-	-							
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							
Filter media												
Element Δp			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				

ADDITIONAL FEATURES

See page 268

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

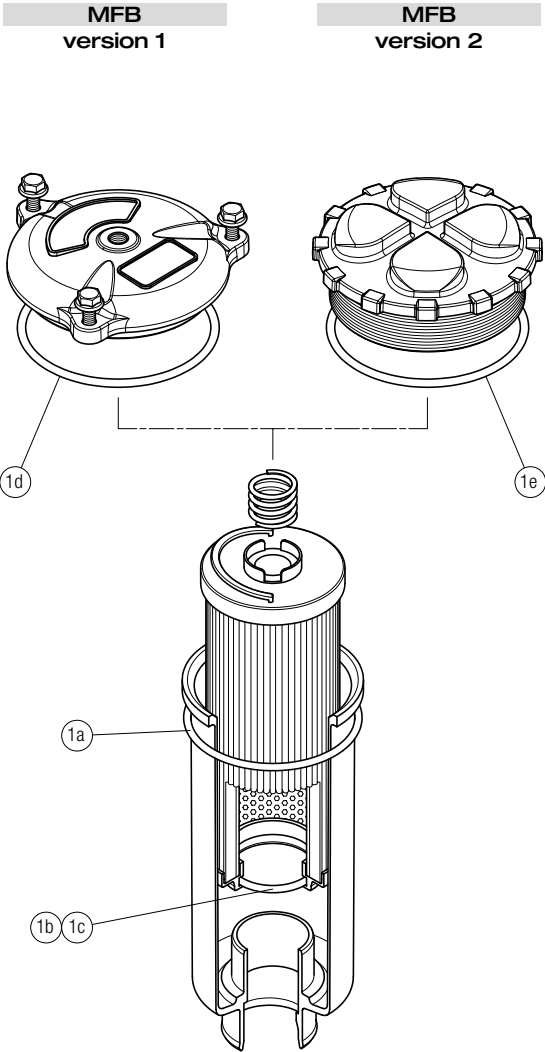
MFB



Filter size	Filter Length	$\varnothing A$ [mm]	$\varnothing B$ [mm]	$\varnothing C$ [mm]	$\varnothing D$ [mm]	$\varnothing E$ [mm]	$\varnothing F$ [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	-
100	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
	4	80.5	20	26	47	88	111	334	2.5	24	58	55	69	116	54	66	20	20
180	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	-
190	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

MDH series

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



Return filter

Maximum working pressure up to 1 MPa (10 bar)

Flow rate up to 500 l/min

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

Available features:

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

Common applications:

Heavy duty industrial equipment

Large mobile machines with limited space for the tank

Filter housing materials

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

Bypass valve

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

Δp element type

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

Seals

- Standard NBR series A
- Optional FPM series V

Temperature

From -25 °C to +110 °C

Note

MDH filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]			Volumes [dm ³]		
	Length	2	4	Length	2	4
MDH 250		3.80	4.55		4.65	6.90

Flow rates [l/min]

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

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

The reference fluid has a kinematic viscosity of 30 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.

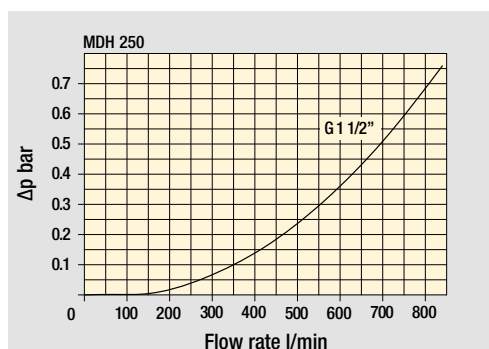
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

Filter series	Style B
MDH 250	•

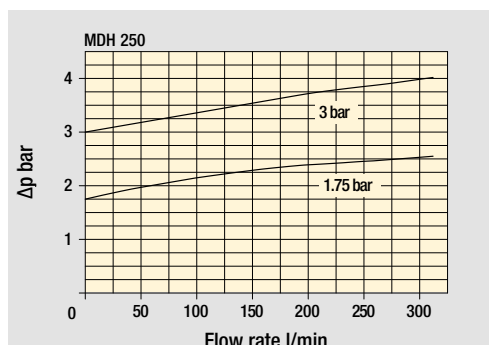
Hydraulic symbols

Pressure drop

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.

MDH250

Designation & Ordering code

COMPLETE FILTER

Series and size	Configuration example: MDH250										2	C	F	S	A	B	2	A10	P01
MDH250																			
Length	2 4																		
Bypass valve																			
C	1.75 bar																		
E	3 bar																		
Diffuser																			
F	With diffuser																		
Air breather																			
S	Without air breather																		
Seals and treatments	Filtration rating																		
A	NBR	Axx	Mxx	Pxx															
V	FPM																		
W	NBR head anodized			-															
Z	FPM head anodized			-															
Connections																			
Front	Left			Right															
A	G 1 1/2"	1 1/2" SAE 3000 psi/M + G 1 1/4"			1 1/4" SAE 3000 psi/M + G 1"														
B	1 1/2" NPT	1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT			1 1/4" SAE 3000 psi/UNC + 1" NPT														
C	SAE 24 - 1 7/8" - 12 UN	1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" - 12 UN			1 1/4" SAE 3000 psi/UNC + SAE 16 - 1 5/16" - 12 UN														
Connection indicator																			
1	Without connection																		
2	With 2 plugged connections (pressure indicator + diff. pressure indicator)																		
Filtration rating (filter media)																			
A03	Inorganic microfiber	3 µm	M25	Wire mesh	25 µm														
A06	Inorganic microfiber	6 µm	M60	Wire mesh	60 µm														
A10	Inorganic microfiber	10 µm	M90	Wire mesh	90 µm														
A16	Inorganic microfiber	16 µm	P10	Resin impregnated paper	10 µm														
A25	Inorganic microfiber	25 µm	P25	Resin impregnated paper	25 µm														
Execution																			
P01	MP Filtri standard																		
Pxx	Customized																		

FILTER ELEMENT

Element series and size	Configuration example: DH250					2	A10	A	P01
DH250									
Element length	2 4								
Filtration rating (filter media)									
A03	Inorganic microfiber	3 µm	M25	Wire mesh	25 µm				
A06	Inorganic microfiber	6 µm	M60	Wire mesh	60 µm				
A10	Inorganic microfiber	10 µm	M90	Wire mesh	90 µm				
A16	Inorganic microfiber	16 µm	P10	Resin impregnated paper	10 µm				
A25	Inorganic microfiber	25 µm	P25	Resin impregnated paper	25 µm				
Seals					Execution				
A	NBR				P01 MP Filtri standard				
V	FPM				Pxx Customized				

CLOGGING INDICATORS

See page 720-721

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

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

PLUGS

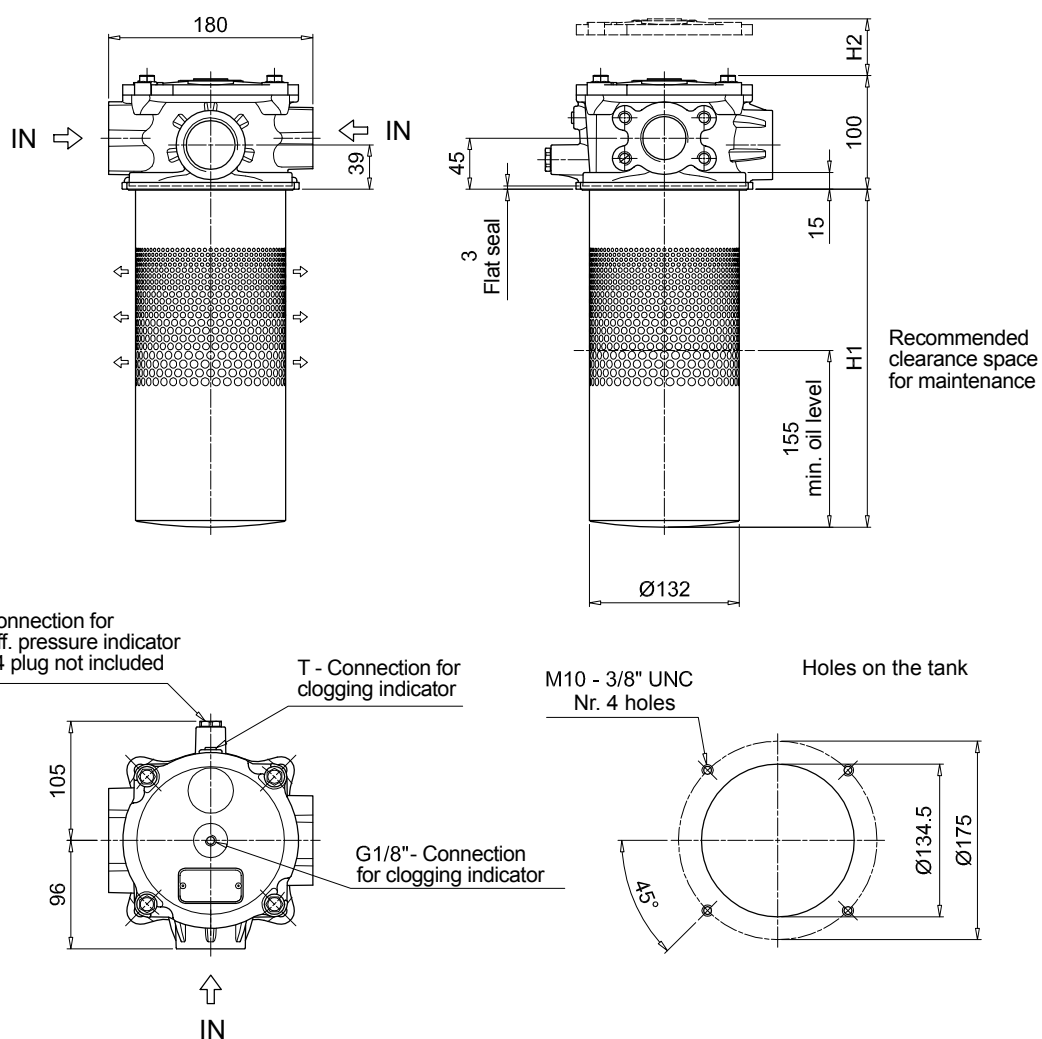
See page 747

T4	Plug
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MDH250

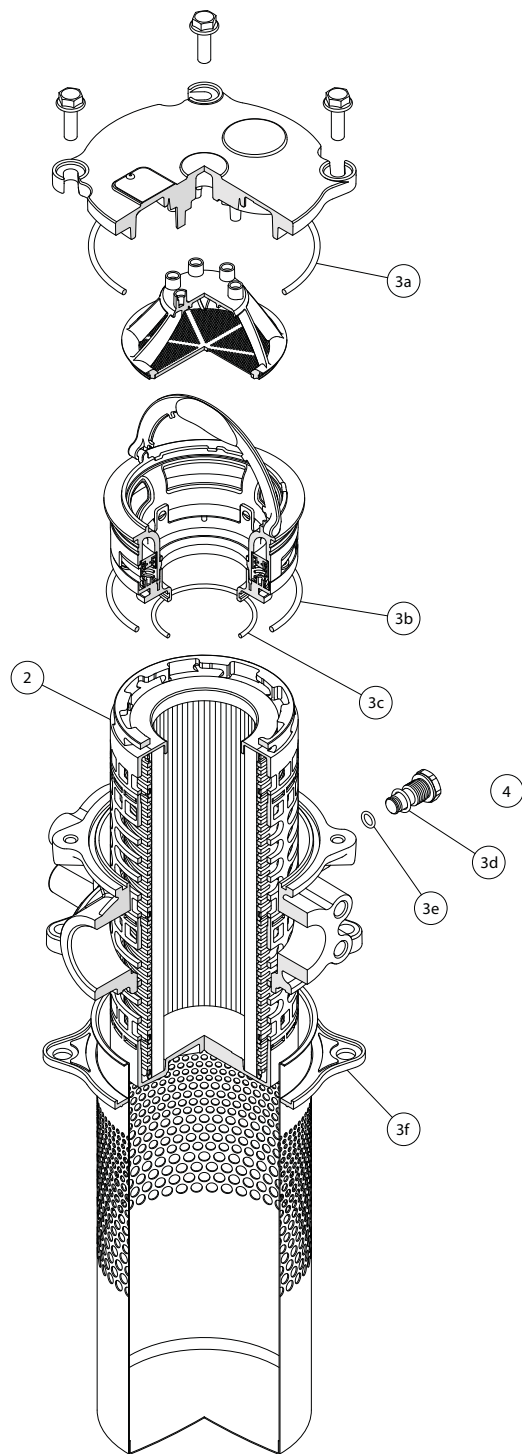
Filter length	H1 [mm]	H2 [mm]
2	300	380
4	485	565

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



MDH SPARE PARTS

Order number for spare parts



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

MPH series

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



Return filter

Maximum working pressure up to 1 MPa (10 bar)

Flow rate up to 3500 l/min

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

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

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

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

Available features:

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

Common applications:

Heavy duty industrial equipment

Filter housing materials

- Head
 - Aluminium: MPH 110-114-116-120-250
 - Anodized Aluminium: MPH 630-850
 - Painted Aluminium: MPH 660

- Cover
 - Polyamide: MPH 110-114-116-120
 - Aluminium: MPH 250
 - Anodized Aluminium: MPH 630
 - Painted Aluminium: MPH 660
 - Steel: MPH 850

- Insert assembly
 - Polyamide: MPH 110-114-116-120
 - Aluminium: MPH 250-630-660-850

- Diffuser: Stainless Steel

- Valve: Phosphatized Steel

Bypass valve

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

Δp element type

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

Seals

- Standard NBR series A
- Optional FPM series V

Temperature

From -25 °C to +110 °C

Note

MPH filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

Filter series	Weights [kg]					Volumes [dm³]						
	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	-

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.

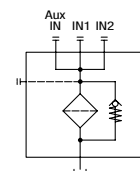
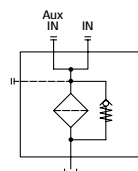
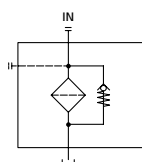
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

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

Please, contact our Sales Department for further additional information.

Hydraulic symbols

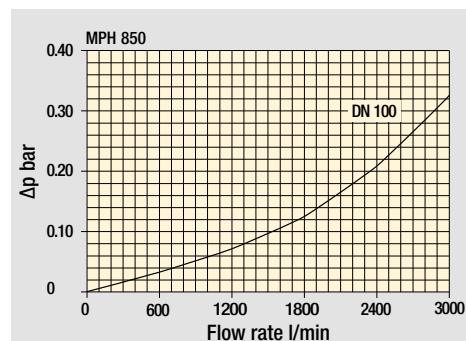
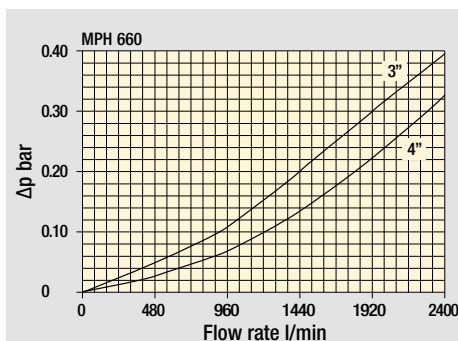
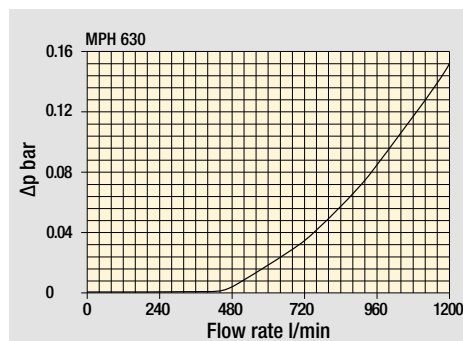
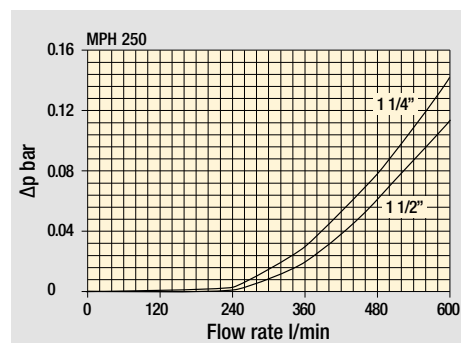
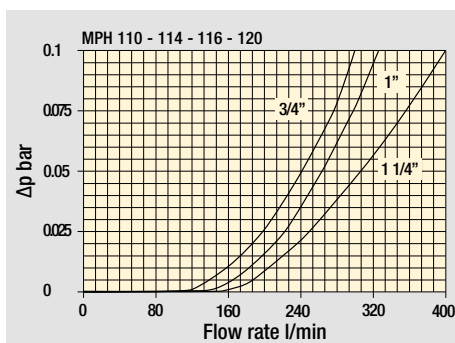
Filter series	Style 1 connection	Style 2 connections	Style 3 connections
MPH 110	-	•	-
MPH 114	•	-	-
MPH 116	•	-	-
MPH 120	-	-	•
MPH 250	•	•	-
MPH 630	•	•	-
MPH 660	•	-	-
MPH 850	-	•	-



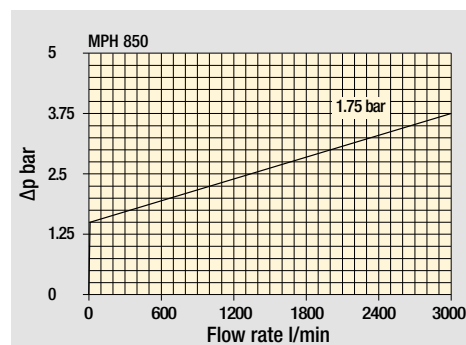
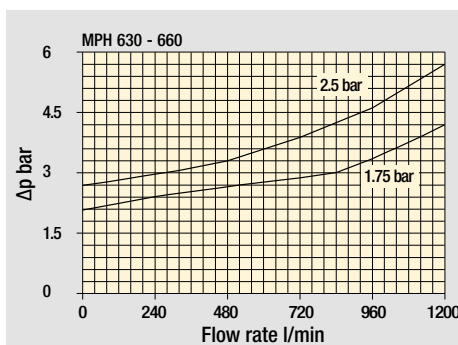
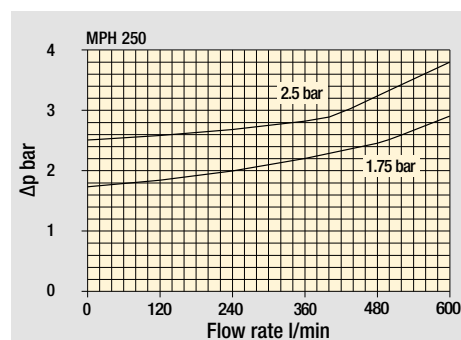
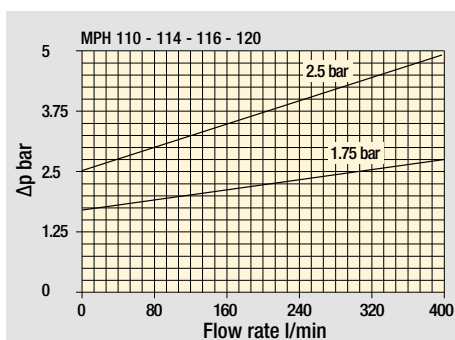
MPH GENERAL INFORMATION

Pressure drop

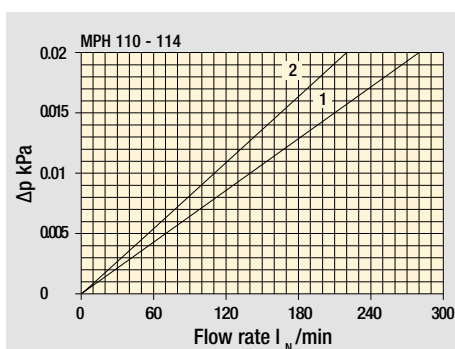
Filter housings Δp pressure drop



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.

Designation & Ordering code

COMPLETE FILTER

Series and size

MPH110

Length

1 | 2 | 3 | 4 | 5 |

Bypass valve

S Without bypass | C 1.75 bar | E 2.5 bar

Diffuser and magnetic filter

D With diffuser, with magnetic filter

F With diffuser, without magnetic filter

O Without diffuser, with magnetic filter

E Without diffuser, without magnetic filter

Air breather

S Without air breather

C With air breather 10 µm

D With anti-splash and air breather SAP050 10 µm

P With anti-splash and air breather SAP050 10 µm
pressurization 0.5 bar

Seals and treatments

Axx | Mxx | Pxx

A NBR • • •

V FPM • • •

W NBR head anodized • • -

Z FPM head anodized • • -

Main Connections

G1 G 3/4"

G2 G 1"

G3 G 1 1/4"

G4 3/4" NPT

G5 1" NPT

G6 1 1/4" NPT

Aux size 1

G 3/8"

3/8" NPT

Aux size 2

G 1/2"

1/2" NPT

Main Connections

G7 SAE 12 - 1 1/16" - 12 UN

G8 SAE 16 - 1 5/16" - 12 UN

G9 SAE 20 - 1 5/8" - 12 UN

Aux size 1

SAE 6 - 9/16" - 18 UNF

Aux size 2

SAE 8 - 3/4" - 16 UNF

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

The diagram illustrates the configuration example **MR100 1 A10 A P01** and maps it to the filter element specifications. The configuration is broken down as follows:

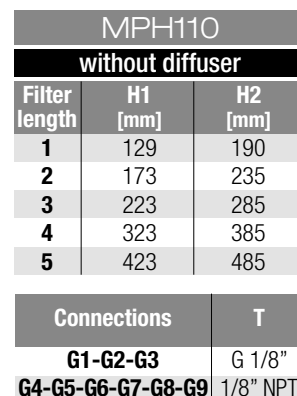
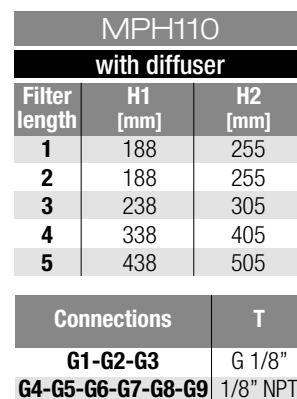
- MR100**: Element series and size
- 1**: Element length (1)
- A10**: Filtration rating (filter media) A03 Inorganic microfiber 3 µm
- A**: Filtration rating (filter media) A06 Inorganic microfiber 6 µm
- P01**: Filtration rating (filter media) P10 Resin impregnated paper 10 µm

The corresponding filter element specifications are:

Series	Length	Filtration rating (filter media)	Material	Size
MR100	1	A03	Inorganic microfiber	3 µm
MR100	1	A06	Inorganic microfiber	6 µm
MR100	1	A10	Inorganic microfiber	10 µm
MR100	1	A16	Inorganic microfiber	16 µm
MR100	1	A25	Inorganic microfiber	25 µm
MR100	1	M25	Wire mesh	25 µm
MR100	1	M60	Wire mesh	60 µm
MR100	1	M90	Wire mesh	90 µm
MR100	1	P10	Resin impregnated paper	10 µm
MR100	1	P25	Resin impregnated paper	25 µm

CLOGGING INDICATORS		See page 720-721
BVA	Axial pressure gauge	BEA Electrical pressure indicator
BVR	Radial pressure gauge	BEM Electrical pressure indicator
BVP	Visual pressure indicator with automatic reset	BLA Electrical / visual pressure indicator
BVO	Visual pressure indicator with manual reset	

ADDITIONAL FEATURES		See page	268
DPT	Dipstick		



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH114									
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 filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Air breather											
S Without air breather											
C With air breather 10 µm											
D With anti-splash and air breather SAP050 10 µm											
P With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
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		Configuration example: MR100				
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		

CLOGGING INDICATORS

See page 720-721

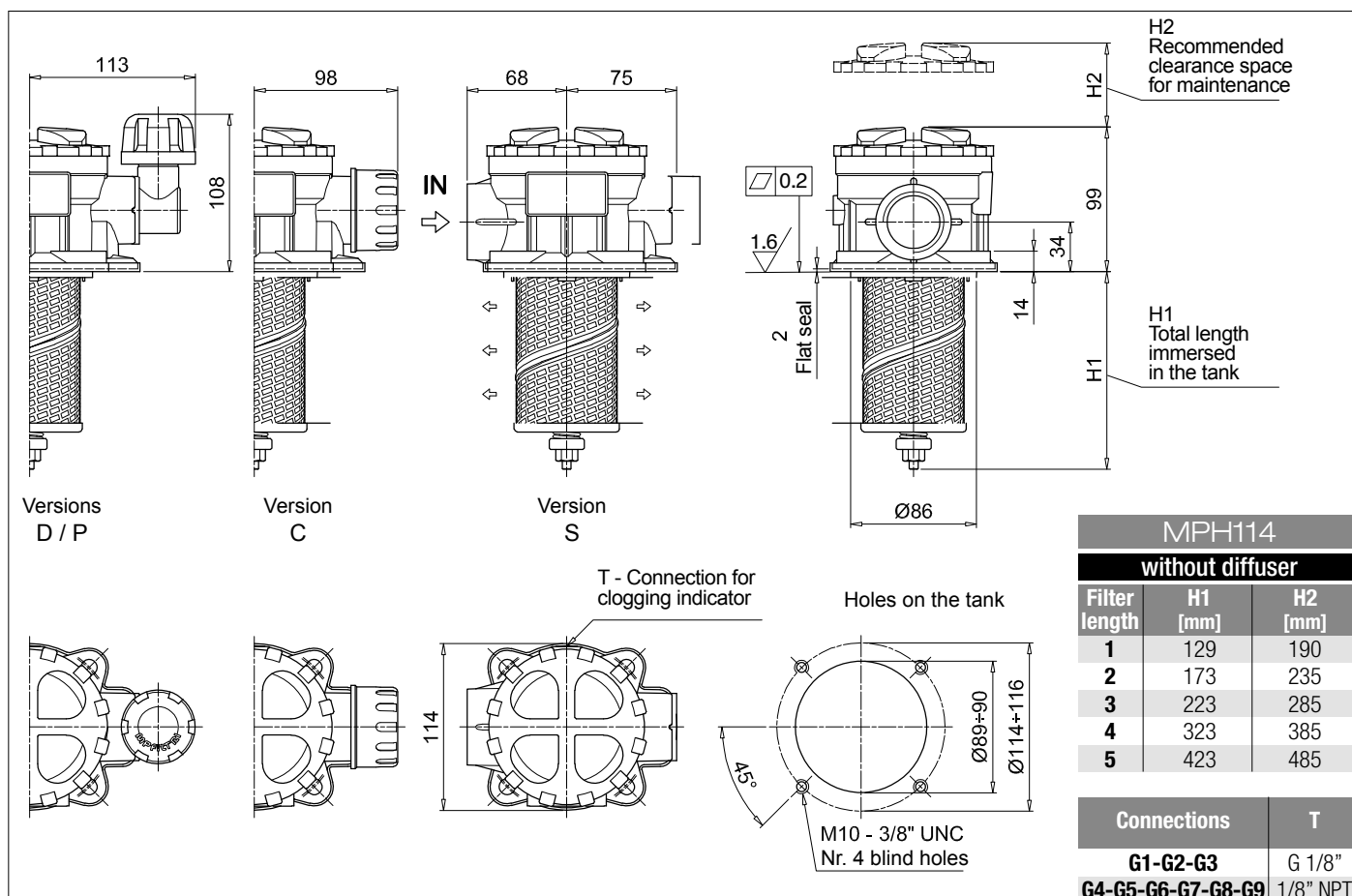
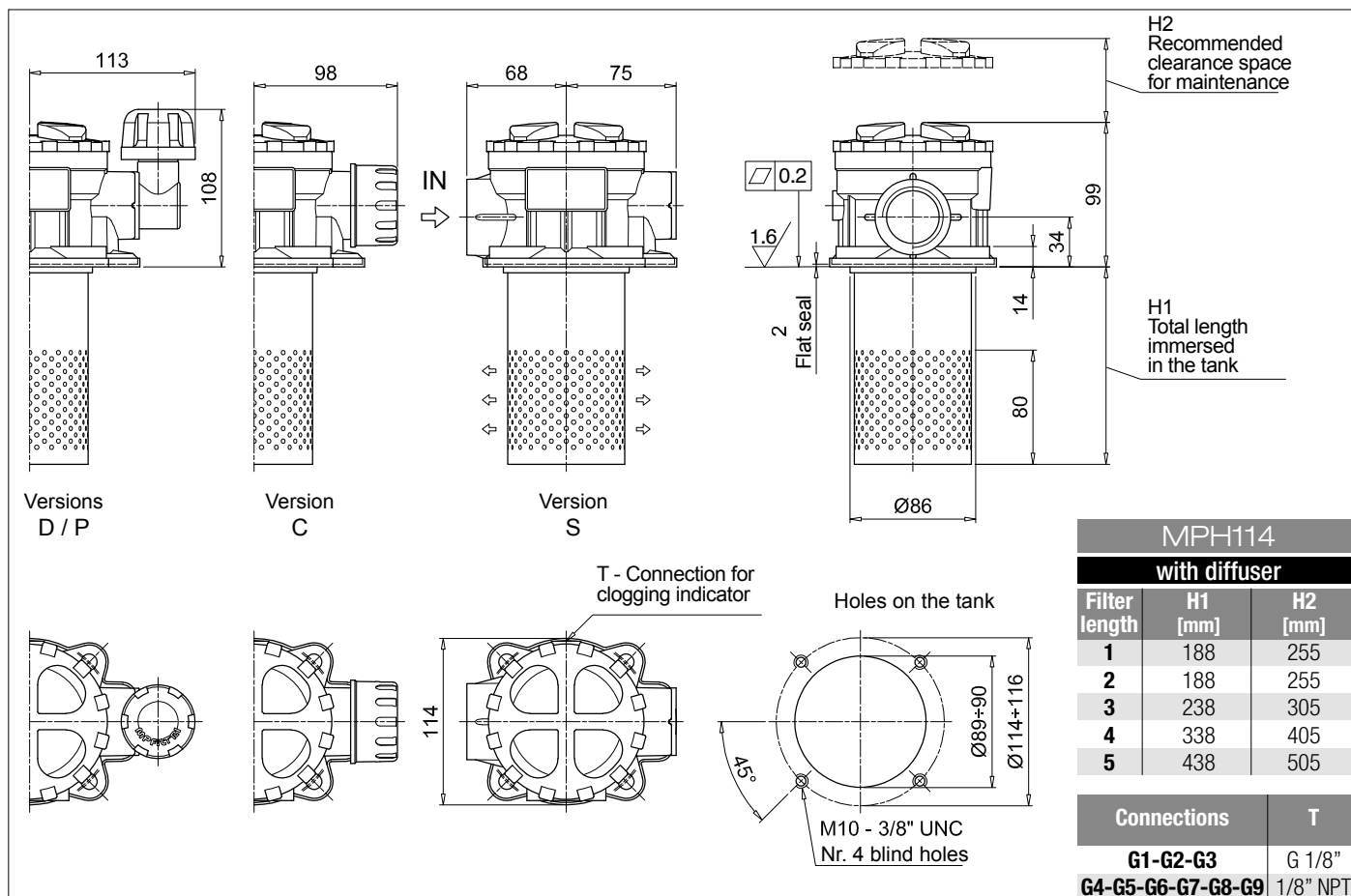
BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

DPT Dipstick



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH116									
MPH116		5	S	D	S	A	G1	A10	P01		
Length											
1 2 3 4 5											
Bypass valve											
S Without bypass		C 1.75 bar	E 2.5 bar								
Diffuser and magnetic filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Air breather											
S Without air breather											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
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		Configuration example: MR100			
MR100		5	A10	A	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			
		A NBR			
		V FPM			
		Execution			
		P01 MP Filtri standard			
		Pxx Customized			

CLOGGING INDICATORS

See page 720-721

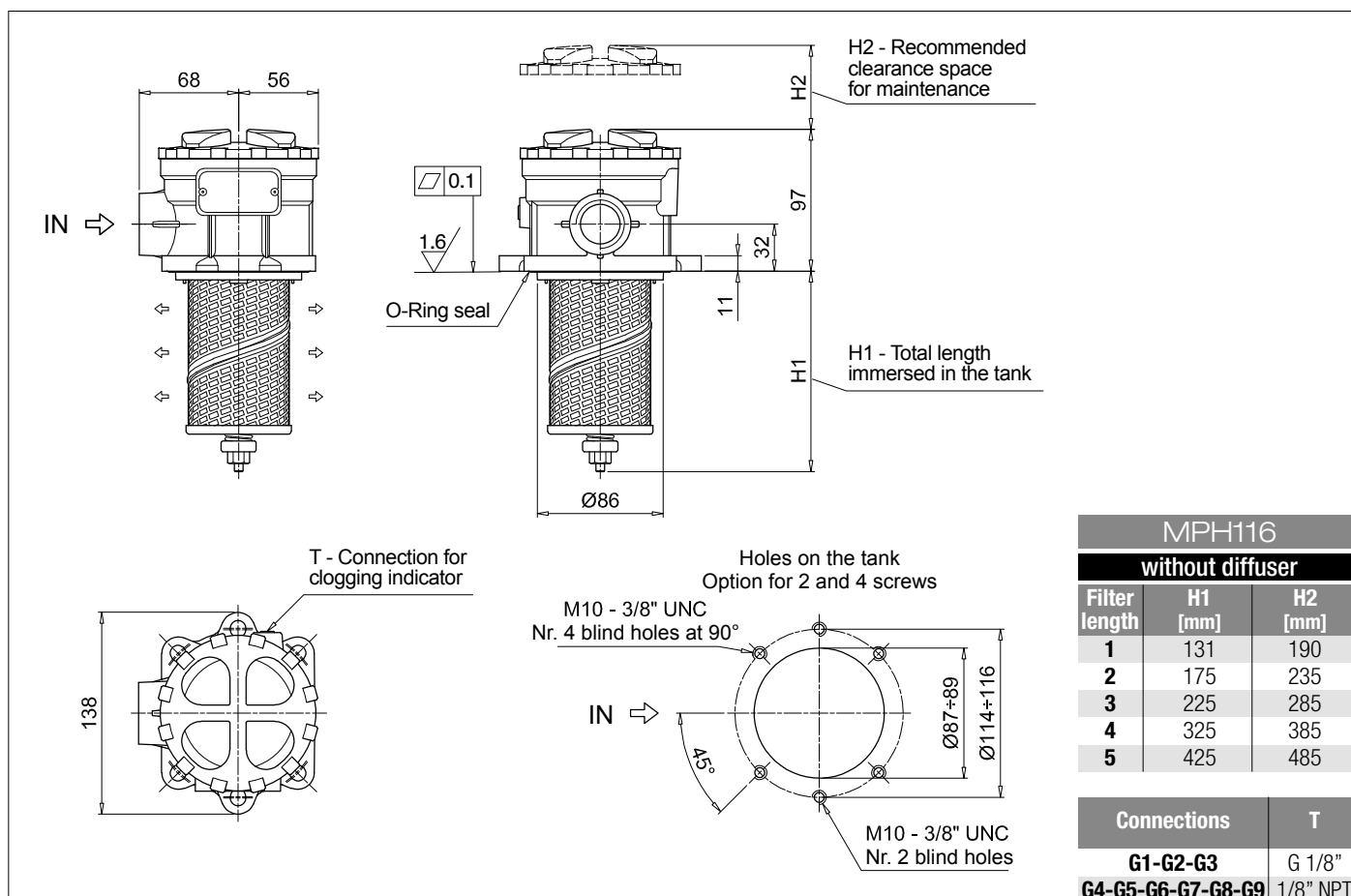
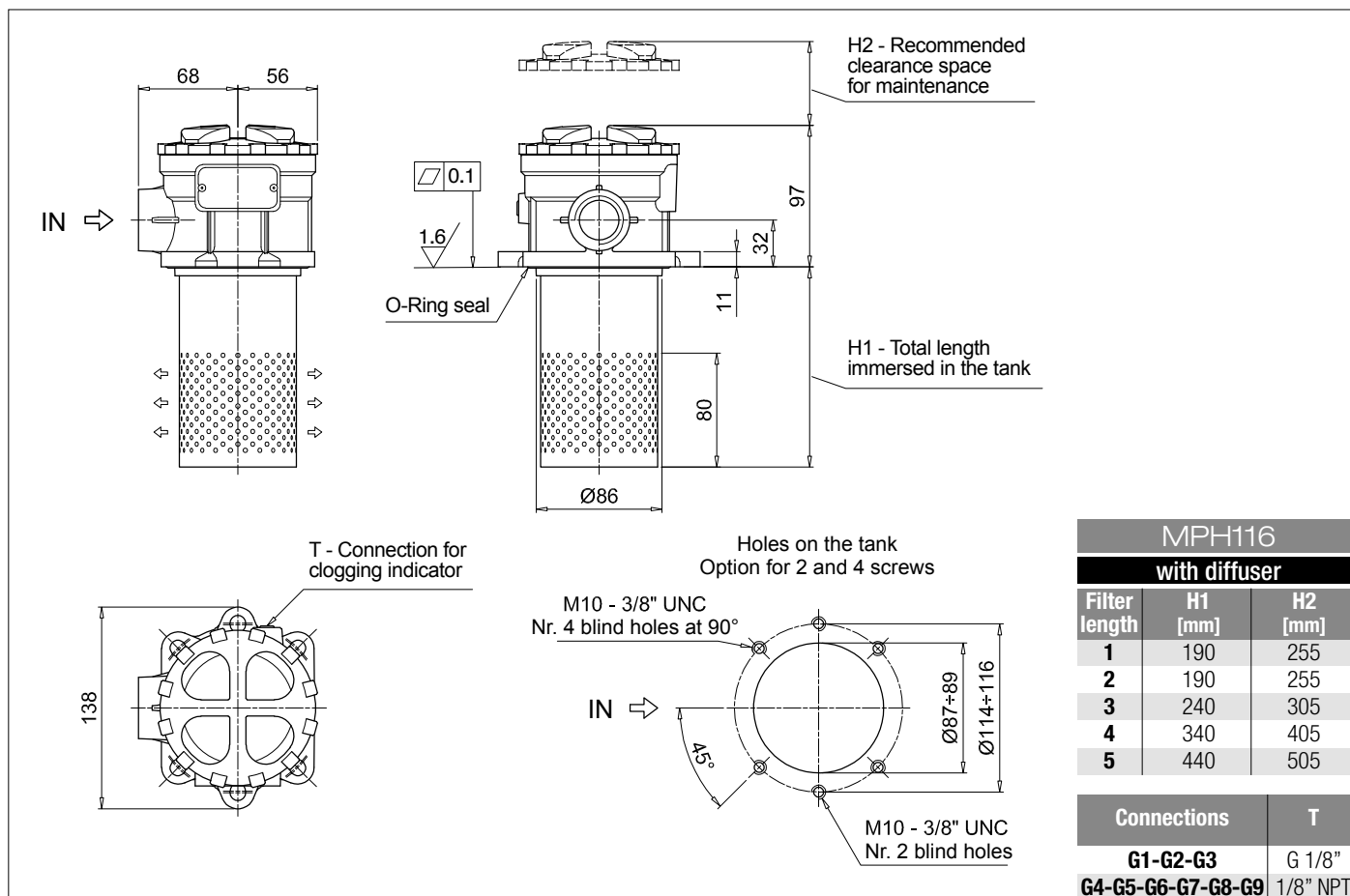
BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

DPT Dipstick



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH120									
MPH120		1	S	D	A	G1	1	A10	P01		
Length		1	2	3	4	5					
Bypass valve											
S	Without bypass	C	1.75 bar	E	2.5 bar						
Diffuser and magnetic filter											
D	With diffuser, with magnetic filter										
F	With diffuser, without magnetic filter										
O	Without diffuser, with magnetic filter										
E	Without diffuser, without magnetic filter										
Seals and treatments		Filtration rating									
A	NBR	Axx	Mxx	Pxx							
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"		G 3/8"		G 1/2"					
G3	G 1 1/4"	G 3/4"		G 3/8"		G 1/2"					
G4	3/4" NPT	3/4" NPT		G 3/8"		G 1/2"					
G5	1" NPT	1" NPT		G 3/8"		G 1/2"					
G6	1 1/4" NPT	3/4" NPT		G 3/8"		G 1/2"					
G7	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN		G 3/8"		G 1/2"					
G8	SAE 16 - 1 5/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN		G 3/8"		G 1/2"					
G9	SAE 20 - 1 5/8" - 12 UN	SAE 12 - 1 1/16" - 12 UN		G 3/8"		G 1/2"					
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				
MR100		1	A10	A	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						
A	NBR					
V	FPM					
Execution						
P01		MP Filtri standard				
Pxx		Customized				

CLOGGING INDICATORS

See page 720-721

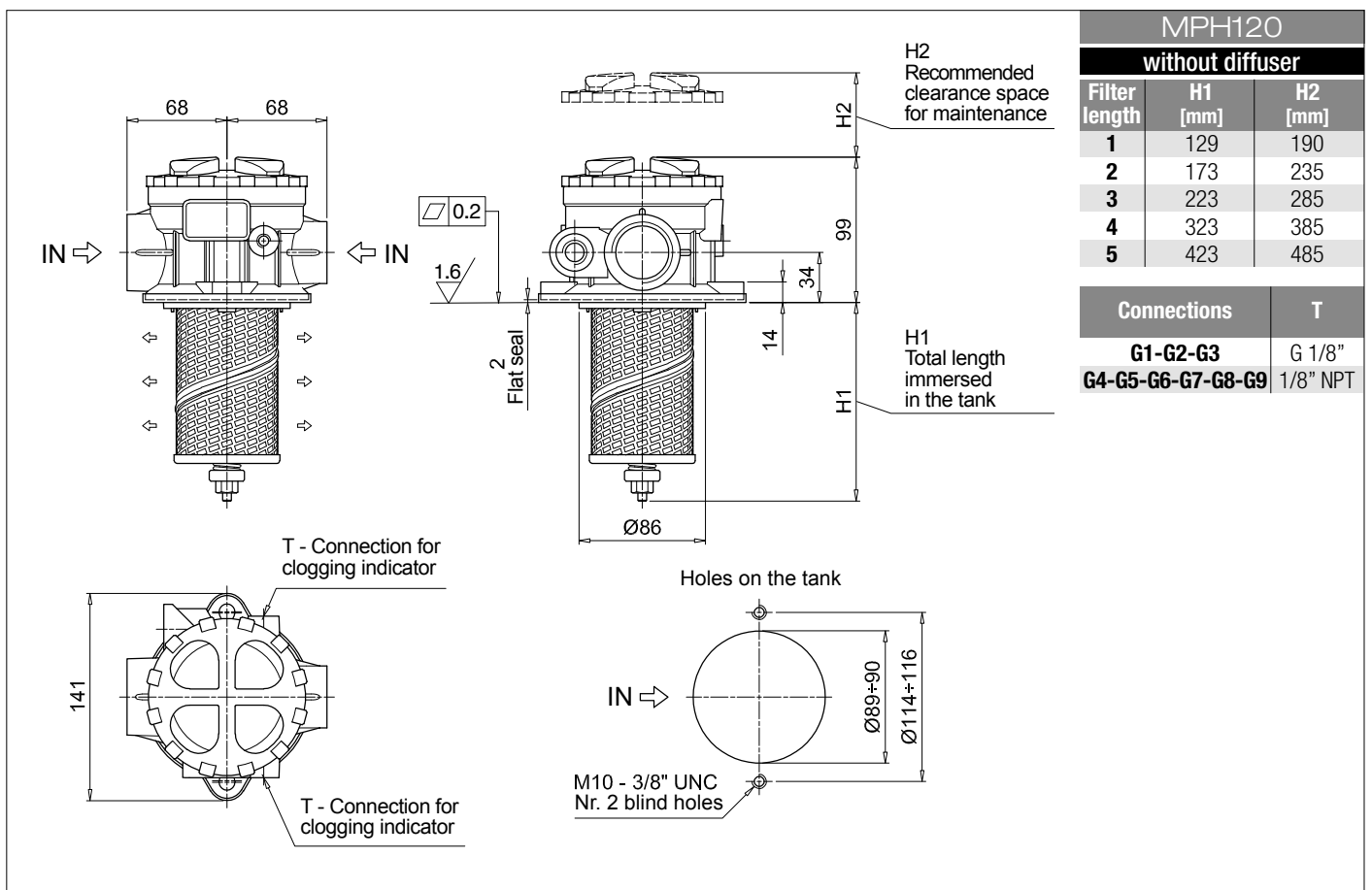
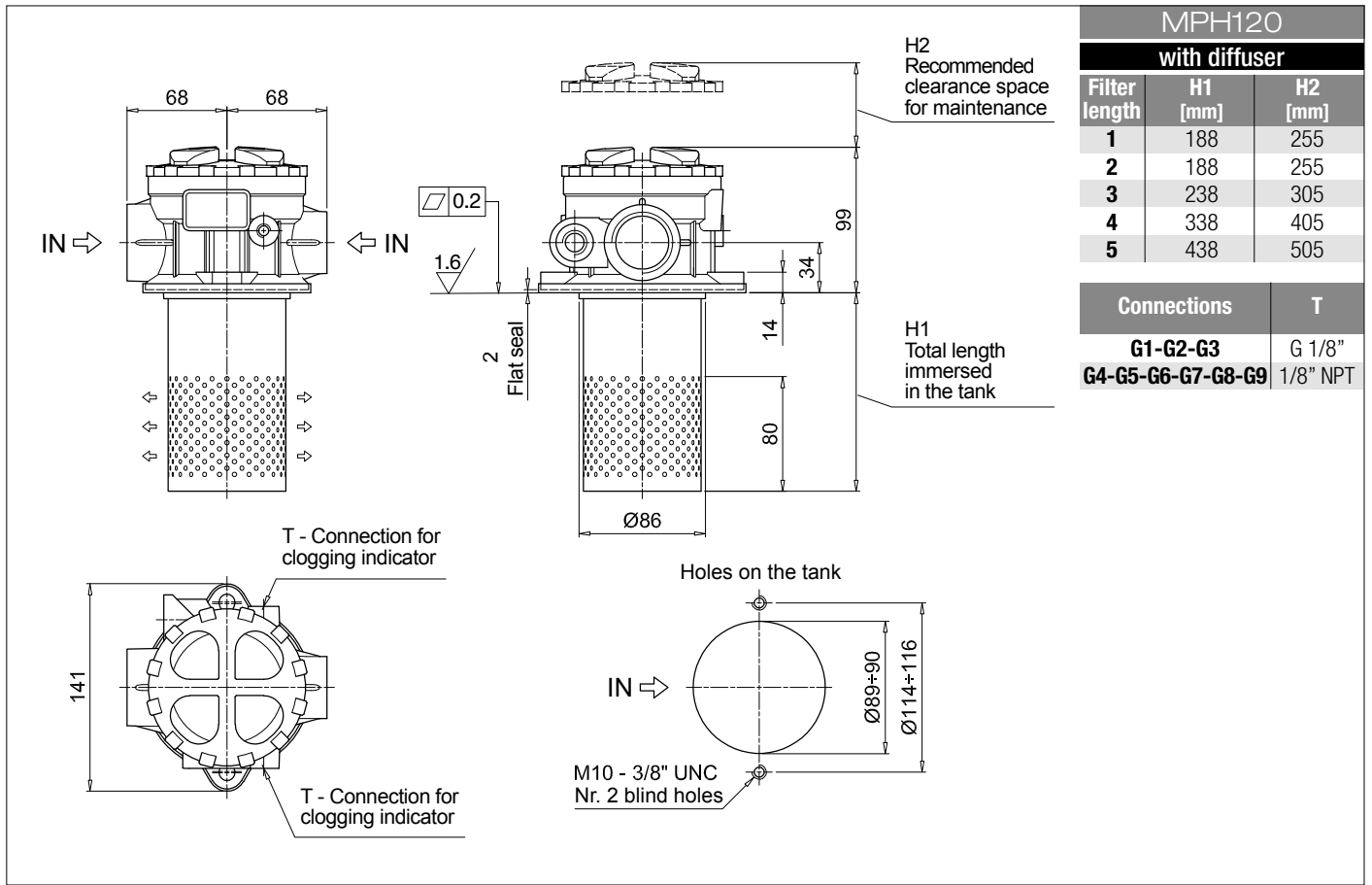
BVA	Axial pressure gauge
BVR	Radial pressure gauge
BVP	Visual pressure indicator with automatic reset
BRVQ	Visual pressure indicator with manual reset

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

ADDITIONAL FEATURES

See page 268

DPT	Dipstick
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Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH250									
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 filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Air breather											
S Without air breather											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
Z FPM head anodized		•	•	-							
Main Connections		Rear connections									
G1 G 1 1/2"		-									
G2 G 1 1/2"		G 1 1/4"									
G4 1 1/2" NPT		-									
G5 1 1/2" NPT		1 1/4" NPT									
G7 SAE 24 - 1 7/8" - 12 UN		-									
G8 SAE 24 - 1 7/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN									
F1 1 1/2" SAE 3000 psi/M		-									
F2 1 1/2" SAE 3000 psi/M		1 1/4" SAE 3000 psi/M									
F3 1 1/2" SAE 3000 psi/UNC		-									
F4 1 1/2" SAE 3000 psi/UNC		1 1/4" SAE 3000 psi/UNC									
Filtration rating (filter media)											
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

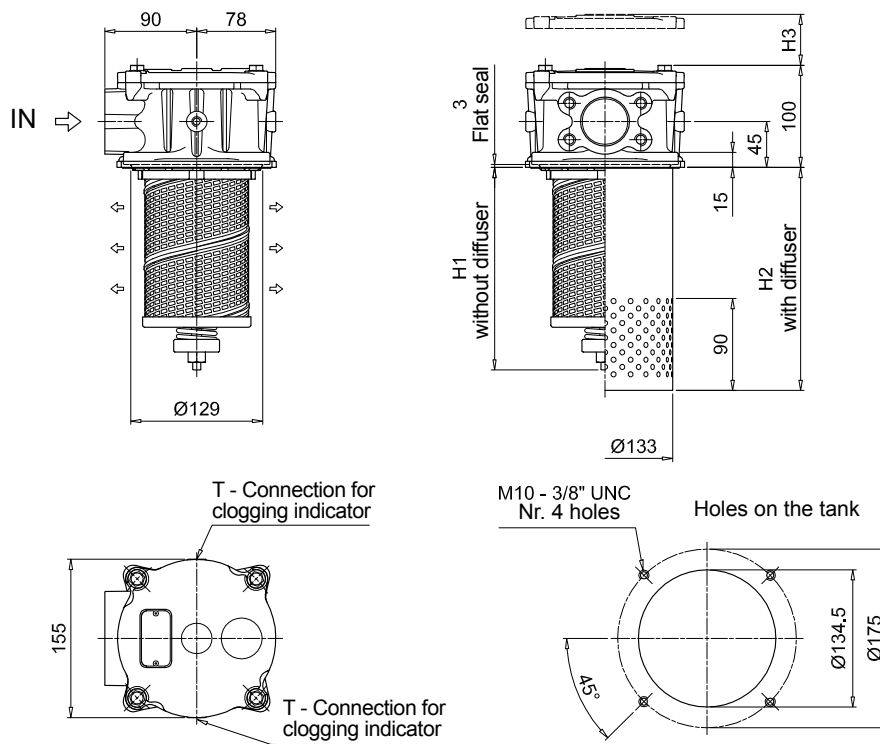
Element series and size		Configuration example: MR250			
MR250		1	A10	A	P01
Element length					
1 2 3 4					
Filtration rating (filter media)					
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm			
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm			
A10 Inorganic microfiber 10 µm		M90 Wire mesh 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		Execution	
		A NBR		P01 MP Filtri standard	
		V FPM		Pxx Customized	

CLOGGING INDICATORS

See page 720-721

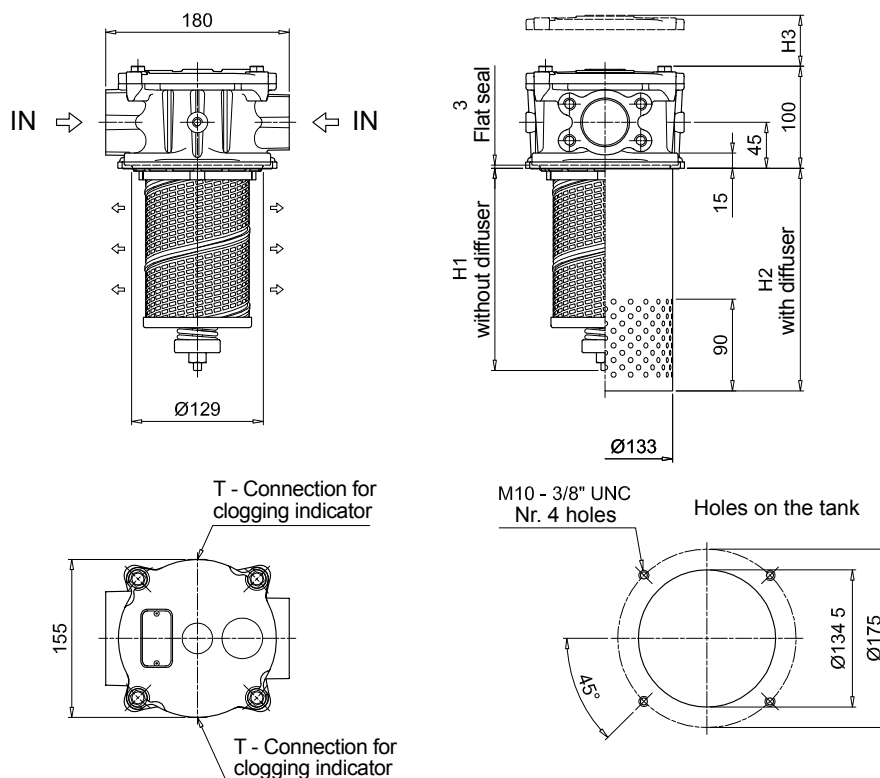
BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

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



MPH250			
1 connection port			
Filter length	H1 [mm]	H2 [mm]	H3 [mm]
1	182	247	255
2	231	247	305
3	302	317	375
4	502	507	580

Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT
F1-F2	G 1/8"
F3-F4	1/8" NPT



MPH250			
2 connection ports			
Filter length	H1 [mm]	H2 [mm]	H3 [mm]
1	182	247	255
2	231	247	305
3	302	317	375
4	502	507	580

Connections	T
G1-G2-G3	G 1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT
F1-F2	G 1/8"
F3-F4	1/8" NPT

Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH630									
MPH630		1	S	E	S	W	F1	M25	P01		
Length											
1 2 3 4 5											
Bypass valve											
S Without bypass		C 1.75 bar	E 2.5 bar								
Diffuser and magnetic filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Air breather											
S Without air breather											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
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

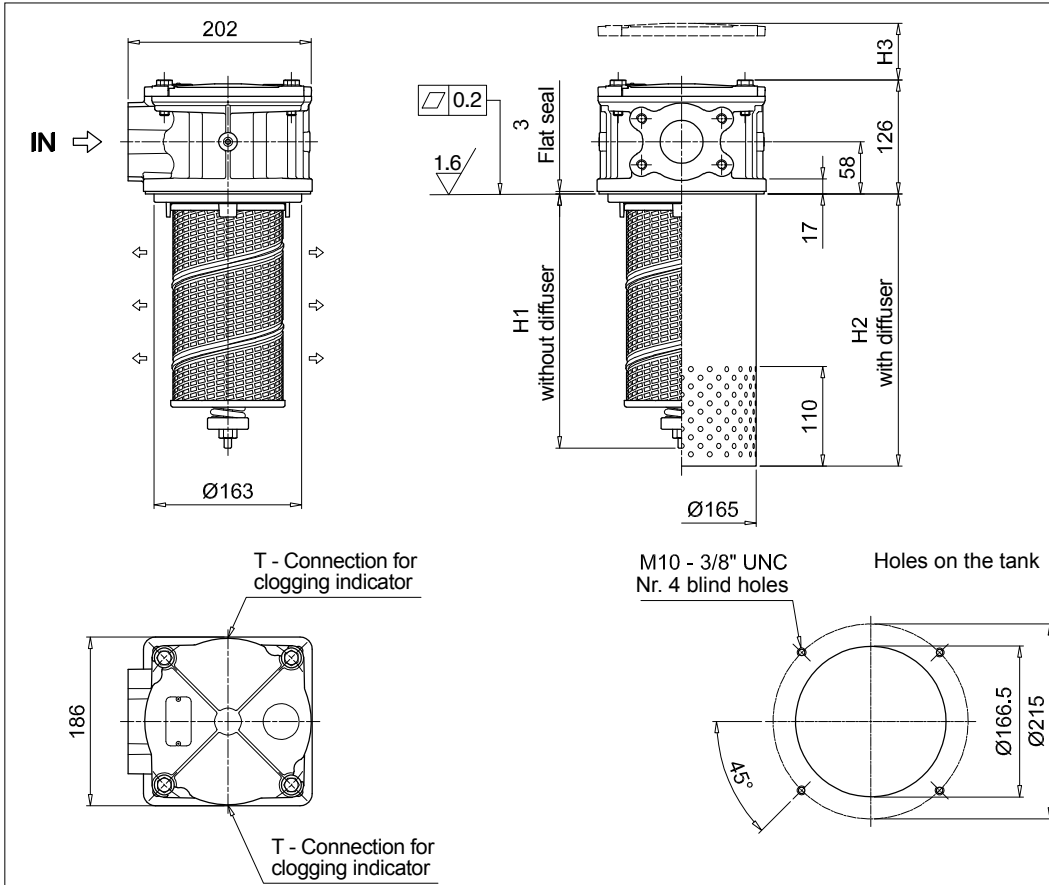
Element series and size		Configuration example: MR630			
MR630		1	M25	A	P01
Element length					
1 2 3 4 5					
Filtration rating (filter media)					
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm			
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm			
A10 Inorganic microfiber 10 µm		M90 Wire mesh 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	

CLOGGING INDICATORS

See page 720-721

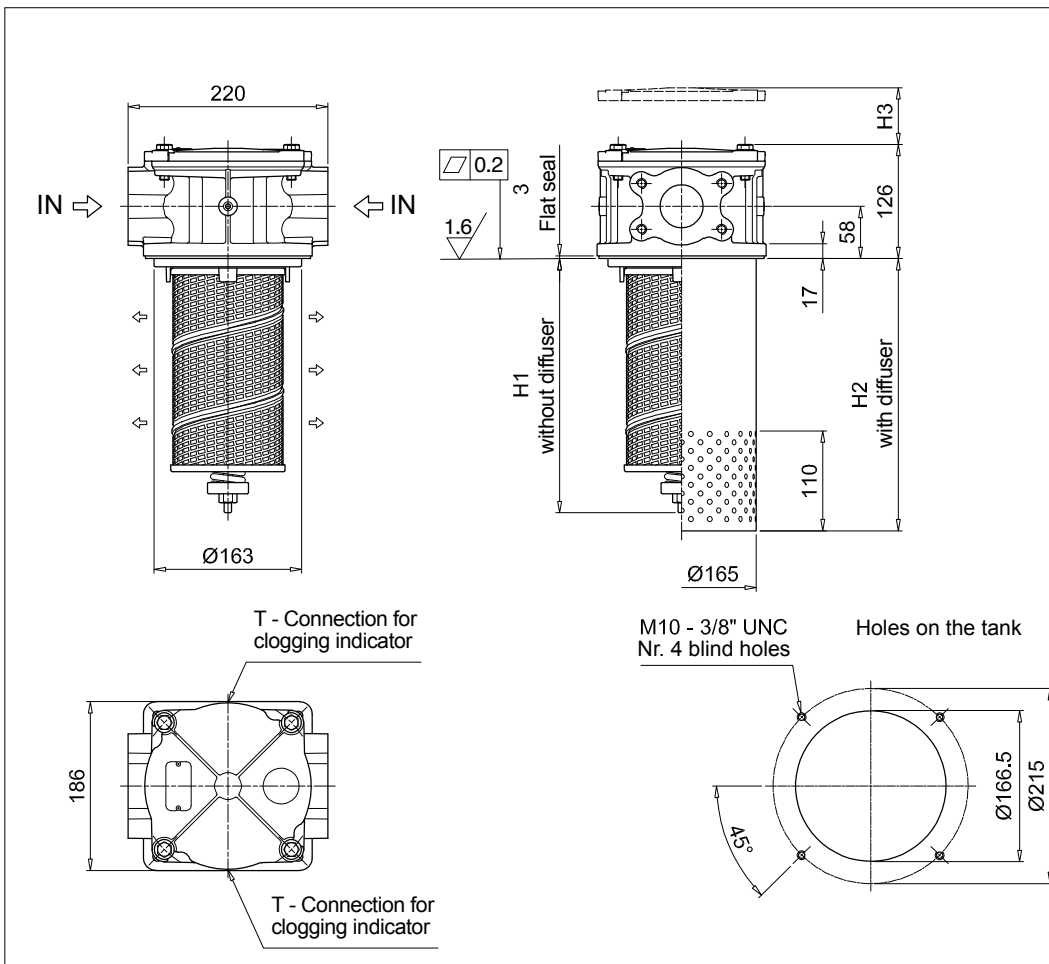
BVA Axial pressure gauge
BVR Radial pressure gauge
BVP Visual pressure indicator with automatic reset
BVQ Visual pressure indicator with manual reset

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



MPH630			
1 connection port			
Filter length	H1 [mm]	H2 [mm]	H3 [mm]
1	260	278	330
2	340	358	410
3	440	458	510
4	528	548	600
5	829	848	900

Connections	T
F1	G 1/8"
F3	1/8" NPT



MPH630			
2 connection ports			
Filter length	H1 [mm]	H2 [mm]	H3 [mm]
1	260	278	330
2	340	358	410
3	440	458	510
4	528	548	600
5	829	848	900

Connections	T
F2	G 1/8"
F4	1/8" NPT

Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH660									
MPH660		4	C	D	S	A	F2	A10	P01		
Length											
4 5											
Bypass valve											
S Without bypass		C 1.75 bar	E 2.5 bar								
Diffuser and magnetic filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Air breather											
S Without air breather											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
Z FPM head anodized		•	•	-							
Main Connections											
F1 3" SAE 3000 psi/M											
F2 4" SAE 3000 psi/M											
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		Configuration example: MR630			
MR630		5	M25	A	P01
Element length					
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					

CLOGGING INDICATORS

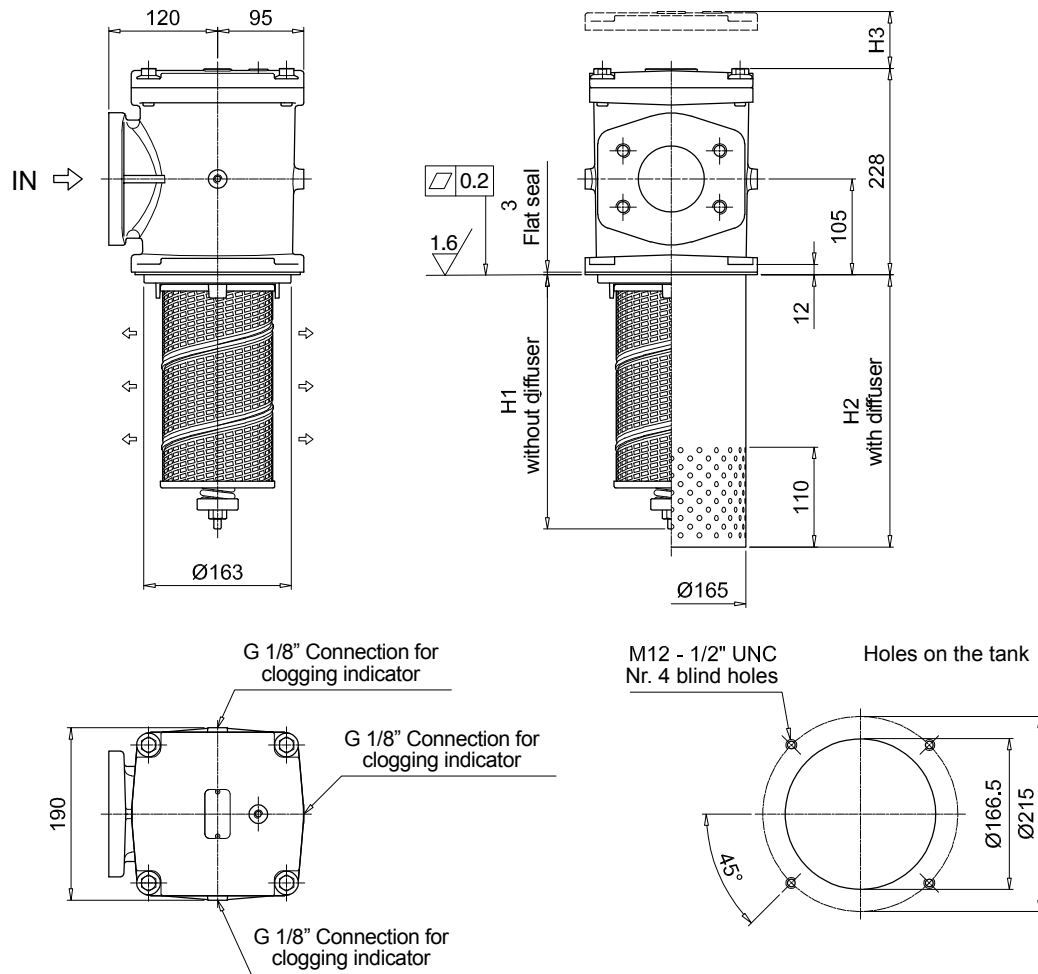
See page 720-721

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

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

MPH660

Filter length	H1 [mm]	H2 [mm]	H3 [mm]
4	538	548	610
5	838	848	910



Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example: MPH850									
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 filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Air breather											
S Without air breather											
Seals and treatments		Filtration rating									
		Axx	Mxx	Pxx							
A NBR		•	•	•							
V FPM		•	•	•							
W NBR head anodized		•	•	-							
Z FPM head anodized		•	•	-							
Main Connections		Rear connections									
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

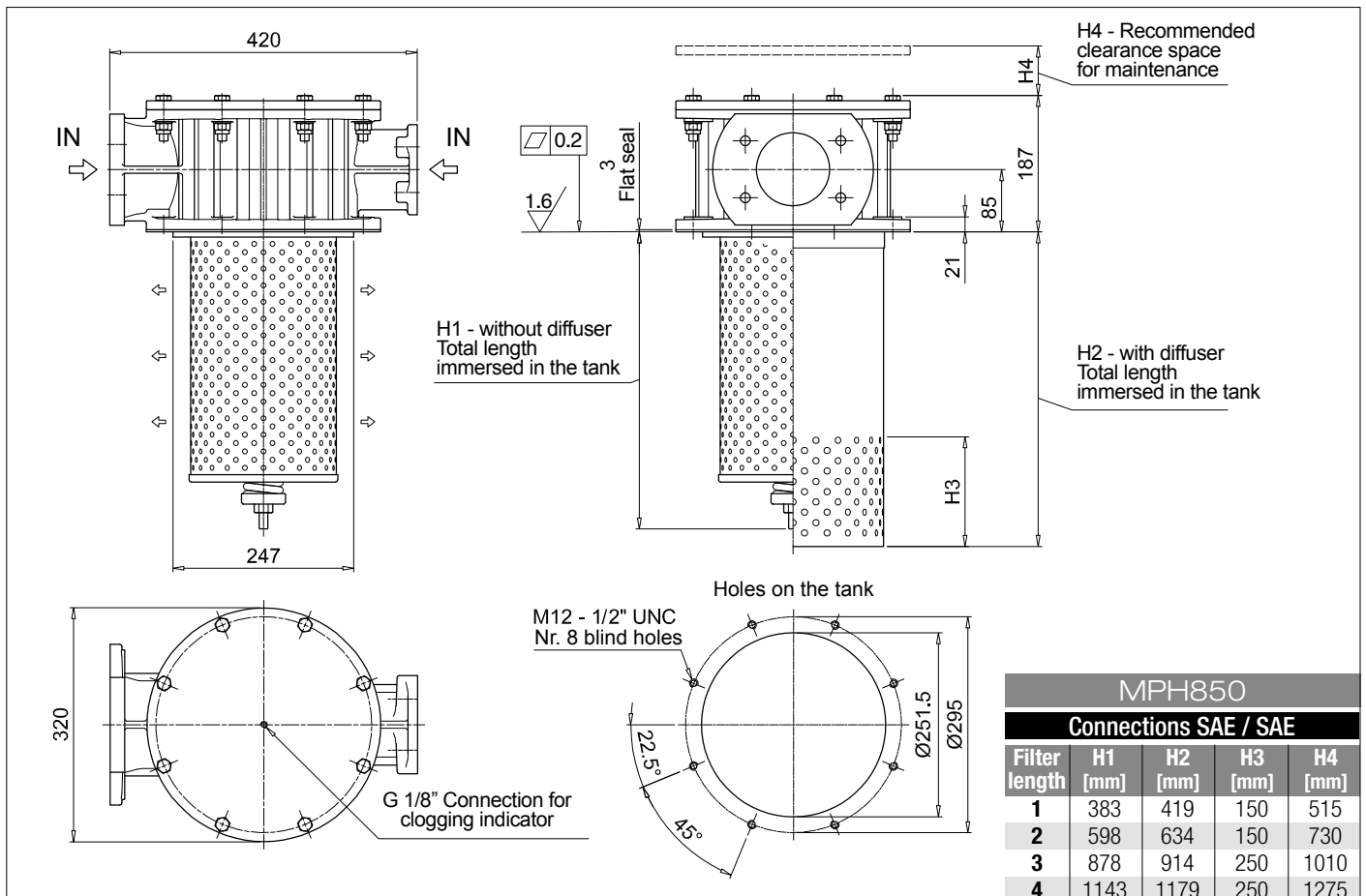
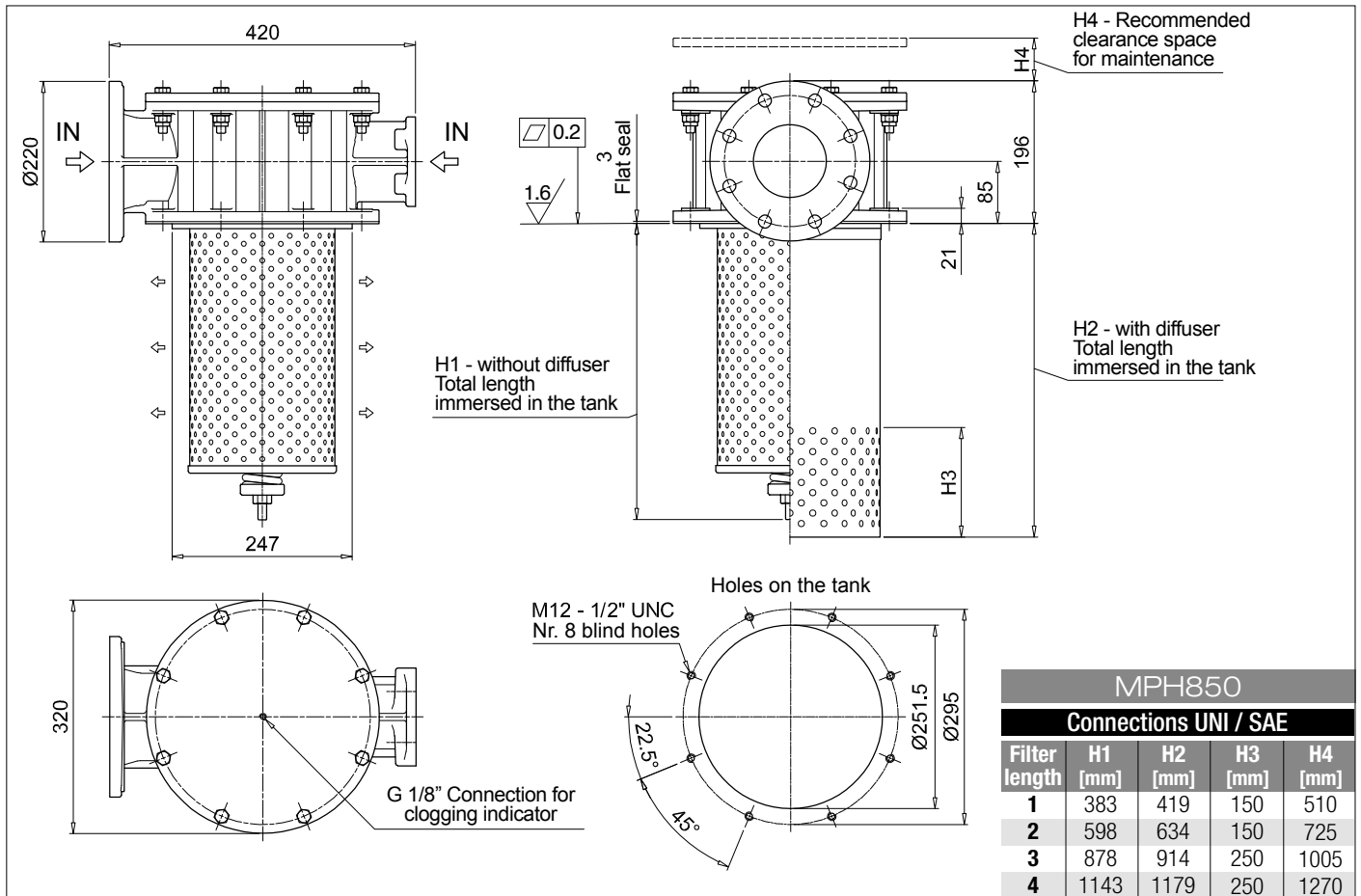
Element series and size		Configuration example: MR850				
MR850		1	A10	A	P01	
Element length						
1 2 3 4						
Filtration rating (filter media)						
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm				
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm				
A10 Inorganic microfiber 10 µm		M90 Wire 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				

CLOGGING INDICATORS

See page 720-721

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

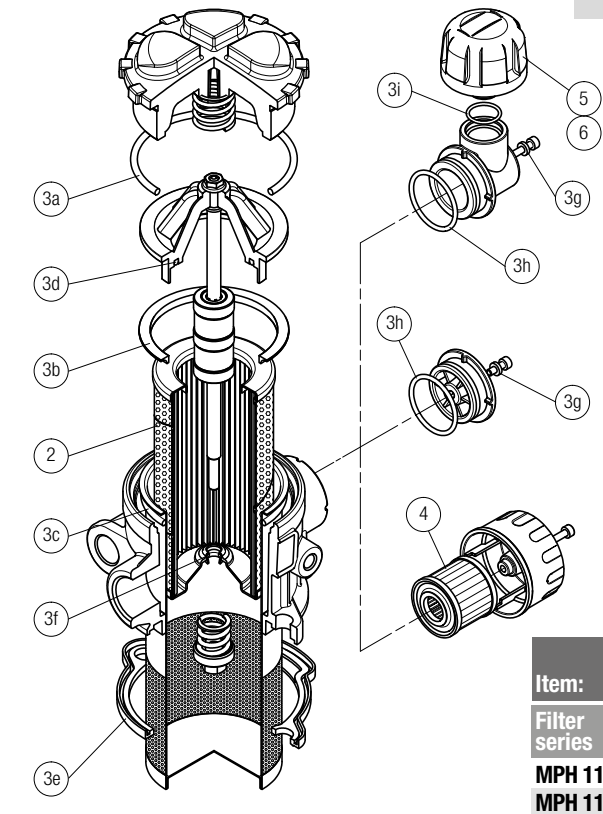
BEA Electrical pressure indicator
BEM Electrical pressure indicator
BLA Electrical / visual pressure indicator



MPH SPARE PARTS

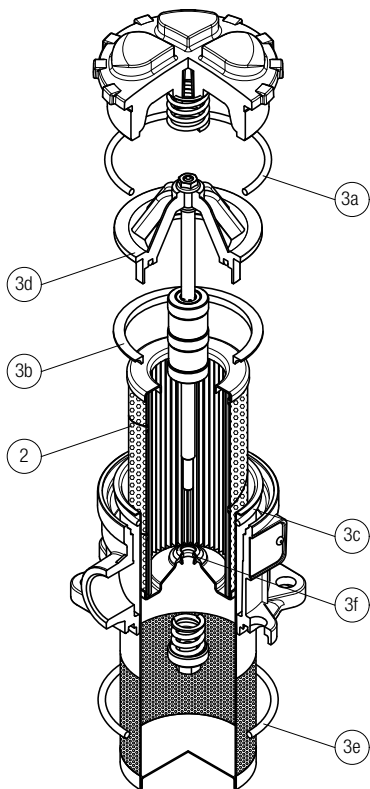
Order number for spare parts

MPH 110 - 114



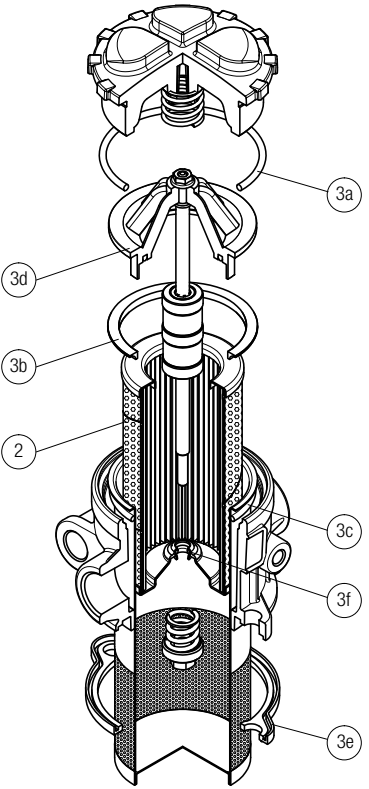
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3i)		4	5	6
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		
		NBR	FPM	C	D	P
MPH 110	See order table	02050565	02050566	10 µm	10 µm	10 µm
MPH 114		02050582	02050583	A3L03	SAP50G3L03A0P01	SAP50G3L03A1P01

MPH 116



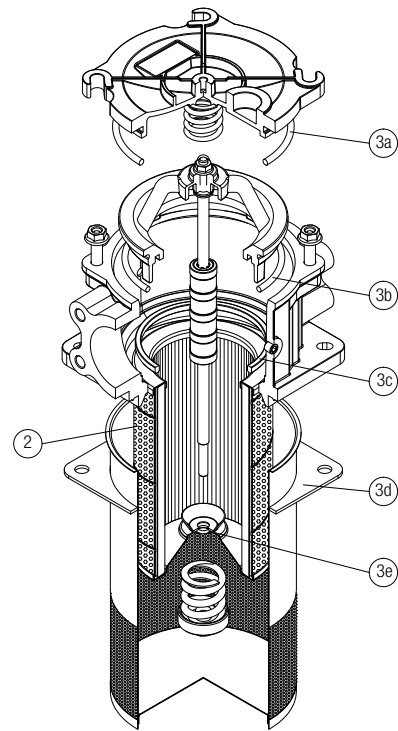
Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3	(3a ÷ 3f)
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPH 116	See order table	02050741	02050742

MPH 120



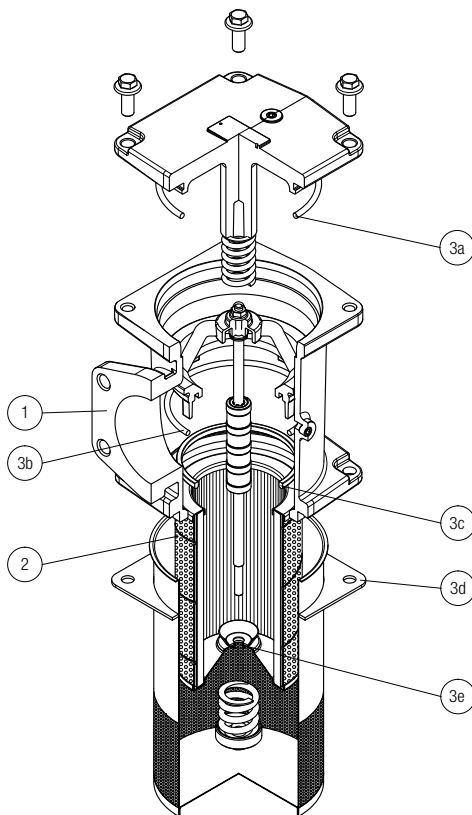
Item:		Q.ty: 1 pc.	Q.ty: 1 pc.
2		3 (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPH 120	See order table	02050567	02050568

MPH 250 - 630



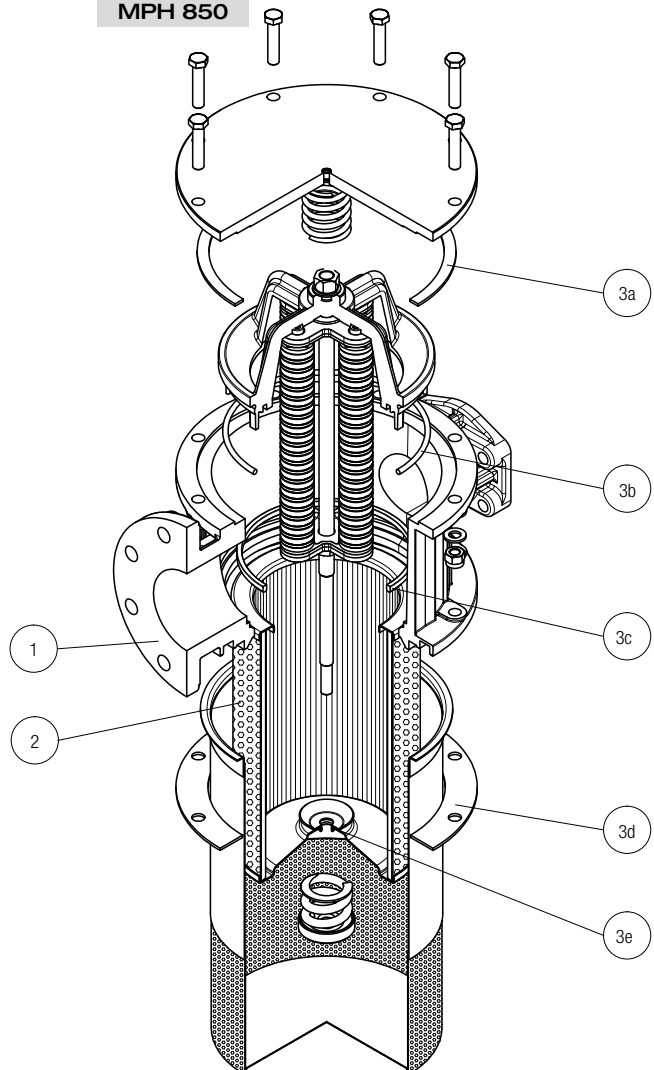
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM
MPH 250	See order table	02050151	02050152
MPH 630	See order table	02050153	02050154

MPH 660



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	2	3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM
MPH 660	See order table	02050153	02050154
MPH 850	See order table	02050155	02050156

MPH 850



MPI series

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



Description

Technical data

Return filter

Maximum working pressure up to 1 MPa (10 bar)

Flow rate up to 3500 l/min

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

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

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

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

Available features:

- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise

Common applications:

Heavy duty industrial equipment

Filter housing materials

- Insert assembly
Polyamide, GF reinforced: MPI 100
Aluminium: MPI 250-630-850

- Diffuser: Tinned Steel

- Valve: Steel

Bypass valve

- Opening pressure 175 kPa (1.75 bar) $\pm 10\%$
- Opening pressure 250 kPa (2.5 bar) $\pm 10\%$, except for MPI 850

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 [dm³]						
	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	-

Flow rates [l/min]

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.

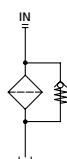
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.

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

Please, contact our Sales Department for further additional information.

Hydraulic symbol

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



MPI MPI100 - MPI250 - MPI630 - MPI850

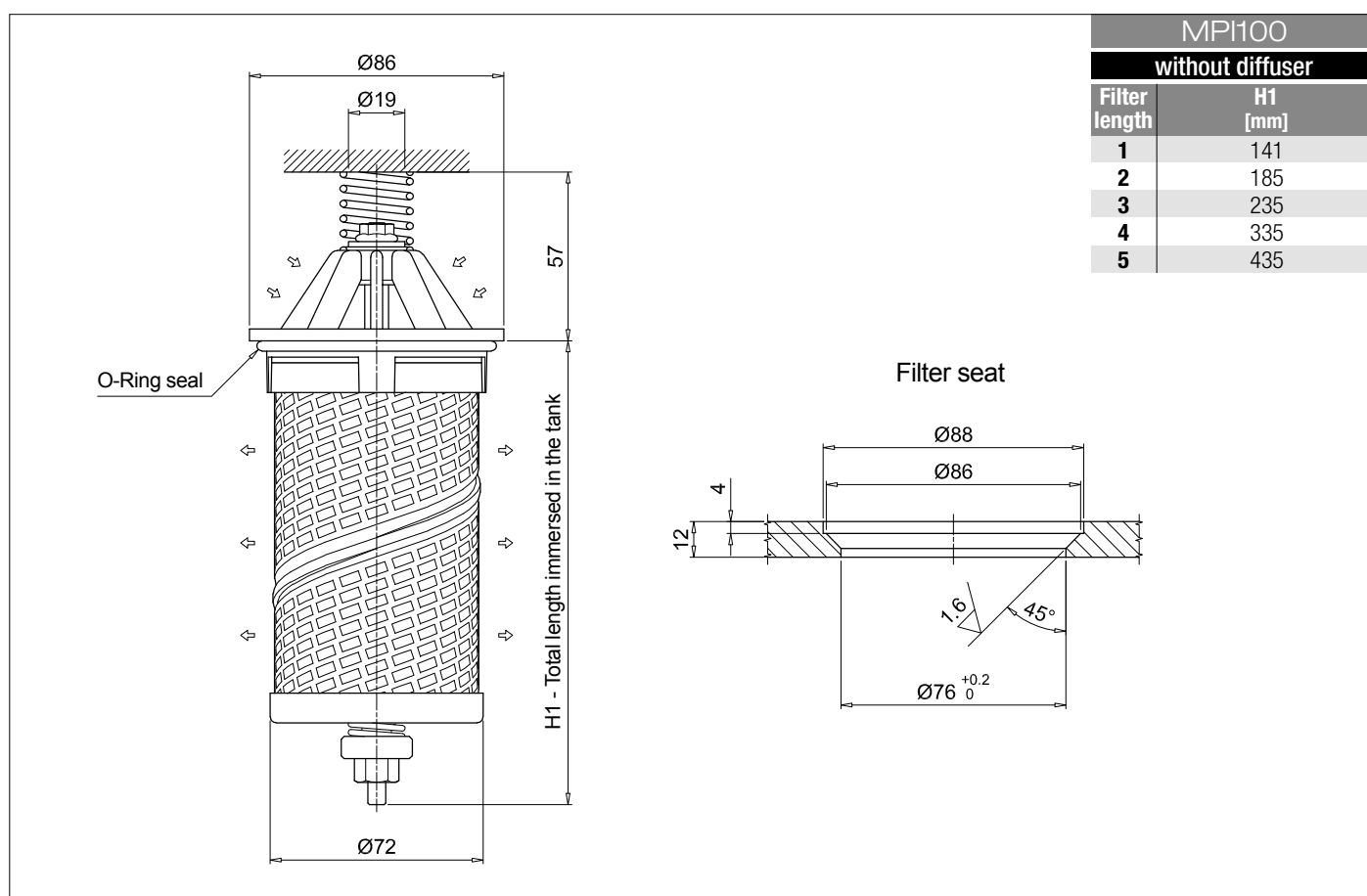
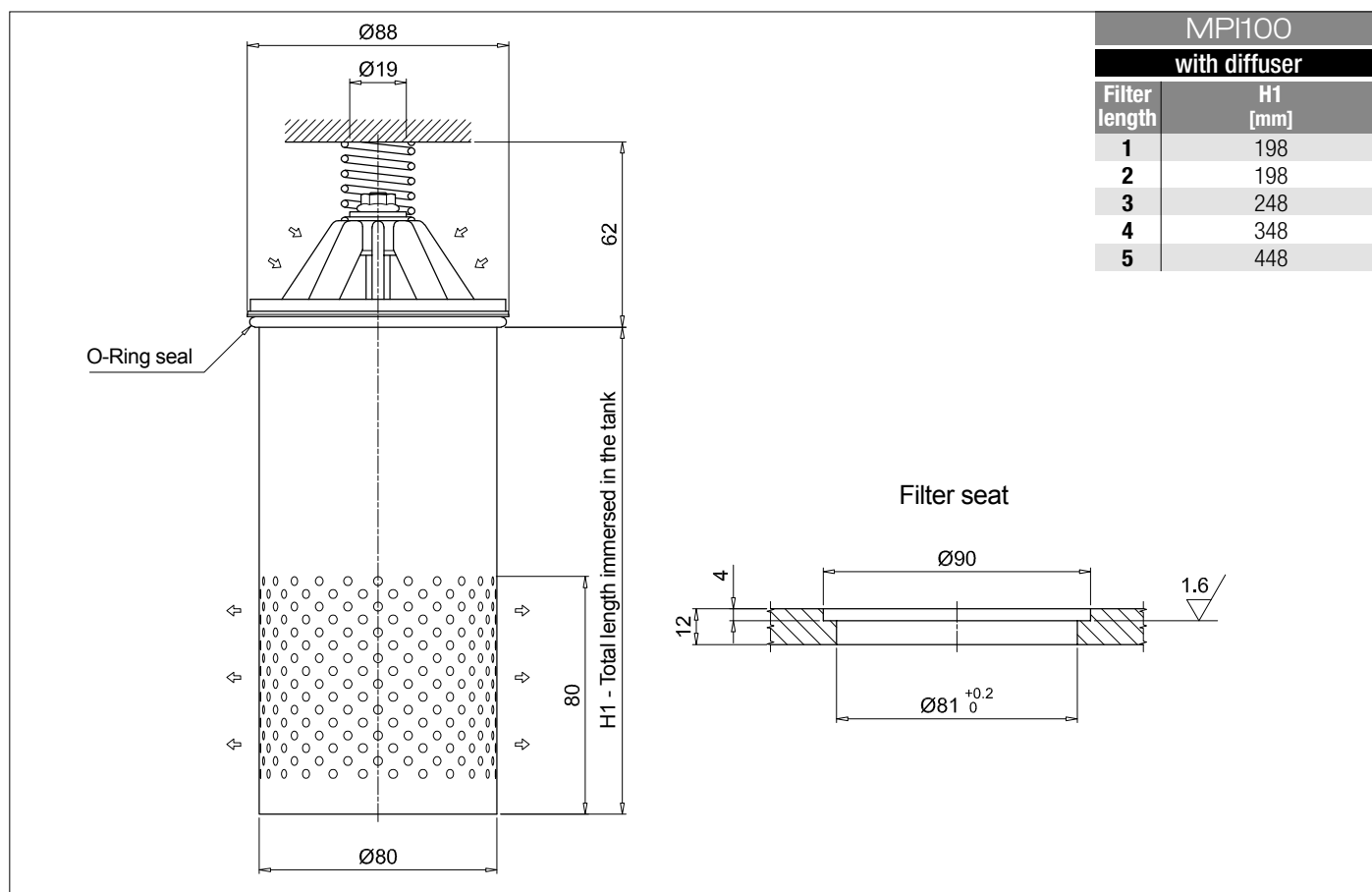
Designation & Ordering code

COMPLETE FILTER

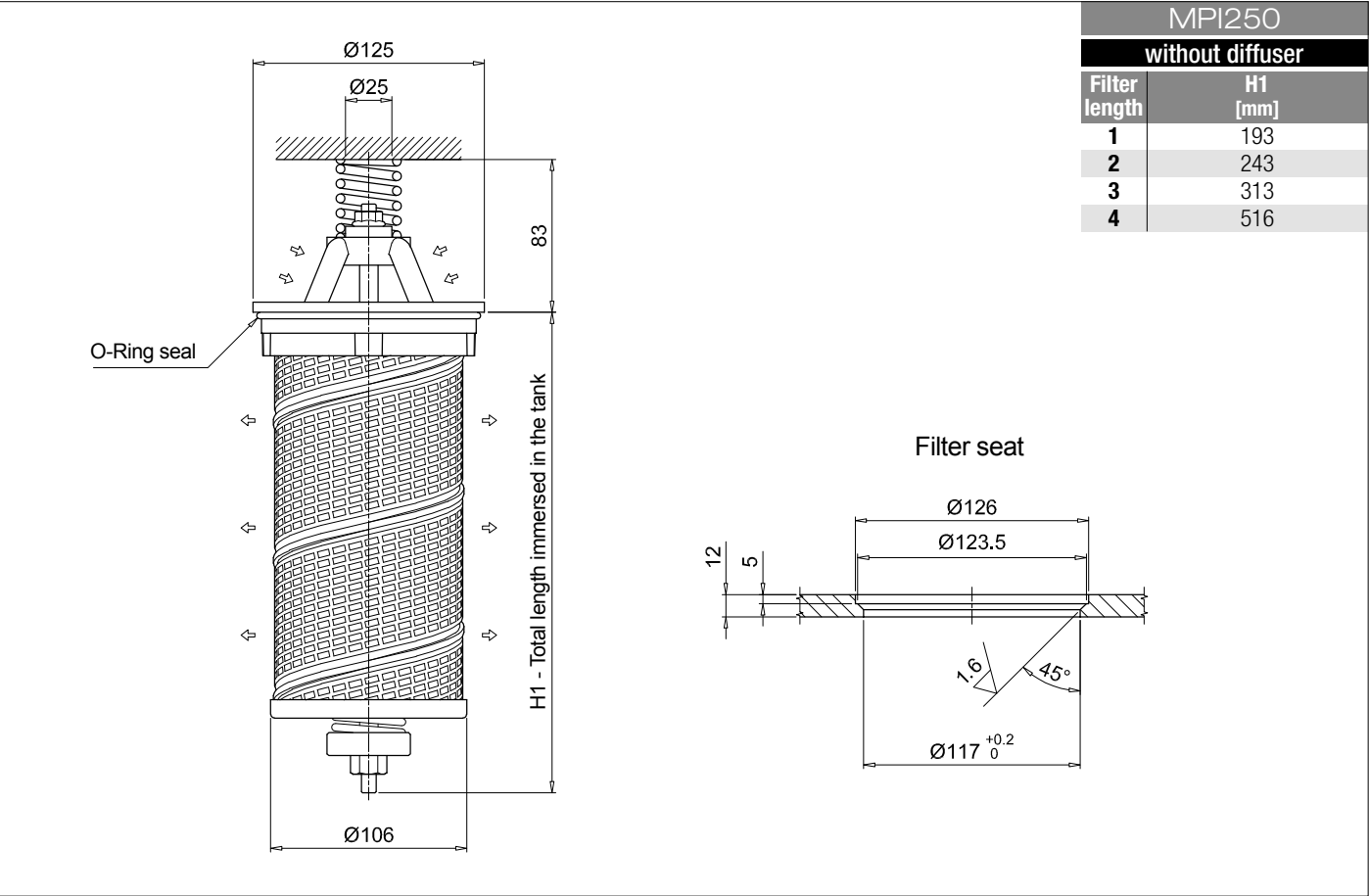
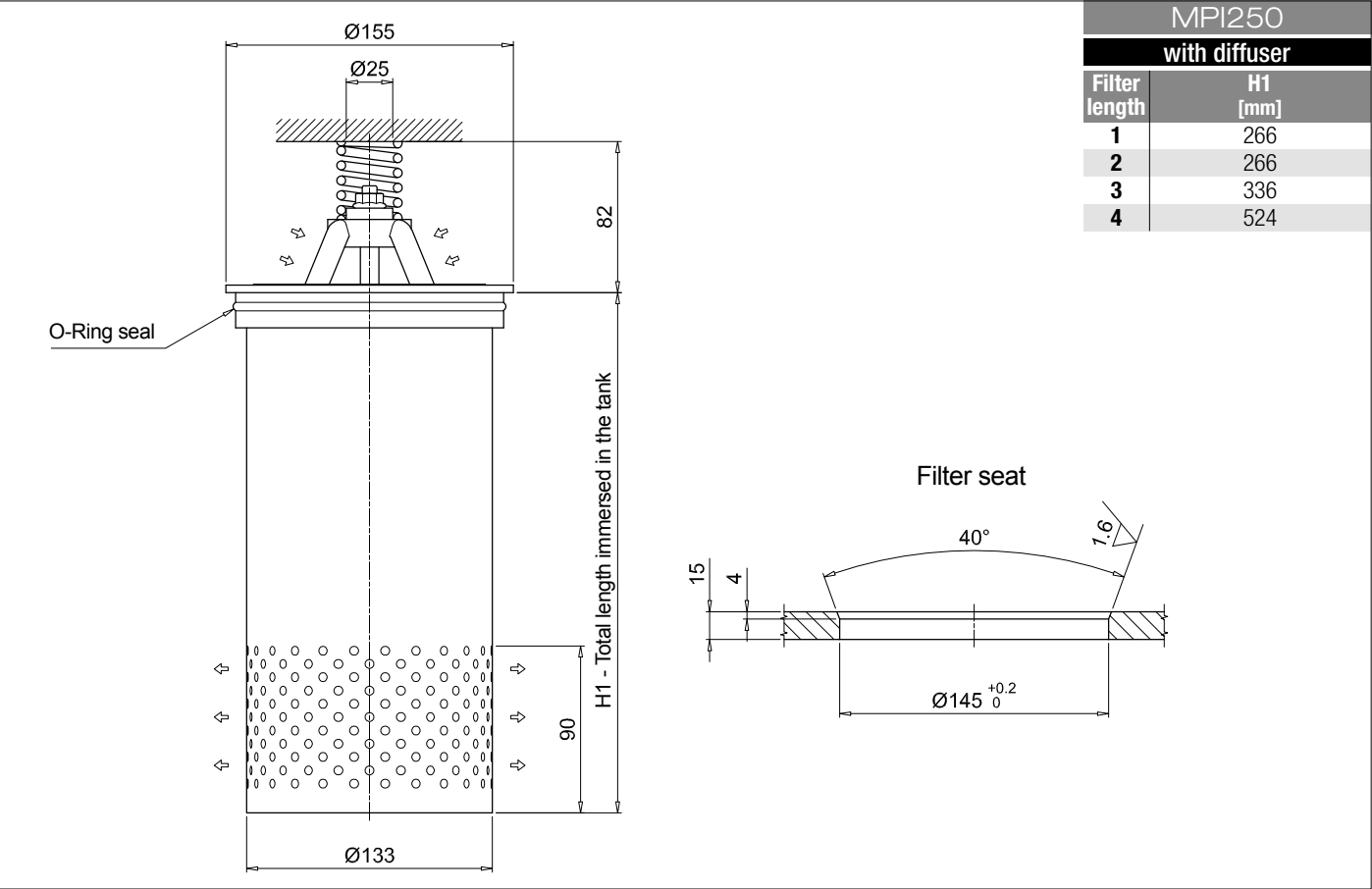
Series and size					Configuration example 1: MPI1001CEDA10P01						
MPI100					Configuration example 2: MPI6305EDZM25P01						
MPI250											
MPI630											
MPI850											
Length	MPI100	MPI250	MPI630	MPI850							
1	•	•	•	•							
2	•	•	•	•							
3	•	•	•	•							
4	•	•	•	•							
5	•	-	•	-							
Bypass valve	MPI100	MPI250	MPI630	MPI850							
S Without bypass	•	•	•	•							
C 1.75 bar	•	•	•	•							
E 2.5 bar	•	•	•	-							
Diffuser and magnetic filter											
D With diffuser, with magnetic filter											
F With diffuser, without magnetic filter											
O Without diffuser, with magnetic filter											
E Without diffuser, without magnetic filter											
Seals and treatments					Filtration rating						
					Axx	Mxx	Pxx				
A NBR				•	•	•					
V FPM				•	•	•					
W NBR head anodized				•	•	-					
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						

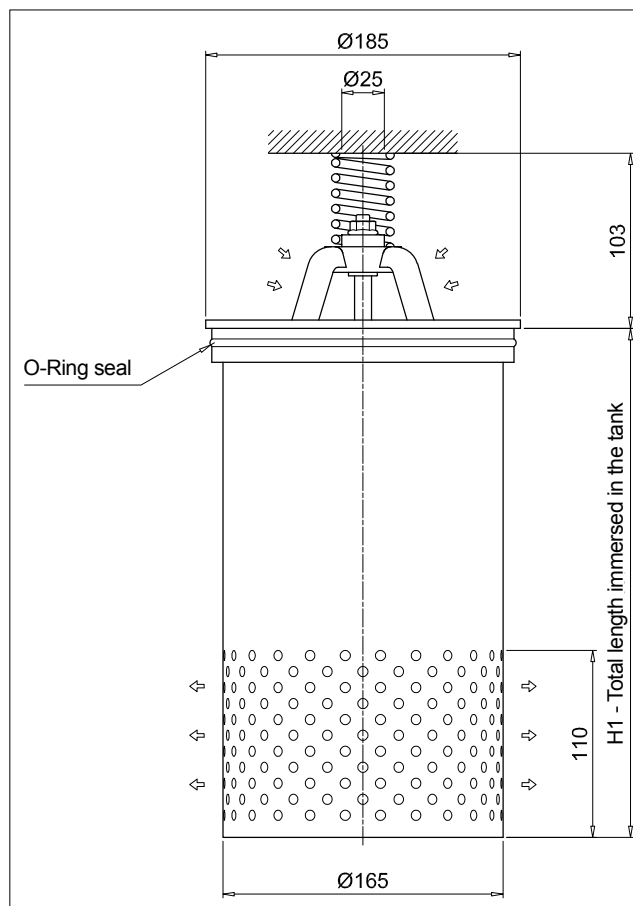
FILTER ELEMENT

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									
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				

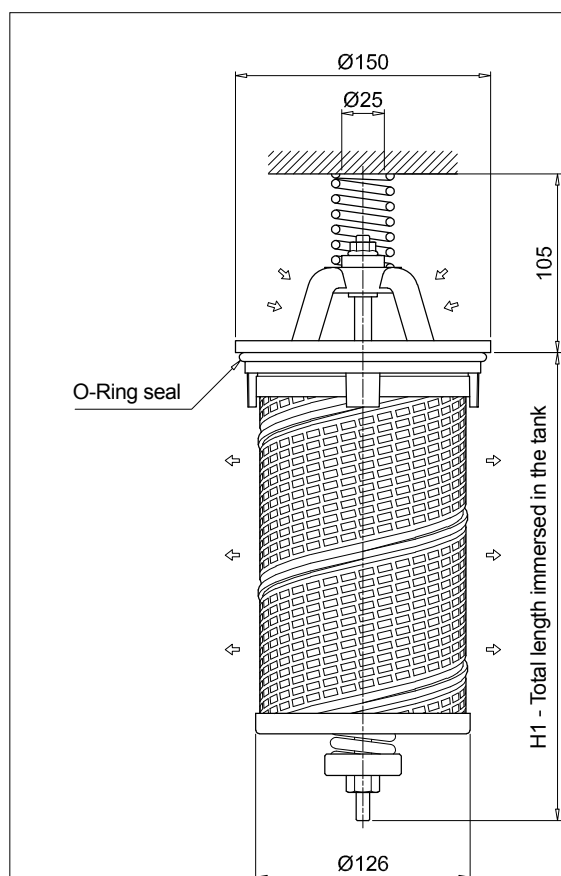
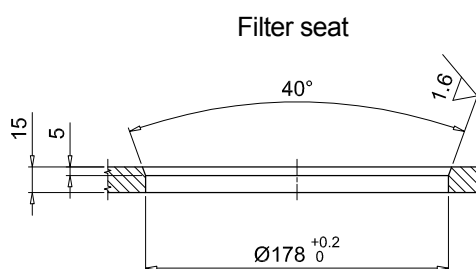


Dimensions

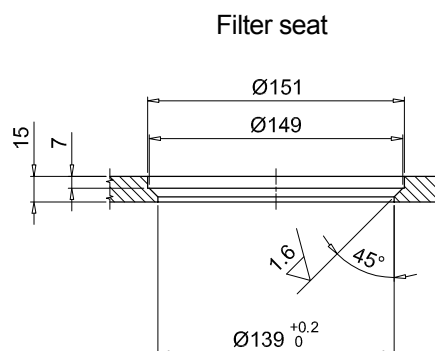




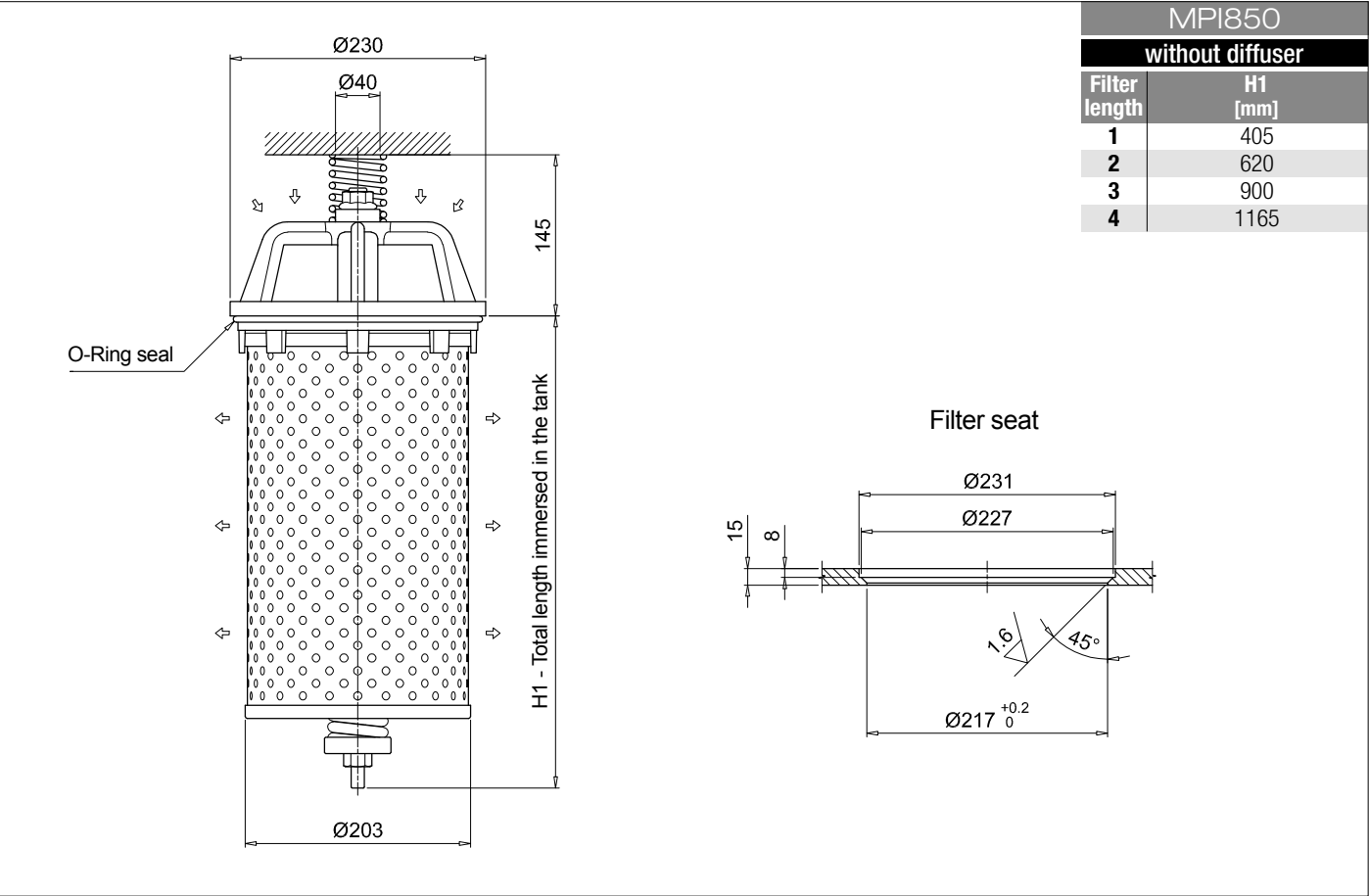
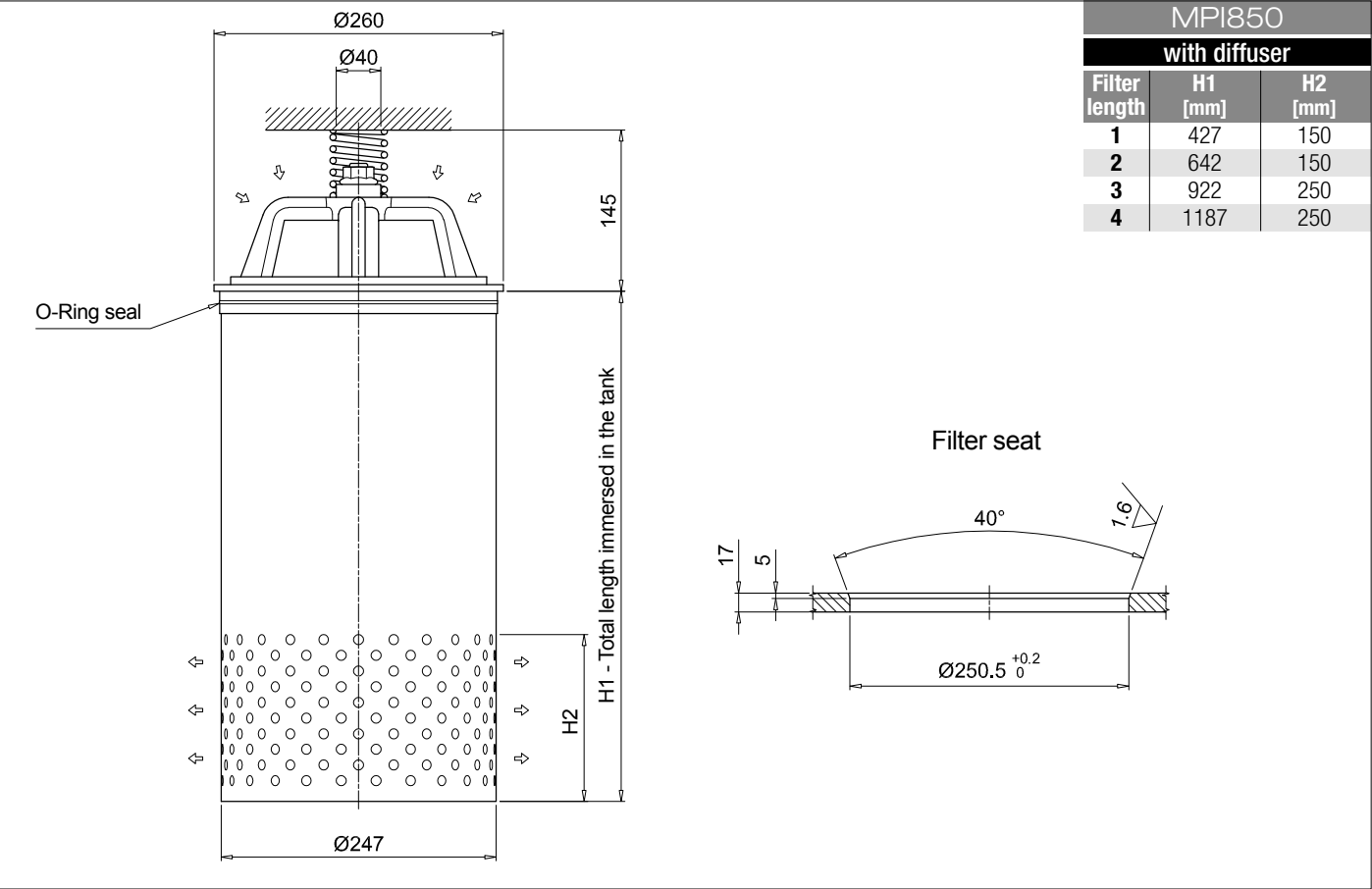
MPI630	
with diffuser	
Filter length	H1 [mm]
1	298
2	378
3	478
4	568
5	868



MPI630	
without diffuser	
Filter length	H1 [mm]
1	275
2	355
3	455
4	540
5	841

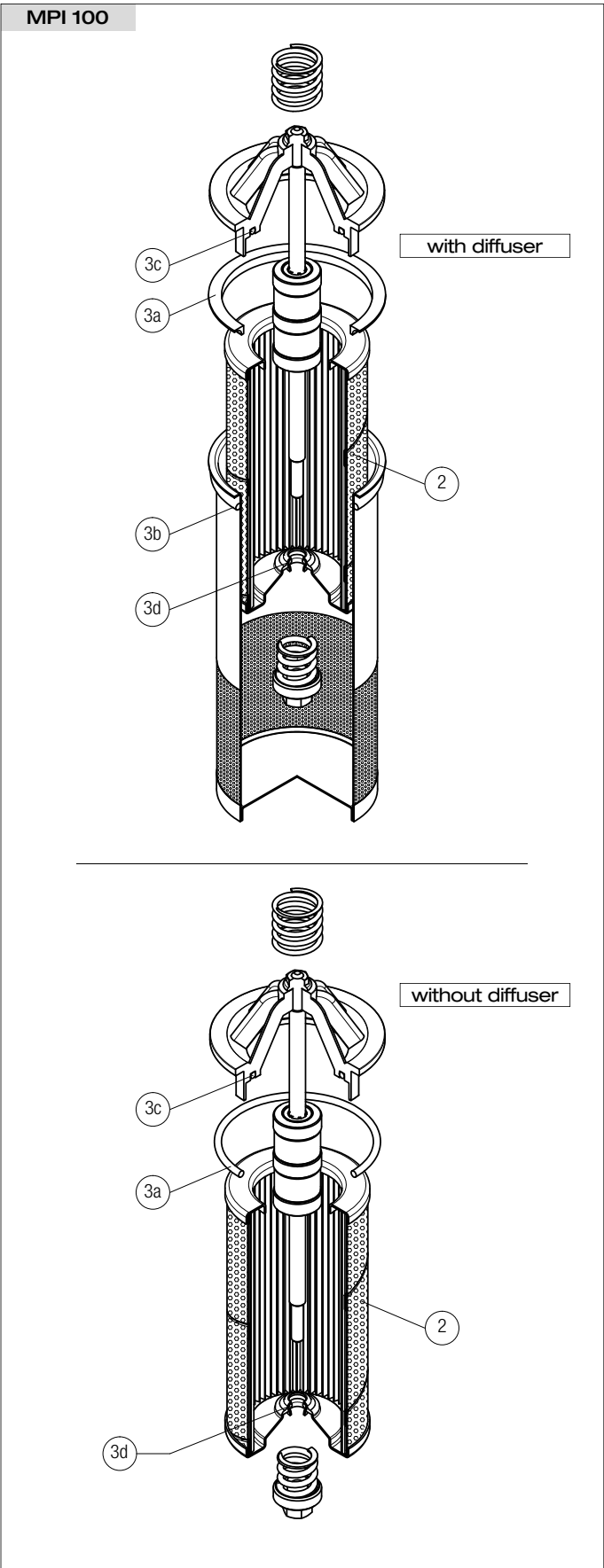


Dimensions

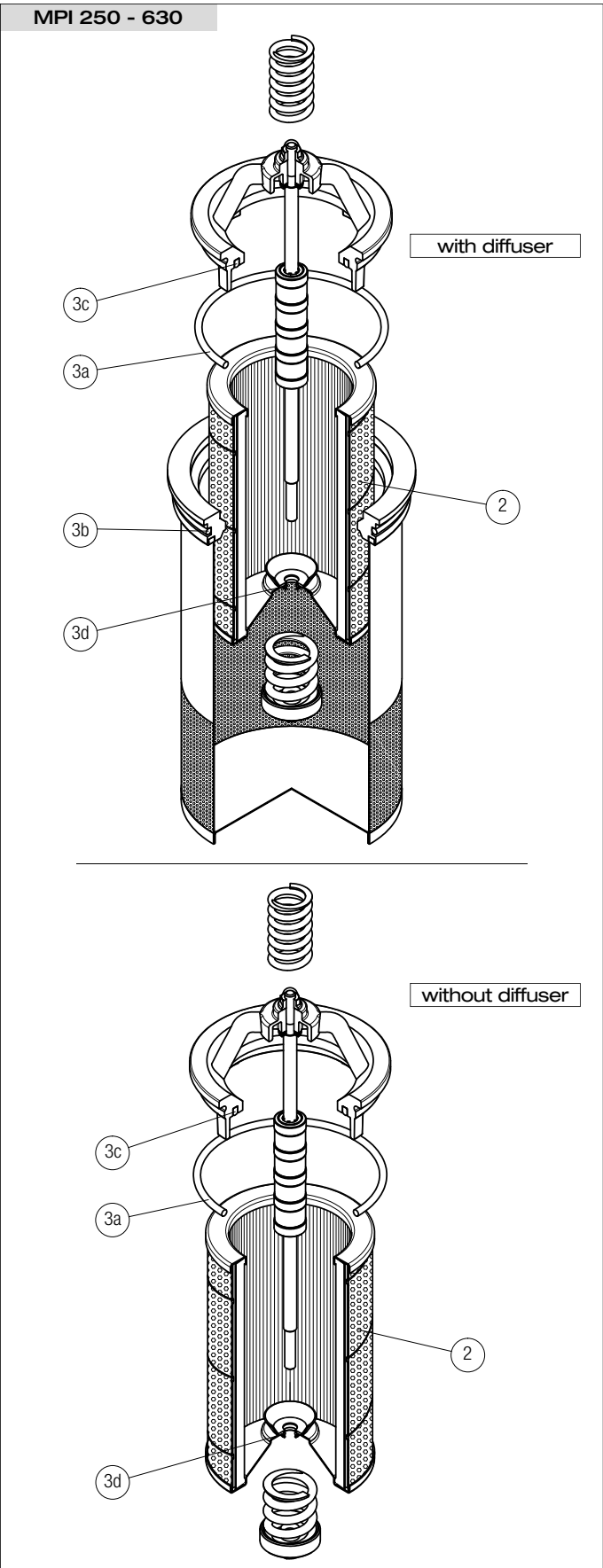


MPI SPARE PARTS

Order number for spare parts

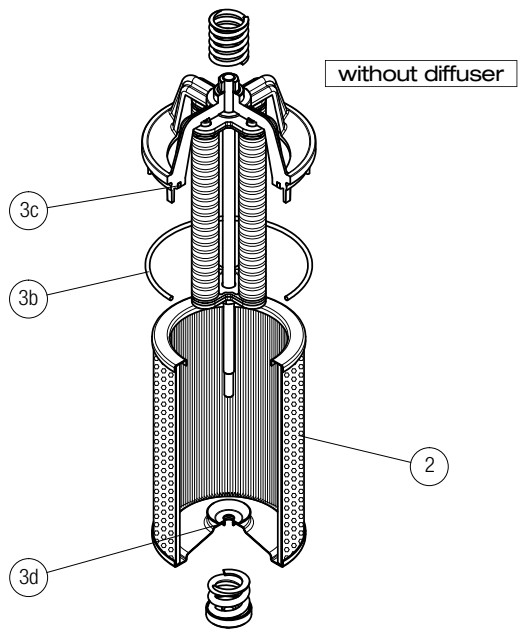
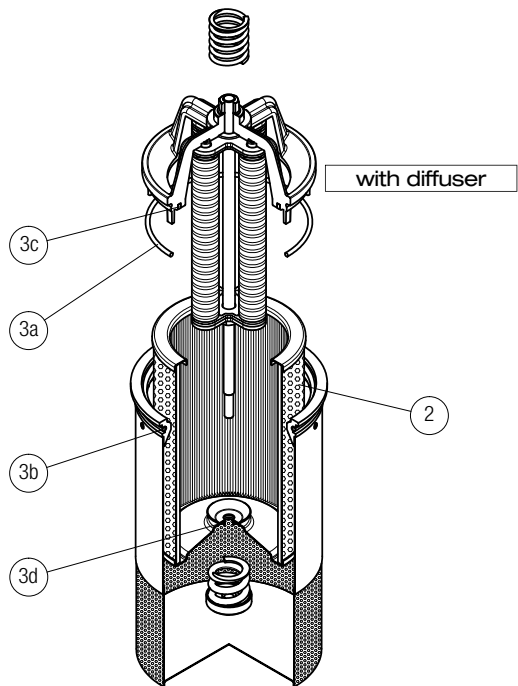


Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3	(3a ÷ 3d)
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPI 100	See order table	02050145	02050146



Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3	(3a ÷ 3d)
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
MPI 250	See order table	02050147	02050148
MPI 630		02050112	02050113

MPI 850



Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	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 2500 l/min



Description

Technical data

Return filter

Maximum working pressure up to 2 MPa (20 bar)
Flow rate up to 2500 l/min

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

They could be directly fixed to the reservoir in immersed or semi-immersed position or connected to the lines of the system through the hydraulic fittings.

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

Available features:

- Female threaded connections up to 2 1/2" and flanged connections up to 3 1/2", for a maximum flow rate of 2500 l/min
- Double input connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

Common applications:

Heavy duty industrial equipment

Filter housing materials

- Filter body
Aluminium: FRI 255
Anodized Aluminium: FRI 025-040-100-250-630
Phosphatized Steel: FRI 850
- Cover
Polyamide, GF reinforced: FRI 255
Anodized Aluminium: FRI 025-040-100-250-630-850
- Valve: Polyamide, GF reinforced - Steel

Bypass valve

Opening pressure 240 kPa (2.4 bar) $\pm 10\%$

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

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.

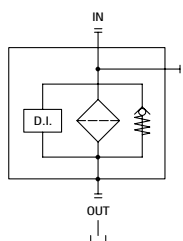
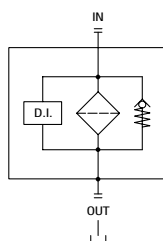
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

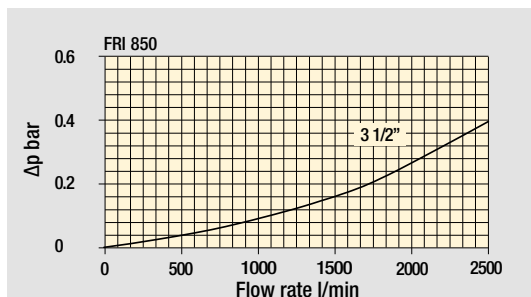
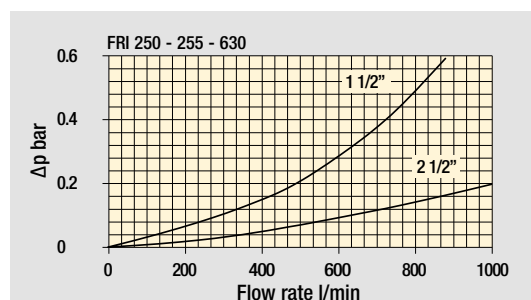
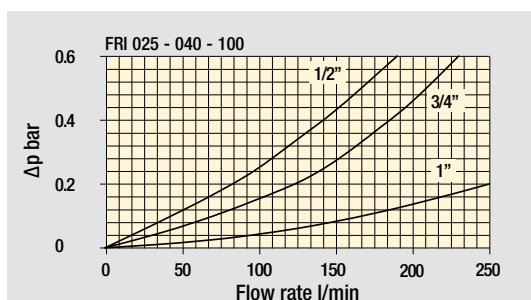
Hydraulic symbols

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

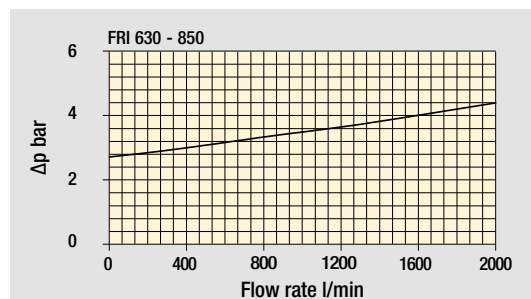
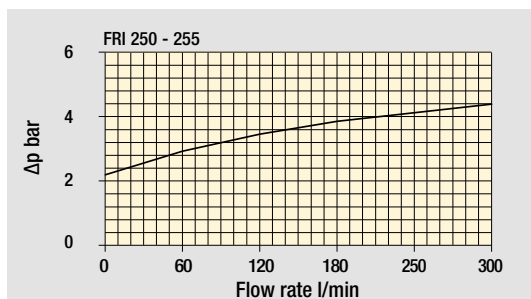
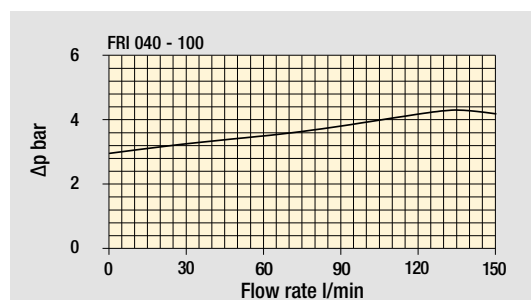
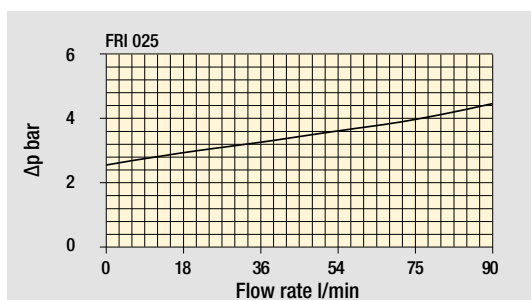


Pressure drop

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.

Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example 1:		FRI025	B	A	G1	A25	N	P01
FRI025		Configuration example 2:		FRI040	S	V	G2	M25	N	P01
FRI040										
Bypass valve										
B With bypass 2.4 bar										
S Without bypass										
Seals and treatments										
A NBR										
V FPM										
Connections for FRI025		Connections for FRI040								
G1 G 1/2"		G3/4"								
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

[illegible]

CLOGGING INDICATORS

See page 720-721

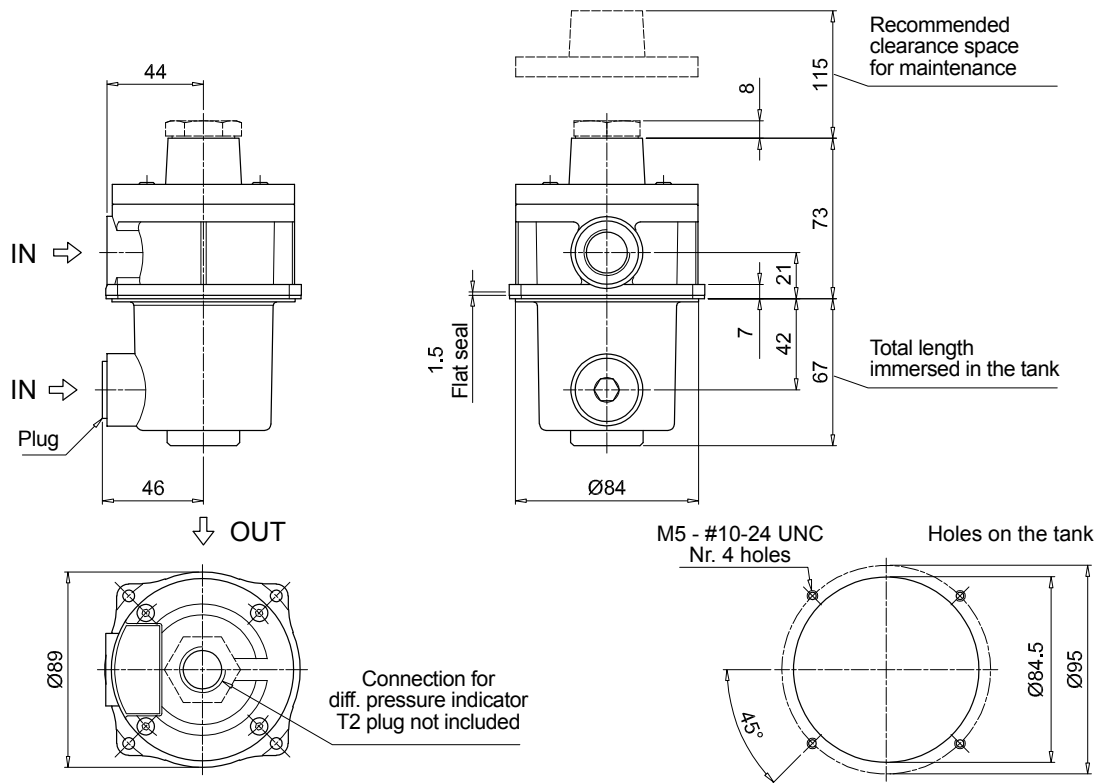
DEA	Electrical differential pressure indicator	DLE	Electrical / visual differential pressure indicator
DEM	Electrical differential pressure indicator	DTA	Electronic differential pressure indicator
DEU	Electrical differential pressure indicator	DVA	Visual differential pressure indicator
DLA	Electrical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

PLUGS

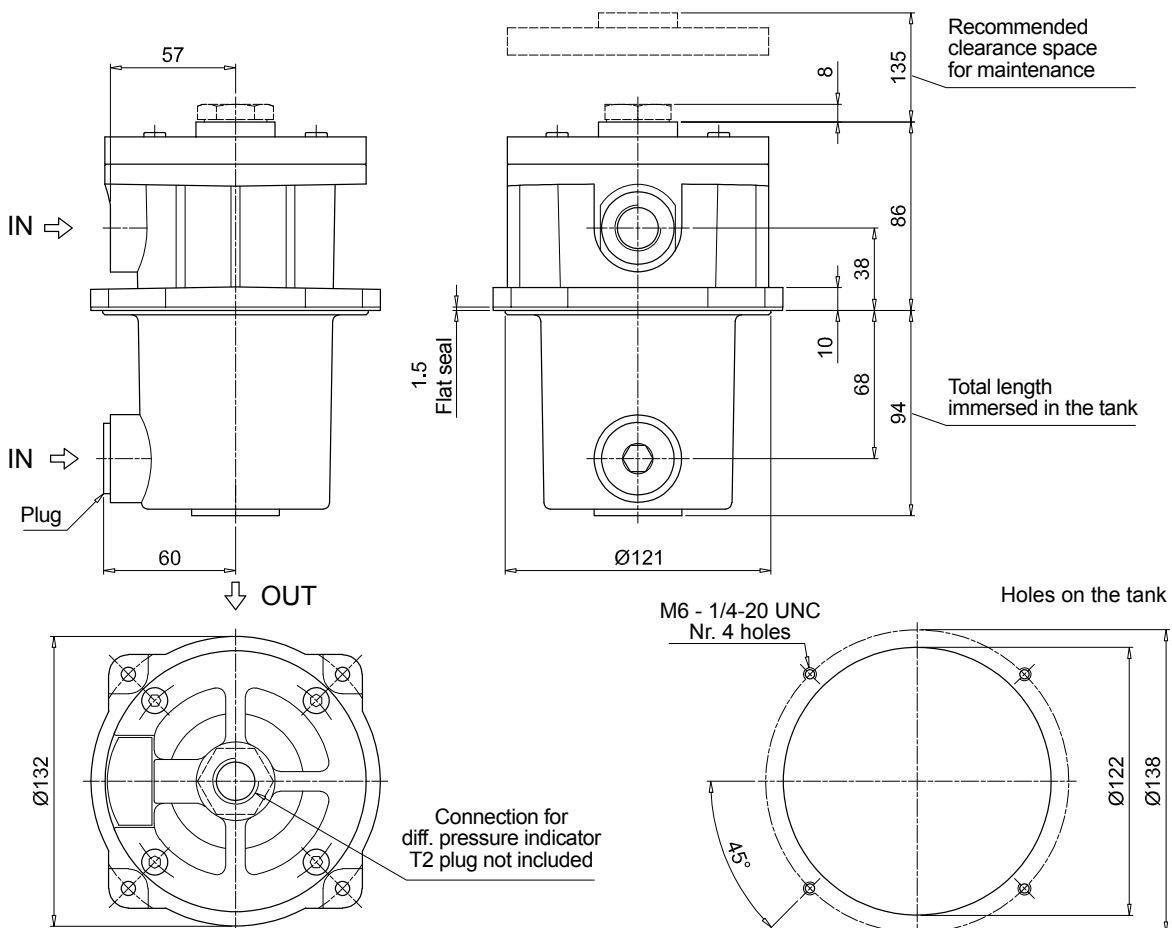
See page 747

T2 Plug (not included)

FRIO25



FRIO40

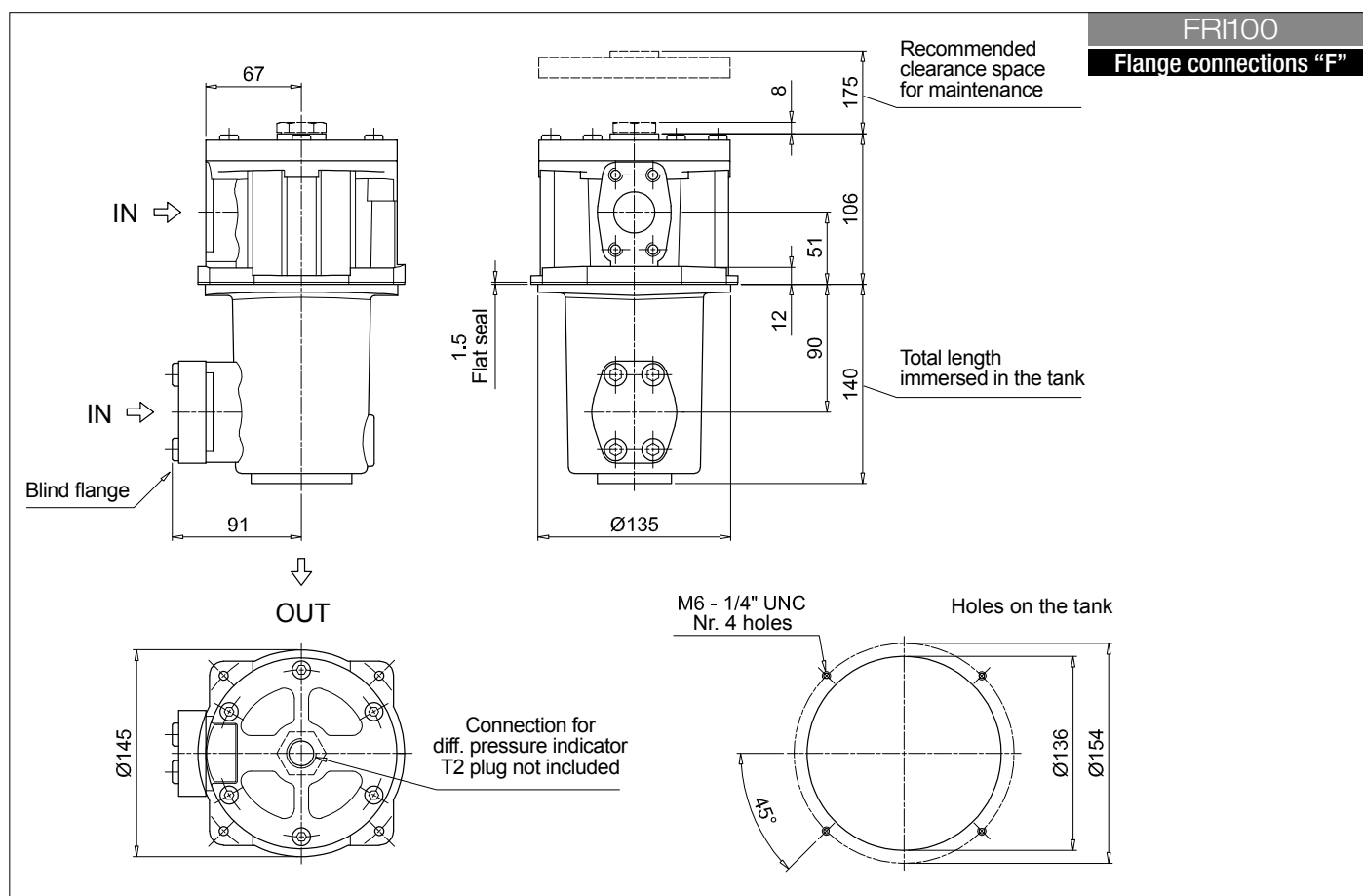
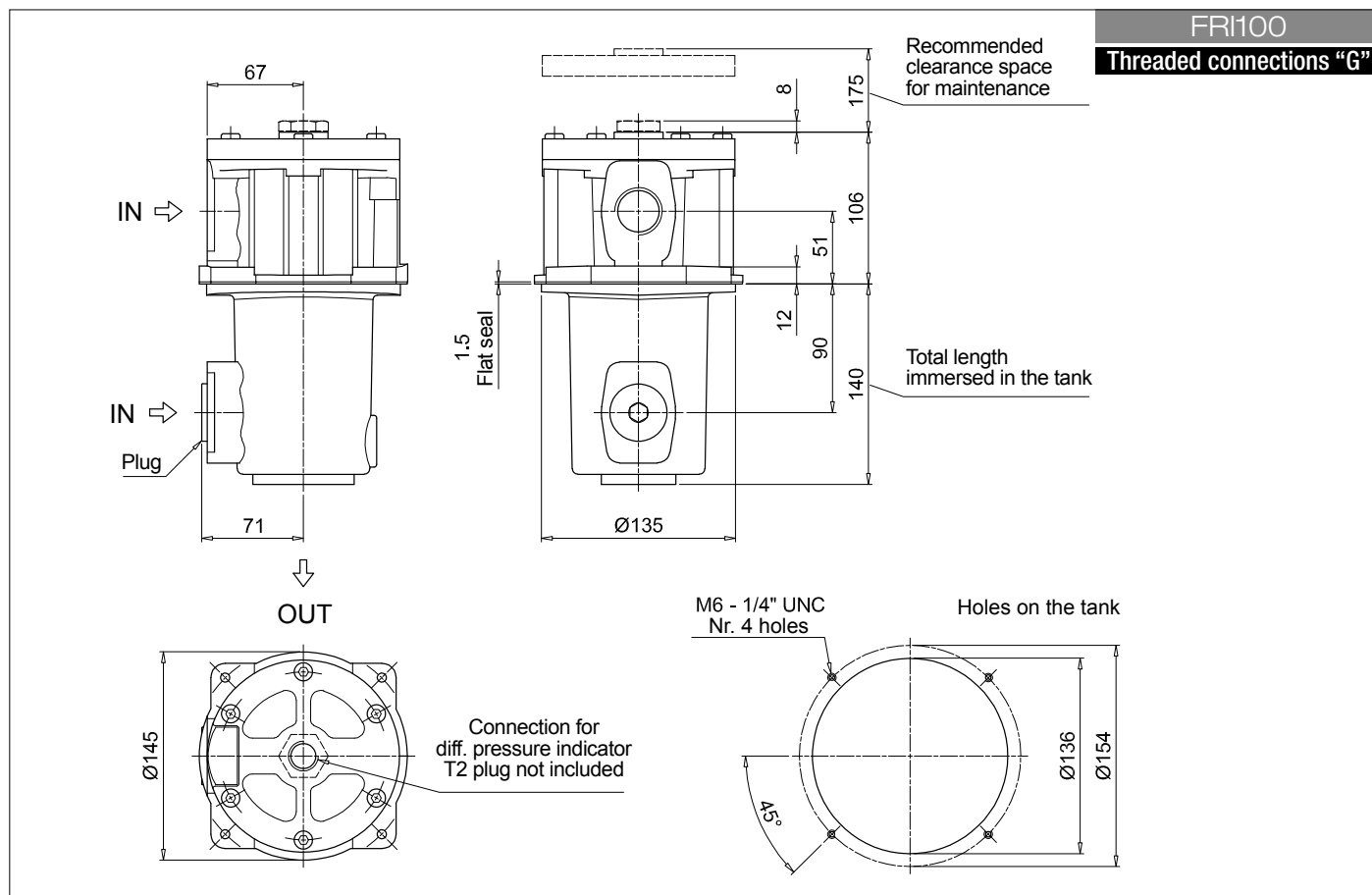


Series and size		Configuration example 1:		FRI100	B	A	G1	A25	N	P01
FRI100		Configuration example 2:		FRI630	S	V	F2	M25	N	P01
FRI250										
FRI630										
Bypass valve										
B	With bypass 2.4 bar									
S	Without bypass									
Seals and treatments										
A	NBR									
V	FPM									
Connections for FRI100		Connections for FRI250		Connections for FRI630						
G1	G 1"	G 1 1/2"		G 2 1/2"						
G2	1" 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 32 - 2 1/2" - 12 UN						
F1	1" 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		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 10 bar			P01 MP Filtri standard			
							Pxx Customized			

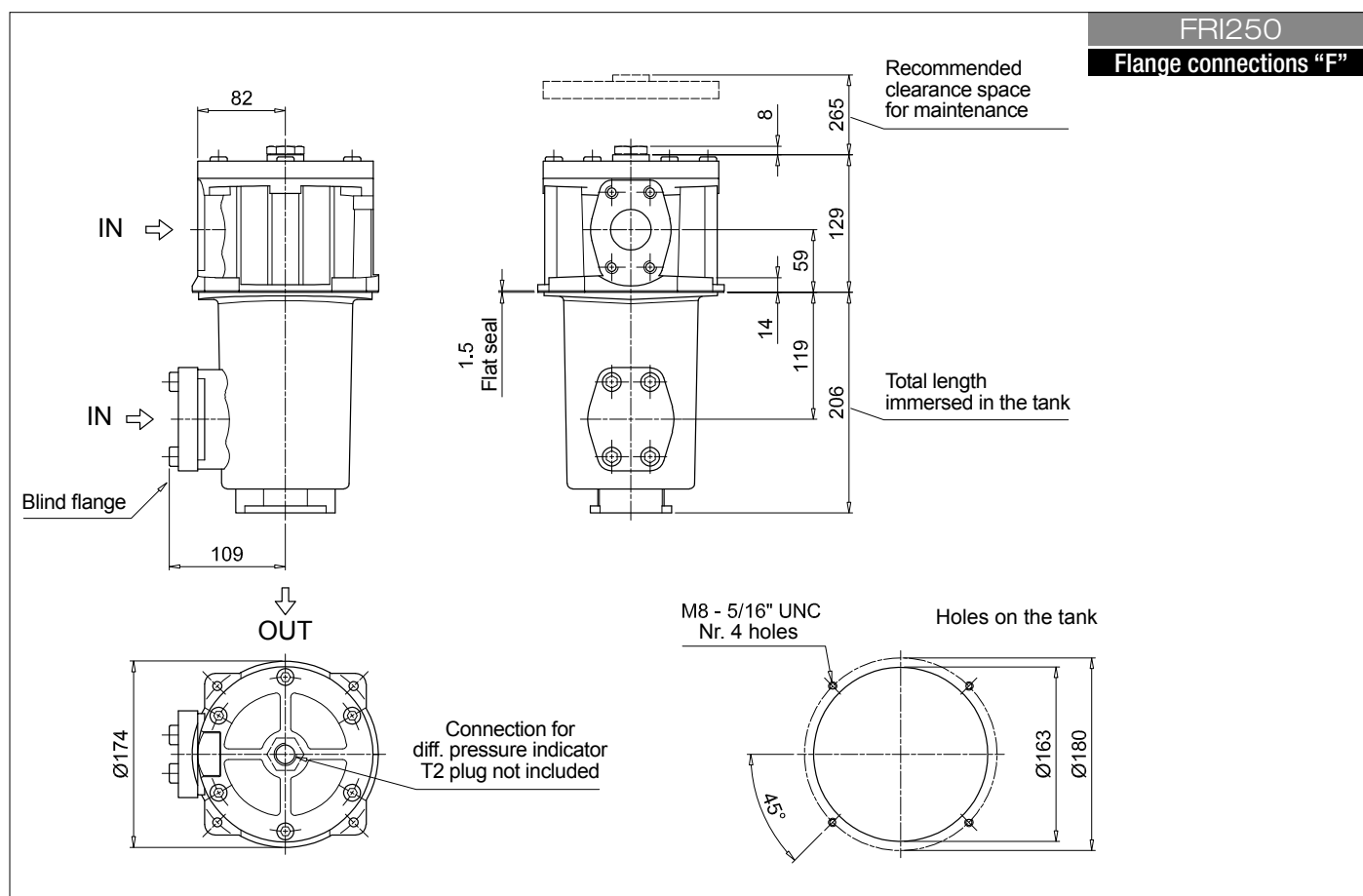
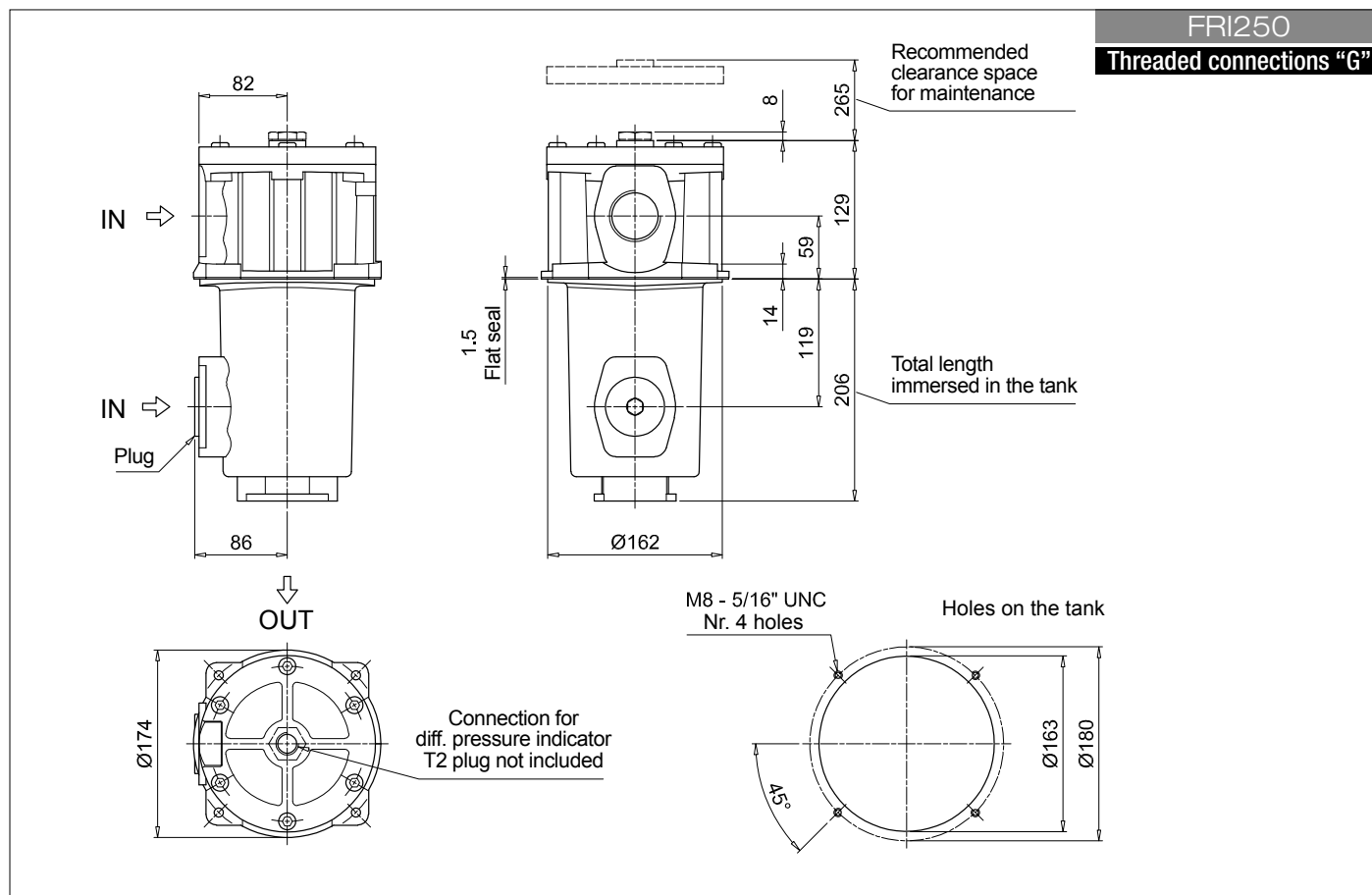
Element series and size CU100 CU250 CU630		Configuration example 1: CU100	A25	N	P01
		Configuration example 2: CU630	M25	V	P01
Filtration rating (filter media)					
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm				
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm				
A10 Inorganic microfiber 10 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					
N NBR					
V FPM					
		Execution P01 MP Filtri standard Pxx Customized			

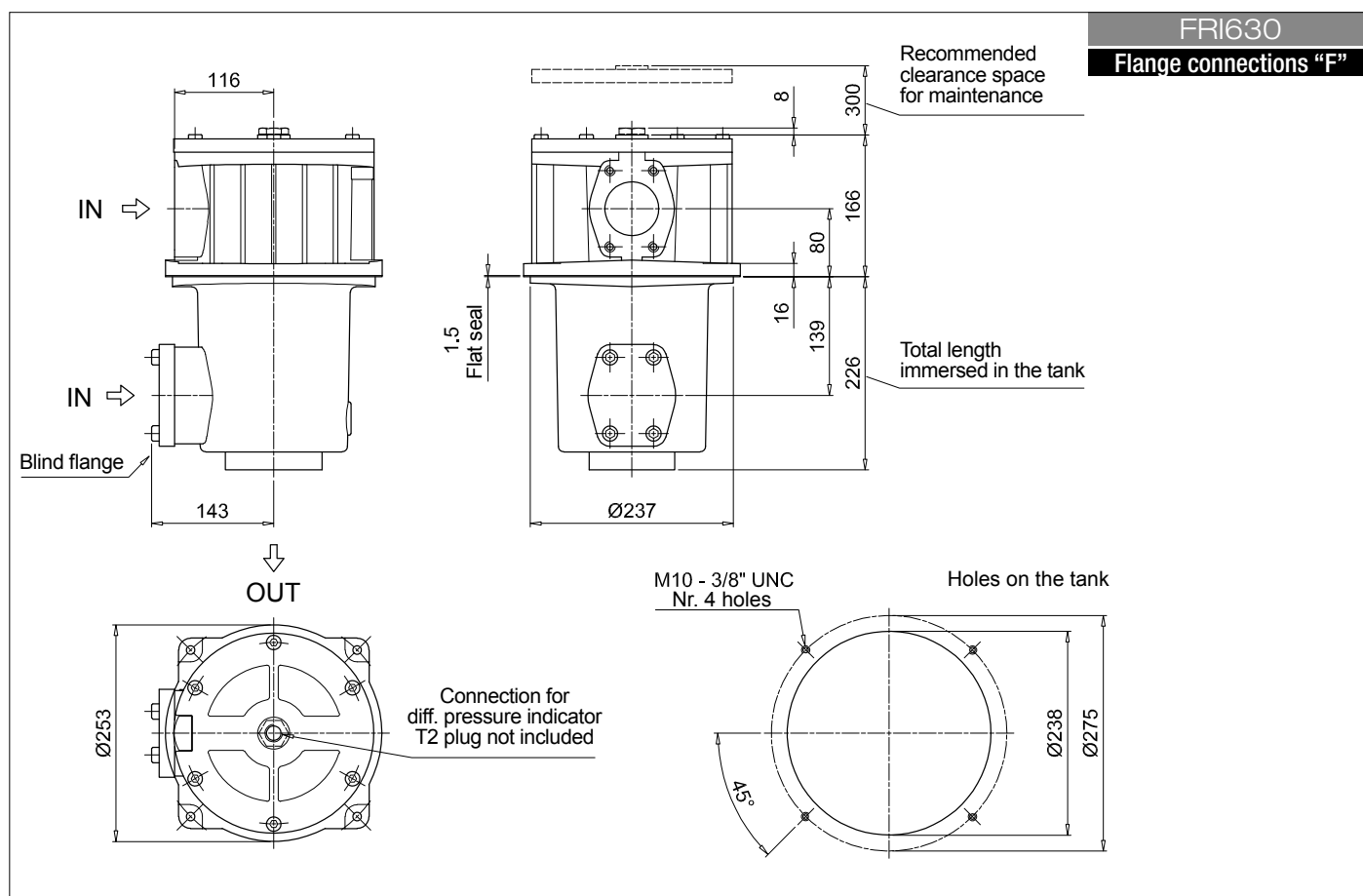
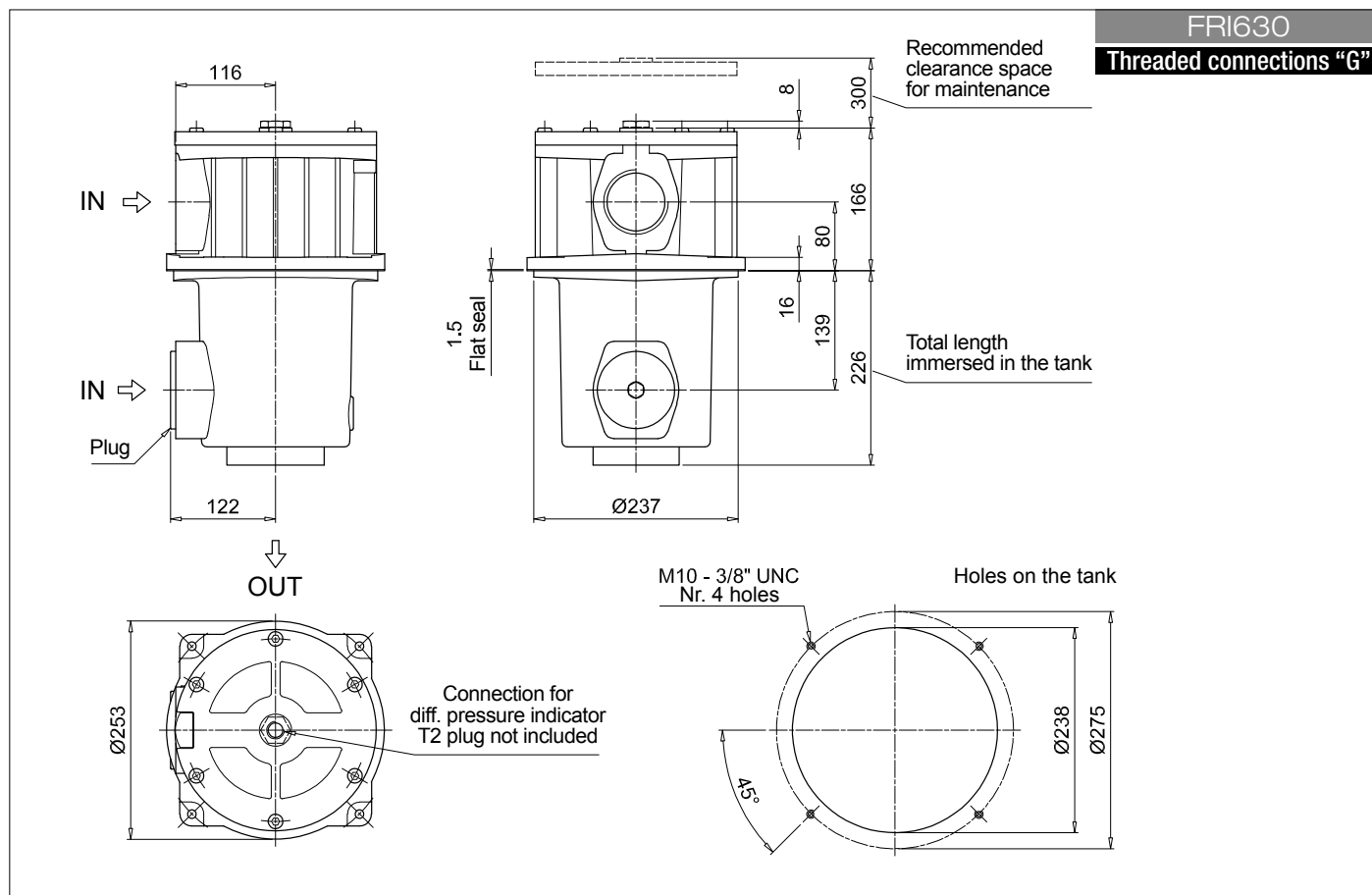
DEA	Electrical differential pressure indicator	DLE	Electrical / visual differential pressure indicator
DEM	Electrical differential pressure indicator	DTA	Electronic differential pressure indicator
DEU	Electrical differential pressure indicator	DVA	Visual differential pressure indicator
DLA	Electrical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

T2 Plug (not included)



Dimensions





Designation & Ordering code

COMPLETE FILTER

Series and size		Configuration example 1:		FRI255	S	V	F2	M25	N	P01
FRI255		Configuration example 2:		FRI850	B	A	F1	A25	V	P01
FRI850										
Bypass valve										
B With bypass 2.4 bar										
S Without bypass										
Seals for FRI255		Seals and treatments for FRI850		Filtration rating						
				Axx	Mxx	Pxx				
A NBR		A NBR		•	•	•				
V FPM		V FPM		•	•	•				
		W NBR head anodized		•	•	-				
		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 CU250 CU850			Configuration example 1: CU250			M25			V			P01		
			Configuration example 2: CU850			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											
						Filtration rating								
Seals for FRI255			Seals and treatments for FRI850			Axx			Mxx			Pxx		
N NBR			N NBR			•			•			•		
V FPM			V FPM			•			•			•		
			W NBR head anodized			•			•			-		
			Z FPM head anodized			•			•			-		
												Execution		
												P01 MP Filtri standard		
												Pxx Customized		

FRI255 CLOGGING INDICATORS

See page 720-721

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

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

FRI850 CLOGGING INDICATORS

See page 720-721

DEA	Electrical differential pressure indicator
DEM	Electrical differential pressure indicator
DLA	Electrical / visual differential pressure indicator
DLE	Electrical / visual differential pressure indicator

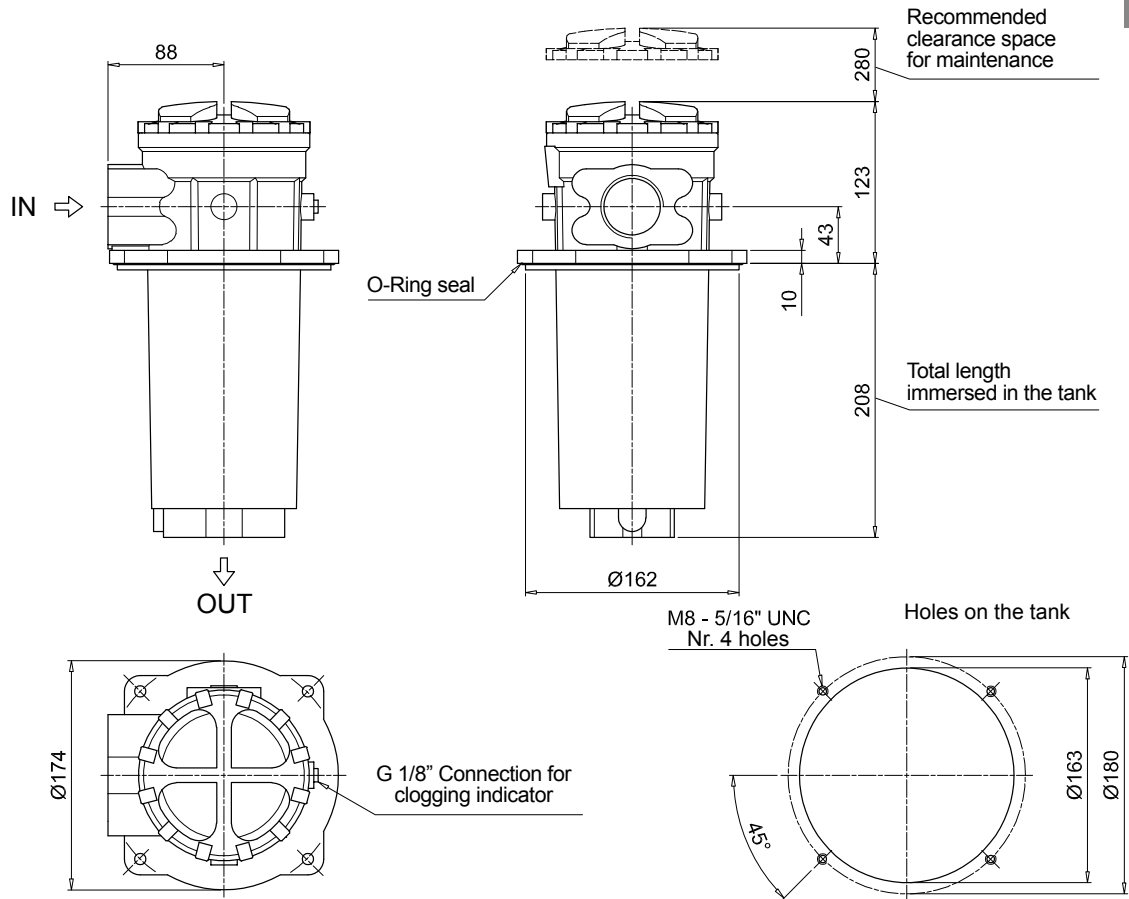
DTA	Electrical differential pressure indicator
DVA	Visual differential pressure indicator
DVM	Visual differential pressure indicator

PLUGS

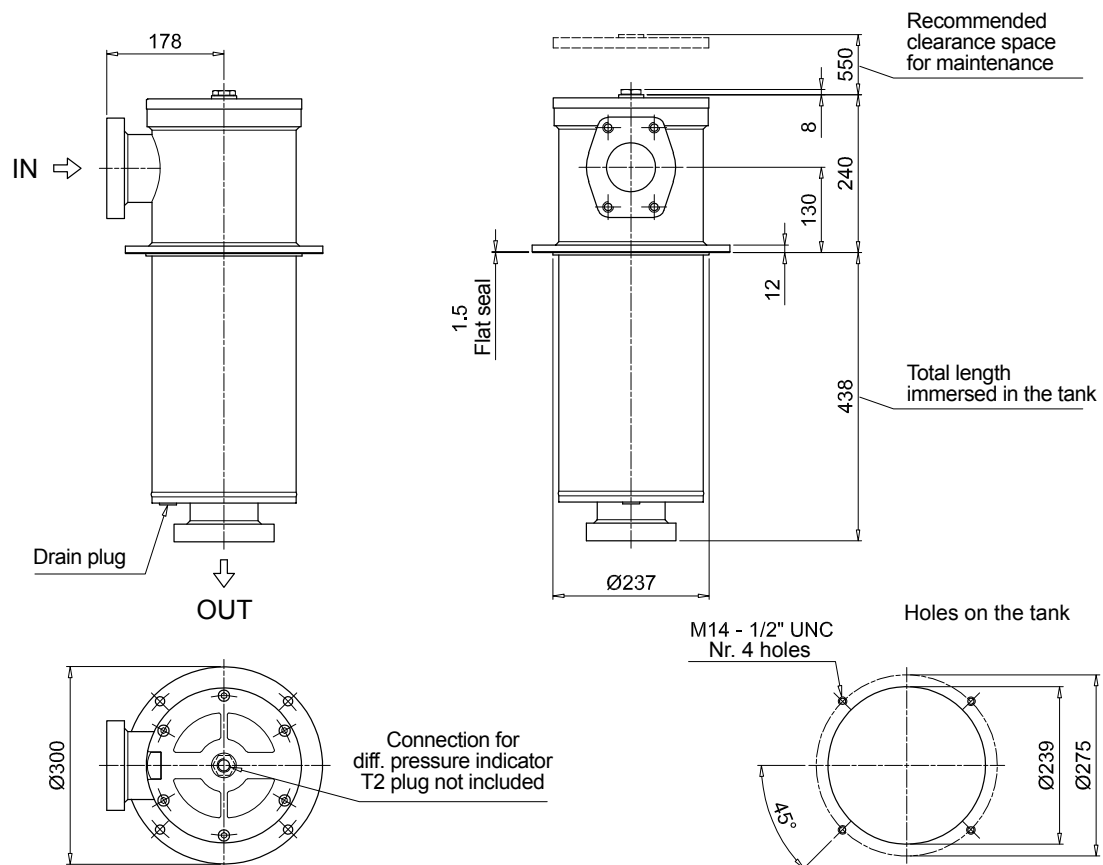
See page 747

T2 Plug (not included)

FRI255

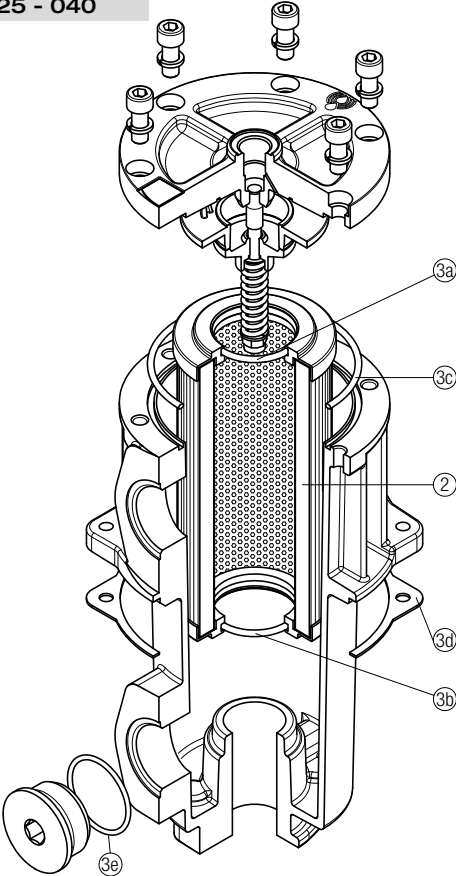


FRI850



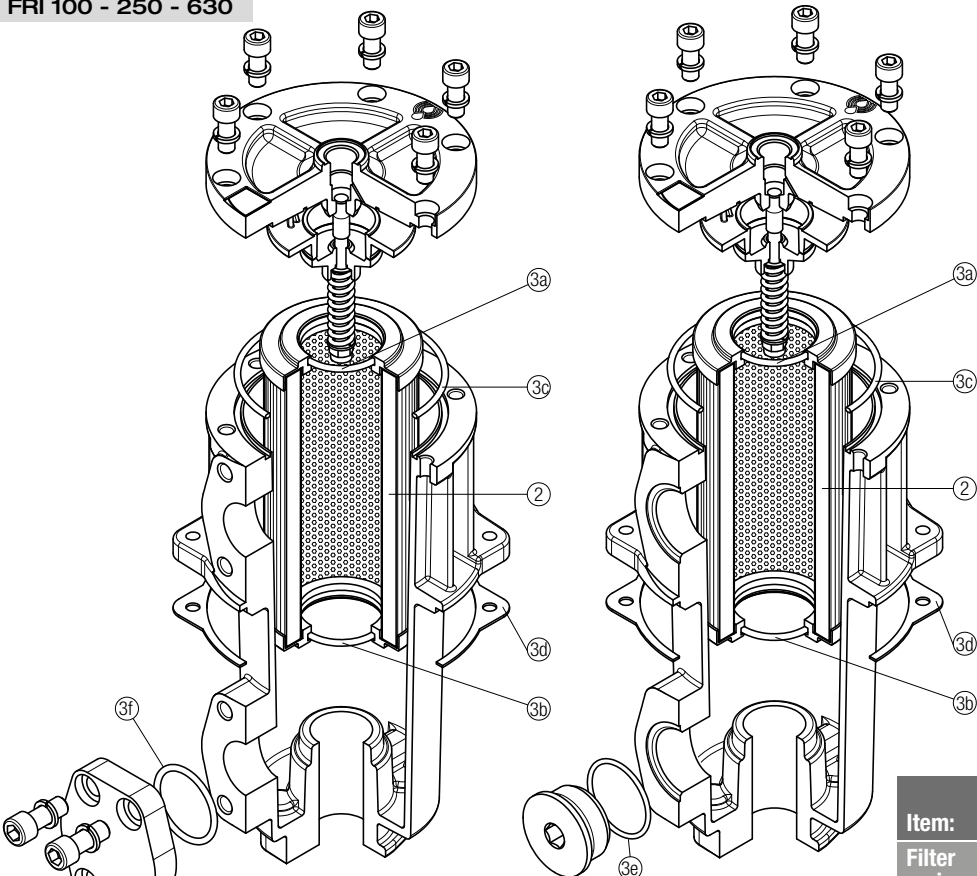
Order number for spare parts

FRI 025 - 040



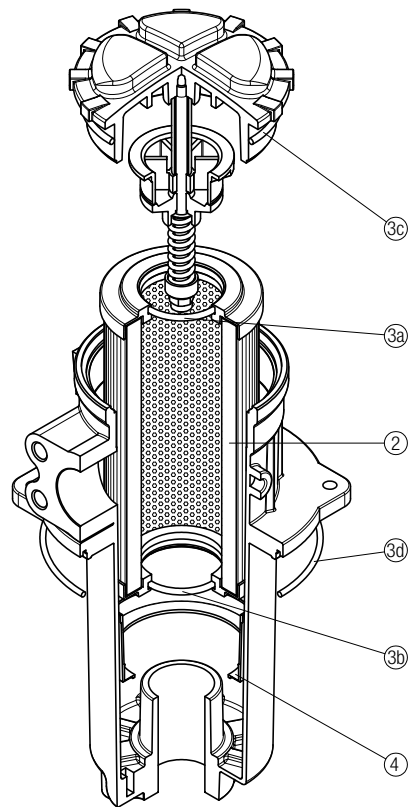
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element See order table	Seal Kit code number NBR	FPM
FRI 025		02050213	02050220
FRI 040		02050214	02050221

FRI 100 - 250 - 630



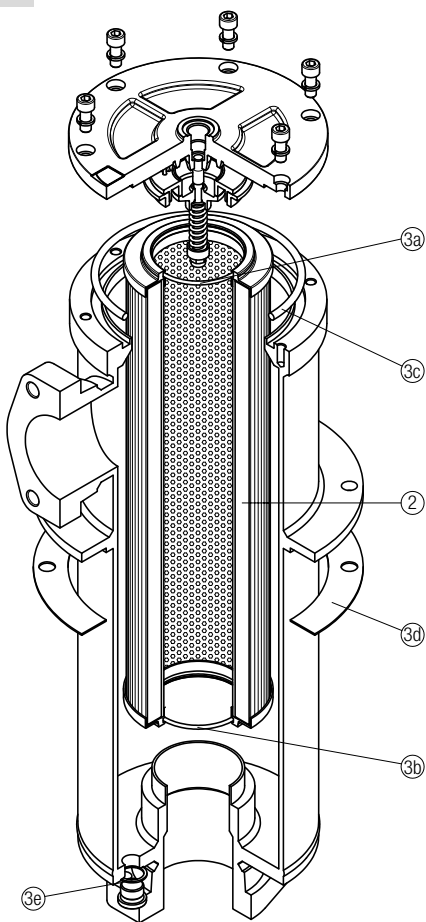
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)	
Filter series	Filter element See order table	Seal Kit code number NBR	FPM
FRI 100		02050215	02050222
FRI 250		02050216	02050223
FRI 630		02050217	02050224

FRI 255



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

FRI 850



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

RF2 series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 615 l/min



Description

Technical data

Return filter

Maximum working pressure up to 2 MPa (20 bar)
Flow rate up to 615 l/min

RF2250 and RF2350 are ranges of return filters for side tank mounting with integrated shut-off valve for protection of the reservoir against the system contamination.

They are placed below the minimum oil level, directly connected to the return line of the system.

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

Available features:

- Female threaded connections up to 1" and flanged connections up to 1 1/2", for a maximum flow rate of 615 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic filter, to hold the ferrous particles
- Visual, electrical and electronic clogging indicators

Common applications:

- Compact mobile machines
- Compact industrial equipment

Filter housing materials

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

Bypass valve

Opening pressure 175 kPa (1.75 bar) $\pm$ 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 263 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

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 $\Delta p = 0.5$ bar.

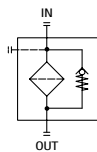
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.

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

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

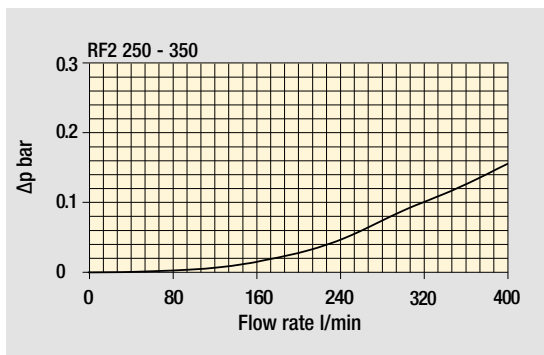
Filter series	Style B - E
RF2 250	•
RF2 350	•

Hydraulic symbols

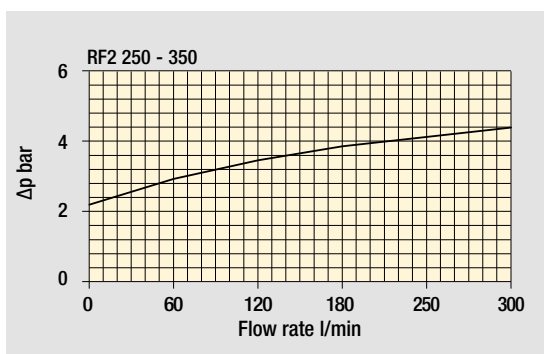


Pressure drop

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.

RF2 RF2250 - RF2350

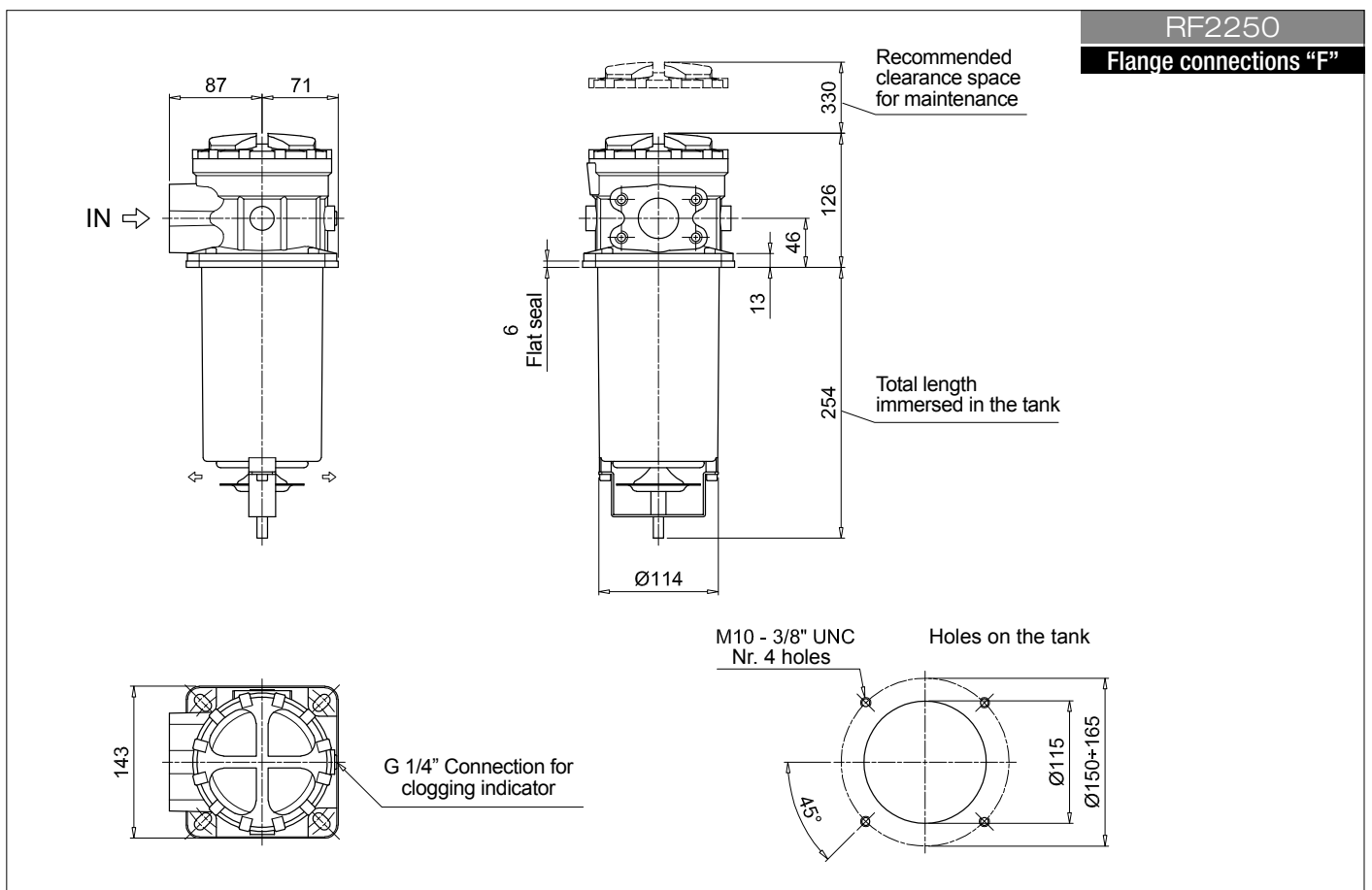
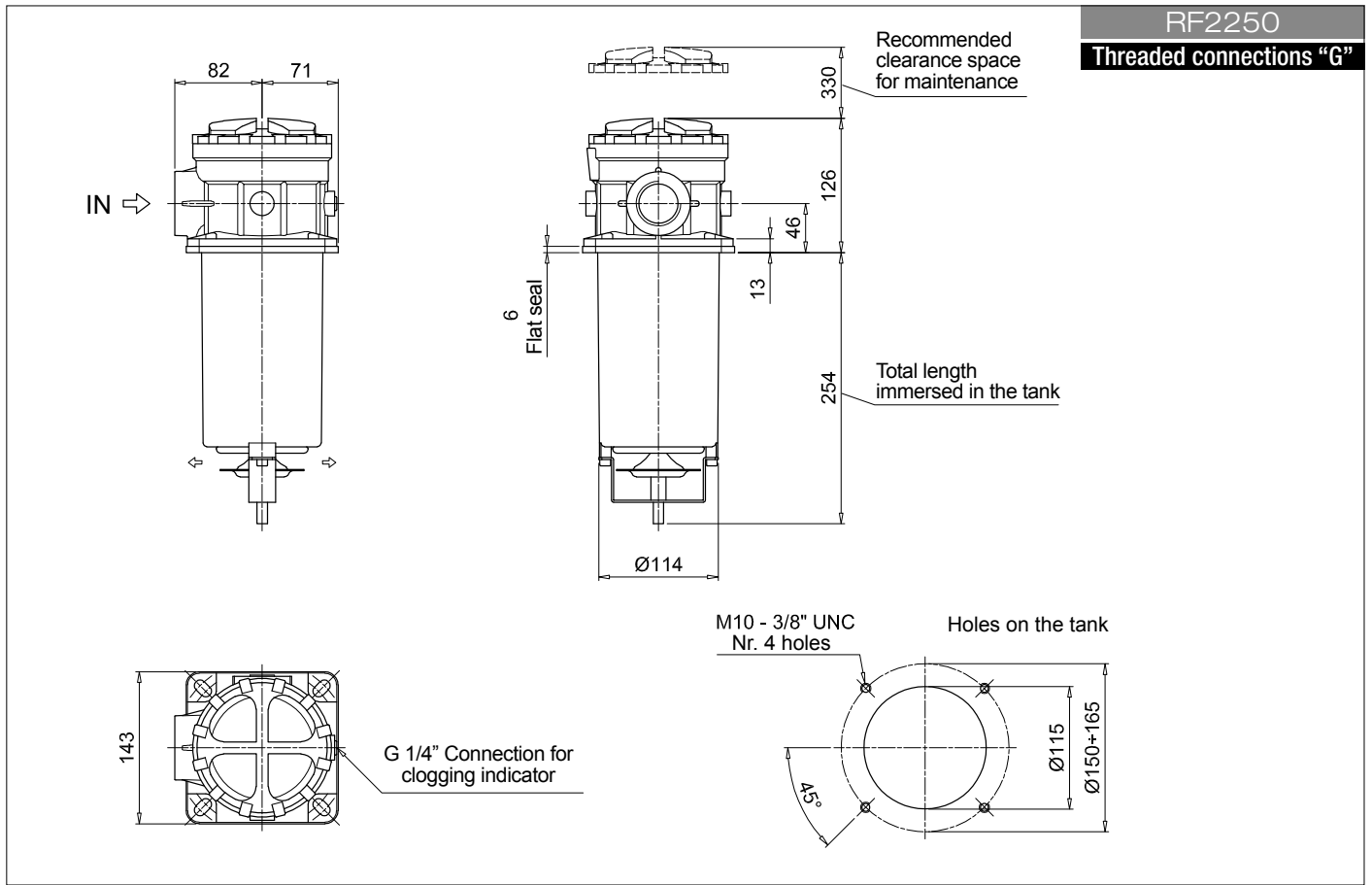
Designation & Ordering code

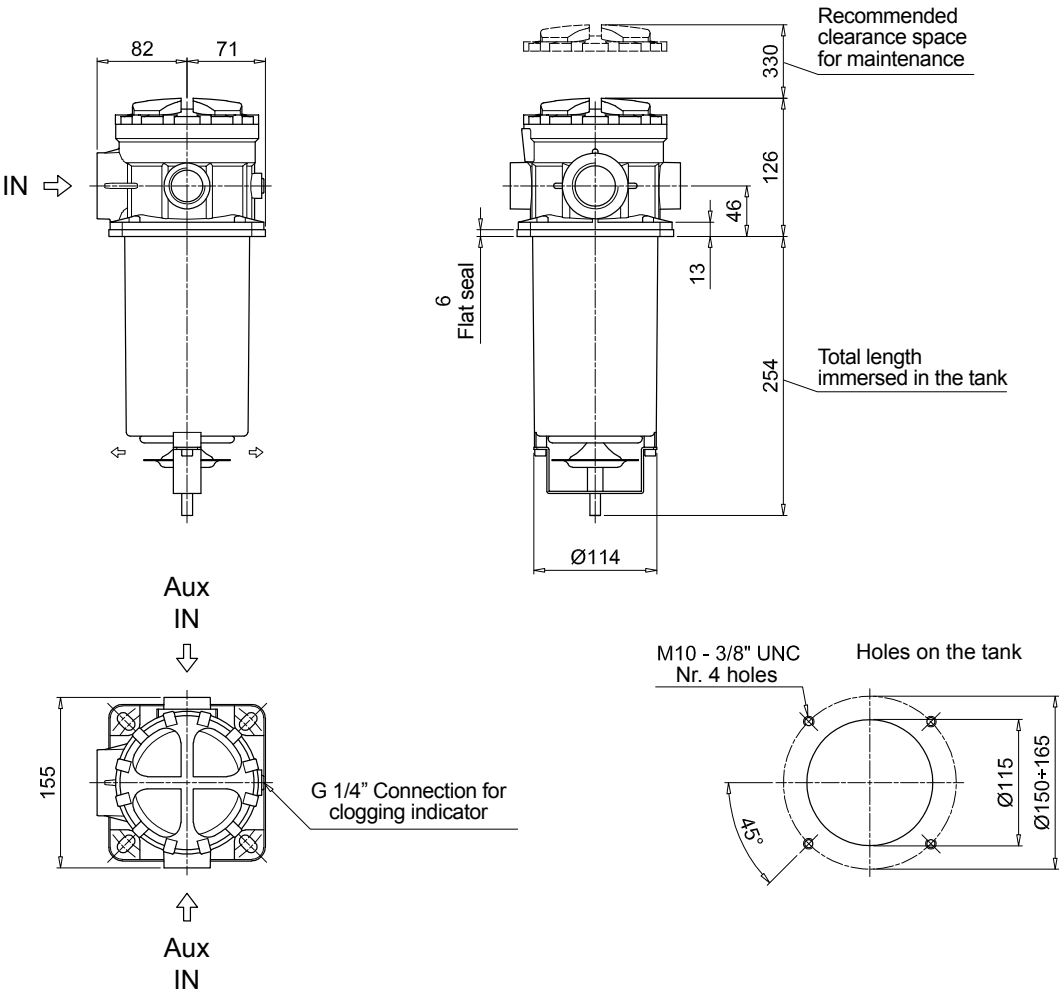
COMPLETE FILTER

Series and size		Configuration example 1:	RF2250	V	F2	E	M25	P01
RF2250		Configuration example 2:	RF2350	A	G1	B	A25	P01
RF2350								
Seals and treatments								
A NBR								
V FPM								
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 With bypass 1.75 bar								
E With bypass 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								

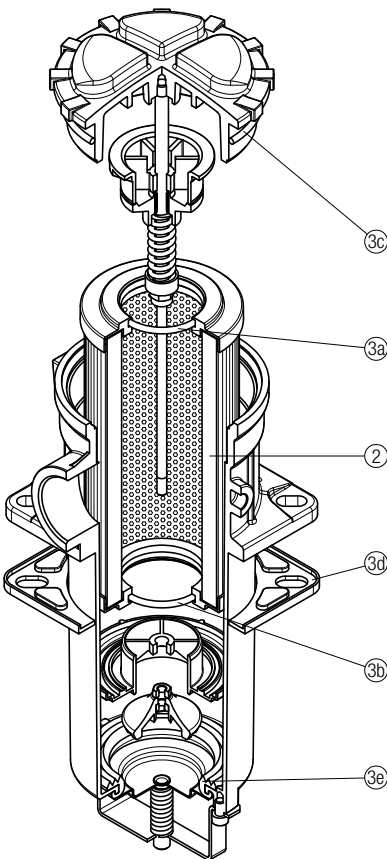
FILTER ELEMENT

Element series and size		Configuration example 1:	CU250	M25	N	P01
CU250		Configuration example 2:	CU250	A25	V	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						
N NBR						
V FPM						
Execution						
P01 MP Filtri standard						
Pxx Customized						





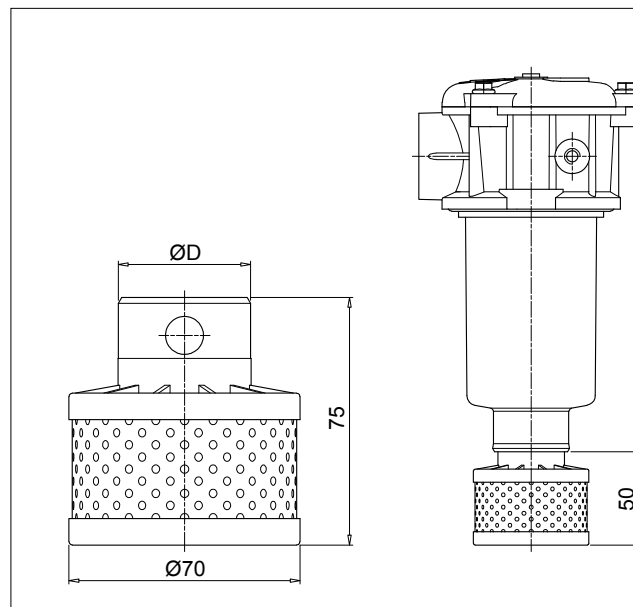
RF2 250 - 350



Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3	(3a ÷ 3e)
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
RF2 250	See order table	02050586	02050587
RF2 350			

Accessories

DIFFUSER WITH FAST LOCK CONNECTION

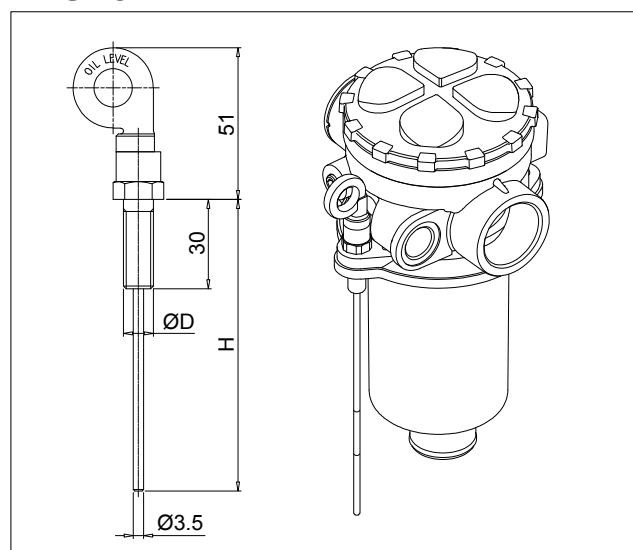


Configuration example: **DFS** **32** **A** **075**

Series	Size	Ø D [mm]	Version	Length
DFS	32	32	A Standard	075 Standard
	40	40		

Filter series	Filter size	Filter Length	DFS32	DFS40		
MPF	100	104	110	1	•	
		2	•	-		
		3	-	•		
		4	-	•		
MPFX	100	104	110	1	•	
		2	-	•		
		3	-	•		
		4	-	•		
MPT	110	114	116	120	1	•
		2	•	-		
		3	-	•		
		4	-	•		
MPTX	110	114	116	120	1	•
		2	-	•		
		3	-	•		
		4	-	•		

DIPSTICK



Materials

- Screw: phosphatized steel
- Stick: phosphatized steel
- Handle: Polyamide

Technical data

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

Configuration example: **DPT** **20** **M10** **A** **P01**

Series	Length	H [mm]
DPT	15	134
	20	184
	25	234
	30	284
	35	334

Seals

A	NBR
V	FPM

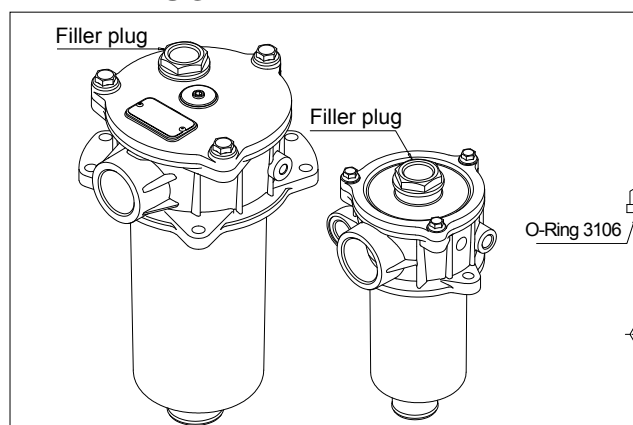
Fastening

M8	Fastening with screws Ø D = M8
M10	Fastening with screws Ø D = M10

Execution

P01	MP Filtri standard
Pxx	Customized

FILLER PLUG



Materials

- Body: Polyamide
- Seal: NBR

Technical data

Tightening torque: 15 N·m

O-Ring 3106

M30x1.5

A/F 34

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

POLYAMIDE EXTENSION TUBE

H1 - Total
length
immersed
in the tank

Conf. example:

TE

40

A

250

Series

TE

Size

Ø D [mm]

25

25

32

32

40

40

51

51

62

62

Material

A Polyamide

Length

H [mm]

25-32-40

51-62

200

200

•

•

250

250

•

-

300

300

•

•

350

350

•

-

400

400

•

•

450

450

•

-

500

500

•

•

600

600

-

•

COMPATIBILITY TABLE

Filter series		Filter size			Filter length	TE25	TE32	TE40	TE51	TE62	Tube length								
											200	250	300	350	400	450	500	600	
H1 [mm]																			
MPF	MPFX	30			1	•	-	-	-	-	266	316	366	416	466	516	566	-	
		100			104	110	1	-	•	-	-	-	275	325	375	425	475	525	575
MPF		100	104	110	2	-	-	-	-	-	322	372	422	472	522	572	622	-	
					3	-	-	•	-	-	400	450	500	550	600	650	700	-	
					4	-	-	-	-	-	502	552	602	652	702	752	802	-	
					1	-	-	-	-	-	277	327	377	427	477	527	577	-	
MPFX		100	104	110	2	-	-	•	-	-	322	372	422	472	522	572	622	-	
					3	-	-	-	-	-	400	450	500	550	600	650	700	-	
					4	-	-	-	-	-	502	552	602	652	702	752	802	-	
					1	-	-	-	-	-	410	460	510	560	610	660	710	-	
MPF	MPFX	181	182	184	2	-	-	•	-	-	623	673	723	773	823	873	923	-	
					1	-	-	-	-	-	620	-	720	-	820	-	920	1020	
MPFX		400	410	450	451	1	-	-	-	•	-	352	-	452	-	552	-	652	752
						2	-	-	-	-	•	-	-	511	-	611	-	711	811
						3	-	-	-	-	•	-	-	559	-	659	-	759	859
						1	-	-	-	•	-	597	-	697	-	797	-	897	997
MPT	MPTX	025	027		1	-	-	-	-	-	278	328	378	428	478	528	578	-	
					2	•	-	-	-	-	342	392	442	492	542	592	642	-	
					3	-	-	-	-	-	380	430	480	530	580	630	680	-	
					1	-	-	-	-	-	273	323	373	423	473	523	573	-	
MPT		110	114	116	120	2	-	•	-	-	320	370	420	470	520	570	620	-	
						3	-	-	-	-	396	446	496	546	596	646	696	-	
						4	-	-	•	-	498	548	598	648	698	748	798	-	
						1	-	-	-	-	273	323	373	423	473	523	573	-	
MPTX		110	114	116	120	2	-	-	•	-	318	368	418	468	518	568	618	-	
						3	-	-	-	-	396	446	496	546	596	646	696	-	
						4	-	-	-	-	498	548	598	648	698	748	798	-	
						1	-	-	-	-	273	323	373	423	473	523	573	-	

STEEL EXTENSION TUBE

Configuration example:

MPF191

2

A

F1

A10

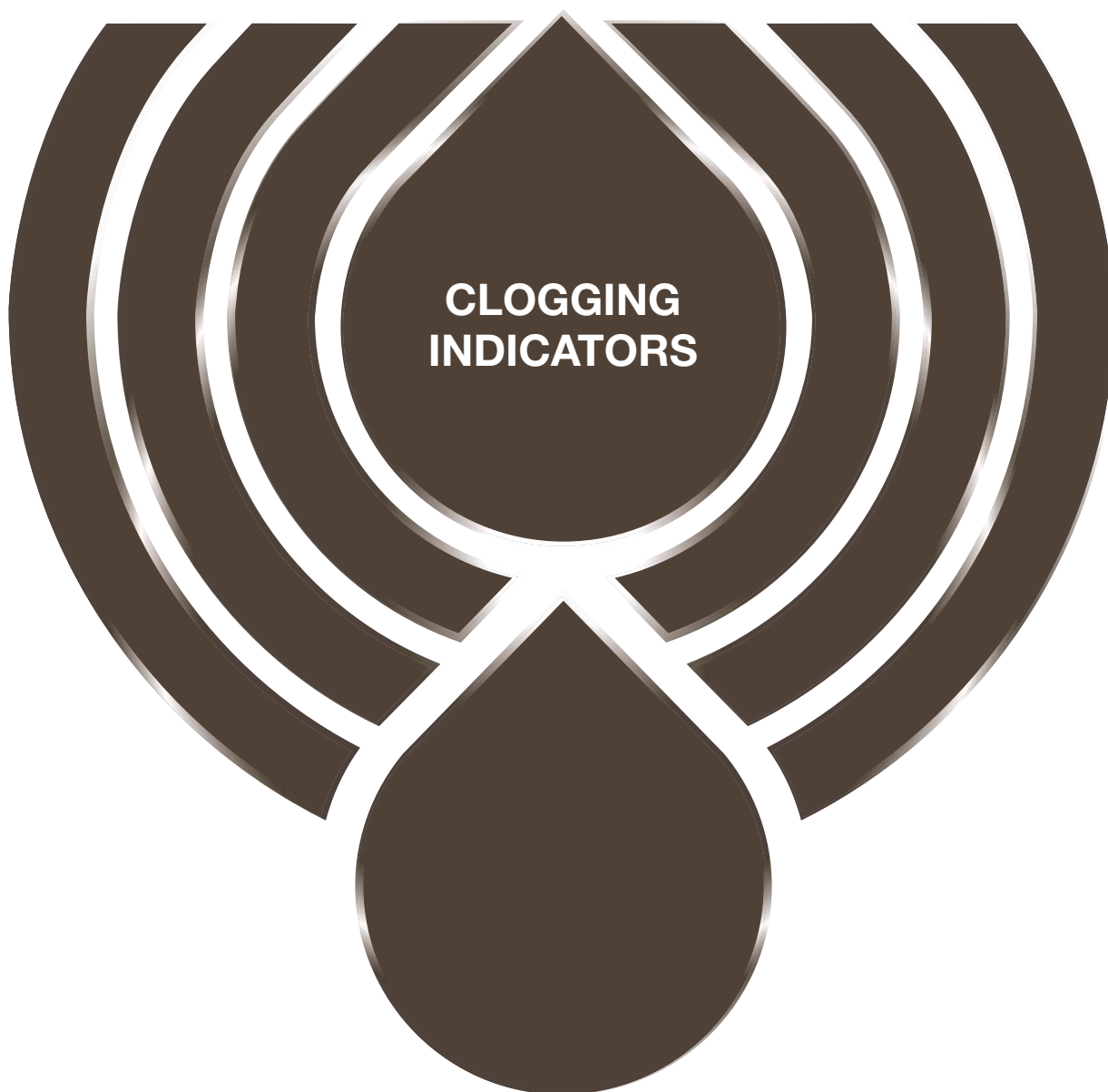
H

B

S60

Length	H1 [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	
MPF	191	192	194		2	• -
	400	410	450	451	1	• -
					2	- •
					3	- •
	750				1	- •



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

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

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

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

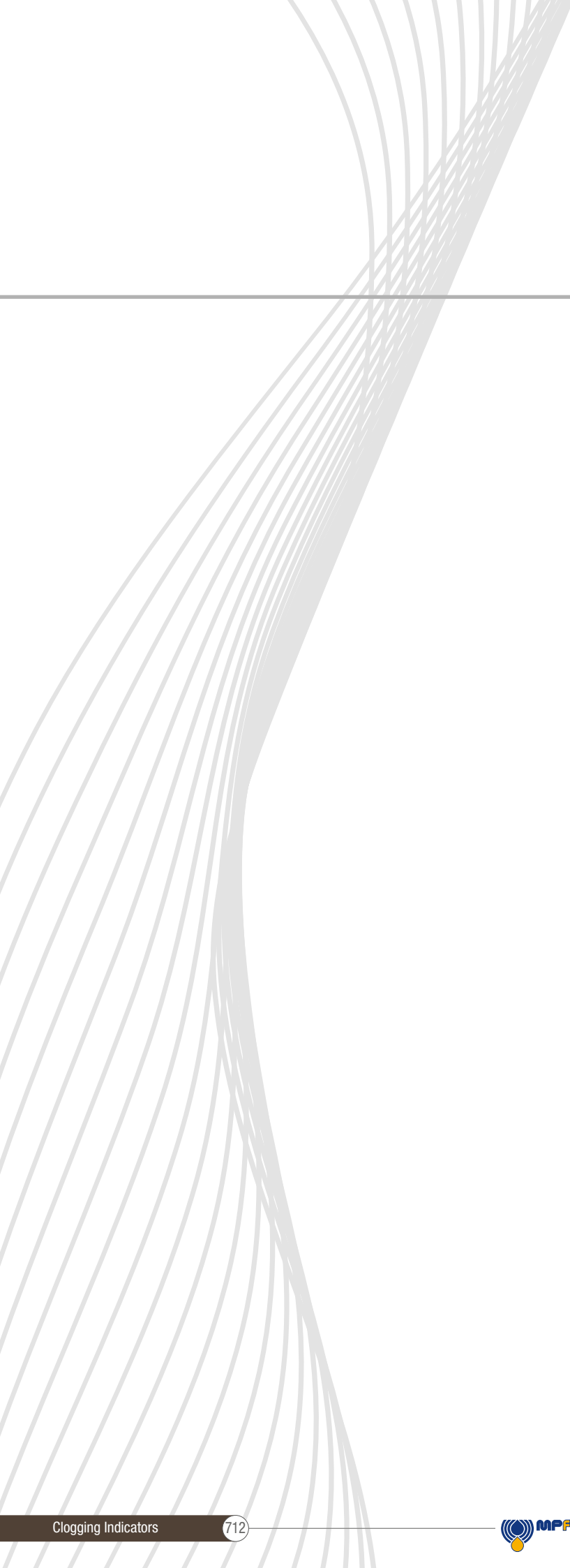
MP Filtri can supply indicators of the following designs:

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

These type of devices can be provided with a visual, electrical or both signals. The electronic differential pressure clogging indicator is also available. It provides both analogical 4-20 mA output and digital warning (75% of clogging) and alarm (clogging) outputs.

In the following pages you can find a reference guide about the types of clogging indicators available in the different families of MP Filtri's Hydraulic Filtration range of products.





DESIGNATION, ORDERING CODES & TECHNICAL DATA

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QUICK REFERENCE GUIDE

Ordering codes

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
SUCTION FILTERS	ELIXIR® SFEX060-110	VVB20P01	VEB21AA50P01	VLB21AA51P01
		VVS20P01		VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
	SFMC250	VVA20P01	VEA21xA50P01 VEA21xA50P01UL	VLA21xA51P01
		WVR20P01		VLA21xA52P01 VLA21xA53P01 VLA21xA71P01
RETURN FILTERS	Without bypass	SFSC 500 - 503 - 504 - 505 SFSC 510 - 535 - 540	VVA20P01 WVR20P01	VLA21xA51P01 VLA21xA52P01 VLA21xA53P01 VLA21xA71P01
	With bypass 1.75 bar	ELIXIR® RFEX060-080-110-160	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01
	Without bypass	ELIXIR® RFEX060-080-110-160	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01
	With bypass 1.75 bar	MDH 250	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01 DVS12HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01 DES12HA10P01 DES12HA30P01 DES12HA80P01
	With bypass 3 bar	MDH 250	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01 DVS25HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01 DES25HA10P01 DES25HA30P01 DES25HA80P01
	With bypass 1.75 bar	MPFX MPTX MPF MPT MPH	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01
	With bypass 3 bar	MPFX MPTX MPF MPT	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEA20HA50P01UL BEM20HA41P01
	With bypass 2.5 bar	MPH		
	With bypass 4.5 bar	MPLX	DVA20xP01	DEA20xA50P01 DEA20xA50P01UL DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01
	With bypass 2.4 bar	FRI	DVM20xP01	DLE20xA50P01 DLE20xF50P01 DTA20xF70P01
				DEU20VA50P01UL

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
RETURN / SUCTION FILTERS	MRSX 116 - 165 - 166 Suction line	VVB20P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
		VVS20P01		
	MRSX 116 - 165 - 166 Return line	BVA25P01	BEA20HA50P01 BEA20HA50P01UL	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
		BVR25P01	BEM20HA41P01	
		BVP20HP01	BET25HF10P01 BET25HF30P01 BET25HF50P01	
		BVQ20HP01		
	LMP 124 MULTIPORT		BEA20HA50P01 BEA20HA50P01UL	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01
		BVA25P01	BEM20HA41P01	
		BVR25P01	BET25HF10P01 BET25HF30P01 BET25HF50P01	
		BVP20HP01		
		BVQ20HP01	DEA20xA50P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01
		DVA20xP01	DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01	
		DVM20xP01		
			DEU20VA50P01UL	
SPIN-ON FILTERS	Suction line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	WVB20P01 VVS20P01	VEB21AA50P01
	Return line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 MST 050 - 070 - 100 - 150	BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01	BEA15HA50P01 BEA15HA50P01UL BEM15HA41P01
				BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
	In-line	MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DVA12xP01 DVM12xP01 DVA20xP01 DVM20xP01	DEA12xA50P01 DEM12xAxxP01 DEA20xA50P01 DEM20xAxxP01 DEU20VA50P01UL
				DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLA20xA51P01 DLA20xA52P01 DLA20xA71P01
				DLE12xA50P01 DLE12xF50P01 DLE20xF50P01 DLE20xF50P01
				DTA12xF70P01 DTA20xF70P01

QUICK REFERENCE GUIDE

Ordering codes

Filter family	Filter series	Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators		
LOW & MEDIUM PRESSURE FILTERS	ELIXIR® LFEX 060-080-110-160	DVS25HP01	DES25HA10P01 DES25HA30P01 DES25HA80P01			
	With bypass valve 3.5 bar	LMP 110 LMP 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20VA50P01UL DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01		
	With bypass valve 2.5 bar	LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD		DTA20xF70P01		
		LPH 630	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xx10P01 DEM20xx20P01 DEM20xx30P01 DEM20xx35P01 DEU20VA50P01UL DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01		
	With bypass valve 1.75 bar	LPH 630	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xx10P01 DEM12xx20P01 DEM12xx30P01 DEM12xx35P01 DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DTA12xF70P01		
	Without bypass valve	ELIXIR® LFEX 060-080-110-160	DVS40HP01	DES40HA10P01 DES40HA30P01 DES40HA80P01		
		LMP 110 LMP 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD LPH 630	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01 DEU50VA50P01UL DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01 DTA50xF70P01		
		With bypass valve 6 bar	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 351 - 500 FMMX 050 - 150 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xx10P01 DEM50xx20P01 DEM50xx30P01 DEM50xx35P01 DEU50VA50P01UL DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	
			Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 351 - 500 FMMX 050 - 150 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA70xP01 DVA95xP01 DVM70xP01 DVM95xP01	DEA70xA50P01 DEA95xA50P01 DEM70xx10P01 DEM70xx20P01 DEM70xx30P01 DEM70xx35P01 DEU70VA50P01UL DEM95xx10P01 DEM95xx20P01 DEM95xx30P01 DEM95xx35P01 DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLA95xA51P01 DLA95xA52P01 DLA95xA71P01 DLE70xA50P01 DLE70xF50P01 DLE95xA50P01 DLE95xF50P01 DTA70xF70P01 DTA95xF70P01

Filter family	Filter series		Visual indicators	Electrical indicators	Electronic / Electrical-Visual indicators
STAINLESS STEEL HIGH PRESSURE FILTERS	With bypass valve 6 bar	FZH 012 - 040	DVZ50xP01	DEZ50xA50P01	DLZ50xA51P01 DLZ50xA52P01
	Without bypass valve	FZH 012 - 040	DVZ70xP01 DVZ95xP01	DEZ70xA50P01 DEZ95xA50P01	DLZ70xA51P01 DLZ70xA52P01 DLZ95xA51P01 DLZ95xA52P01
	With bypass valve 6 bar	FZP 039 - 136 FZB 039 FZM 039 FZD 051	DVX50xP01 DYY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01
	Without bypass valve	FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVX95xP01 DYY70xP01 DYY95xP01	DEX70xA50P01 DEX95xA50P01	DLX70xA51P01 DLX70xA52P01 DLX95xA51P01 DLX95xA52P01
FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE	With bypass valve 6 bar	FMMX 050 - 150	DVA50xP01 DVM50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01	
	Without bypass valve	FMMX 050 - 150	DVA70xP01 DVA95xP01 DVM70xP01 DVM95xP01	DEH70xA48P01 DEH70xA49P01 DEH70xA70P01	
	With bypass valve 6 bar	FZP 039 - 136	DVX50xP01 DYY50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01	
	Without bypass valve	FZP 039 - 136	DVX70xP01 DVX95xP01 DYY70xP01 DYY95xP01	DEH70xA48P01 DEH70xA49P01 DEH70xA70P01	
	With bypass valve 6 bar	FZH 012 - 040	DVZ50xP01		
	Without bypass valve	FZH 012 - 040	DVZ70xP01 DVZ95xP01		

Suitable indicator types

V ACUUM INDICATORS

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

They measure the pressure downstream of the filter element.

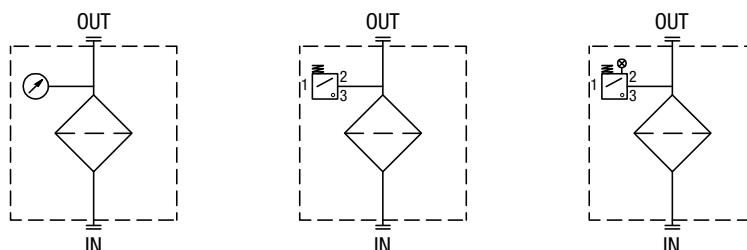
Standard items are produced with R 1/4" EN 10226 connection.

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

Vacuum indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "V".

Example:

V VVB20P01



B BAROMETRIC (PRESSURE) INDICATORS

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

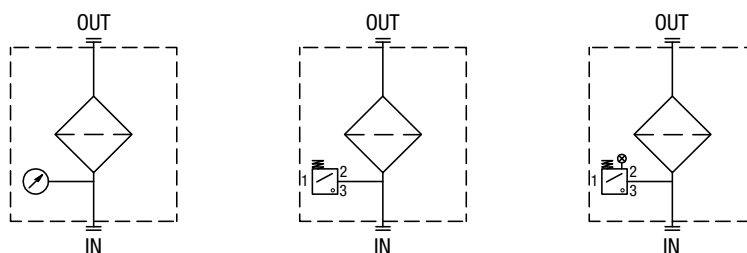
They measure the pressure upstream of the filter element.

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

Barometric (pressure) indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "B".

Example:

B BVA14P01



D DIFFERENTIAL PRESSURE INDICATORS

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

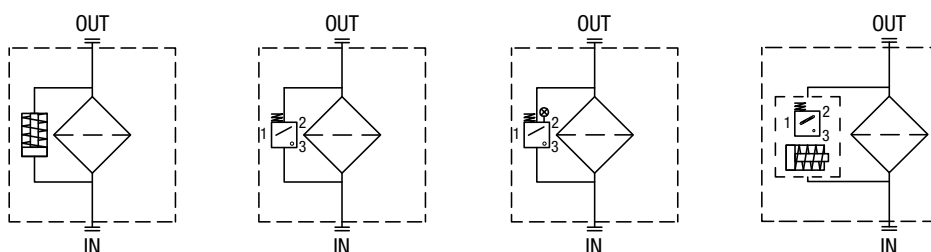
They measure the pressure upstream and downstream of the filter element (differential pressure).

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

Also available in Stainless Steel models. Differential pressure indicators are identified in the Hydraulic Filtration catalogue and in the Quick Reference Guide table by the letter "D".

Example:

D DVA20xP01



Designation & Ordering code

VACUUM INDICATORS											
Series		Configuration example 1:									
VE Electrical vacuum indicator		VE	A	21	V	A	50	P01	EX		
VL Electrical/Visual vacuum indicator		Configuration example 2:									
VV Vacuum gauge		VL	B	21	A	A	71	P01			
		Configuration example 3:									
		VV	R	20	P01						
Type VE - VL		Type VV		SFxC	SFEX						
A Connection EN 10226 - R1/4"		A Axial connection EN 10226 - R1/4"		•	-						
B Connection EN 10226 - R1/8"		B Axial connection EN 10226 - R1/8"		-	•						
		R Radial connection EN 10226 - R1/4"		•	-						
		S Radial connection EN 10226 - R1/8"		-	•						
Vacuum setting		VE	VL	VV							
20 -0.16 bar		-	-	•							
21 -0.21 bar		•	•	-							
Seals		VEA - VLA		VEB - VLB							
A NBR		•		•							
V FPM		•		-							
Thermostat		VE	VL								
A Without		•	•								
Electrical connections		VE	VL								
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 Vac		-	•								
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		-	•								
		Option									
		P01 MP Filtri standard									
		Pxx Customized									
Certifications		VEA21A	VEA21V	VEB	VL	VV					
Without		•	•	•	•	•					
EX ATEX certification		•	•	•	-	-					
UL UL certification		•	-	-	-	-					

Designation & Ordering code

BAROMETRIC (PRESSURE) INDICATORS

Series				Configuration example 1: BEA 15 H A 41 P01 EX									
BE Electrical pressure indicator				Configuration example 2: BLA 20 H A 71 P01									
BL Electrical/Visual pressure indicator				Configuration example 3: BVR 14 P01									
BV Visual pressure indicator				Configuration example 4: BVP 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										
T With thermal switch	•	-	P Visual indicator with automatic reset										
			Q Visual indicator with manual reset										
Pressure setting	BEA-BEM	BET	BLA	BVA-BVR	BVP-BVQ								
14 1.4 bar	-	-	-	•	-								
15 1.5 bar	•	-	•	-	•								
20 2.0 bar	•	•	•	-	•								
25 2.5 bar	-	•	-	•	-								
Seals	BE	BLA	BVA-BVR	BVP-BVQ									
H HNBR	•	•	-	•									
Thermostat	BEA-BEM	BET	BLA										
A Without thermostat	•	-	•										
F With thermostat	-	•	-										
Electrical connections					BEA	BEM	BET	BL					
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 Vac	-	-	-	•									
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•									
					Option								
					P01 MP Filtri standard								
					Pxx Customized								
Certifications					BEA	BEM-BET	BL	BV					
Without					•	•	•	•					
EX ATEX certification					•	-	-	-					
UL UL certification					•	-	-	-					

DIFFERENTIAL PRESSURE INDICATORS

Series
DE Electrical differential pressure indicator
DL Electrical/Visual differential pressure indicator
DT Electrical differential pressure indicator
DV Visual differential pressure indicator

Configuration example 1:	DE	M	20	H	F	50	P01
Configuration example 2:	DE	U	50	V	A	50	P01
Configuration example 3:	DL	E	20	V	A	71	P01
Configuration example 4:	DT	A	20	H	F	70	P01
Configuration example 5:	DV	M	20	V			P01

Type	DE	DL	DT
A Standard type	•	•	•
M With wired electrical connection	•	-	-
U Standard type 210 bar, UL certified	•	-	-
E For high power supply	-	•	-
S Compact version	•	-	-

DV
A With automatic reset
M With manual reset
S With automatic reset

Pressure setting	DEA	DEM	DEU	DES	DL	DT	DVA	DVM	DVS
12 1.2 bar	-	-	-	•	-	-	-	-	•
20 2.0 bar	•	•	•	-	•	•	•	•	-
25 2.5 bar	-	-	-	•	-	-	-	-	•

Seals	DEA	DEM	DEU	DES	DL	DT	DVA	DVM	DVS
H HNBR	•	•	-	•	•	•	•	•	•
V FPM	•	•	•	-	•	•	•	•	-

Thermostat	DEA	DEM	DEU	DES	DLA	DLE	DT
A Without thermostat	•	•	•	•	•	•	-
F With thermostat	-	•	-	-	-	•	•

Electrical connections	DEA	DEM	DEU	DES	DLA	DLE	DT
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	-	-	-	-	•	-	-
80 Connection Stud #10-32 UNF	-	-	-	•	-	-	-

Option
P01 MP Filtri standard
Pxx Customized

Certifications	DEU	OTHERS
Without	-	•
UL UL certification	•	-

PLUGS

Series
T2 Plug
T4 Plug

Seals	T2	T4
A NBR	-	•
H HNBR	•	-
V FPM	•	-

Configuration example	T2	H
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Designation & Ordering code

VACUUM INDICATORS

Series		Configuration example 1:										EX
VE Electrical vacuum indicator		Configuration example 2:										
VL Electrical/Visual vacuum indicator		Configuration example 3:										
VV Vacuum gauge												
Type VE - VL		Type VV										
A Connection EN 10226 - R1/4"		A Axial connection EN 10226 - R1/4"										
B Connection EN 10226 - R1/8"		B Axial connection EN 10226 - R1/8"										
		R Radial connection EN 10226 - R1/4"										
		S Radial connection EN 10226 - R1/8"										
Vacuum setting		VE	VL	VV								
20 -0.16 bar		-	-	•								
21 -0.21 bar		•	•	-								
Seals		VEA - VLA		VEB - VLB								
A NBR		•		•								
V FPM		•		-								
Thermostat		VE	VL									
A Without thermostat		•	•									
Electrical connections		VE	VL									
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 Vac		-	•									
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		-	•									
		Option										
		P01 MP Filtri standard										
		Pxx Customized										
Certifications		VEA21A	VEA21V	VEB	VL	VV						
Without		•	•	•	•	•						
EX ATEX certification		•	•	•	-	-						
UL UL certification		•	-	-	-	-						

BAROMETRIC (PRESSURE) INDICATORS

Series			Configuration example 1: BE M 15 H A 41 P01 EX									
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									
T With thermal switch	•	-	P Visual indicator with automatic reset									
			Q Visual indicator with manual reset									
Pressure setting	BEA-BEM	BET	BLA	BVA-BVR	BVP-BVQ							
14 1.4 bar	-	-	-	•	-							
15 1.5 bar	•	-	•	-	-							
20 2.0 bar	•	•	•	-	•							
25 2.5 bar	-	•	-	•	-							
Seals	BE	BLA	BVP-BVQ									
H HNBR	•	•	•									
Thermostat	BEA-BEM	BET	BLA									
A Without thermostat	•	-	•									
F With thermostat	-	•	-									
Electrical connections	BEA	BEM	BET	BL								
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 Vac	-	-	-	•								
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	-	-	•								
Option												
P01 MP Filtri standard												
Pxx Customized												
Certifications	BEA	BEM-BET	BL	BV								
Without	•	•	•	•								
EX ATEX certification	•	-	-	-								
UL UL certification	•	-	-	-								

DIFFERENTIAL PRESSURE INDICATORS

Series				Configuration example 1:							
DE Electrical differential pressure indicator				DE	U	50	V	A	50	P01	UL
DL Electrical/Visual differential pressure indicator				Configuration example 2:							
DT Electronic differential pressure indicator				DL	E	20	V	A	71	P01	
DV Visual differential pressure indicator				Configuration example 4:							
				DT	A	50	H	F	70	P01	
				Configuration example 5:							
				DV	M	70	V			P01	
Type				DE	DL	DT	DV				
A Standard type				•	•	•	A With automatic reset				
M With wired electrical connection				•	-	-	M With manual reset				
U Standard type 210 bar, UL certified				•	-	-					
E For high power supply				-	•	-					
Pressure setting				DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM
20 2.0 bar				•	•	•	•	•	•	•	•
Seals				DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM
H HNBR				•	•	-	•	•	•	•	•
V FPM				•	•	•	•	•	•	•	•
Thermostat				DEA	DEM	DEU	DLA	DLE	DT		
A Without thermostat				•	•	•	•	•	-		
F With thermostat				-	•	-	-	•	•		
Electrical connections				DEA	DEM	DEU	DLA	DLE	DT		
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											
Certifications				DEU	OTHERS						
Without				-	•						
UL UL certification				•	-						

PLUGS

Series		Configuration example	
T2 Plug		T2	H
Seals			
H HNBR			
V FPM			

Designation & Ordering code

VACUUM INDICATORS

Series	Configuration example 1:	VE	B	21	A	A	50	P01	EX
VE Electrical vacuum indicator	Configuration example 2:	VL	B	21	A	A	71	P01	
VL Electrical/Visual vacuum indicator	Configuration example 3:	VV	S	20				P01	
VV Vacuum gauge									
Type VE - VL	Type VV								
B Connection EN 10226 - R1/8"	B Axial connection EN 10226 - R1/8"								
	S Radial connection EN 10226 - R1/8"								
Vacuum setting	VE	VL	VV						
20 -0.16 bar	-	-	•						
21 -0.21 bar	•	•	-						
Seals	VE	VL							
A NBR	•	•							
Thermostat	VE	VL							
A Without thermostat	•	•							
Electrical connections	VE	VL							
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 Vac	-	•							
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc	-	•							
Option									
P01 MP Filtri standard									
Pxx Customized									
Certifications	VEB	VL	VV						
Without	•	•	•						
EX ATEX certification	•	-	-						
UL UL certification	-	-	-						

BAROMETRIC (PRESSURE) INDICATORS

Series			Configuration example 1:							
BE Electrical pressure indicator			BE		M	15	H	A	41	P01
BL Electrical/Visual pressure indicator			BL		A	20	H	A	71	P01
BV Visual pressure indicator			BV		R	14				P01
			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 thermostat			•	•	-					
Electrical connections			BEA	BEM	BL					
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 Vac			-	-	•					
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			-	-	•					
Option										
P01 MP Filtri standard										
Pxx Customized										
Certifications			BEA	BEM-BET	BL	BV				
Without			•	•	•	•				
EX ATEX certification			•	-	-	-				
UL UL certification			•	-	-	-				

DIFFERENTIAL PRESSURE INDICATORS

Series				Configuration example 1:											
DE Electrical differential pressure indicator				Configuration example 2:	DE	U	50	V	A	50	P01	UL			
DL Electrical/Visual differential pressure indicator				Configuration example 3:	DL	E	20	V	A	71	P01				
DT Electronic differential pressure indicator				Configuration example 4:	DT	A	50	H	F	70	P01				
DV Visual differential pressure indicator				Configuration example 5:	DV	M	70	V			P01				
Type	DE	DL	DT	DV											
A Standard type	•	•	•	A With automatic reset											
M With wired electrical connection	•	-	-	M With manual reset											
U Standard type 210 bar, UL certified	•	-	-												
E For high power supply	-	•	-												
Pressure setting	DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM							
12 1.2 bar	•	•	-	•	•	•	•	•							
20 2.0 bar	•	•	•	•	•	•	•	•							
Seals	DEA	DEM	DEU	DLA	DLE	DTA	DVA	DVM							
H HNBR	•	•	-	•	•	•	•	•							
V FPM	•	•	•	•	•	•	•	•							
Thermostat	DEA	DEM	DEU	DLA	DLE	DT									
A Without thermostat	•	•	•	•	•	-									
F With thermostat	-	•	-	-	•	•									
Electrical connections							DEA	DEM	DEU	DLA	DLE	DT			
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	
														Certifications	
														DEU	
														OTHERS	
														Without	
														-	
														•	
														UL UL certification	
														•	
														-	

PLUGS

Series		Configuration example	
T2 Plug		T2	H
Seals			
H HNBR			
V FPM			

CLOGGING INDICATORS LOW & MEDIUM PRESS. FILTERS

Designation & Ordering code

DIFFERENTIAL PRESSURE INDICATORS

Series											Configuration example 1:	
DE Electrical differential pressure indicator											DE	M
DL Electrical/Visual differential pressure indicator											20	H
DT Electronic differential pressure indicator											F	50
DV Visual differential pressure indicator											P01	
Type											Configuration example 2:	
A Standard type											DE	U
M With wired electrical connection											50	V
U Standard type 210 bar, UL certified											A	50
E For high power supply											P01	UL
S Compact version											Configuration example 3:	
											DL	E
											50	V
											A	71
											P01	
Pressure setting											Configuration example 4:	
12 1.2 bar											DT	A
20 2.0 bar											20	H
25 2.5 bar											F	70
40 4.0 bar											P01	
50 5.0 bar											Configuration example 5:	
											DV	M
											50	V
												P01
Seals												
H HNBR												
V FPM												
Thermostat												
A Without thermostat												
F With thermostat												
Electrical connections												
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												
80 Connection Stud #10-32 UNF												
Option												
P01 MP Filtri standard												
Pxx Customized												
Certifications												
Without											DEU	OTHERS
UL UL certification											-	•

PLUGS

Series			Configuration example	
T2 Plug			T2	H
T4 Plug				
Seals				
A NBR			T2	T4
H HNBR			-	•
V FPM			•	-

DIFFERENTIAL PRESSURE INDICATORS

Series					Configuration example 1:					Configuration example 2:					Configuration example 3:					Configuration example 4:					Configuration example 5:																			
DE Electrical differential pressure indicator					DE					U					50					V					A					50					P01					UL				
DL Electrical/Visual differential pressure indicator					DL					E					20					V					A					71					P01									
DT Electronic differential pressure indicator					DT					A					50					H					F					70					P01									
DV Visual differential pressure indicator					DV					M					70					V															P01									
Type					DE					DL					DT					DV																								
A Standard type					•					•					•					A With automatic reset																								
M With wired electrical connection					•					-					-					M With manual reset																								
U Standard type 210 bar, UL certified					•					-					-																													
E For high power supply					-					•					-																													
Pressure setting					DEA					DEM					DEU					DLA					DLE					DTA					DVA					DVM				
50 5.0 bar					•					•					•					•					•					•					•					•				
70 7.0 bar					•					•					•					•					•					•					•					•				
95 9.5 bar					•					•					-					•					•					•					•					•				
Seals					DEA					DEM					DEU					DLA					DLE					DTA					DVA					DVM				
H HNBR					•					•					-					•					•					•					•					•				
V FPM					•					•					•					•					•					•					•					•				
Thermostat					DEA					DEM					DEU					DLA					DLE					DT														
A Without thermostat					•					•					•					•					•					-														
F With thermostat					-					•					-					-					•					•														
Electrical connections					DEA					DEM					DEU					DLA					DLE					DT														
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																																												
Certifications					DEU																																							
Without					-																																							
UL UL certification					•																																							

PLUGS

Series		Configuration example	
T2 Plug		T2	H
Seals			
H HNBR			
V FPM			

CLOGGING INDICATORS

STAINLESS STEEL HIGH PRESSURE FILTERS

Designation & Ordering code

DIFFERENTIAL PRESSURE INDICATORS

Series					Configuration example 1:						
DE Electrical differential pressure indicator					DE	Z	50	H	A	50	P01
DL Electrical / Visual differential pressure indicator					DL	X	70	V	A	52	P01
DV Visual differential pressure indicator											
Type											
X	Stainless steel standard type 420 bar	•	•	•							
Y	Stainless steel optional type 420 bar	-	-	•							
Z	Stainless steel 700 bar (only for FZH)	•	•	•							
Pressure setting											
50	5.0 bar	•	•	•							
70	7.0 bar	•	•	•							
95	9.5 bar	•	•	•							
Seals											
H	HNBR	•	•	•							
V	FPM	-	-	•							
F	MFQ	•	•	-							
Thermostat											
A	Without thermostat	•	•	•							
Electrical connections					DEX	DEZ	DL				
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	-	-	•							
Option											
P01 MP Filtri standard											
Pxx Customized											

PLUGS

Series					Configuration example	
X2 Stainless Steel plug 420 bar					X2	H
X3 Stainless Steel plug 700 bar (only for FZH)						
Seals						
H	HNBR					
V	FPM					
F	MFQ					

FILTERS FOR POTENTIALLY EXPLOSIVE ATMOSPHERE

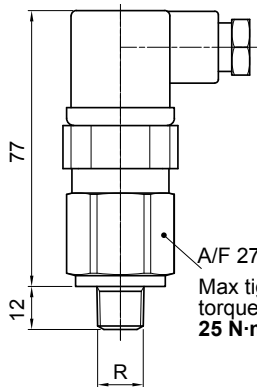
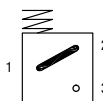
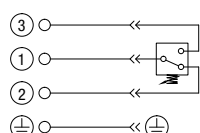
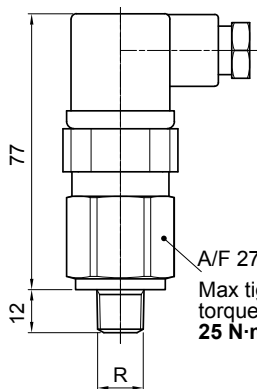
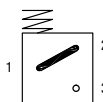
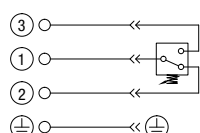
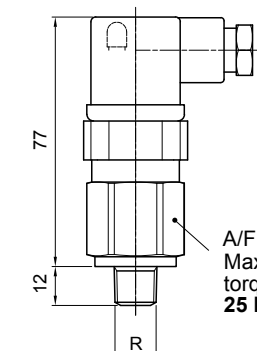
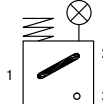
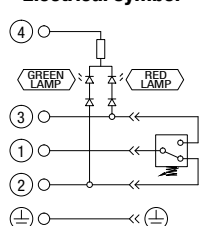
Designation & Ordering code

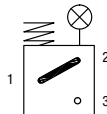
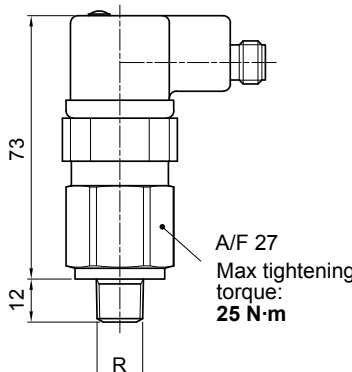
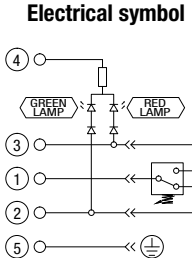
DIFFERENTIAL PRESSURE INDICATORS									
Series		Configuration example 1: DE H 50 F A 48 P01							
DE Electrical differential pressure indicator		Configuration example 2: DV X 70 V P01							
DV Visual differential pressure indicator									
Type	DE	DV							
A With automatic reset	-	•							
M With manual reset	-	•							
H Stainless steel hazardous area 420 bar	•	-							
X Stainless steel standard type 420 bar	-	•							
Y Stainless steel optional type 420 bar	-	•							
Pressure setting	DEH	DVA	DVM	DVX	DVY				
50 5.0 bar	•	•	•	•	•				
70 7.0 bar	•	•	•	•	•				
95 9.5 bar	-	•	•	•	•				
Seals	DEH	DVA	DVM	DVX	DVY				
H HNBR	-	•	•	•	•				
V FPM	•	•	•	•	•				
F MFQ	•	-	-	-	-				
Thermostat	DEH								
A Without thermostat	•								
T With thermostat	-								
Electrical connections	DEH								
48 Connection via three-core cable - fitting M20x1.5	•								
49 Connection via four-core cable - fitting 1/2" NPT	•								
70 Connection IEC 61076-2-101 D (M12)	•								
Option									
P01 MP Filtri standard									
Pxx Customized									

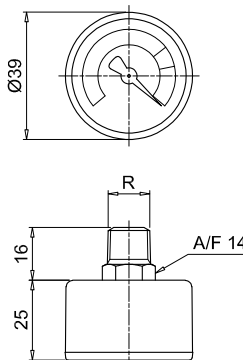
PLUGS			
Series		Configuration example X2 H	
T2 Plug			
X2 Stainless Steel plug 420 bar			
X3 Stainless Steel plug 700 bar (only for FZH)			
Seals	T2	X2	X3
H HNBR	•	•	•
V FPM	•	•	•
F MFQ	-	•	•

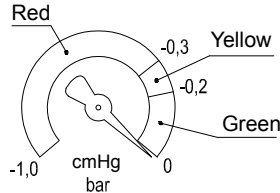
VACUUM INDICATORS

Technical data

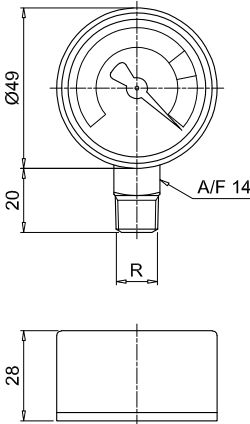
VE*50 (EX) Electrical Vacuum Indicator Connection: EN 175301-803 <table><tr><th>R</th><th>Ordering code</th></tr><tr><td>EN 10226 - R1/4"</td><td>VE A 21 x A 50 P01 VE A 21 x A 50 P01 EX</td></tr><tr><td>EN 10226 - R1/8"</td><td>VE B 21 A A 50 P01 VE B 21 A A 50 P01 EX</td></tr></table>  A/F 27 Max tightening torque: 25 N·m		R	Ordering code	EN 10226 - R1/4"	VE A 21 x A 50 P01 VE A 21 x A 50 P01 EX	EN 10226 - R1/8"	VE B 21 A A 50 P01 VE B 21 A A 50 P01 EX	Hydraulic symbol  Electrical symbol   - Certification: ATEX, IECEx - Certification included in EX version	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: VEA: NBR/FPM VEB: NBR Technical data - Vacuum setting: 0.21 bar ±10% - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: EN 175301-803 - Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac - CE certification - Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X
R	Ordering code								
EN 10226 - R1/4"	VE A 21 x A 50 P01 VE A 21 x A 50 P01 EX								
EN 10226 - R1/8"	VE B 21 A A 50 P01 VE B 21 A A 50 P01 EX								
VEA50 UL Electrical Vacuum Indicator Connection: EN 175301-803 <table><tr><th>R</th><th>Ordering code</th></tr><tr><td>EN 10226 - R1/4"</td><td>VE A 21 A A 50 P01 UL</td></tr></table>  A/F 27 Max tightening torque: 25 N·m		R	Ordering code	EN 10226 - R1/4"	VE A 21 A A 50 P01 UL	Hydraulic symbol  Electrical symbol   - Certification: UL - Certification included in EX version	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: VEA: NBR/FPM VEB: NBR Technical data - Vacuum setting: 0.21 bar ±10% - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: EN 175301-803 - Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac - CE certification - Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X		
R	Ordering code								
EN 10226 - R1/4"	VE A 21 A A 50 P01 UL								
VL*51 - VL*52 - VL*53 Electrical/Visual Vacuum Indicator Connection: EN 175301-803 51: Transparent base with lamps 24 Vdc 52: Transparent base with lamps 110 Vdc 53: Transparent base with lamps 230 Vac <table><tr><th>R</th><th>Ordering code</th></tr><tr><td>EN 10226 - R1/4"</td><td>VL A 21 x A xx P01</td></tr><tr><td>EN 10226 - R1/8"</td><td>VL B 21 A A xx P01</td></tr></table>  A/F 27 Max tightening torque: 25 N·m		R	Ordering code	EN 10226 - R1/4"	VL A 21 x A xx P01	EN 10226 - R1/8"	VL B 21 A A xx P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Base: Transparent polyamide - Contacts: Brass - Polyamide - Seal: VLA: NBR/FPM VLB: NBR Technical data - Vacuum setting: 0.21 bar ±10% - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: EN 175301-803 - 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
R	Ordering code								
EN 10226 - R1/4"	VL A 21 x A xx P01								
EN 10226 - R1/8"	VL B 21 A A xx P01								

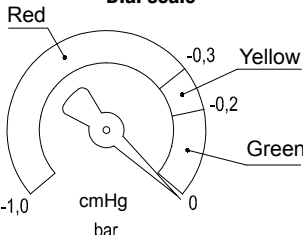
VL*71		Hydraulic symbol	Materials
Electrical/Visual Vacuum Indicator Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			
Connections	Indicator code		Brass Black polyamide Silver VLA: NBR/FPM VLB: NBR
EN 10226 - R1/4"	VL A 21 x A 71 P01		
EN 10226 - R1/8"	VL B 21 A A 71 P01		
		Electrical symbol	Technical data
			Materials
		Technical data	Materials
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		Electrical data</	

VVA - VVB	
Axial Vacuum Gauge	
R	Ordering code
EN 10226 - R1/4"	VVA 20 P01
EN 10226 - R1/8"	VVB 20 P01
	

Hydraulic symbol	
	
Dial scale	
	
Conversion to SI units	
[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials	
- Case:	Black plastic
- Window:	Clear plastic
- Dial:	White plastic
- Pointer:	Black plastic
- Pressure connection:	Cu-alloy
- Pressure element:	Bourdon tube Cu-alloy soft soldered, C type
- Movement:	Cu-alloy
Technical data	
- Max working pressure:	Steady: -0.7 bar Fluctuating: -0.6 bar Short time: -1.0 bar
- Working temperature:	Ambient from -40 °C to +60 °C Fluid max + 60 °C Storage from -40 °C to +60 °C
- Compatibility with fluids:	Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Accuracy:	Class 2.5 according to EN 13190
- Degree of protection:	IP31 according to EN 60529

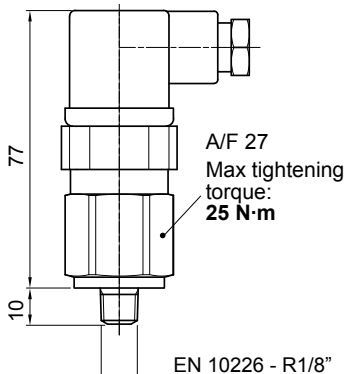
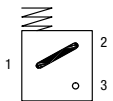
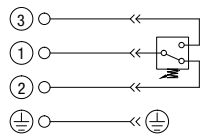
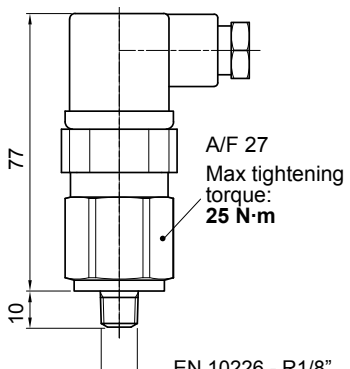
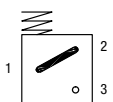
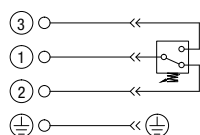
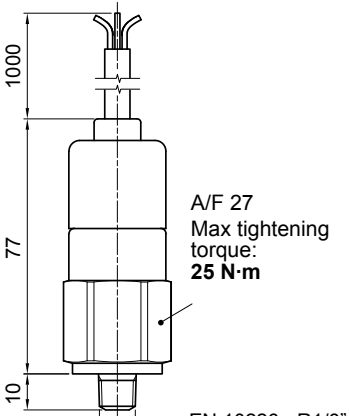
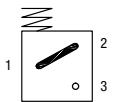
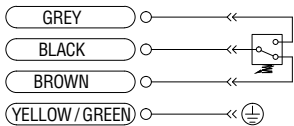
VVR - VVS		
Radial Vacuum Gauge		
R	A/F	Ordering code
EN 10226 - R1/4"	14	VVR 20 P01
EN 10226 - R1/8"	11	VVS 20 P01
		

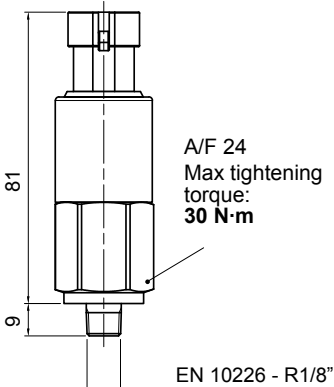
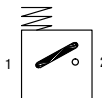
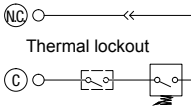
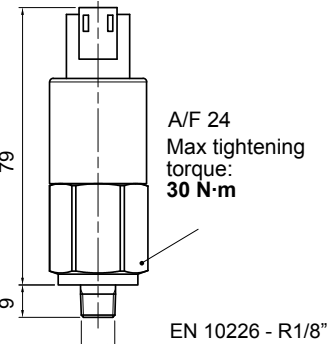
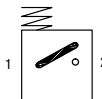
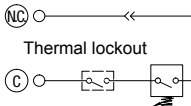
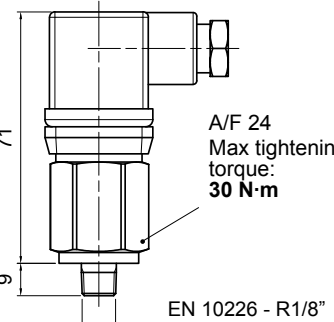
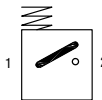
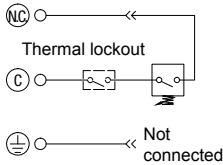
Hydraulic symbol	
	
Dial scale	
	
Conversion to SI units	
[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials	
- Case:	Black plastic
- Window:	Clear plastic
- Dial:	White plastic
- Pointer:	Black plastic
- Pressure connection:	Cu-alloy
- Pressure element:	Bourdon tube Cu-alloy soft soldered, C type
- Movement:	Cu-alloy
Technical data	
- Max working pressure:	Steady: -0.7 bar Fluctuating: -0.6 bar Short time: -1.0 bar
- Working temperature:	Ambient from -40 °C to +60 °C Fluid max + 60 °C Storage from -40 °C to +60 °C
- Compatibility with fluids:	Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Accuracy:	Class 2.5 according to EN 13190
- Degree of protection:	IP31 according to EN 60529

BAROMETRIC (PRESSURE) INDICATORS

Dimensions

BEA*50 (EX) Electrical Pressure Indicator Connection EN 175301-803 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.5 bar ±10%</td><td>BE A 15 HA 50 P01 BE A 15 HA 50 P01 EX</td></tr><tr><td>2.0 bar ±10%</td><td>BE A 20 HA 50 P01 BE A 20 HA 50 P01 EX</td></tr></table> 		Settings	Ordering code	1.5 bar ±10%	BE A 15 HA 50 P01 BE A 15 HA 50 P01 EX	2.0 bar ±10%	BE A 20 HA 50 P01 BE A 20 HA 50 P01 EX	Hydraulic symbol  Electrical symbol   - Certification: ATEX, IECEx - Certification included in EX version	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 40 bar - Proof pressure: 60 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: EN 175301-803 - Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac - CE certification - Available Atex product: I M1 Ex ia I Ma II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X
Settings	Ordering code								
1.5 bar ±10%	BE A 15 HA 50 P01 BE A 15 HA 50 P01 EX								
2.0 bar ±10%	BE A 20 HA 50 P01 BE A 20 HA 50 P01 EX								
BEA*50 UL Electrical Pressure Indicator Connection EN 175301-803 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.5 bar ±10%</td><td>BE A 15 HA 50 P01 UL</td></tr><tr><td>2.0 bar ±10%</td><td>BE A 20 HA 50 P01 UL</td></tr></table> 		Settings	Ordering code	1.5 bar ±10%	BE A 15 HA 50 P01 UL	2.0 bar ±10%	BE A 20 HA 50 P01 UL	Hydraulic symbol  Electrical symbol   - Certification: UL - Certification included in EX version	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 40 bar - Proof pressure: 60 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: EN 175301-803 - Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac - CE certification - Available Atex product: I M1 Ex ia I Ma II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X
Settings	Ordering code								
1.5 bar ±10%	BE A 15 HA 50 P01 UL								
2.0 bar ±10%	BE A 20 HA 50 P01 UL								
BEM*41 Electrical Pressure Indicator Connection via four-core cable <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.5 bar ±10%</td><td>BE M 15 HA 41 P01</td></tr><tr><td>2.0 bar ±10%</td><td>BE M 20 HA 41 P01</td></tr></table> 		Settings	Ordering code	1.5 bar ±10%	BE M 15 HA 41 P01	2.0 bar ±10%	BE M 20 HA 41 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 40 bar - Proof pressure: 60 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP67 according to EN 60529 Electrical data - Electrical connection: Four-core cable - Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac - CE certification On request this indicator can be provided with main connectors in use for wirings.
Settings	Ordering code								
1.5 bar ±10%	BE M 15 HA 41 P01								
2.0 bar ±10%	BE M 20 HA 41 P01								

BET*F10 Electrical Pressure Indicator Connection AMP Superseal series 1.5 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>2.0 bar ±10%</td><td>BET 20 H F 10 P01</td></tr><tr><td>2.5 bar ±10%</td><td>BET 25 H F 10 P01</td></tr></table> 	Settings	Ordering code	2.0 bar ±10%	BET 20 H F 10 P01	2.5 bar ±10%	BET 25 H F 10 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +100 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: AMP Superseal series 1.5 - Resistive load: 0.5 A / 48 Vdc - Thermostat condition: Open up to 30 °C - CE certification
Settings	Ordering code							
2.0 bar ±10%	BET 20 H F 10 P01							
2.5 bar ±10%	BET 25 H F 10 P01							
BET*F30 Electrical Pressure Indicator Deutsch DT-04-2-P <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>2.0 bar ±10%</td><td>BET 20 H F 30 P01</td></tr><tr><td>2.5 bar ±10%</td><td>BET 25 H F 30 P01</td></tr></table> 	Settings	Ordering code	2.0 bar ±10%	BET 20 H F 30 P01	2.5 bar ±10%	BET 25 H F 30 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +100 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: Deutsch DT-04-2-P - Resistive load: 0.5 A / 48 Vdc - Thermostat condition: Open up to 30 °C - CE certification
Settings	Ordering code							
2.0 bar ±10%	BET 20 H F 30 P01							
2.5 bar ±10%	BET 25 H F 30 P01							
BET*F50 Electrical Pressure Indicator Connection EN 175301-803 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>2.0 bar ±10%</td><td>BET 20 H F 50 P01</td></tr><tr><td>2.5 bar ±10%</td><td>BET 25 H F 50 P01</td></tr></table> 	Settings	Ordering code	2.0 bar ±10%	BET 20 H F 50 P01	2.5 bar ±10%	BET 25 H F 50 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +100 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree of protection: IP65 according to EN 60529 Electrical data - Electrical connection: EN 175301-803 - Resistive load: 0.5 A / 48 Vdc - Thermostat condition: Open up to 30 °C - CE certification
Settings	Ordering code							
2.0 bar ±10%	BET 20 H F 50 P01							
2.5 bar ±10%	BET 25 H F 50 P01							

BAROMETRIC (PRESSURE) INDICATORS

Dimensions

BL*51 - BL*52 - BL*53 Electrical/Visual Pressure Indicator Connection: EN 175301-803 51: Transparent base with lamps 24 Vdc 52: Transparent base with lamps 110 Vdc 53: Transparent base with lamps 230 Vac <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.5 bar ±10%</td><td>BL A 15 H A xx P01</td></tr><tr><td>2.0 bar ±10%</td><td>BL A 20 H A xx P01</td></tr></table>		Settings	Ordering code	1.5 bar ±10%	BL A 15 H A xx P01	2.0 bar ±10%	BL A 20 H A xx P01	Hydraulic symbol Electrical symbol	Materials - Body: - Base: - Contacts: - Seal: Brass Transparent polyamide Silver HNBR Technical data - Max working pressure: - Proof pressure: - Working temperature: - Compatibility with fluids: - Degree of protection: 40 bar 60 bar From -25 °C to +80 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP65 according to EN 60529 Electrical data - Electrical connection: - Type - Lamps - Resistive load: EN 175301-803 51 52 53 24 Vdc 110 Vdc 230 Vac 1 A / 24 Vdc 1 A / 110 Vdc 1 A / 230 Vac
Settings	Ordering code								
1.5 bar ±10%	BL A 15 H A xx P01								
2.0 bar ±10%	BL A 20 H A xx P01								
BL*71 Electrical/Visual Pressure Indicator Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.5 bar ±10%</td><td>BL A 15 H A 71 P01</td></tr><tr><td>2.0 bar ±10%</td><td>BL A 20 H A 71 P01</td></tr></table>		Settings	Ordering code	1.5 bar ±10%	BL A 15 H A 71 P01	2.0 bar ±10%	BL A 20 H A 71 P01	Hydraulic symbol Electrical symbol	Materials - Body: - Base: - Contacts: - Seal: Brass Black polyamide Silver HNBR Technical data - Max working pressure: - Proof pressure: - Working temperature: - Compatibility with fluids: - Degree of protection: 40 bar 60 bar From -25 °C to +80 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP65 according to EN 60529 Electrical data - Electrical connection: - Lamps: - Resistive load: IEC 61076-2-101 D (M12) 24 Vdc (black base) 0.4 A / 24 Vdc
Settings	Ordering code								
1.5 bar ±10%	BL A 15 H A 71 P01								
2.0 bar ±10%	BL A 20 H A 71 P01								
BVA Axial Pressure Gauge <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.4 bar ±10%</td><td>BV A 14 P01</td></tr><tr><td>2.5 bar ±10%</td><td>BV A 25 P01</td></tr></table>		Settings	Ordering code	1.4 bar ±10%	BV A 14 P01	2.5 bar ±10%	BV A 25 P01	Hydraulic symbol Dial scale BV A 14 P01 BV A 25 P01	Materials - Case: - Window: - Dial: - Pointer: - Pressure connection: - Pressure element: Painted Steel Clear plastic Painted Steel Black plastic Brass Bourdon tube Cu-alloy soft soldered, C type Technical data - Max working pressure: - Working temperature: - Compatibility with fluids: - Accuracy: - Degree of protection: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar Ambient from -40 °C to +60 °C Fluid max +60 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 Class 2.5 according to EN 13190 IP31 according to EN 60529
Settings	Ordering code								
1.4 bar ±10%	BV A 14 P01								
2.5 bar ±10%	BV A 25 P01								

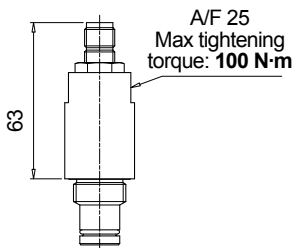
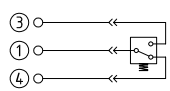
BVR	
Radial Pressure Gauge	
Settings	Ordering code
1.4 bar ±10%	BV R 14 P01
2.5 bar ±10%	BV R 25 P01
Dial scale BV R 14 P01	
Dial scale BV R 25 P01	
Materials	
- Case:	Painted Steel
- Window:	Clear plastic
- Dial:	Painted Steel
- Pointer:	Black plastic
- Pressure connection:	Brass
- Pressure element:	Bourdon tube Cu-alloy soft soldered, C type
Technical data	
- Max working pressure:	Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature:	Ambient from -40 °C to +60 °C Fluid max +60 °C
- Compatibility with fluids:	Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943
- Accuracy:	Class 2.5 according to EN 13190
- Degree of protection:	IP31 according to EN 60529

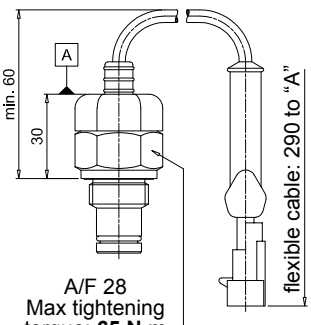
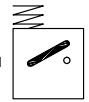
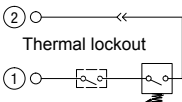
BVP - BVQ	
Visual Pressure Indicator BVP - Automatic reset BVQ - Manual reset	
Setting	Ordering code
1.5 bar ±10%	BV P 15 H P01
	BV Q 15 H P01
2.0 bar ±10%	BV P 20 H P01
	BV Q 20 H P01
Materials	
- Body:	Brass
- Cover / internal parts:	Nylon
- Caps:	VMQ
- Seal:	HNBR
Technical data	
- Reset:	BVP - Automatic 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 HFB and HFC according to ISO 2943
- Degree of protection:	IP45 according to EN 60529
Signals	
Absence of pressure (no indicator)	
Presence of pressure (green button rises gradually)	
Clogged filter element (red button risen)	

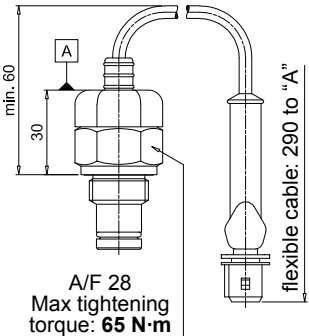
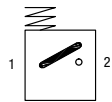
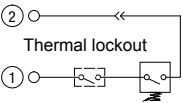
DIFFERENTIAL PRESSURE INDICATORS

Dimensions

DEA*50 Electrical Differential Pressure Indicator Connection: EN 175301-803 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE A 12 x A 50 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DE A 20 x A 50 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DE A 50 x A 50 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE A 70 x A 50 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DE A 95 x A 50 P01</td></tr></table> A/F 30 Max tightening torque: 65 N·m		Settings	Ordering code	1.2 bar ±10%	DE A 12 x A 50 P01	2.0 bar ±10%	DE A 20 x A 50 P01	5.0 bar ±10%	DE A 50 x A 50 P01	7.0 bar ±10%	DE A 70 x A 50 P01	9.5 bar ±10%	DE A 95 x A 50 P01	Hydraulic symbol Electrical symbol	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653 Electrical data - Electrical connection: EN 175301-803 - Resistive load: 0.2 A / 115 Vdc
Settings	Ordering code														
1.2 bar ±10%	DE A 12 x A 50 P01														
2.0 bar ±10%	DE A 20 x A 50 P01														
5.0 bar ±10%	DE A 50 x A 50 P01														
7.0 bar ±10%	DE A 70 x A 50 P01														
9.5 bar ±10%	DE A 95 x A 50 P01														
DEH*48 Hazardous Area Electrical Differential Pressure Indicator Connection via three-core cable - fitting M20x1.5 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>2.0 bar ±10%</td><td>DE H 20 x A 48 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DE H 50 x A 48 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE H 70 x A 48 P01</td></tr></table> A/F 25 Max tightening torque: 100 N·m flexible cable ≈ 5000 to A		Settings	Ordering code	2.0 bar ±10%	DE H 20 x A 48 P01	5.0 bar ±10%	DE H 50 x A 48 P01	7.0 bar ±10%	DE H 70 x A 48 P01	Hydraulic symbol Electrical symbol - Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO - Certification included as standard	Materials - Body: AISI 316L - Contacts: Rhodium - Seal: FPM - MFQ Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -60 °C to +125 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Temperature class: T4 (135 °C) and T6 (85 °C) - Degree of protection: IP 66/67/68 according to EN 60529 - Connection type: Three-core cable, fitting M20x1.5 - Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts) Electrical data - Connection via three-core cable - fitting M20x1.5 - Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac - Electrical Ratings: $U_i = 30$ Vdc / $I_i = 250$ mA / $P_i = 1.3$ W - Available ATEX product: II 1 GD Ex ia IIC T6 Ga -60°C $\leq T_a \leq 80^\circ\text{C}$ Ex ia IIC T4 Ga -60°C $\leq T_a \leq 125^\circ\text{C}$ II 2 GD Ex db IIC T6* Gb Ex tb IIIC T85°C* Db (Tamb : = -60°C to +70°C)* IP66/67 * alternative T/Class and ambients T4, T135°C (Tamb = -60°C to +120°C)				
Settings	Ordering code														
2.0 bar ±10%	DE H 20 x A 48 P01														
5.0 bar ±10%	DE H 50 x A 48 P01														
7.0 bar ±10%	DE H 70 x A 48 P01														
DEH*49 Hazardous Area Electrical Differential Pressure Indicator Connection via four-core cable - fitting 1/2" NPT <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>2.0 bar ±10%</td><td>DE H 20 x A 49 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DE H 50 x A 49 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE H 70 x A 49 P01</td></tr></table> A/F 25 Max tightening torque: 100 N·m flexible cable ≈ 5000 to A		Settings	Ordering code	2.0 bar ±10%	DE H 20 x A 49 P01	5.0 bar ±10%	DE H 50 x A 49 P01	7.0 bar ±10%	DE H 70 x A 49 P01	Hydraulic symbol Electrical symbol - Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO, UL/CSA Class I Division 1 Groups A-D, UL/CSA Class II Division 1 Groups E-G - Certification included as standard	Materials - Body: AISI 316L - Contacts: Rhodium - Seal: FPM - MFQ Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -60 °C to +120 °C : ATEX, IECEx, EAC TR CU, INMETRO From -60 °C to +105 °C : UL/CSA - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Temperature class: T4 (135 °C) and T6 (85 °C) - Degree of protection: IP 66/67/68 according to EN 60529 - Connection type: Four-core cable, fitting 1/2" NPT - Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts) Electrical data - Connection via four-core cable - fitting 1/2" NPT - Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac - Max voltage: 150 Vac/dc - Power: 20 W - Available ATEX product: II 1 GD Ex ia IIC T6 Ga -60°C $\leq T_a \leq 80^\circ\text{C}$ Ex ia IIC T4 Ga -60°C $\leq T_a \leq 125^\circ\text{C}$ II 2 GD Ex db IIC T6* Gb Ex tb IIIC T85°C* Db (Tamb : = -60°C to +70°C)* IP66/67 * alternative T/Class and ambients T4, T135°C (Tamb = -60°C to +120°C)				
Settings	Ordering code														
2.0 bar ±10%	DE H 20 x A 49 P01														
5.0 bar ±10%	DE H 50 x A 49 P01														
7.0 bar ±10%	DE H 70 x A 49 P01														

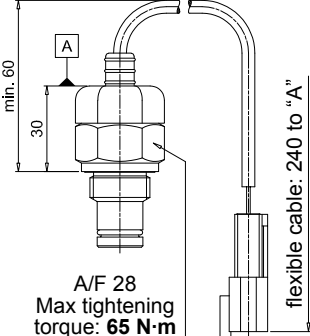
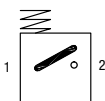
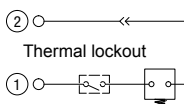
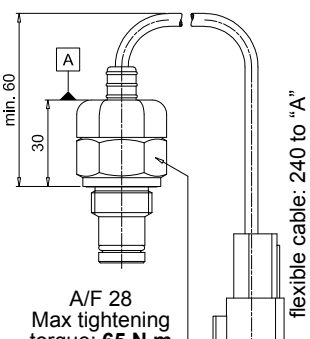
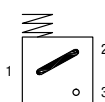
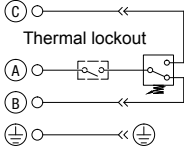
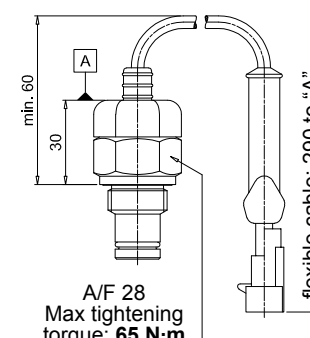
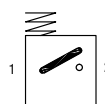
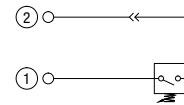
DEH*70		Hydraulic symbol	Materials
Hazardous Area Electrical Differential Pressure Indicator Connection IEC 61076-2-101 D (M12)			
Settings	Ordering code	Electrical symbol	Technical data
2.0 bar ±10%	DE H 20 x A 70 P01		
5.0 bar ±10%	DE H 50 x A 70 P01		
7.0 bar ±10%	DE H 70 x A 70 P01		
		  	Materials - Body: AISI 316L with internal engineered resin switch - Contacts: Rhodium - Seal: FPM - MFQ Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -60 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids - Temperature class: HFB and HFC according to ISO 2943 - Degree of protection: IP 66/67 according to EN 60529 - Connection type: IEC 61076-2-101 D (M12) - Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts) Electrical data - Connection IEC 61076-2-101 D (M12) - Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vdc - Electrical Ratings: $U_i = 30$ Vdc $I_i = 250$ mA $P_i = 1.3$ W - Available ATEX product: II 1 GD Ex ia IIC T6 Ga -60°C ≤ Ta ≤ 80°C Ex ia IIC T4 Ga -60°C ≤ Ta ≤ 125°C II 2 GD Ex db IIC T6* Gb Ex tb IIIC T85°C* Db (Tamb : = -60°C to +70°C)* IP66/67 * alternative T/Class and ambients T4, T135°C (Tamb = -60°C to +120°C)

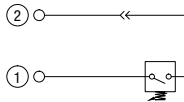
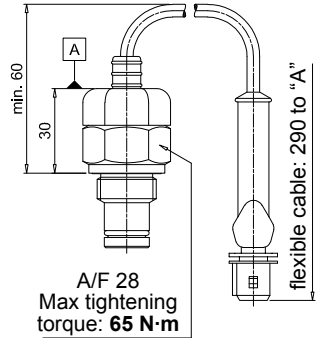
DEM*F10		Hydraulic symbol	Materials
Electrical Differential Pressure Indicator Connection: AMP Superseal series 1.5			
Settings	Ordering code	Electrical symbol	Technical data
1.2 bar ±10%	DE M 12 x F 10 P01		
2.0 bar ±10%	DE M 20 x F 10 P01		
5.0 bar ±10%	DE M 50 x F 10 P01		
7.0 bar ±10%	DE M 70 x F 10 P01		
9.5 bar ±10%	DE M 95 x F 10 P01		
		 	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids - Degree protection: HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 Electrical data - Electrical connection: AMP Superseal series 1.5 - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")
min. 60			
30			
A/F 28 Max tightening torque: 65 N·m			
flexible cable: 290 to "A"			
②			
①			
Thermal lockout			

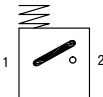
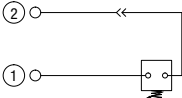
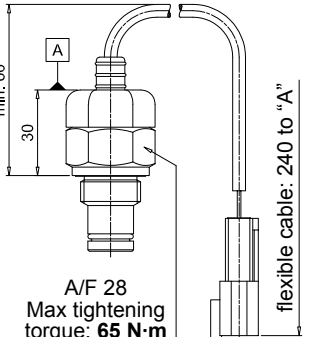
DEM*F20		Hydraulic symbol	Materials	
Electrical Differential Pressure Indicator AMP Time junior				
Settings	Ordering code	Electrical symbol	Technical data	
1.2 bar ±10%	DE M 12 x F 20 P01			
2.0 bar ±10%	DE M 20 x F 20 P01			
5.0 bar ±10%	DE M 50 x F 20 P01			
7.0 bar ±10%	DE M 70 x F 20 P01			
9.5 bar ±10%	DE M 95 x F 20 P01			
			Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids - Degree protection: HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 Electrical data - Electrical connection: AMP Time junior - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")	
				

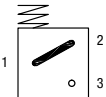
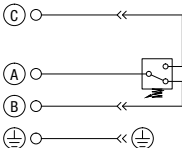
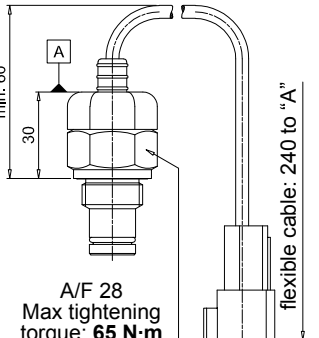
DIFFERENTIAL PRESSURE INDICATORS

Dimensions

DEM*F30 Electrical Differential Pressure Indicator Deutsch DT-04-2-P <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE M 12 x F 30 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DE M 20 x F 30 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DE M 50 x F 30 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE M 70 x F 30 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DE M 95 x F 30 P01</td></tr></table>  A/F 28 Max tightening torque: 65 N·m		Settings	Ordering code	1.2 bar ±10%	DE M 12 x F 30 P01	2.0 bar ±10%	DE M 20 x F 30 P01	5.0 bar ±10%	DE M 50 x F 30 P01	7.0 bar ±10%	DE M 70 x F 30 P01	9.5 bar ±10%	DE M 95 x F 30 P01	Hydraulic symbol  Electrical symbol  Thermal lockout	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 Electrical data - Electrical connection: Deutsch DT-04-2-P - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")
Settings	Ordering code														
1.2 bar ±10%	DE M 12 x F 30 P01														
2.0 bar ±10%	DE M 20 x F 30 P01														
5.0 bar ±10%	DE M 50 x F 30 P01														
7.0 bar ±10%	DE M 70 x F 30 P01														
9.5 bar ±10%	DE M 95 x F 30 P01														
DEM*F35 Electrical Differential Pressure Indicator Deutsch DT-04-3-P <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE M 12 x F 35 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DE M 20 x F 35 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DE M 50 x F 35 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE M 70 x F 35 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DE M 95 x F 35 P01</td></tr></table>  A/F 28 Max tightening torque: 65 N·m		Settings	Ordering code	1.2 bar ±10%	DE M 12 x F 35 P01	2.0 bar ±10%	DE M 20 x F 35 P01	5.0 bar ±10%	DE M 50 x F 35 P01	7.0 bar ±10%	DE M 70 x F 35 P01	9.5 bar ±10%	DE M 95 x F 35 P01	Hydraulic symbol  Electrical symbol  Thermal lockout	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 Electrical data - Electrical connection: Deutsch DT-04-3-P - Resistive load: 0.2 A / 115 Vdc - Switching type: SPDT contact - Thermal lockout: Normally open up to 30 °C (option "F")
Settings	Ordering code														
1.2 bar ±10%	DE M 12 x F 35 P01														
2.0 bar ±10%	DE M 20 x F 35 P01														
5.0 bar ±10%	DE M 50 x F 35 P01														
7.0 bar ±10%	DE M 70 x F 35 P01														
9.5 bar ±10%	DE M 95 x F 35 P01														
DEM*A10 Electrical Differential Pressure Indicator Connection: AMP Superseal series 1.5 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE M 12 x A 10 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DE M 20 x A 10 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DE M 50 x A 10 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DE M 70 x A 10 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DE M 95 x A 10 P01</td></tr></table>  A/F 28 Max tightening torque: 65 N·m		Settings	Ordering code	1.2 bar ±10%	DE M 12 x A 10 P01	2.0 bar ±10%	DE M 20 x A 10 P01	5.0 bar ±10%	DE M 50 x A 10 P01	7.0 bar ±10%	DE M 70 x A 10 P01	9.5 bar ±10%	DE M 95 x A 10 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM Technical data - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 Electrical data - Electrical connection: AMP Superseal series 1.5 - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request)
Settings	Ordering code														
1.2 bar ±10%	DE M 12 x A 10 P01														
2.0 bar ±10%	DE M 20 x A 10 P01														
5.0 bar ±10%	DE M 50 x A 10 P01														
7.0 bar ±10%	DE M 70 x A 10 P01														
9.5 bar ±10%	DE M 95 x A 10 P01														

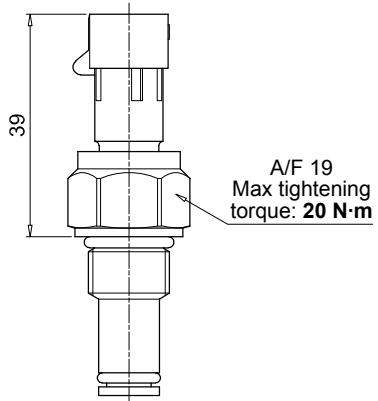
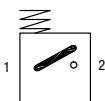
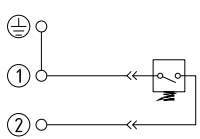
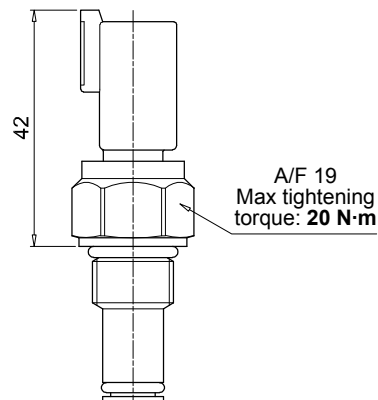
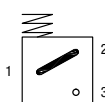
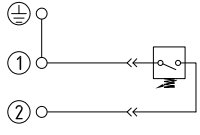
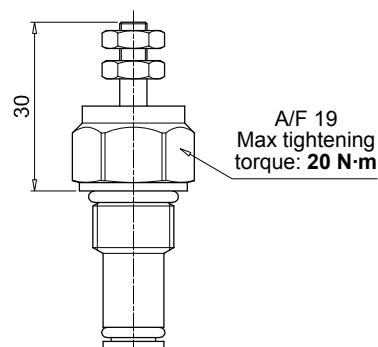
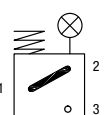
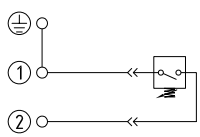
DEM*A20		Hydraulic symbol	Materials
Electrical Differential Pressure Indicator AMP Time junior			- Body: Brass - Base: Black polyamide - Contacts: Silver - Seal: HNBR - FPM
Settings	Ordering code	Electrical symbol	Technical data
1.2 bar $\pm 10\%$	DE M 12 x A 20 P01		- Max working pressure: 420 bar
2.0 bar $\pm 10\%$	DE M 20 x A 20 P01		- Proof pressure: 630 bar
5.0 bar $\pm 10\%$	DE M 50 x A 20 P01		- Burst pressure: 1260 bar
7.0 bar $\pm 10\%$	DE M 70 x A 20 P01		- Working temperature: From -25 °C to +110 °C
9.5 bar $\pm 10\%$	DE M 95 x A 20 P01		- Compatibility with fluids: Mineral oils, Synthetic fluids
			- Degree protection: IP66 according to EN 60529
A/F 28 Max tightening torque: 65 N·m			Electrical data - Electrical connection: AMP Time junior - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request)

DEM*A30		Hydraulic symbol	Electrical symbol	Materials	Technical data	Electrical data			
Electrical Differential Pressure Indicator Deutsch DT-04-2-P									
Settings	Ordering code								
1.2 bar ±10%	DE M 12 x A 30 P01								
2.0 bar ±10%	DE M 20 x A 30 P01								
5.0 bar ±10%	DE M 50 x A 30 P01								
7.0 bar ±10%	DE M 70 x A 30 P01								
9.5 bar ±10%	DE M 95 x A 30 P01								
									

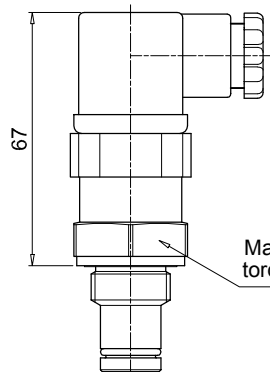
DEM*A35		Hydraulic symbol	Electrical symbol	Materials	Technical data	Electrical data			
Electrical Differential Pressure Indicator Deutsch DT-04-3-P									
Settings	Ordering code								
1.2 bar ±10%	DE M 12 x A 35 P01								
2.0 bar ±10%	DE M 20 x A 35 P01								
5.0 bar ±10%	DE M 50 x A 35 P01								
7.0 bar ±10%	DE M 70 x A 35 P01								
9.5 bar ±10%	DE M 95 x A 35 P01								
									

DIFFERENTIAL PRESSURE INDICATORS

Dimensions

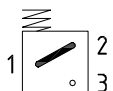
DES*10 Electrical Differential Pressure Indicator AMP Superseal series 1.5 <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE S 12 H A 10 P01</td></tr><tr><td>2.5 bar ±10%</td><td>DE S 25 H A 10 P01</td></tr><tr><td>4.0 bar ±10%</td><td>DE S 40 H A 10 P01</td></tr></table> 	Settings	Ordering code	1.2 bar ±10%	DE S 12 H A 10 P01	2.5 bar ±10%	DE S 25 H A 10 P01	4.0 bar ±10%	DE S 40 H A 10 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Internal parts: Brass - Polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 16 bar - Proof pressure: 24 bar - Burst pressure: 48 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids - Degree protection: HFB and HFC according to ISO 2943 IP67 according to EN 60529 Electrical data - Electrical connection: AMP Superseal series 1.5 - Resistive load: 0.2 A / 24 Vdc - Switching type: Normally open contacts (NC on request)
Settings	Ordering code									
1.2 bar ±10%	DE S 12 H A 10 P01									
2.5 bar ±10%	DE S 25 H A 10 P01									
4.0 bar ±10%	DE S 40 H A 10 P01									
DES*30 Electrical Differential Pressure Indicator Deutsch DT-04-2-P <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE S 12 H A 30 P01</td></tr><tr><td>2.5 bar ±10%</td><td>DE S 25 H A 30 P01</td></tr><tr><td>4.0 bar ±10%</td><td>DE S 40 H A 30 P01</td></tr></table> 	Settings	Ordering code	1.2 bar ±10%	DE S 12 H A 30 P01	2.5 bar ±10%	DE S 25 H A 30 P01	4.0 bar ±10%	DE S 40 H A 30 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Internal parts: Brass - Polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 16 bar - Proof pressure: 24 bar - Burst pressure: 48 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids - Degree protection: HFB and HFC according to ISO 2943 IP67 according to EN 60529 Electrical data - Electrical connection: Deutsch DT-04-2-P - Resistive load: 0.2 A / 24 Vdc - Switching type: Normally open contacts (NC on request)
Settings	Ordering code									
1.2 bar ±10%	DE S 12 H A 30 P01									
2.5 bar ±10%	DE S 25 H A 30 P01									
4.0 bar ±10%	DE S 40 H A 30 P01									
DES*80 Electrical Differential Pressure Indicator Stud #10-32 UNF <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DE S 12 H A 80 P01</td></tr><tr><td>2.5 bar ±10%</td><td>DE S 25 H A 80 P01</td></tr><tr><td>4.0 bar ±10%</td><td>DE S 40 H A 80 P01</td></tr></table> 	Settings	Ordering code	1.2 bar ±10%	DE S 12 H A 80 P01	2.5 bar ±10%	DE S 25 H A 80 P01	4.0 bar ±10%	DE S 40 H A 80 P01	Hydraulic symbol  Electrical symbol 	Materials - Body: Brass - Internal parts: Brass - Polyamide - Contacts: Silver - Seal: HNBR Technical data - Max working pressure: 16 bar - Proof pressure: 24 bar - Burst pressure: 48 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids - Degree protection: HFB and HFC according to ISO 2943 IP67 according to EN 60529 Electrical data - Electrical connection: Stud #10-32 UNF - Resistive load: 0.2 A / 24 Vdc - Switching type: Normally open contacts (NC on request)
Settings	Ordering code									
1.2 bar ±10%	DE S 12 H A 80 P01									
2.5 bar ±10%	DE S 25 H A 80 P01									
4.0 bar ±10%	DE S 40 H A 80 P01									

DEU*50 UL	
Electrical Differential Pressure Indicator	
Connection EN 175301-803	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE U 20 V A 50 P01 UL
5.0 bar $\pm 10\%$	DE U 50 V A 50 P01 UL
7.0 bar $\pm 10\%$	DE U 70 V A 50 P01 UL

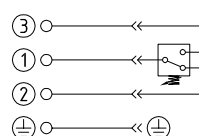


A/F 30
Max tightening
torque: 50 N·m

Hydraulic symbol



Electrical symbol





- Certification: UL
- Certification included as standard

Materials

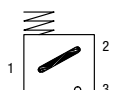
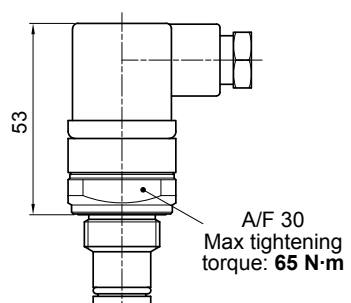
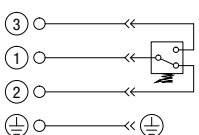
- Body: Brass
- Base: Black Polyamide
- Contacts: Silver
- Seal: FPM

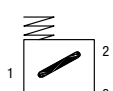
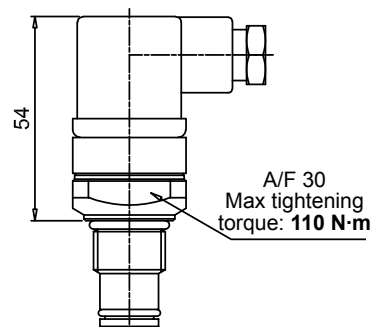
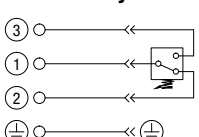
Technical data

- Max working pressure: 210 bar
- Proof pressure: 220 bar
- Burst pressure: 880 bar
- Working temperature: From -25°C to $+85^{\circ}\text{C}$
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data

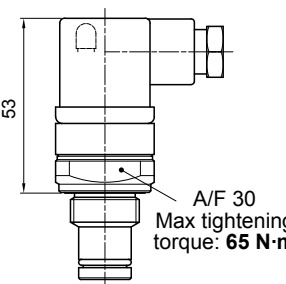
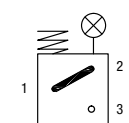
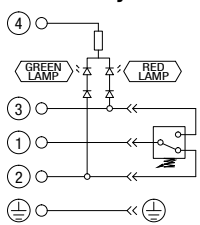
- Electrical connection: EN 175301-803
- Resistive load: 3 A / 30 Vdc
3 A / 125 Vac
3 (3) A / 250 Vac

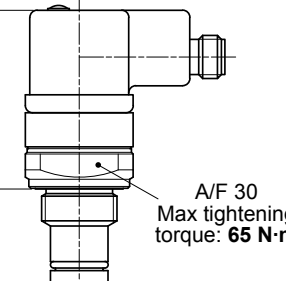
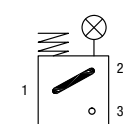
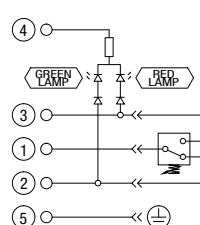
DEX*50		Hydraulic symbol	Materials		
Electrical Differential Pressure Indicator Connection: EN 175301-803					
Settings	Ordering code		AISI 316L Black polyamide Silver HNBR - MFQ		
1.2 bar $\pm 10\%$	DE X 12 x A 50 P01				
2.0 bar $\pm 10\%$	DE X 20 x A 50 P01				
5.0 bar $\pm 10\%$	DE X 50 x A 50 P01				
7.0 bar $\pm 10\%$	DE X 70 x A 50 P01				
9.5 bar $\pm 10\%$	DE X 95 x A 50 P01				
		Electrical symbol			
				Technical data	
		- Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653		Electrical data	
		- Electrical connection: EN 175301-803 - Resistive load: 0.2 A / 115 Vdc			

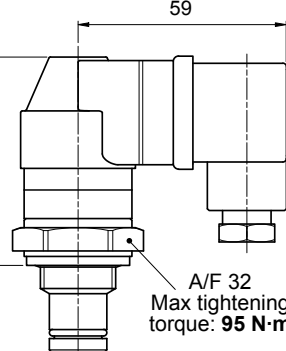
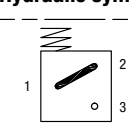
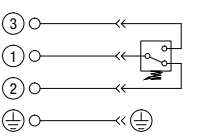
DEZ*50		Hydraulic symbol	Materials		
Electrical Differential Pressure Indicator Connection: EN 175301-803					
Settings	Ordering code		- Body: AISI 316L - Base: Black polyamide - Contacts: Silver - Seal: HNBR - MFQ		
1.2 bar ±10%	DE Z 12 x A 50 P01				
2.5 bar ±10%	DE Z 25 x A 50 P01				
5.0 bar ±10%	DE Z 50 x A 50 P01				
7.0 bar ±10%	DE Z 70 x A 50 P01				
9.5 bar ±10%	DE Z 95 x A 50 P01				
		Electrical symbol			
				Technical data	
		- Max working pressure: 700 bar - Proof pressure: 1050 bar - Burst pressure: 2100 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653		Electrical data	
		- Electrical connection: EN 175301-803 - Resistive load: 0.2 A / 115 Vdc			

DIFFERENTIAL PRESSURE INDICATORS

Dimensions

DLA*51 - DLA*52													
Electrical/Visual Differential Pressure Indicator Connection: EN 175301-803													
51: Transparent base with lamps 24 Vdc 52: Transparent base with lamps 110 Vdc													
<table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DL A 12 x A xx P01</td></tr><tr><td>2.0 bar ±10%</td><td>DL A 20 x A xx P01</td></tr><tr><td>5.0 bar ±10%</td><td>DL A 50 x A xx P01</td></tr><tr><td>7.0 bar ±10%</td><td>DL A 70 x A xx P01</td></tr><tr><td>9.5 bar ±10%</td><td>DL A 95 x A xx P01</td></tr></table>	Settings	Ordering code	1.2 bar ±10%	DL A 12 x A xx P01	2.0 bar ±10%	DL A 20 x A xx P01	5.0 bar ±10%	DL A 50 x A xx P01	7.0 bar ±10%	DL A 70 x A xx P01	9.5 bar ±10%	DL A 95 x A xx P01	
Settings	Ordering code												
1.2 bar ±10%	DL A 12 x A xx P01												
2.0 bar ±10%	DL A 20 x A xx P01												
5.0 bar ±10%	DL A 50 x A xx P01												
7.0 bar ±10%	DL A 70 x A xx P01												
9.5 bar ±10%	DL A 95 x A xx P01												
Hydraulic symbol													
													
Electrical symbol													
													
Materials													
- Body: Brass													
- Base: Transparent polyamide													
- Contacts: Silver													
- Seal: HNBR - FPM													
Technical data													
- Max working pressure: 420 bar													
- Proof pressure: 630 bar													
- Burst pressure: 1260 bar													
- Working temperature: From -25 °C to +110 °C													
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943													
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653													
Electrical data													
- Electrical connection: EN 175301-803													
- Type: 51 52													
- Lamps: 24 Vdc 110 Vdc													
- Resistive load: 1 A / 24 Vdc 1 A / 110 Vdc													

DLA*71													
Electrical/Visual Differential pressure indicator Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc													
<table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DL A 12 x A 71 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DL A 20 x A 71 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DL A 50 x A 71 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DL A 70 x A 71 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DL A 95 x A 71 P01</td></tr></table>	Settings	Ordering code	1.2 bar ±10%	DL A 12 x A 71 P01	2.0 bar ±10%	DL A 20 x A 71 P01	5.0 bar ±10%	DL A 50 x A 71 P01	7.0 bar ±10%	DL A 70 x A 71 P01	9.5 bar ±10%	DL A 95 x A 71 P01	
Settings	Ordering code												
1.2 bar ±10%	DL A 12 x A 71 P01												
2.0 bar ±10%	DL A 20 x A 71 P01												
5.0 bar ±10%	DL A 50 x A 71 P01												
7.0 bar ±10%	DL A 70 x A 71 P01												
9.5 bar ±10%	DL A 95 x A 71 P01												
Hydraulic symbol													
													
Electrical symbol													
													
Materials													
- Body: Brass													
- Base: Black polyamide													
- Contacts: Silver													
- Seal: HNBR - FPM													
Technical data													
- Max working pressure: 420 bar													
- Proof pressure: 630 bar													
- Burst pressure: 1260 bar													
- Working temperature: From -25 °C to +110 °C													
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943													
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653													
Electrical data													
- Electrical connection: IEC 61076-2-101 D (M12)													
- Lamps: 24 Vdc (black base)													
- Resistive load: 0.4 A / 24 Vdc													

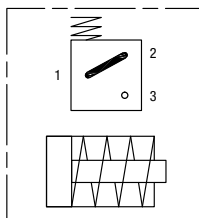
DLE*A50													
Electrical/Visual Differential Pressure Indicator Without term. Connections: EN 175301-803													
<table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DL E 12 x A 50 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DL E 20 x A 50 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DL E 50 x A 50 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DL E 70 x A 50 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DL E 95 x A 50 P01</td></tr></table>	Settings	Ordering code	1.2 bar ±10%	DL E 12 x A 50 P01	2.0 bar ±10%	DL E 20 x A 50 P01	5.0 bar ±10%	DL E 50 x A 50 P01	7.0 bar ±10%	DL E 70 x A 50 P01	9.5 bar ±10%	DL E 95 x A 50 P01	
Settings	Ordering code												
1.2 bar ±10%	DL E 12 x A 50 P01												
2.0 bar ±10%	DL E 20 x A 50 P01												
5.0 bar ±10%	DL E 50 x A 50 P01												
7.0 bar ±10%	DL E 70 x A 50 P01												
9.5 bar ±10%	DL E 95 x A 50 P01												
Hydraulic symbol													
													
Electrical symbol													
													
Materials													
- Body: Brass													
- Base: Black polyamide													
- Contacts: Silver													
- Seal: HNBR - FPM													
Technical data													
- Max working pressure: 420 bar													
- Proof pressure: 630 bar													
- Burst pressure: 1260 bar													
- Working temperature: From -25 °C to +110 °C													
- Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943													
- Degree protection: IP65 according to EN 60529													
Electrical data													
- Electrical connections: EN 175301-803													
- Resistive load: 5 A / 250 Vac													
- Available the connector with lamps													

DLE*F50
Electrical/Visual Differential Pressure Indicator
 With term. Connections: EN 175301-803

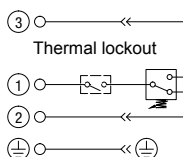
Settings	Ordering code
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2.0 bar $\pm 10\%$	DL E 20 x F 50 P01
5.0 bar $\pm 10\%$	DL E 50 x F 50 P01
7.0 bar $\pm 10\%$	DL E 70 x F 50 P01
9.5 bar $\pm 10\%$	DL E 95 x F 50 P01

A/F 32
Max tightening torque: 95 N·m

Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black polyamide
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFB and HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data

- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

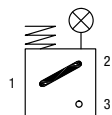
DLX*51 - DLX*52
Electrical/Visual Differential Pressure Indicator
 Connection: EN 175301-803

51: Transparent base with lamps 24 Vdc
 52: Transparent base with lamps 110 Vdc

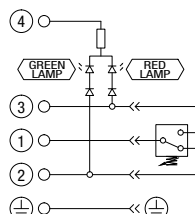
Settings	Ordering code
1.2 bar $\pm 10\%$	DL X 12 x A 5x P01
2.0 bar $\pm 10\%$	DL X 20 x A 5x P01
5.0 bar $\pm 10\%$	DL X 50 x A 5x P01
7.0 bar $\pm 10\%$	DL X 70 x A 5x P01
9.5 bar $\pm 10\%$	DL X 95 x A 5x P01

A/F 30
Max tightening torque: 65 N·m

Hydraulic symbol



Electrical symbol



Materials

- Body: AISI 316L
- Base: Transparent polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529
IP69K according to ISO 20653

Electrical data

- Electrical connection: EN 175301-803
- Type: 51 52
- Lamps: 24 Vdc 110 Vdc
- Resistive load: 1 A / 24 Vdc 1 A / 110 Vdc

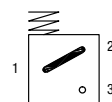
DLZ*51 - DLZ*52
Electrical/Visual Differential Pressure Indicator
 Connection: EN 175301-803

51: Transparent base with lamps 24 Vdc
 52: Transparent base with lamps 110 Vdc

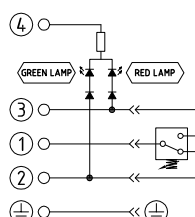
Settings	Ordering code
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2.5 bar $\pm 10\%$	DL Z 25 x A 5x P01
5.0 bar $\pm 10\%$	DL Z 50 x A 5x P01
7.0 bar $\pm 10\%$	DL Z 70 x A 5x P01
9.5 bar $\pm 10\%$	DL Z 95 x A 5x P01

A/F 30
Max tightening torque: 110 N·m

Hydraulic symbol



Electrical symbol



Materials

- Body: AISI 316L
- Base: Transparent polyamide
- Contacts: Silver
- Seal: HNBR - MFQ

Technical data

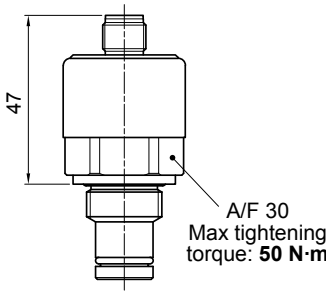
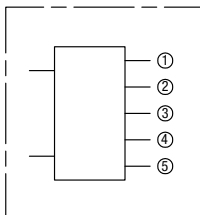
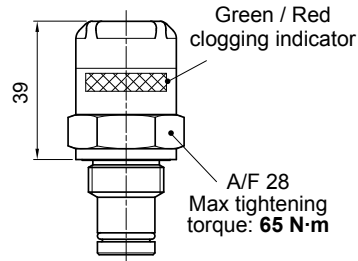
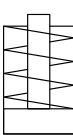
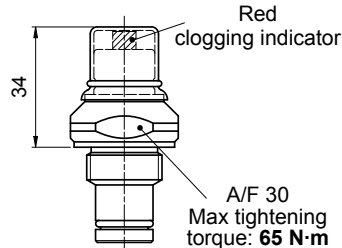
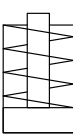
- Max working pressure: 700 bar
- Proof pressure: 1050 bar
- Burst pressure: 2100 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
HFB and HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529
IP69K according to ISO 20653

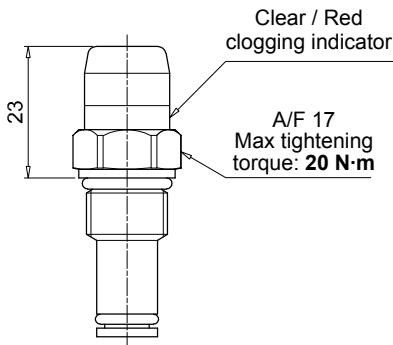
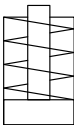
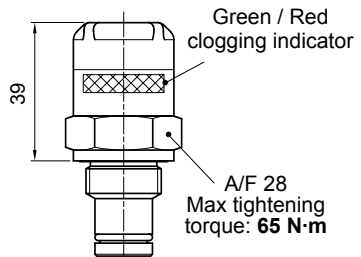
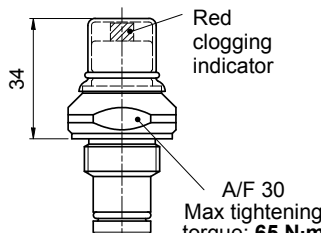
Electrical data

- Electrical connection: EN 175301-803
- Type: 51 52
- Lamps: 24 Vdc 110 Vdc
- Resistive load: 1 A / 24 Vdc 1 A / 110 Vdc

DIFFERENTIAL PRESSURE INDICATORS

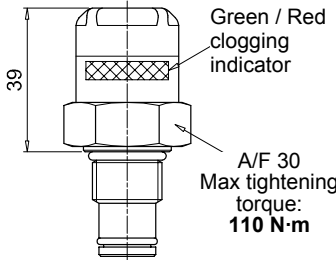
Dimensions

DTA*F70 Electronic Differential Pressure Indicator Connection: IEC 61076-2-101 D (M12) <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DT A 12 x F 70 P01</td></tr><tr><td>2.0 bar ±10%</td><td>DT A 20 x F 70 P01</td></tr><tr><td>5.0 bar ±10%</td><td>DT A 50 x F 70 P01</td></tr><tr><td>7.0 bar ±10%</td><td>DT A 70 x F 70 P01</td></tr><tr><td>9.5 bar ±10%</td><td>DT A 95 x F 70 P01</td></tr></table>  A/F 30 Max tightening torque: 50 N·m		Settings	Ordering code	1.2 bar ±10%	DT A 12 x F 70 P01	2.0 bar ±10%	DT A 20 x F 70 P01	5.0 bar ±10%	DT A 50 x F 70 P01	7.0 bar ±10%	DT A 70 x F 70 P01	9.5 bar ±10%	DT A 95 x F 70 P01	Hydraulic symbol  Electrical symbol <table><tr><td>①</td><td>○</td><td>○</td><td>+24 Vdc</td></tr><tr><td>②</td><td>○</td><td>○</td><td>4 ÷ 20 mA</td></tr><tr><td>③</td><td>○</td><td>○</td><td>75% - N.O. Digital output</td></tr><tr><td>④</td><td>○</td><td>○</td><td>100% - N.O. Digital output</td></tr><tr><td>⑤</td><td>○</td><td>○</td><td>0 Vdc</td></tr></table>	①	○	○	+24 Vdc	②	○	○	4 ÷ 20 mA	③	○	○	75% - N.O. Digital output	④	○	○	100% - N.O. Digital output	⑤	○	○	0 Vdc	Materials - Body: - Internal parts: - Contacts: - Seal: Brass Brass - Polyamide Silver HNBR - FPM Technical data - Max working pressure: - Proof pressure: - Burst pressure: - Compatibility with fluids: - Degree protection: 420 bar 630 bar 1260 bar Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP67 according to EN 60529 Electrical data - Electrical connection: - Power supply: - Analogue output: - Thermal lockout: IEC 61076-2-101 D (M12) 24 Vdc From 4 to 20 mA 30 °C (all output signals stalled up to 30 °C)
Settings	Ordering code																																		
1.2 bar ±10%	DT A 12 x F 70 P01																																		
2.0 bar ±10%	DT A 20 x F 70 P01																																		
5.0 bar ±10%	DT A 50 x F 70 P01																																		
7.0 bar ±10%	DT A 70 x F 70 P01																																		
9.5 bar ±10%	DT A 95 x F 70 P01																																		
①	○	○	+24 Vdc																																
②	○	○	4 ÷ 20 mA																																
③	○	○	75% - N.O. Digital output																																
④	○	○	100% - N.O. Digital output																																
⑤	○	○	0 Vdc																																
DVA Visual Differential Pressure Indicator <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DV A 12 x P01</td></tr><tr><td>2.0 bar ±10%</td><td>DV A 20 x P01</td></tr><tr><td>5.0 bar ±10%</td><td>DV A 50 x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DV A 70 x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DV A 95 x P01</td></tr></table>  Green / Red clogging indicator A/F 28 Max tightening torque: 65 N·m		Settings	Ordering code	1.2 bar ±10%	DV A 12 x P01	2.0 bar ±10%	DV A 20 x P01	5.0 bar ±10%	DV A 50 x P01	7.0 bar ±10%	DV A 70 x P01	9.5 bar ±10%	DV A 95 x P01	Hydraulic symbol 	Materials - Body: - Internal parts: - Seal: Brass Brass - Polyamide HNBR - FPM Technical data - Reset: - Max working pressure: - Proof pressure: - Burst pressure: - Working temperature: - Compatibility with fluids: - Degree protection: Automatic reset 420 bar 630 bar 1260 bar From -25 °C to +110 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP65 according to EN 60529																				
Settings	Ordering code																																		
1.2 bar ±10%	DV A 12 x P01																																		
2.0 bar ±10%	DV A 20 x P01																																		
5.0 bar ±10%	DV A 50 x P01																																		
7.0 bar ±10%	DV A 70 x P01																																		
9.5 bar ±10%	DV A 95 x P01																																		
DVM Visual Differential Pressure Indicator <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DV M 12 x P01</td></tr><tr><td>2.0 bar ±10%</td><td>DV M 20 x P01</td></tr><tr><td>5.0 bar ±10%</td><td>DV M 50 x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DV M 70 x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DV M 95 x P01</td></tr></table>  Red clogging indicator A/F 30 Max tightening torque: 65 N·m		Settings	Ordering code	1.2 bar ±10%	DV M 12 x P01	2.0 bar ±10%	DV M 20 x P01	5.0 bar ±10%	DV M 50 x P01	7.0 bar ±10%	DV M 70 x P01	9.5 bar ±10%	DV M 95 x P01	Hydraulic symbol 	Materials - Body: - Internal parts: - Seal: Brass Brass - Polyamide HNBR - FPM Technical data - Reset: - Max working pressure: - Proof pressure: - Burst pressure: - Working temperature: - Compatibility with fluids: - Degree protection: Manual reset 420 bar 630 bar 1260 bar From -25 °C to +110 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP65 according to EN 60529																				
Settings	Ordering code																																		
1.2 bar ±10%	DV M 12 x P01																																		
2.0 bar ±10%	DV M 20 x P01																																		
5.0 bar ±10%	DV M 50 x P01																																		
7.0 bar ±10%	DV M 70 x P01																																		
9.5 bar ±10%	DV M 95 x P01																																		

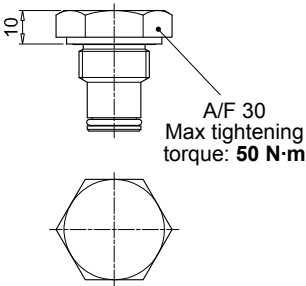
DVS Visual Differential Pressure Indicator <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DV S 12 H P01</td></tr><tr><td>2.5 bar ±10%</td><td>DV S 25 H P01</td></tr><tr><td>4.0 bar ±10%</td><td>DV S 40 H P01</td></tr></table>  Clear / Red clogging indicator A/F 17 Max tightening torque: 20 N·m	Settings	Ordering code	1.2 bar ±10%	DV S 12 H P01	2.5 bar ±10%	DV S 25 H P01	4.0 bar ±10%	DV S 40 H P01	Hydraulic symbol 	Materials - Body: - Internal parts: - Seal: Brass Brass - Polyamide HNBR Technical data - Reset: - Max working pressure: - Proof pressure: - Burst pressure: - Working temperature: - Compatibility with fluids: - Degree protection: Automatic reset 16 bar 24 bar 48 bar From -25 °C to +110 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP67 according to EN 60529				
Settings	Ordering code													
1.2 bar ±10%	DV S 12 H P01													
2.5 bar ±10%	DV S 25 H P01													
4.0 bar ±10%	DV S 40 H P01													
DVX Visual Differential Pressure Indicator <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DV X 12 x P01</td></tr><tr><td>2.0 bar ±10%</td><td>DV X 20 x P01</td></tr><tr><td>5.0 bar ±10%</td><td>DV X 50 x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DV X 70 x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DV X 95 x P01</td></tr></table>  Green / Red clogging indicator A/F 28 Max tightening torque: 65 N·m	Settings	Ordering code	1.2 bar ±10%	DV X 12 x P01	2.0 bar ±10%	DV X 20 x P01	5.0 bar ±10%	DV X 50 x P01	7.0 bar ±10%	DV X 70 x P01	9.5 bar ±10%	DV X 95 x P01	Hydraulic symbol 	Materials - Body: - Internal parts: - Seal: AISI 316L AISI 316L - Polyamide HNBR - MFQ Technical data - Reset: - Max working pressure: - Proof pressure: - Burst pressure: - Working temperature: - Compatibility with fluids: - Degree protection: Automatic reset 420 bar 630 bar 1260 bar From -25 °C to +110 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP65 according to EN 60529
Settings	Ordering code													
1.2 bar ±10%	DV X 12 x P01													
2.0 bar ±10%	DV X 20 x P01													
5.0 bar ±10%	DV X 50 x P01													
7.0 bar ±10%	DV X 70 x P01													
9.5 bar ±10%	DV X 95 x P01													
DVY Visual Differential Pressure Indicator <table><tr><th>Settings</th><th>Ordering code</th></tr><tr><td>1.2 bar ±10%</td><td>DV Y 12 x P01</td></tr><tr><td>2.0 bar ±10%</td><td>DV Y 20 x P01</td></tr><tr><td>5.0 bar ±10%</td><td>DV Y 50 x P01</td></tr><tr><td>7.0 bar ±10%</td><td>DV Y 70 x P01</td></tr><tr><td>9.5 bar ±10%</td><td>DV Y 95 x P01</td></tr></table>  Red clogging indicator A/F 30 Max tightening torque: 65 N·m	Settings	Ordering code	1.2 bar ±10%	DV Y 12 x P01	2.0 bar ±10%	DV Y 20 x P01	5.0 bar ±10%	DV Y 50 x P01	7.0 bar ±10%	DV Y 70 x P01	9.5 bar ±10%	DV Y 95 x P01	Hydraulic symbol 	Materials - Body: - Internal parts: - Seal: AISI 316L AISI 316L - Polyamide HNBR - MFQ Technical data - Reset: - Max working pressure: - Proof pressure: - Burst pressure: - Working temperature: - Compatibility with fluids: - Degree protection: Manual reset 420 bar 630 bar 1260 bar From -25 °C to +110 °C Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 IP65 according to EN 60529
Settings	Ordering code													
1.2 bar ±10%	DV Y 12 x P01													
2.0 bar ±10%	DV Y 20 x P01													
5.0 bar ±10%	DV Y 50 x P01													
7.0 bar ±10%	DV Y 70 x P01													
9.5 bar ±10%	DV Y 95 x P01													

DIFFERENTIAL PRESSURE INDICATORS

Dimensions

DVZ		Hydraulic symbol	Materials - Body: AISI 316L - Internal parts: AISI 316L - Polyamide - Seal: HNBR - MFQ
Visual Differential Pressure Indicator			
Settings	Ordering code		Technical data - Reset: Automatic reset - Max working pressure: 700 bar - Proof pressure: 1050 bar - Burst pressure: 2100 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFB and HFC according to ISO 2943 - Degree protection: IP65 according to EN 60529
1.2 bar ±10%	DV Z 12 x P01		
2.5 bar ±10%	DV Z 25 x P01		
5.0 bar ±10%	DV Z 50 x P01		
7.0 bar ±10%	DV Z 70 x P01		
9.5 bar ±10%	DV Z 95 x P01		
			

T2	
Plug	
Seal	Ordering code
HNBR	T2 H
FPM	T2 V

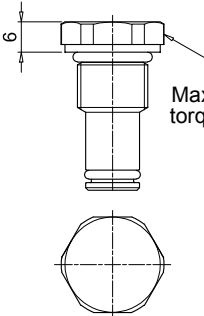


A/F 30
Max tightening
torque: **50 N·m**

Materials

- Body:
Phosphatized steel
- Seal:
HNBR / FPM

T4	
Plug	
Seal	Ordering code
NBR	T4 A

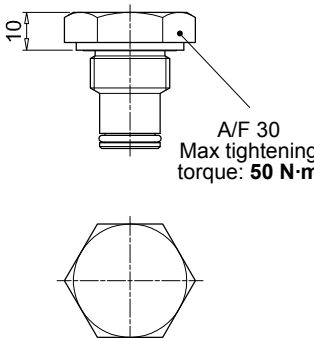


A/F 19
Max tightening
torque: **20 N·m**

Materials

- Body:
Anodized aluminium
- Seal:
NBR

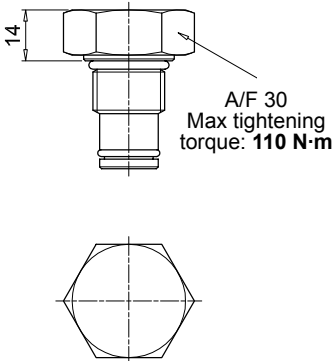
X2		Materials - Body: AISI 316L - Seal: HNBR / FPM / MFQ
Stainless Steel plug 420 bar		
Seal	Ordering code	
HNBR	X2 H	
FPM	X2 V	
MFQ	X2 F	



10

A/F 30
Max tightening
torque: **50 N·m**

X3		Materials - Body: AISI 316L - Seal: HNBR / FPM / MFQ
Stainless Steel plug 700 bar (only for FZH)		
Seal	Ordering code	
HNBR	X3 H	
FPM	X3 V	
MFQ	X3 F	



A/F 30
Max tightening
torque: **110 N·m**

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