

# HYDRAULIC FILTRATION PRODUCTS



**PASSION TO PERFORM**

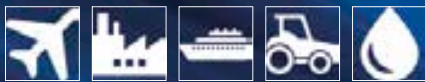




## A WORLDWIDE LEADER IN THE FIELD OF HYDRAULIC FILTRATION EQUIPMENT.

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

## MARKET LEADER



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

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



## WORLDWIDE PRESENCE

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

The Group boasts **8** business branches



## TECHNOLOGY

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

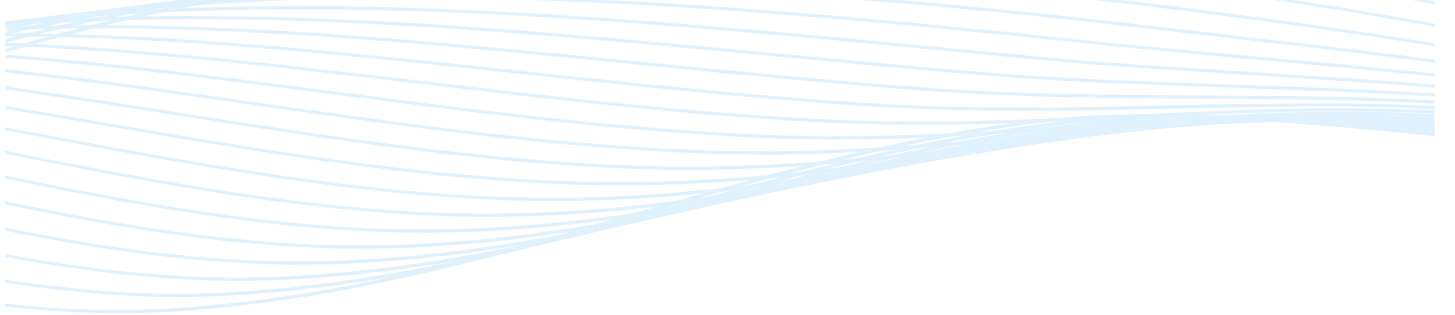


## AND PRODUCTION

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







**SUCTION  
FILTERS**

Flow rates  
up to 875 l/min

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

**RETURN  
FILTERS**

Flow rates  
up to 3000 l/min

Pressure  
up to 20 bar

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

**RETURN /  
SUCTION  
FILTERS**

Flow rates  
up to 300 l/min

Pressure  
up to 80 bar

Mounting:  
- In-Line  
- Tank top

**SPIN-ON  
FILTERS**

Flow rates  
up to 365 l/min

Pressure  
up to 35 bar

Mounting:  
- In-Line  
- Tank top

**LOW & MEDIUM  
PRESSURE  
FILTERS**

Flow rates  
up to 3000 l/min

Pressure  
up to 80 bar

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

**HIGH  
PRESSURE  
FILTERS**

Flow rates  
up to 750 l/min

Pressure from 110 bar  
up to 560 bar

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

## PRODUCT RANGE

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

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

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

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



### STAINLESS STEEL HIGH PRESSURE FILTERS

Flow rates  
up to 125 l/min

Pressure from 320 bar  
up to 1000 bar

Mounting:

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

### CONTAMINATION MONITORING PRODUCTS

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

### MOBILE FILTRATION UNITS

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

### POWER TRANSMISSION PRODUCTS

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

### TANK ACCESSORIES

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

## HYDRAULIC FILTRATION PRODUCTS

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117	MFBX	Bowl assembly	8 116	700 185
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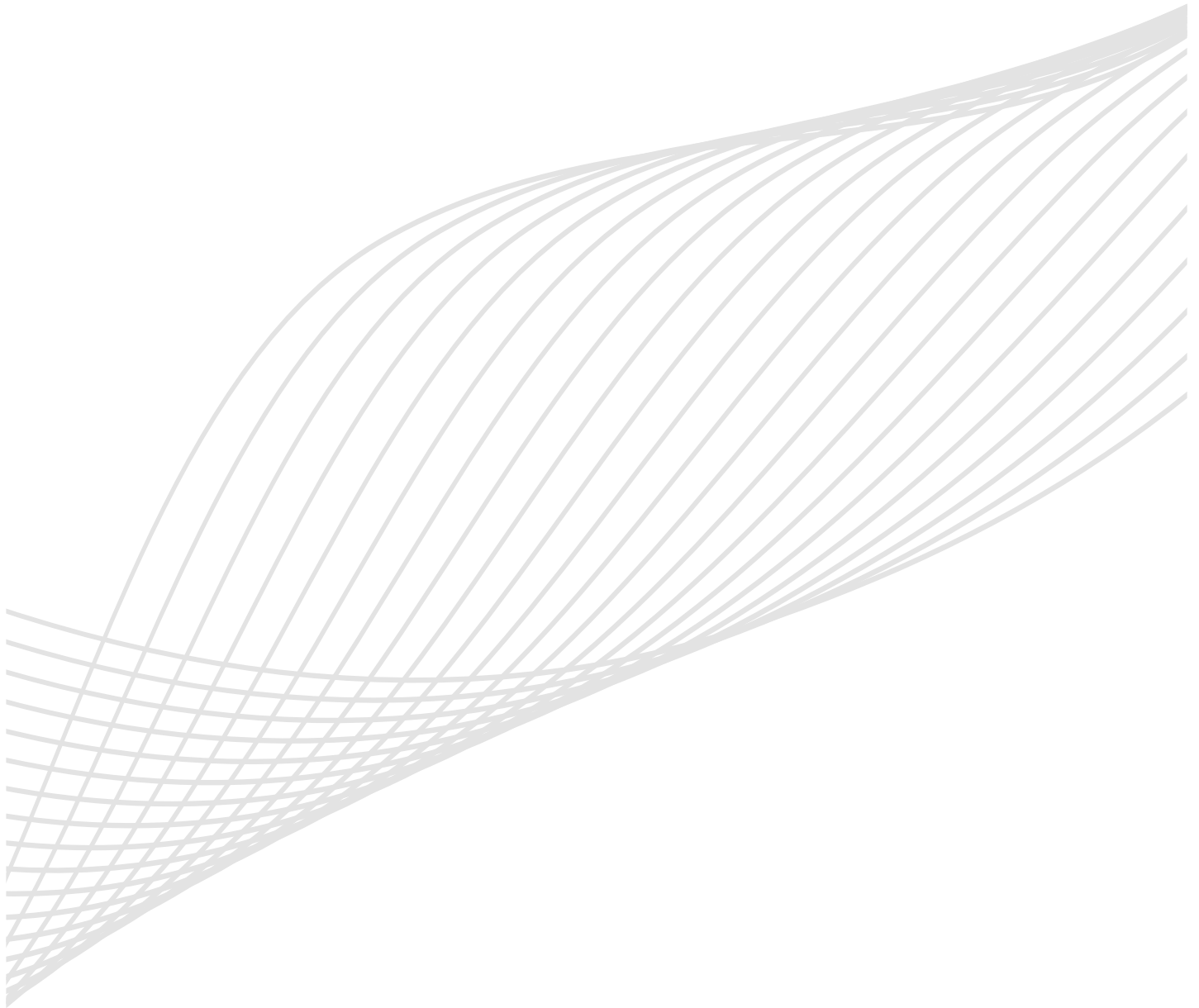
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Introduction

# CONTAMINATION MANAGEMENT

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# CONTAMINATION MANAGEMENT

## 1 HYDRAULIC FLUIDS

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

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

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

- MINERAL OILS  
Commonly used oil deriving fluids.
- FIRE RESISTANT FLUIDS  
Fluids with intrinsic characteristics of incombustibility or high flash point.
- SYNTHETIC FLUIDS  
Modified chemical products to obtain specific optimized features.
- ECOLOGICAL FLUIDS  
Synthetic or vegetable origin fluids with high biodegradability characteristics.

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

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

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

- DYNAMIC VISCOSITY  
It identifies the fluid's resistance to sliding due to the impact of the particles forming it.
- CINEMATIC VISCOSITY  
It is a widespread formal dimension in the hydraulic field.  
It is calculated with the ratio between the dynamic viscosity and the fluid density.  
Cinematic viscosity varies with temperature and pressure variations.
- VISCOSITY INDEX  
This value expresses the ability of a fluid to maintain viscosity when the temperature changes.  
A high viscosity index indicates the fluid's ability to limit viscosity variations by varying the temperature.
- FILTERABILITY INDEX  
It is the value that indicates the ability of a fluid to cross the filter materials.  
A low filterability index could cause premature clogging of the filter material.
- WORKING TEMPERATURE  
Working temperature affects the fundamental characteristics of the fluid.  
As already seen, some fluid characteristics, such as cinematic viscosity, vary with the temperature variation.  
When choosing a hydraulic oil, must therefore be taken into account of the environmental conditions in which the machine will operate.
- COMPRESSIBILITY MODULE  
Every fluid subjected to a pressure contracts, increasing its density.  
The compressibility module identifies the increase in pressure required to cause a corresponding increase in density.
- HYDROLYTIC STABILITY  
It is the characteristic that prevents galvanic pairs that can cause wear in the plant/system.

### - ANTIOXIDANT STABILITY AND WEAR PROTECTION

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

### - HEAT TRANSFER CAPACITY

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

## 2 FLUID CONTAMINATION

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

### - INITIAL CONTAMINATION

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

### - PROGRESSIVE CONTAMINATION

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

### - SOLID CONTAMINATION

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

### - LIQUID CONTAMINATION

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

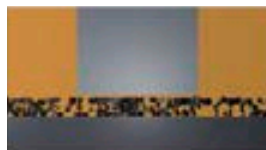
### - GASEOUS CONTAMINATION

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

## 3 EFFECTS OF CONTAMINATION ON HYDRAULIC COMPONENTS

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

CONTAMINATION IN PRESENCE OF  
LARGE TOLERANCES



CONTAMINATION IN PRESENCE OF  
NARROW TOLERANCES



Solid contamination mainly causes surface damage and component wear.

### - ABRASION OF SURFACES

Cause of leakage through mechanical seals, reduction of system performance, failures.

# CONTAMINATION MANAGEMENT

- 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.



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

## 4 MEASURING THE SOLID CONTAMINATION LEVEL

The level of contamination of a system identifies the amount of contaminant contained in a fluid.

This parameter refers to a unit volume of fluid.

The level of contamination may be different at different points in the system. From the information in the previous paragraphs it is also apparent that the level of contamination is heavily influenced by the working conditions of the system, by its working years and by the environmental conditions.

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

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

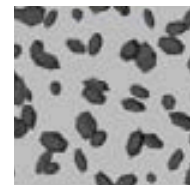
- DECAY OF LUBRICANT PERFORMANCE  
Cause of rust and sludge formation, metal corrosion and increased solid contamination
- BATTERY COLONY CREATION  
Cause of worsening in the filterability feature
- ICE CREATION AT LOW TEMPERATURES  
Cause damage to the surface
- ADDITIVE DEPLETION  
Free water retains polar additives

Gaseous contamination mainly results in decay of system performance.

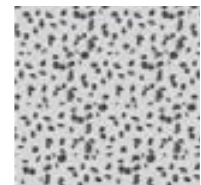
- CUSHION SUSPENSION  
Cause of increased noise and cavitation.
- FLUID OXIDATION  
Cause of corrosion acceleration of metal parts.



HUMAN HAIR  
(75 µm)



MINIMUM DIMENSION  
VISIBLE 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 Automatic Particle Counters (APC).

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

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

NAS 1638 is still used although obsolete.

### Classification example according to ISO 4406

The code refers to the number of particles of the same size or greater than 4, 6 or 14  $\mu\text{m}$  in a 1 ml fluid.

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

> 4  $\mu\text{m}_{(c)}$  = 350 particles

> 6  $\mu\text{m}_{(c)}$  = 100 particles

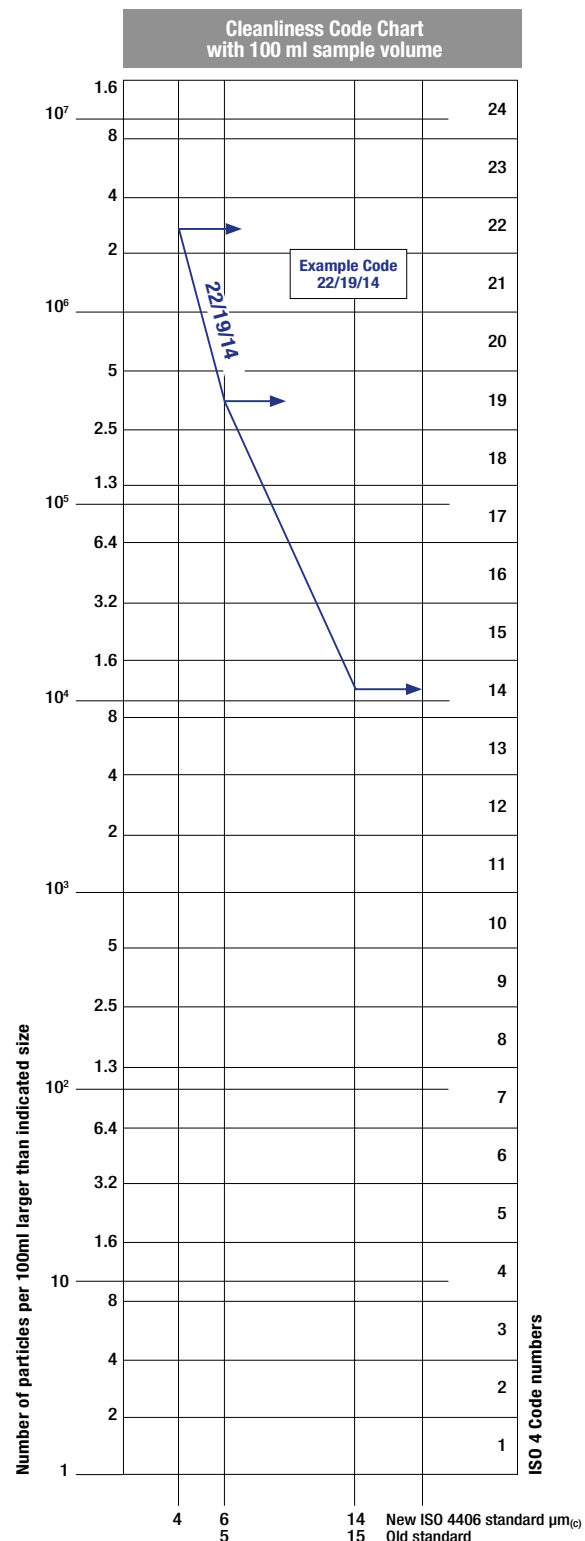
> 14  $\mu\text{m}_{(c)}$  = 25 particles

16 / 14 / 12

## ISO 4406:2017 Cleanliness Code System

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

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





# CONTAMINATION MANAGEMENT

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

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

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

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

Table 1 - Class for differential measurement

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

6 - 14 $\mu\text{m}_{(c)}$ = 15 000 particles
14 - 21 $\mu\text{m}_{(c)}$ = 2 200 particles
21 - 38 $\mu\text{m}_{(c)}$ = 200 particles
38 - 70 $\mu\text{m}_{(c)}$ = 35 particles
> 70 $\mu\text{m}_{(c)}$ = 3 particles
Class 6

Table 2 - Class for cumulative measurement

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

> 4 $\mu\text{m}_{(c)}$ = 45 000 particles
> 6 $\mu\text{m}_{(c)}$ = 15 000 particles
> 14 $\mu\text{m}_{(c)}$ = 1 500 particles
> 21 $\mu\text{m}_{(c)}$ = 250 particles
> 38 $\mu\text{m}_{(c)}$ = 15 particles
> 70 $\mu\text{m}_{(c)}$ = 3 particles
Class from 2F to 4E

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

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

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

The coding system defines the maximum numbers permitted of 100ml volume at various size intervals (differential counts) rather than using cumulative counts as in ISO 4406:1999. Although there is no guidance given in the standard on how to quote the levels, most industrial users quote a single code which is the highest recorded in all sizes and this convention is used on MP Filtri APC's.

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

Size Range Classes (in microns)

Class	Maximum Contamination Limits per 100 ml				
	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 $\mu\text{m}_{(c)}$ = 42 000 particles
15 - 25 $\mu\text{m}_{(c)}$ = 2 200 particles
25 - 50 $\mu\text{m}_{(c)}$ = 150 particles
50 - 100 $\mu\text{m}_{(c)}$ = 18 particles
> 100 $\mu\text{m}_{(c)}$ = 3 particles
Class NAS 8

- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4407

The level of contamination is defined by counting the number of particles collected by a laboratory membrane per unit of fluid volume. The measurement is done by a microscope.

The membrane must be cleaned, dried and desiccated, with fluid and conditions defined by the Standard. The fluid volume is filtered through the membrane, using a suitable suction system.

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

MICROSCOPE CONTROL AND MEASUREMENT



COMPARISON PHOTOGRAPHS

1 graduation = 10  $\mu\text{m}$



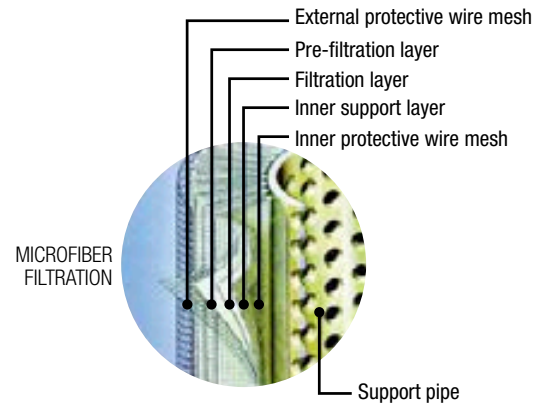
ISO 4406:1999	Class 16/14/11	Class 22/20/17
SAE AS4059E Table 1	Class 5	Class 11
NAS 1638	Class 5	Class 11
SAE AS4059E Table 2	Class 6A/5B/5C	Class 12A/11B/11C

# CONTAMINATION MANAGEMENT

## - CLEANLINESS CODE COMPARISON

Although ISO 4406:2017 standard is being used extensively within the hydraulics industry other standards are occasionally required and a comparison may be requested. The table below gives a very general comparison but often no direct comparison is possible due to the different classes and sizes involved.

ISO 4406:2017	SAE AS4059 Table 2	SAE AS4059 Table 1	NAS 1638
> 4 $\mu\text{m}_{(c)}$ 6 $\mu\text{m}_{(c)}$ 14 $\mu\text{m}_{(c)}$	> 4 $\mu\text{m}_{(c)}$ 6 $\mu\text{m}_{(c)}$ 14 $\mu\text{m}_{(c)}$	4-6 6-14 14-21 21-38 38-70 >70	5-15 15-25 25-50 50-100 >100
23 / 21 / 18	13A / 12B / 12C	12	12
22 / 20 / 17	12A / 11B / 11C	11	11
21 / 19 / 16	11A / 10B / 10C	10	10
20 / 18 / 15	10A / 9B / 9C	9	9
19 / 17 / 14	9A / 8B / 8C	8	8
18 / 16 / 13	8A / 7B / 7C	7	7
17 / 15 / 12	7A / 6B / 6C	6	6
16 / 14 / 11	6A / 5B / 5C	5	5
15 / 13 / 10	5A / 4B / 4C	4	4
14 / 12 / 09	4A / 3B / 3C	3	3



The filtration efficiency of metallic mesh filtrations is defined as the maximum particle size that can pass through the meshes of the filtering grid. The efficiency of microfiber and paper filtration ( $\beta_{x(c)}$ ) is defined through a lab test called Multipass Test. The efficiency value ( $\beta_{x(c)}$ ) is defined as the ratio between the number of particles of certain dimensions detected upstream and downstream of the filter.

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



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

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

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

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

## 5 FILTRATION TECHNOLOGIES

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

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

### - SURFACE FILTRATION

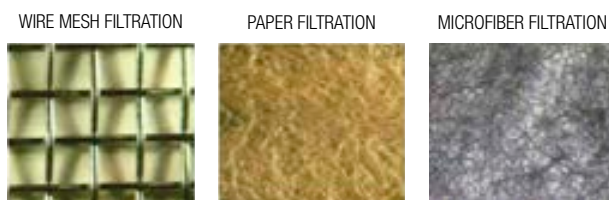
It is by direct interception. The filter prevents particles larger than the pores from continuing in the plant / system. Surface filters are generally manufactured with metal canvases or meshes.

### - DEPTH FILTERING

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

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

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



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

# CONTAMINATION MANAGEMENT

## 6 RECOMMENDED CONTAMINATION CLASSES

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

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

Example of recommended contamination levels for pressures below 140 bar.

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

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

## 7 TYPES OF FILTERS

### Suction filters

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

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

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

# CONTAMINATION MANAGEMENT

## 8 FILTER SIZING PARAMETERS

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

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

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

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

The advantages of proper positioning and sizing of the filters are

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

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

- **MAXIMUM WORKING PRESSURE ( $P_{max}$ )**  
The maximum working pressure of the filter must be greater than or equal to the pressure of the circuit section in which it will be installed.
- **PRESSURE DROP ( $\Delta P$ )**  
The pressure drop depends on a number of factors, such as the working circuit temperature, the fluid viscosity, the filter element cleaning condition.
- **WORKING TEMPERATURE ( $T$ )**  
The working temperature deeply affect the choice of materials. Excessively high or low temperatures may adversely affect the strength of the materials or the characteristics of the seals.
- **FILTRATION EFFICIENCY (%) / FILTRATION RATIO ( $\beta_{x(c)}$ )**  
Filtration efficiency is the most important parameter to consider when selecting a filter.  
When choosing the filtration performances, the needs of the most sensitive components in the system must be considered.
- **FLUID TYPE**  
The type of fluid influences the choice of filters in terms of compatibility and viscosity. It is always mandatory to check the filterability.
- **PLACEMENT IN THE PLANT**  
The position of the filter in the system conditions the efficiency of all filter performances.

## 9 APPLICABLE STANDARDS FOR FILTER DEVELOPMENT

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

### ISO 2941

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

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

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

### ISO 2942

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

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

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

### ISO 2943

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

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

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

### ISO 3723

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

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

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

### ISO 3968

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

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

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

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

### ISO 16889

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

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

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

# CONTAMINATION MANAGEMENT

## ISO 23181

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

This Standard describes the method for testing the fatigue resistance of the filter elements.

The test is carried out by subjecting the filter to continuous flow variations, thus differential pressure, using a high viscosity fluid.

## ISO 11170

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

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

## ISO 10771-1

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

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

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

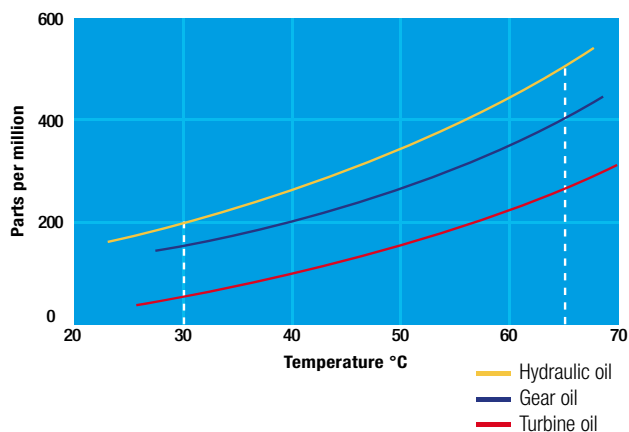
## 10 WATER IN HYDRAULIC AND LUBRICATING FLUIDS

### Water Content

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

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

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



## Saturation Levels

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

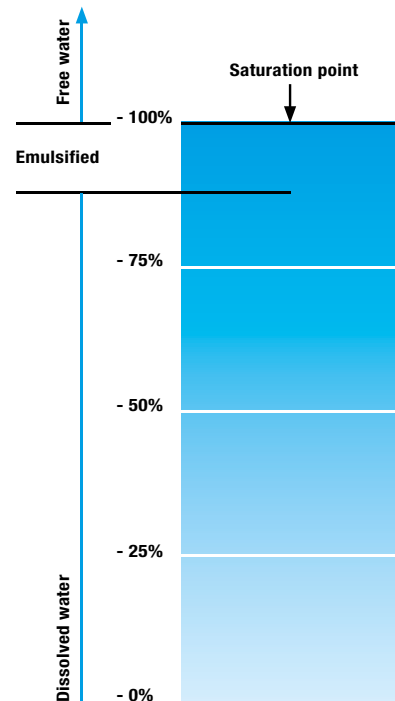
However, even water in solution can cause damage and therefore every reasonable effort should be made to keep saturation levels as low as possible. There is no such thing as too little water. As a guideline, we recommend maintaining saturation levels below 50% in all equipment.

TYPICAL WATER SATURATION LEVEL FOR NEW OILS

Examples:

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

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



# CONTAMINATION MANAGEMENT

## Water absorber

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

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

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

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

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

Filter Media

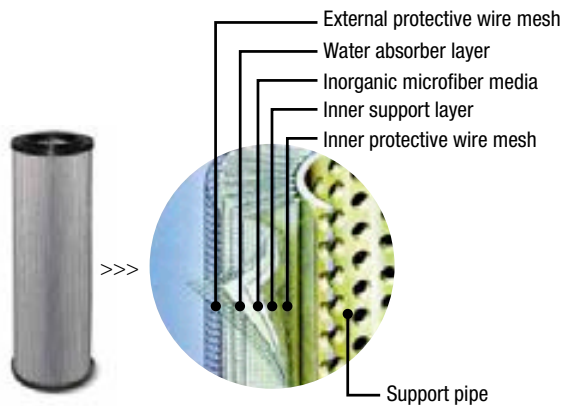


Fabric that absorbs water

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

## Product availability:

### LOW & MEDIUM PRESSURE FILTERS - LMP Series

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



# CONTAMINATION MANAGEMENT

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Introduction

# FILTER SIZING

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CORRECTIVE FACTOR	24

## Calculation

## FILTER SIZING

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

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

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

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

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

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

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

Q = flow rate (l/min - gpm)

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

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

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

International system:

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

Imperial system:

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

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

#### Verification formula

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

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

Application	Range: [ bar ]	[ psi ]
Suction filters	0.08 - 0.10 bar	1.16 - 1.45 psi
Return filters	0.4 - 0.6 bar	5.80 - 8.70 psi
Return - Suction filters (*)	0.8 - 1.0 bar	11.60 - 14.50 psi
	0.4 - 0.6 bar	5.80 - 8.70 psi return lines
	0.3 - 0.5 bar	4.35 - 7.25 psi lubrication lines
Low & Medium Pressure filters	0.3 - 0.4 bar	4.35 - 5.80 psi off-line in power systems
	0.1 - 0.3 bar	1.45 - 4.35 psi off-line in test benches
	0.4 - 0.6 bar	5.80 - 8.7 psi over-boost
High Pressure filters	0.8 - 1.5 bar	11.60 - 21.75 psi
Stainless Steel filters	0.8 - 1.5 bar	11.60 - 21.75 psi

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

#### Generic filter calculation example

Application data:

Tank top return filter

Pressure  $P_{\text{max}} = 10$  bar

Flow rate  $Q = 120$  l/min

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

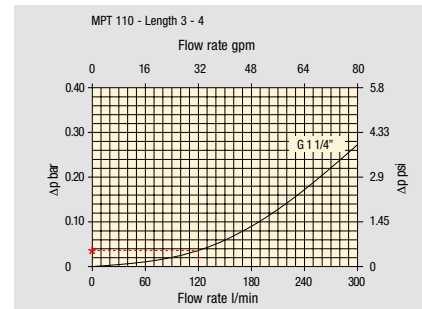
Oil density =  $0.86 \text{ kg}/\text{dm}^3$

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

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

Calculation:

$\Delta p_c = 0.03$  bar /  $0.43$  psi (see graphic below)



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

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

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

Filter element	Absolute filtration H Series					Nominal filtration N Series		
	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
<b>Return filters</b>								
<b>MF 020</b>	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
<b>MF 030</b>	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
<b>MFX 030</b>								
1	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
<b>MF 100</b>	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
<b>MFX 100</b>								
3	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
4	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82

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

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

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

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

## FILTER SIZING Corrective factor

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

### Return filters

Filter element	Absolute filtration H Series					Nominal filtration N Series			
	Type	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
MF 020	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	2	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
	3	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
MF 030 MFX 030	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MF 100 MFX 100	1	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	2	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	3	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	4	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82
MF 180 MFX 180	1	3.67	3.05	1.64	1.56	1.24	1.18	1.06	0.26
	2	1.69	1.37	0.68	0.54	0.51	0.43	0.39	0.12
MF 190 MFX 190	2	1.69	1.37	0.60	0.49	0.44	0.35	0.31	0.11
MF 400 MFX 400	1	3.20	2.75	1.39	1.33	1.06	0.96	0.87	0.22
	2	2.00	1.87	0.88	0.85	0.55	0.49	0.45	0.13
	3	1.90	1.60	0.63	0.51	0.49	0.39	0.35	0.11
MF 750 MFX 750	1	1.08	0.84	0.49	0.36	0.26	0.21	0.19	0.06
MLX 250	2								M25 0.20
		3.00	3.04	1.46	1.25	1.17	-	-	
MLX 660	2								M25 0.10
		1.29	1.26	0.52	0.44	0.38	-	-	
CU 025		78.00	48.00	28.00	24.00	9.33	9.33	8.51	1.25
CU 040		25.88	20.88	10.44	10.00	3.78	3.78	3.30	1.25
CU 100		15.20	14.53	5.14	4.95	2.00	2.00	0.17	1.10
CU 250		3.25	2.55	1.55	1.35	0.71	0.71	0.59	0.25
CU 630		1.96	1.68	0.85	0.72	0.42	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04
MR 100	1	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	2	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	3	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	4	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	5	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MR 250	1	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	2	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	3	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	4	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MR 630	1	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	2	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	3	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	4	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	5	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MR 850	1	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	2	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	3	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	4	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

### Return / Suction filters

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

Filter element	Absolute filtration N Series								
	Type	A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
CU 110	1	16.25	15.16	8.75	8.14	5.87	2.86	2.65	0.14
	2	12.62	10.44	6.11	6.02	4.16	1.60	1.49	0.12
	3	8.57	7.95	5.07	4.07	2.40	1.24	1.15	0.11
	4	5.76	4.05	2.80	2.36	1.14	0.91	0.85	0.05

### Low & Medium pressure filters

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

# Corrective factor FILTER SIZING

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

## High pressure filters

Filter element	Absolute filtration N - R Series					Nominal filtration N Series	
	Type	A03	A06	A10	A16	A25	M25
HP 011	1	332.71	250.07	184.32	152.36	128.36	-
	2	220.28	165.56	74.08	59.13	37.05	-
	3	123.24	92.68	41.48	33.08	20.72	-
	4	77.76	58.52	28.37	22.67	16.17	-
HP 039	2	70.66	53.20	25.77	20.57	14.67	4.90
	3	36.57	32.28	18.00	13.38	8.00	2.90
	4	26.57	23.27	12.46	8.80	5.58	2.20
HP 050	1	31.75	30.30	13.16	12.3	7.29	1.60
	2	24.25	21.26	11.70	9.09	4.90	1.40
	3	17.37	16.25	8.90	7.18	3.63	1.25
	4	12.12	10.75	6.10	5.75	3.08	1.07
	5	7.00	6.56	3.60	3.10	2.25	0.80
HP 065	1	58.50	43.46	23.16	19.66	10.71	1.28
	2	42.60	25.64	16.22	13.88	7.32	1.11
	3	20.50	15.88	8.18	6.81	3.91	0.58
HP 135	1	20.33	18.80	9.71	8.66	4.78	2.78
	2	11.14	10.16	6.60	6.38	2.22	1.11
	3	6.48	6.33	3.38	3.16	2.14	1.01
HP 150	1	17.53	15.91	7.48	6.96	5.94	1.07
	2	8.60	8.37	3.54	3.38	3.15	0.58
	3	6.53	5.90	2.93	2.79	2.12	0.49
HP 320	1	10.88	9.73	5.02	3.73	2.54	1.04
	2	4.40	3.83	1.75	1.48	0.88	0.71
	3	2.75	2.11	1.05	0.87	0.77	0.61
	4	2.12	1.77	0.98	0.78	0.55	0.47
HP 500	1	4.44	3.67	2.30	2.10	1.65	0.15
	2	3.37	2.77	1.78	1.68	1.24	0.10
	3	2.22	1.98	1.11	1.09	0.75	0.08
	4	1.81	1.33	0.93	0.86	0.68	0.05
	5	1.33	1.15	0.77	0.68	0.48	0.04
<b>Absolute filtration - N Series</b>							
Type	A03	A06	A10	A16	A25	M25	
HF 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

## Suction filters

Type	Nominal filtration - N Series					
	P10	P25	M25	M60	M90	M250
SF 250	0.65	0.20	0.10	0.08	0.05	0.03
SF 503	-	-	0.17	0.11	0.11	0.11
SF 504	-	-	0.11	0.08	0.08	0.08
SF 505	-	-	0.23	0.18	0.18	0.18
SF 510	-	-	0.18	0.14	0.14	0.14
SF 535	-	-	0.08	0.05	0.05	0.05
SF 540	-	-	0.05	0.04	0.04	0.04

## Stainless steel high pressure filters

Filter element	Absolute filtration N Series					
	Type	A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36
	2	220.28	165.56	74.08	59.13	37.05
	3	123.24	92.68	41.48	33.08	20.72
	4	77.76	58.52	28.37	22.67	16.17
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
HP 050	1	31.75	30.30	13.16	12.3	7.29
	2	24.25	21.26	11.70	9.09	4.90
	3	17.37	16.25	8.90	7.18	3.63
	4	12.12	10.75	6.10	5.75	3.08
	5	7.00	6.56	3.60	3.10	2.25
HP 135	1	20.33	18.80	9.71	8.66	4.78
	2	11.14	10.16	6.60	6.38	2.22
	3	6.48	6.33	3.38	3.16	2.14
<b>Absolute filtration H - U Series</b>						
Type	A03	A06	A10	A16	A25	
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	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	14.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.60	4.44
	3	8.96	7.46	4.89	4.16	3.07

## TYPICAL FILTER SIZING Selection Software

### Step 1 Select "FILTERS"



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



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



### Step 4 Push "PROCEED"



### Step 5

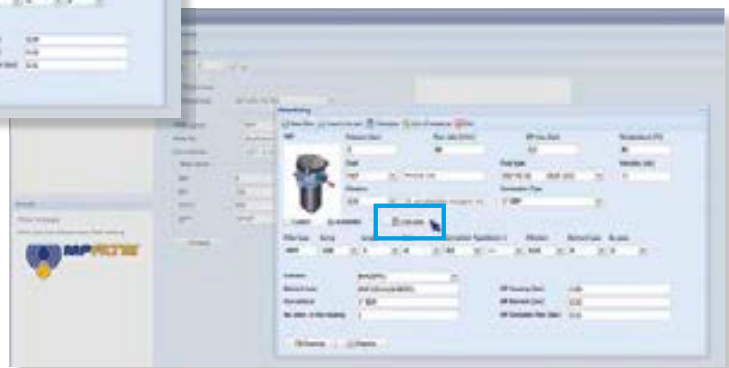
Insert all application data to calculate the filter size following the sequence:

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



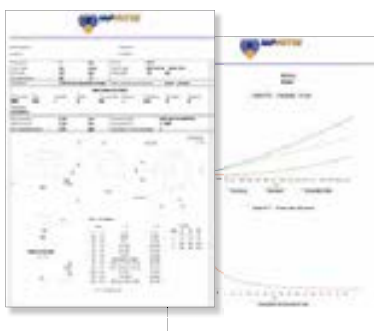
### Step 6

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



### Step 7

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





## TYPICAL FILTER SIZING

---

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

**They are available in 2 styles:**

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

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

## FILTER SIZING

**For the proper corrective factor Y see chapter at page 25**



# Suction filters



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





Suction filters

# STR & MPA - MPM series

Flow rate up to 1000 l/min



# STR & MPA-MPM GENERAL INFORMATION

## Description

## Technical data

### Suction filters

**Flow rate up to 1000 l/min**

#### STR

STR is a range of suction strainers for protection of the downstream pump against the coarse contamination. They are placed below the oil level directly connected to the suction line of the pump.

#### Available features:

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

#### Common application:

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

#### MPA - MPM

MPA and MPM are ranges of suction strainers for protection of the downstream pump against the coarse contamination. They are placed below the minimum oil level, directly connected to the suction line of the pump. The robust design allows the use of these filters in any heavy duty application.

#### Available features:

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

#### Common application:

Industrial equipment

#### STR materials

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

#### MPA - MPM materials

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

#### Bypass valve

Opening pressure 30 kPa (0.3 bar)

#### Elements

Fluid flow through the filter element from OUT to IN.



#### Temperature

From -25 °C to +110 °C

## Weights [kg]

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





# GENERAL INFORMATION STR & MPA-MPM

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

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

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

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

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

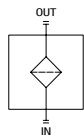
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Hydraulic symbols

Filter series	Style S	Style B
<b>STR</b>	•	•
<b>MPA - MPM</b>	•	•

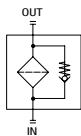
  

OUT

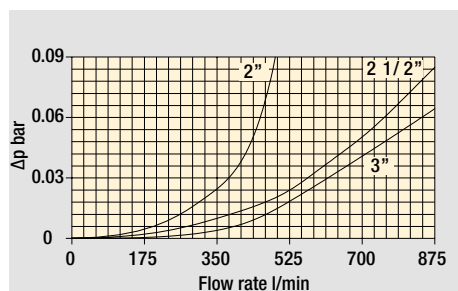
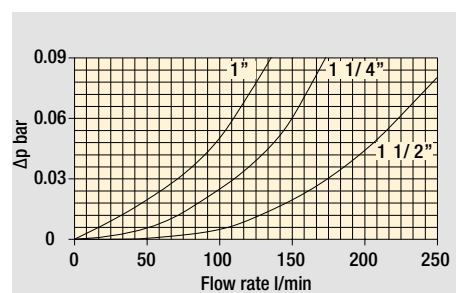
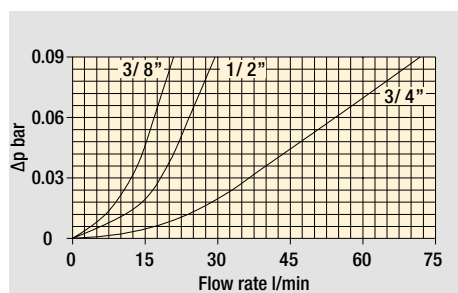


IN

OUT



IN



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

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

# STR

## Designation & Ordering code

### COMPLETE FILTER

#### Element series and size

STR045
STR050
STR065
STR070
STR086
STR100
STR140
STR150

Configuration example 1: STR045 1 B G1 M60 P01

Configuration example 2: STR100 4 S G2 M250 P01

#### Connection type

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

#### Valves

S	Without bypass
B	With bypass 0.3 bar

#### Thread type

G1	Thread GAS
G2	Thread NPT

#### Filtration rating (filter media)

M25	Wire mesh	25 µm
M60	Wire mesh	60 µm
M90	Wire mesh	90 µm
M250	Wire mesh	250 µm

### OTHER INFORMATION

#### Conditions of packaging

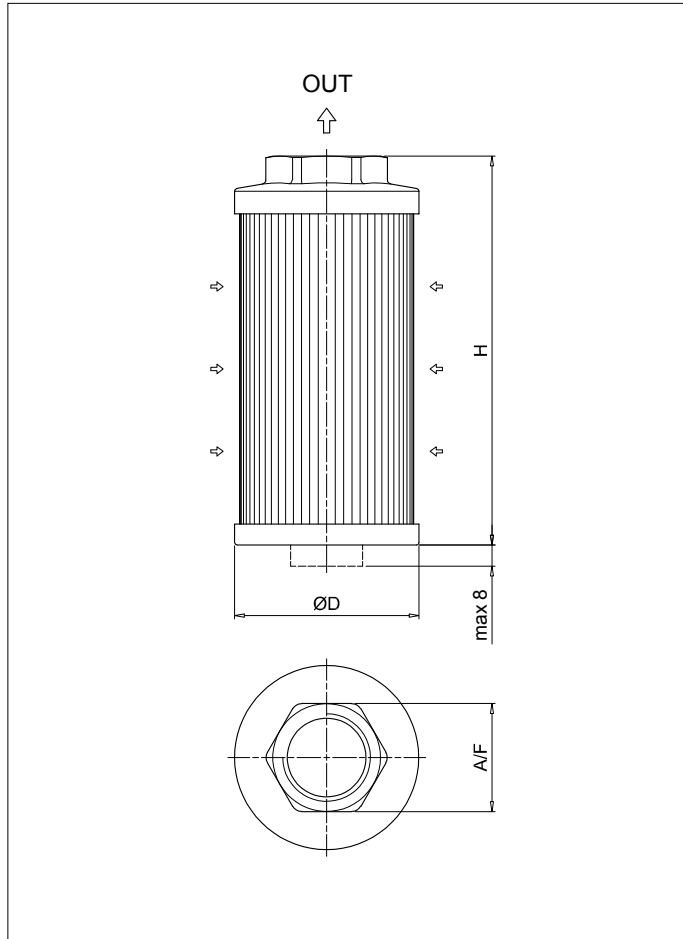
Filter size	Pcs. per box
045	12
050	12
065	6
070	6
086	6
100	6
140	1
150	1

#### Execution

P01	MP Filtri standard
Pxx	Customized

# STR

## Dimensions



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

# MPA-MPM

## Designation & Ordering code

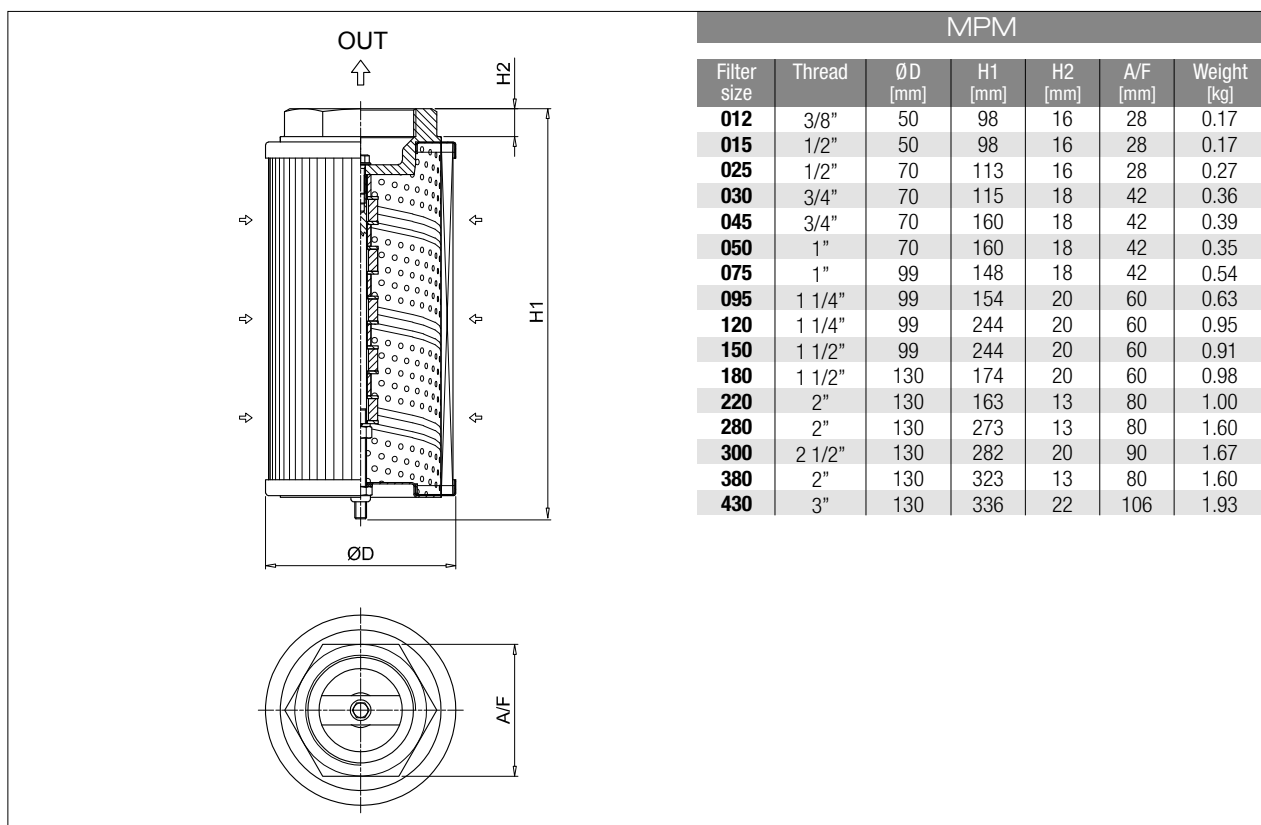
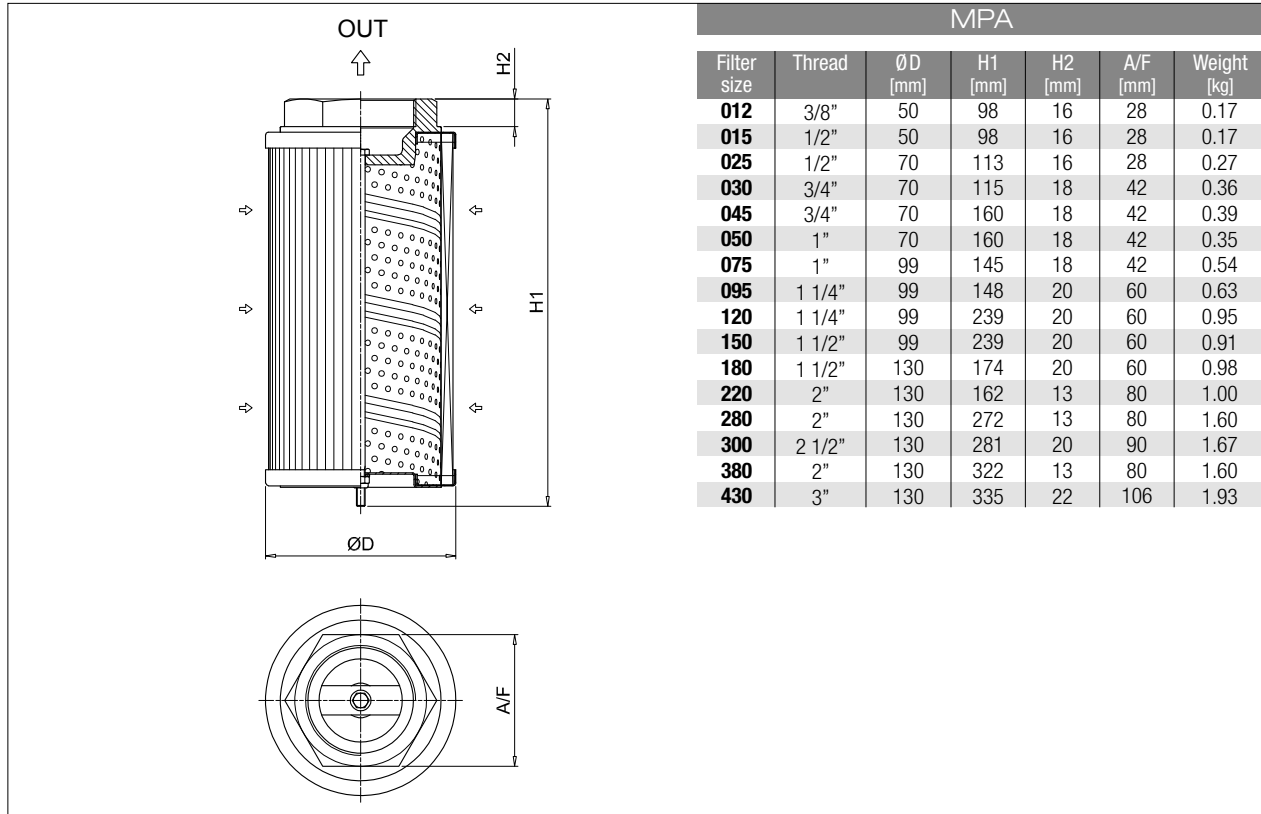
COMPLETE FILTER							
<b>Element series</b>		Configuration example 1:	MPA	030	G1	M60	P01
<b>MPA</b>	Without magnetic filter	Configuration example 2:	MPM	430	G2	M250	P01
<b>MPM</b>	With magnetic filter						
<b>Connections</b>							
<b>012</b>	3/8"						
<b>015</b>	1/2"						
<b>025</b>	1/2"						
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

## OTHER INFORMATION

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

# MPA-MPM

## Dimensions









Suction filters

# SF2 250-350 series

Flow rate up to 160 l/min



# SF2 250-350 GENERAL INFORMATION

## Description

## Technical data

### Suction filters

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

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

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

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

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

#### Available features:

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

#### Common application:

- Mobile machines
- Industrial equipment

### Filter housing materials

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

### Bypass valve

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

### Elements

Fluid flow through the filter element from IN to OUT

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

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



## Weights [kg]

Filter series	Weight [kg]
<b>SF2 250</b>	2.6
<b>SF2 350</b>	2.6

# GENERAL INFORMATION SF2 250-350

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

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

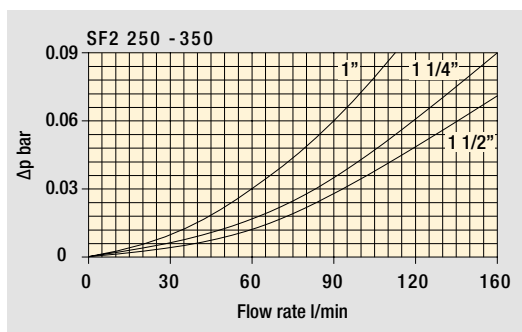
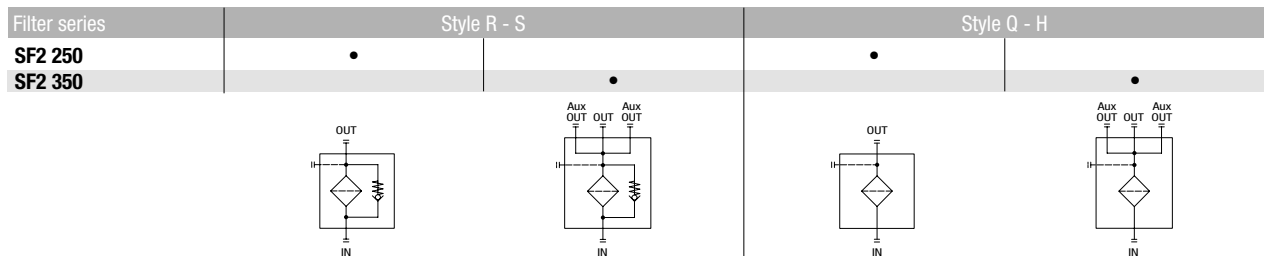
### Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

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

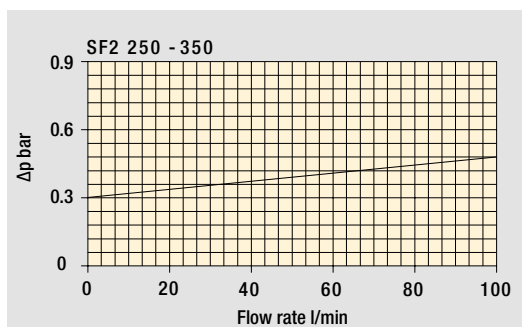
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

## Hydraulic symbols



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



## Bypass valve pressure drop

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

# SF2 250-350

## Designation & Ordering code

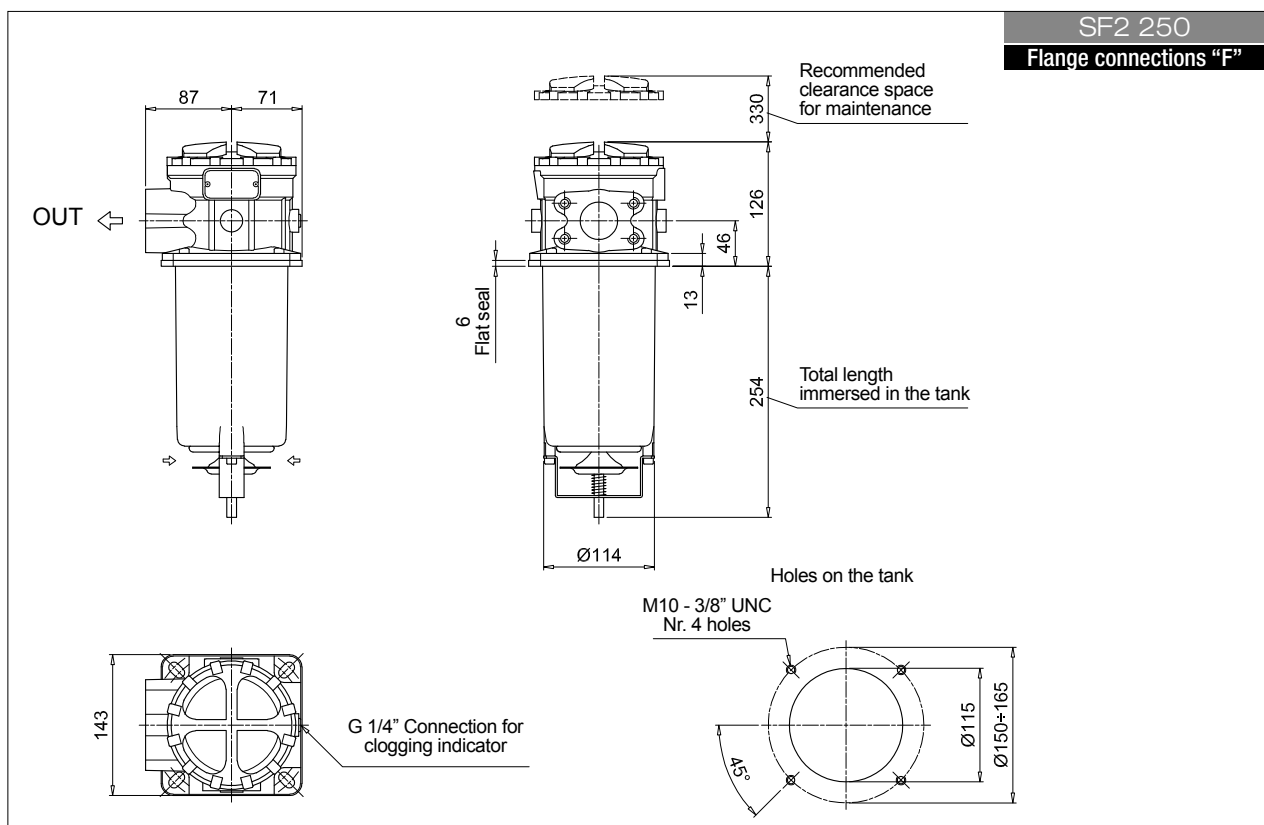
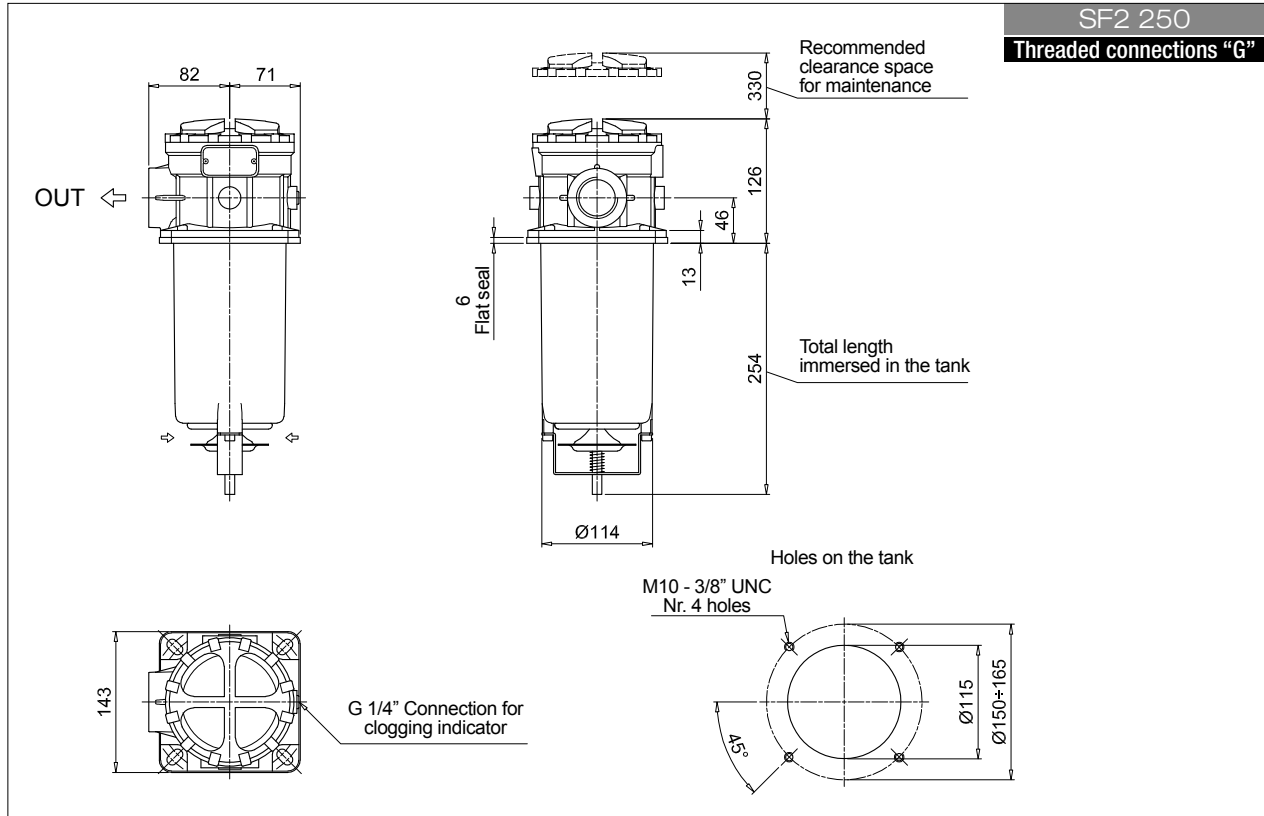
COMPLETE FILTER					
<b>Series and size</b>			Configuration example 1:	SF2250	W F2 R M25 P01
SF2250			Configuration example 2:	SF2350	A G1 S M90 P01
SF2350					
<b>Seals and treatments</b>			Filtration rating		
			Mxx	Pxx	
A	NBR		•	•	
V	FPM		•	•	
W	NBR compatible with fluids HFA-HFB-HFC		•		
Z	FPM compatible with fluids HFA-HFB-HFC		•		
<b>Connections</b>			Aux (only SF2350)	SF2250	SF2350
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		-	•	
<b>Bypass valve and magnetic filter</b>			Q	Without bypass, with magnetic filter	
R	With bypass, with magnetic filter		H	Without bypass, without magnetic filter	
S	With bypass, without magnetic filter				
<b>Filtration rating (filter media)</b>					
M25	Wire mesh 25 µm	P10	Resin impregnated paper 10 µm		
M60	Wire mesh 60 µm	P25	Resin impregnated paper 25 µm		
M90	Wire mesh 90 µm				
M250	Wire mesh 250 µm				
			<b>Execution</b>		
			P01 MP Filtri standard		
			Pxx Customized		

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

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

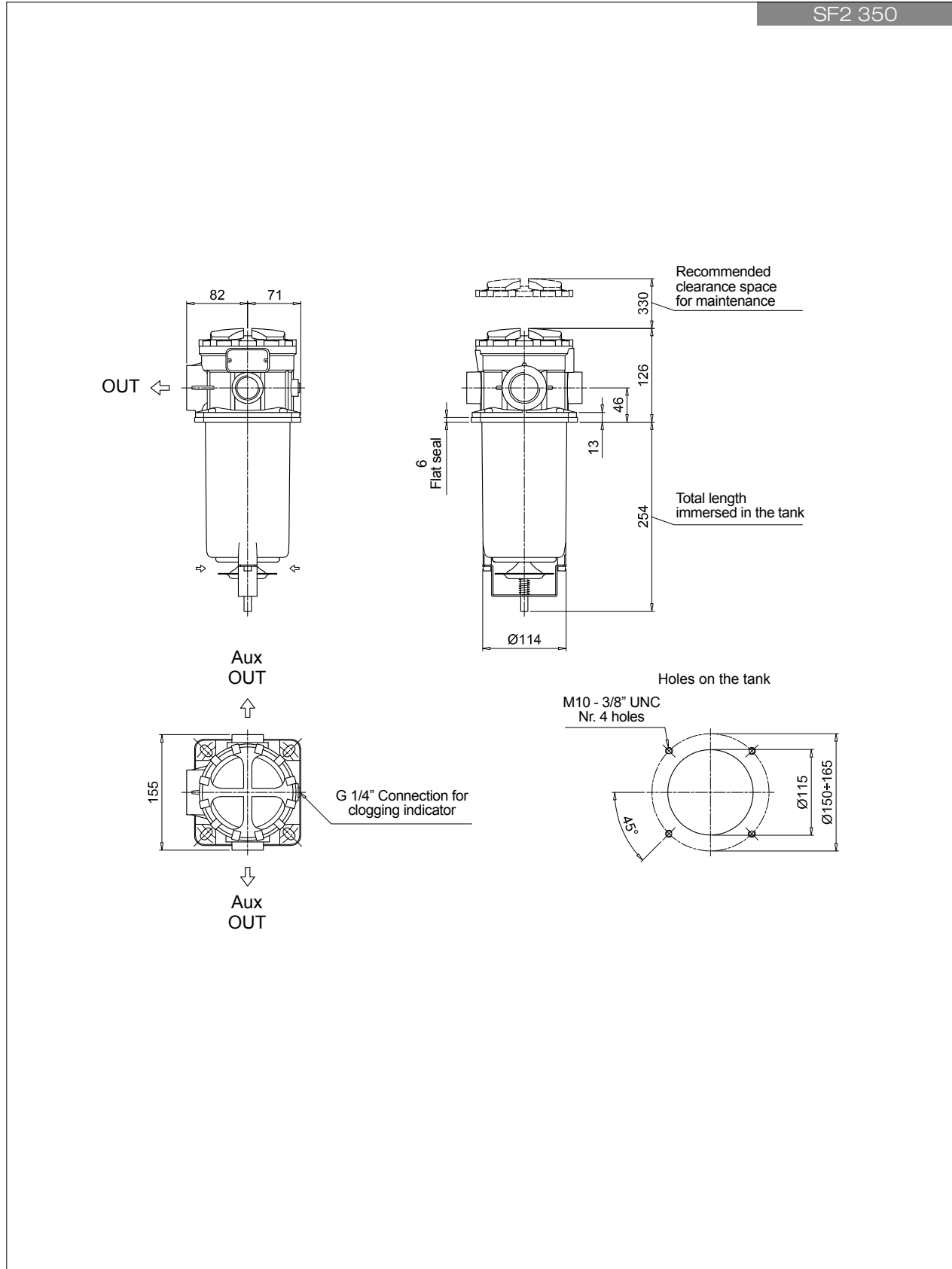
# SF2 250-350

Dimensions



# SF2 250-350

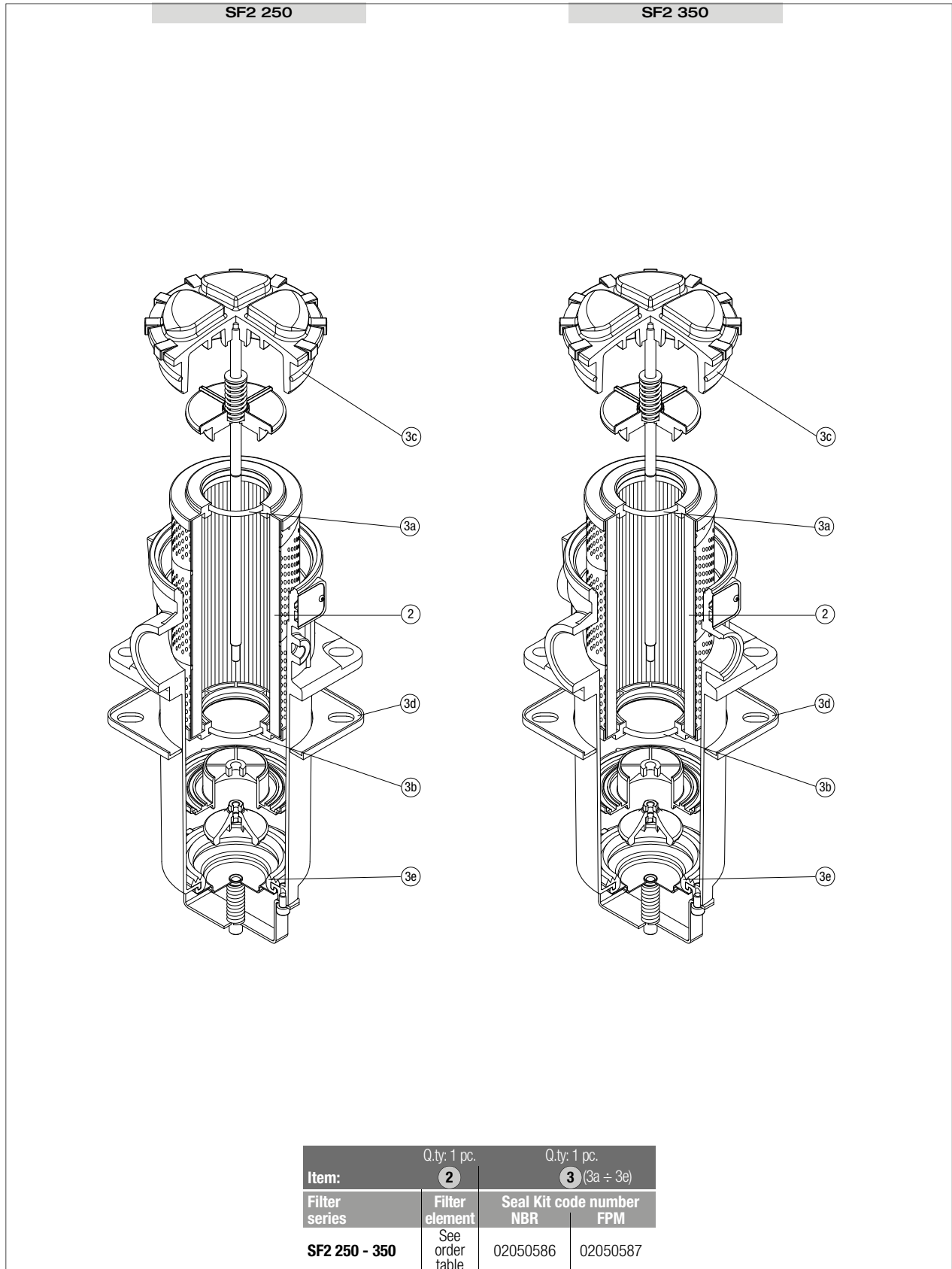
## Dimensions





# SPARE PARTS SF2 250-350

Order number for spare parts







Suction filters

# SF2 500 series

Flow rate up to 700 l/min



# SF2 500 GENERAL INFORMATION

## Description

## Technical data

### Suction filters

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

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

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

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

#### Available features:

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

#### Common application:

Industrial equipment

### Filter housing materials

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

### Elements

Fluid flow through the filter element from IN to OUT

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

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



## Weights [kg]

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

# GENERAL INFORMATION SF2 500

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

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

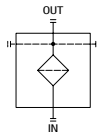
### Maximum flow rate for a complete suction filter with a pressure drop $\Delta p = 0.08$ bar.

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

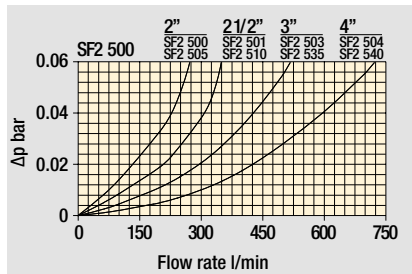
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

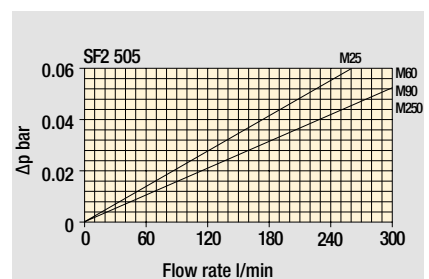
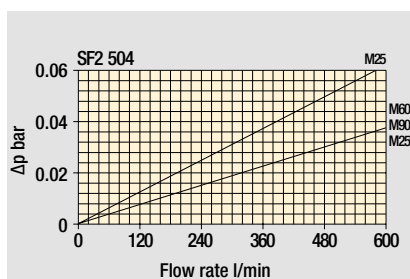
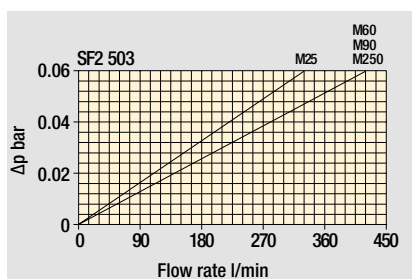
Filter series	
<b>SF2 500</b>	•



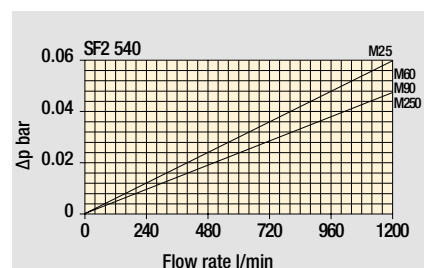
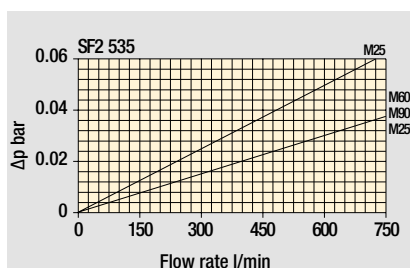
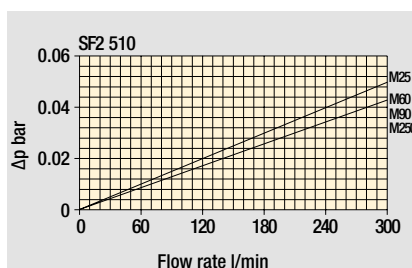
## Hydraulic symbols



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



## Filter element $\Delta p$ pressure drop



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

# SF2 500

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

## Designation & Ordering code

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

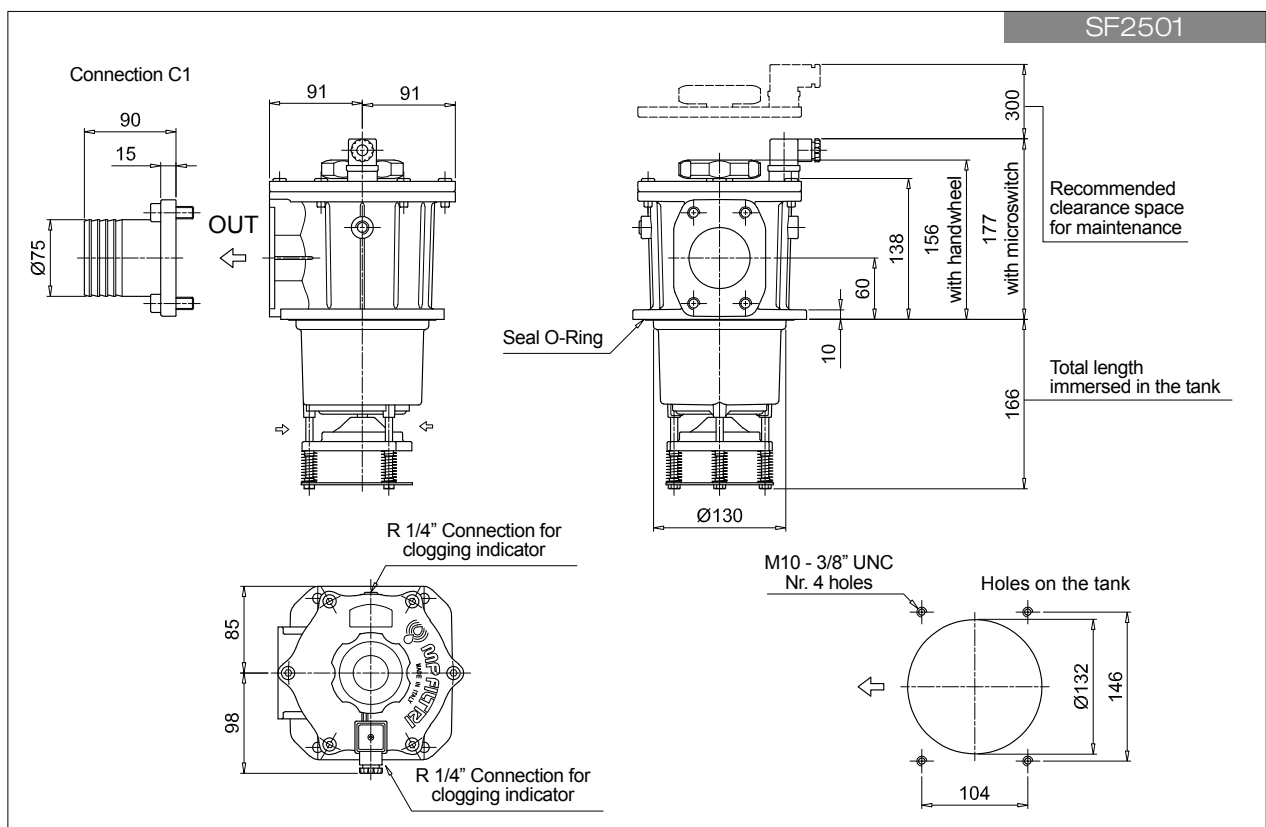
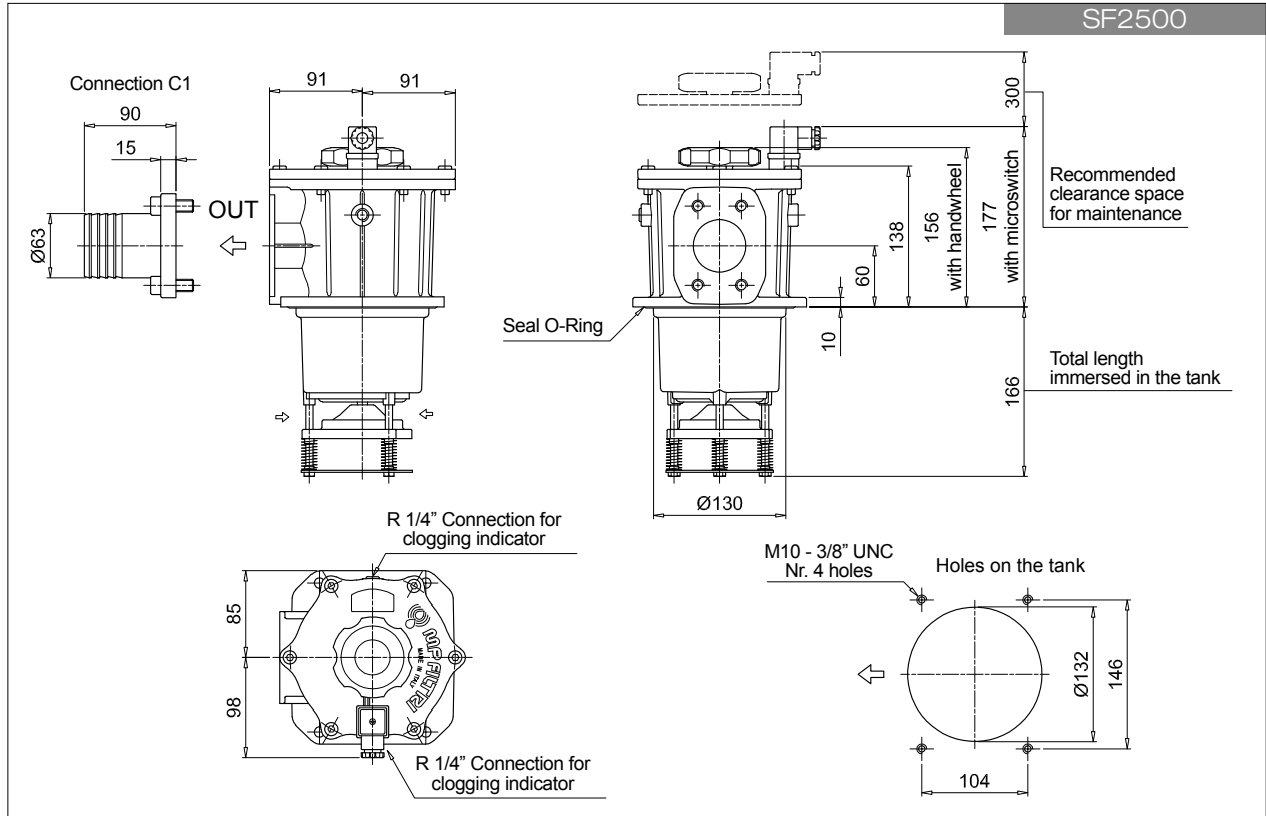
FILTER ELEMENT							
<b>Element series and size</b>		Configuration example 1:					
SF2500	SF2501	SF2503	SF2504	SF2505	SF2510	SF2535	SF2540
<b>SF503</b>		•					
<b>SF504</b>			•				
<b>SF505</b>				•			
<b>SF510</b>	•	•			•		
<b>SF535</b>						•	
<b>SF540</b>							•
<b>Filtration rating (filter media)</b>		Configuration example 2:					
<b>M25</b>	Wire mesh 25 µm	<b>M90</b>	Wire mesh 90 µm				
<b>M60</b>	Wire mesh 60 µm	<b>M250</b>	Wire mesh 250 µm				
<b>Seals and treatments</b>		Filtration rating					
	Standard version	•					
<b>W</b>	Compatible with fluids HFA-HFB-HFC	•					
<b>Execution</b>							
<b>P01</b> MP Filtri standard							
<b>Pxx</b> Customized							

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



SF2500 - SF2501 - SF2503 - SF2504 - SF2505 - SF2510 - SF2535 - SF2540 **SF2 500**

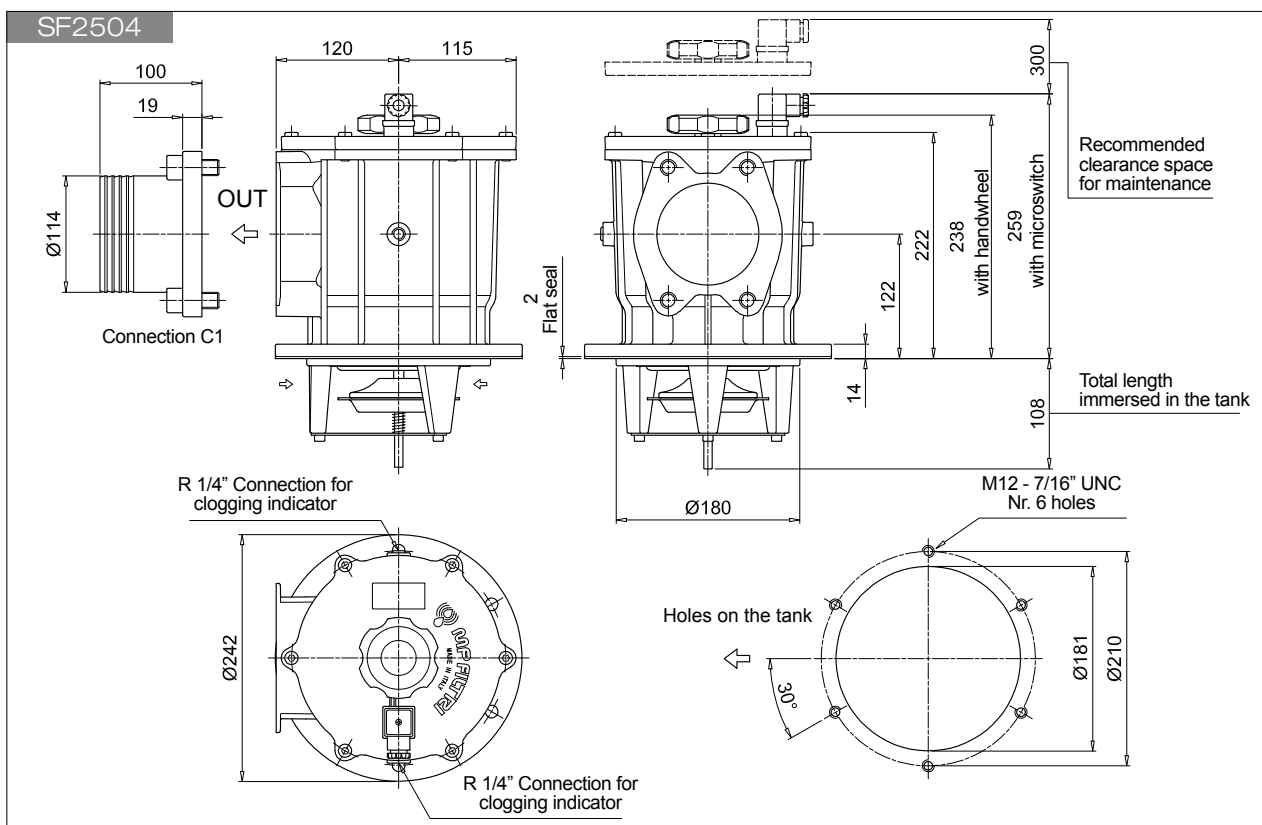
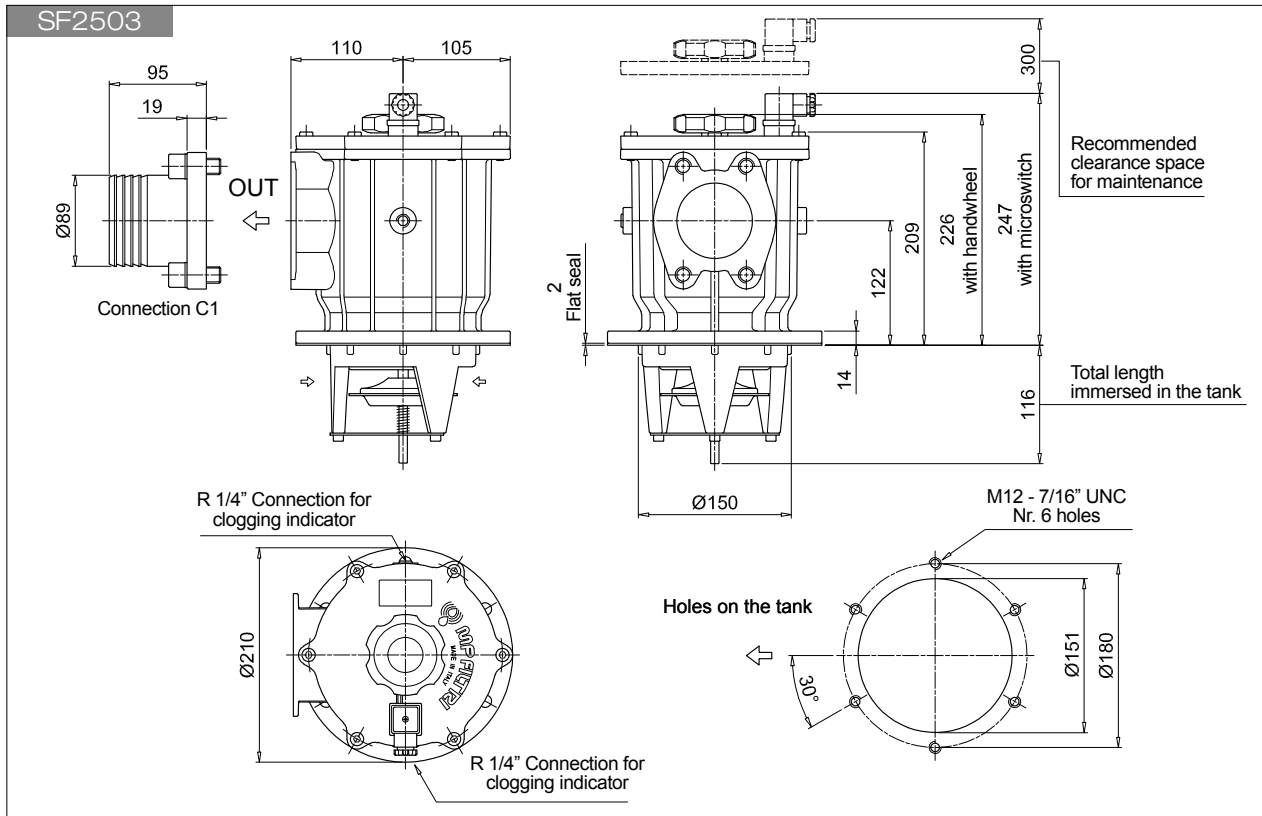
Dimensions



# SF2 500

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

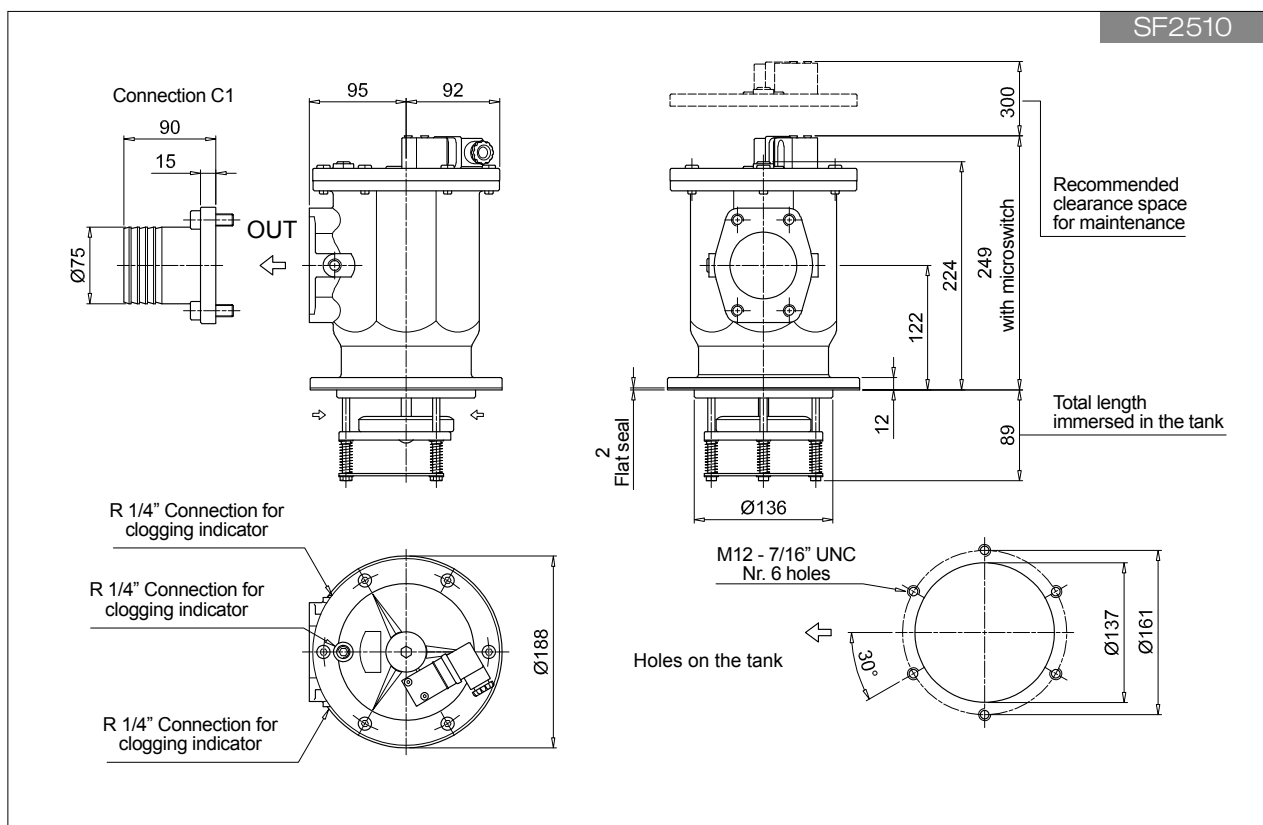
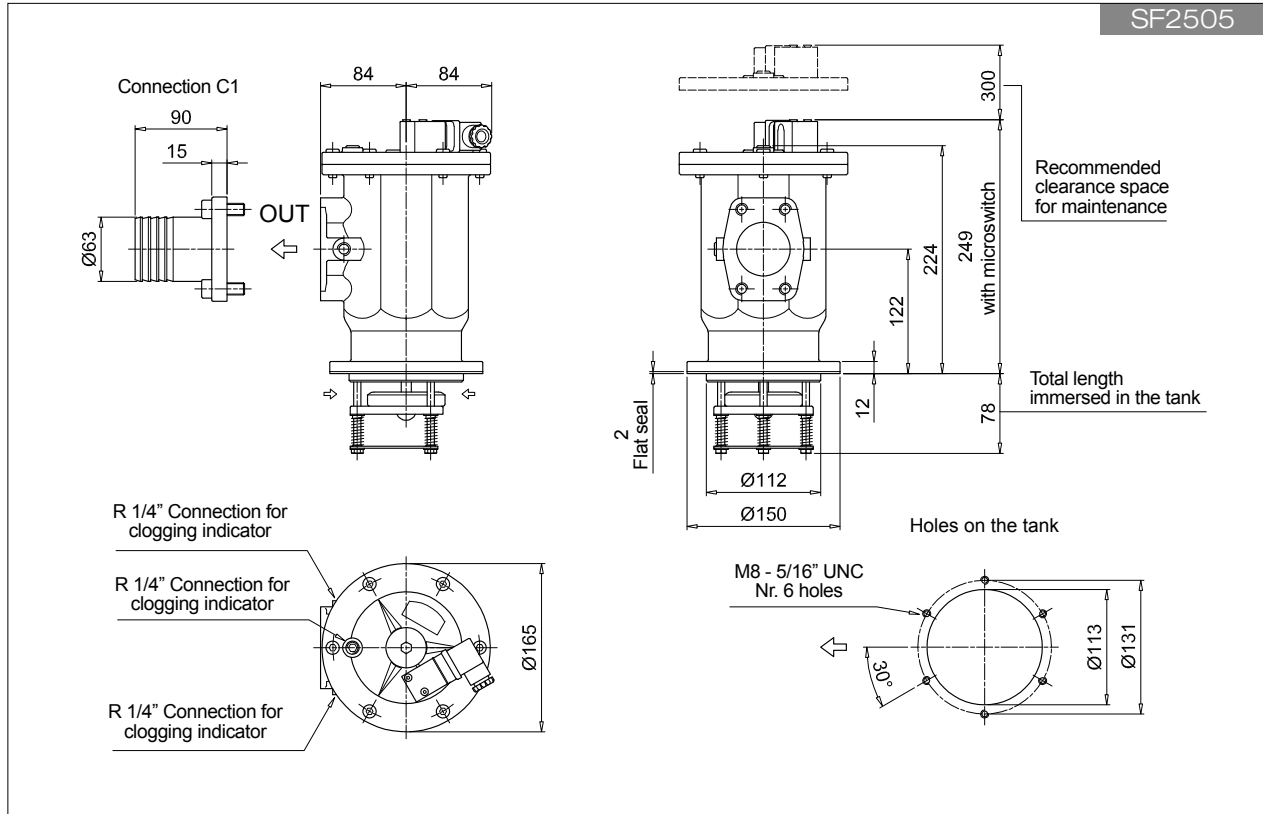
## Dimensions



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

# SF2 500

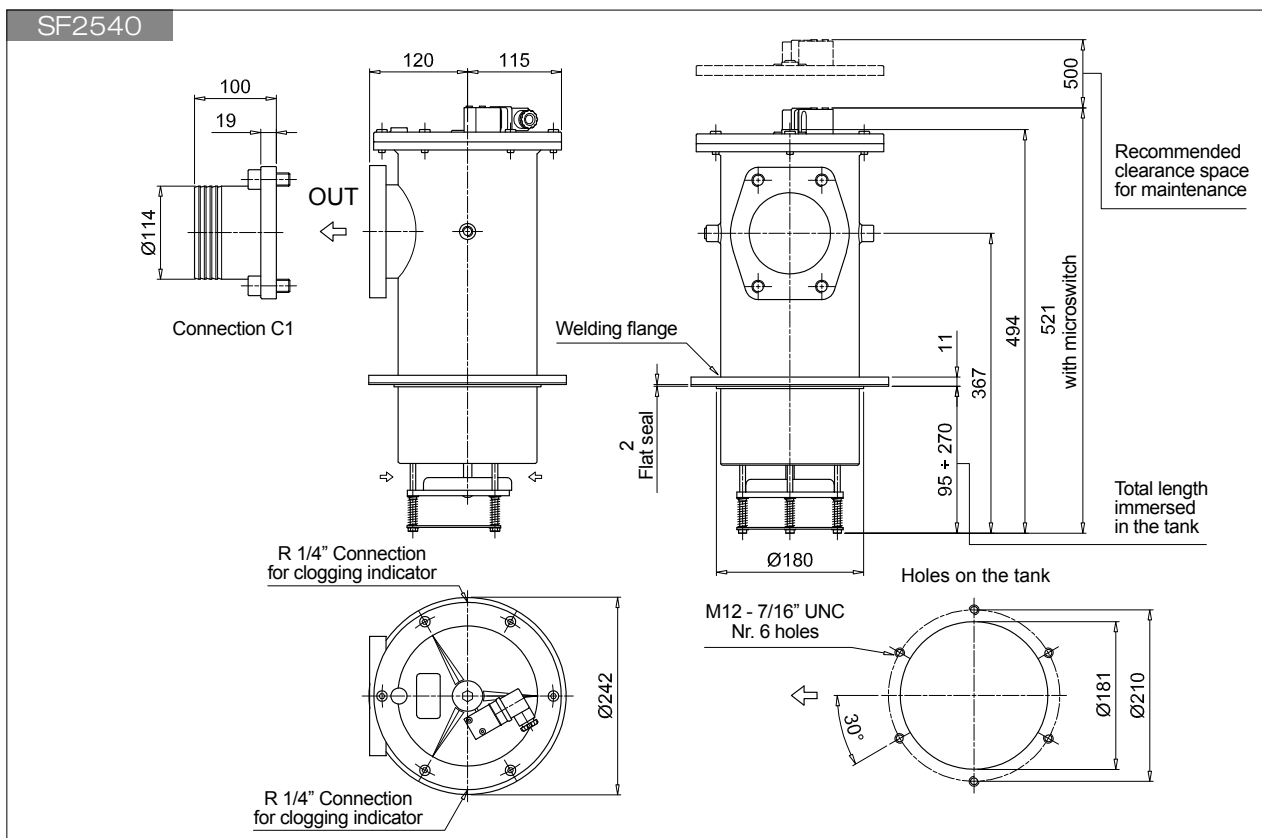
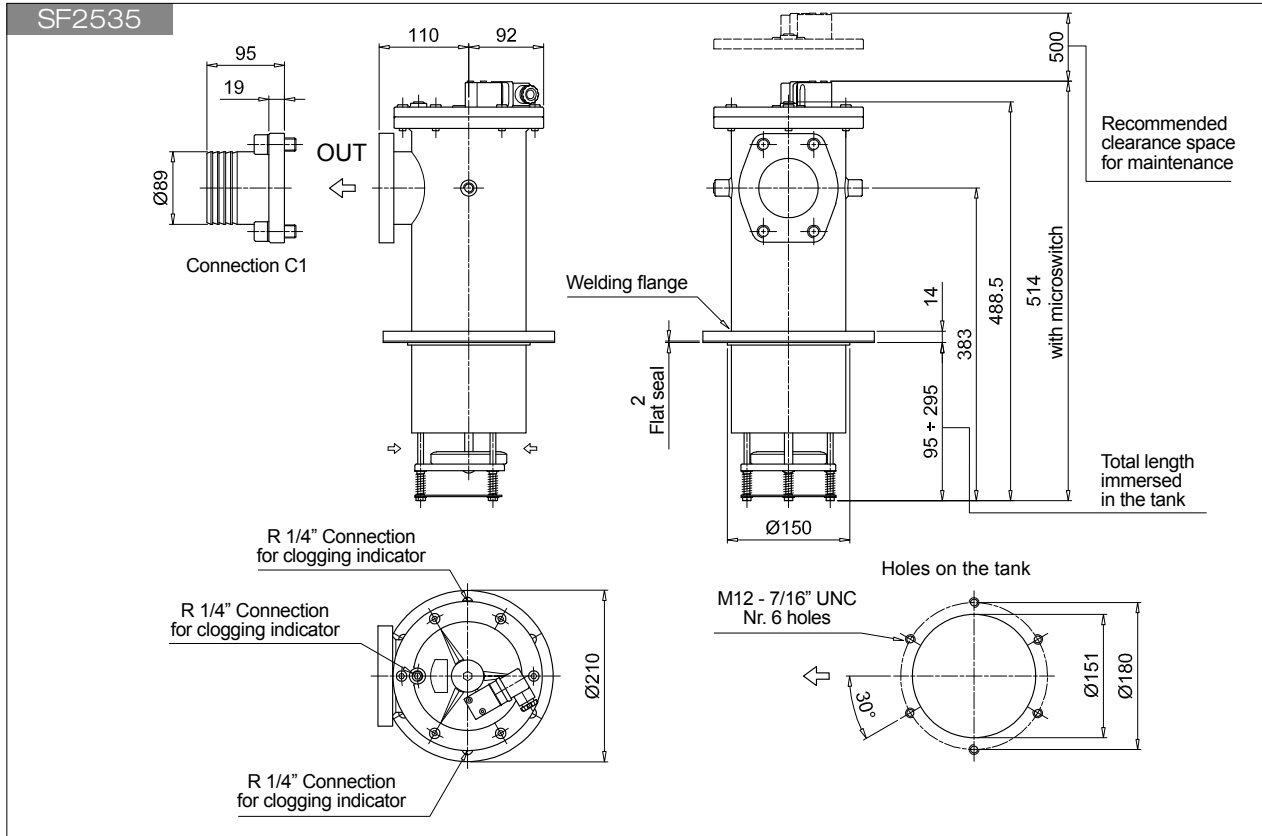
Dimensions



# SF2 500

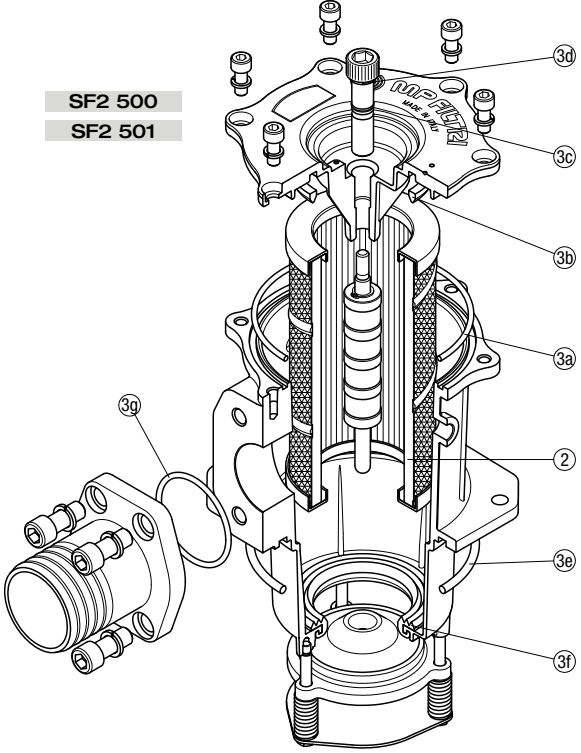
SF2500 - SF2501 - SF2503 - SF2504 - SF2505 - SF2510 - SF2535 - SF2540

## Dimensions

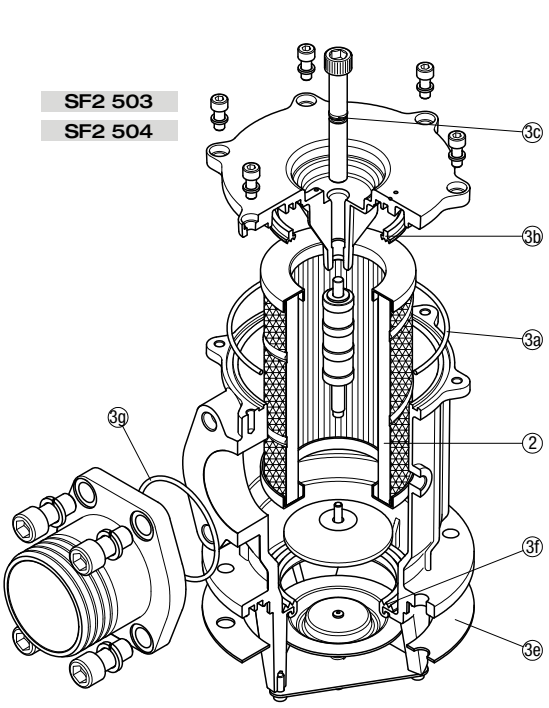


# SPARE PARTS SF2 500

Order number for spare parts

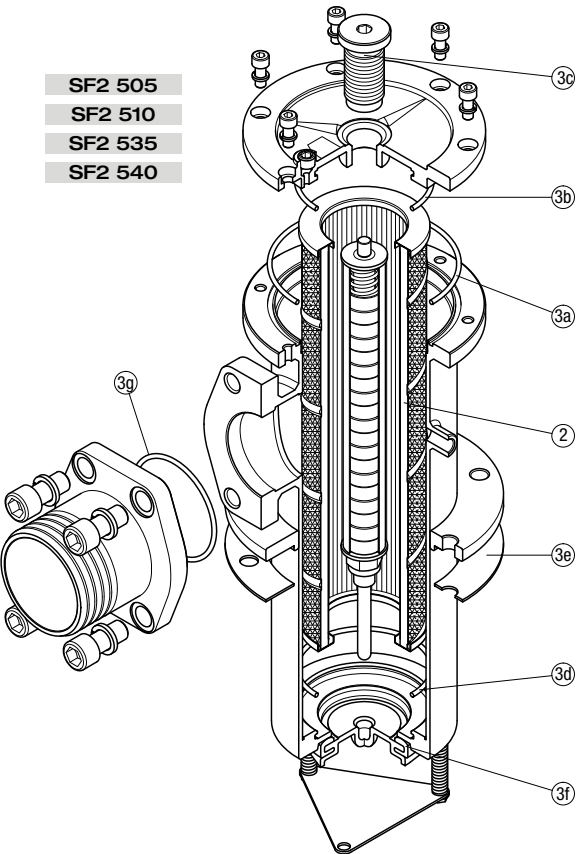


**SF2 500**  
**SF2 501**



**SF2 503**  
**SF2 504**

---



**SF2 505**  
**SF2 510**  
**SF2 535**  
**SF2 540**

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





Suction filters

# Clogging indicators

Vacuum indicators

## Introduction

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

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

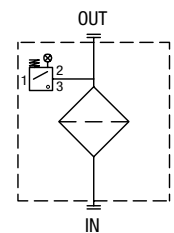
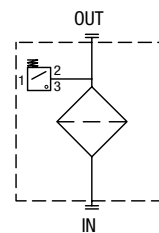
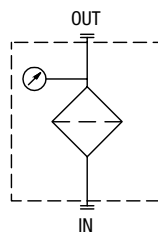
The indicator is set to alarm before the element becomes fully clogged.

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

## Suitable indicator types

### VACUUM INDICATORS

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



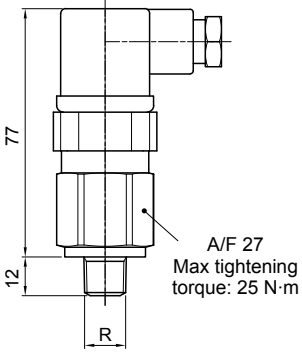

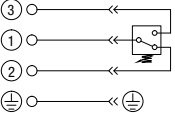

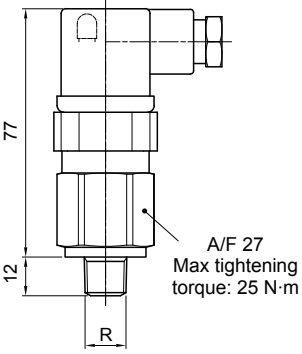

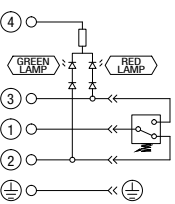
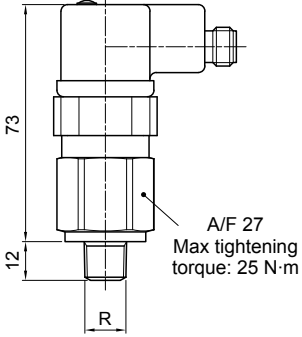

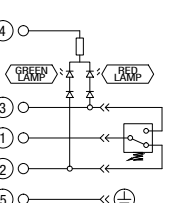
## Quick reference guide

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



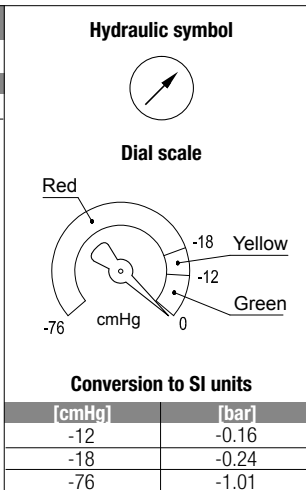
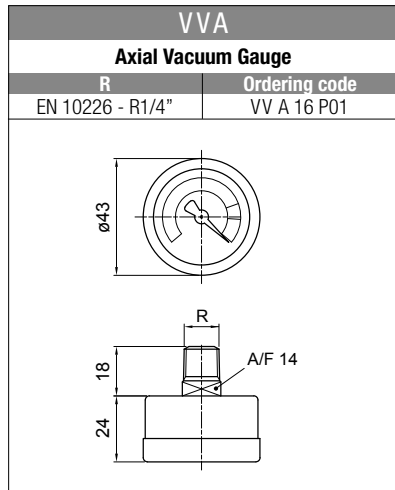
# VACUUM INDICATORS

## Dimensions

<p style="text-align: center;"><b>VE*50</b></p> <p style="text-align: center;"><b>Electrical Vacuum Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">R</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/4"</td> <td>VE A 21 AA 50 P01</td> </tr> </tbody> </table> 	R	Ordering code	EN 10226 - R1/4"	VE A 21 AA 50 P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: <ul style="list-style-type: none"> <li>5 A / 14 Vdc</li> <li>4 A / 30 Vdc</li> <li>5 A / 125 Vac</li> <li>4 A / 250 Vac</li> </ul> </li> <li>- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X </li> <li>- CE certification</li> </ul>									
R	Ordering code														
EN 10226 - R1/4"	VE A 21 AA 50 P01														
<p style="text-align: center;"><b>VL*51 - VL*52 - VL*53</b></p> <p style="text-align: center;"><b>Electrical/Visual Vacuum Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">R</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/4"</td> <td>VL A 21 AA xx P01</td> </tr> </tbody> </table> 	R	Ordering code	EN 10226 - R1/4"	VL A 21 AA xx P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent Nylon</li> <li>- Contacts: Brass - Nylon</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Type: <table style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 0 10px;">51</td> <td style="padding: 0 10px;">52</td> <td style="padding: 0 10px;">53</td> </tr> <tr> <td style="padding: 0 10px;">24 Vdc</td> <td style="padding: 0 10px;">110 Vdc</td> <td style="padding: 0 10px;">230 Vac</td> </tr> </table> </li> <li>- Resistive load: <table style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 0 10px;">1 A / 24 Vdc</td> <td style="padding: 0 10px;">1 A / 110 Vdc</td> <td style="padding: 0 10px;">1 A / 230 Vac</td> </tr> </table> </li> </ul>	51	52	53	24 Vdc	110 Vdc	230 Vac	1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac
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EN 10226 - R1/4"	VL A 21 AA xx P01														
51	52	53													
24 Vdc	110 Vdc	230 Vac													
1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac													
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Connections	Indicator code														
EN 10226 - R1/4"	VL A 21 AA 71 P01														

# VACUUM INDICATORS

## Dimensions

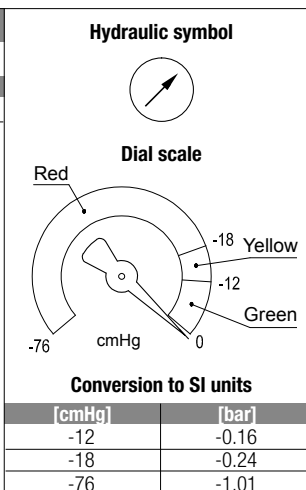
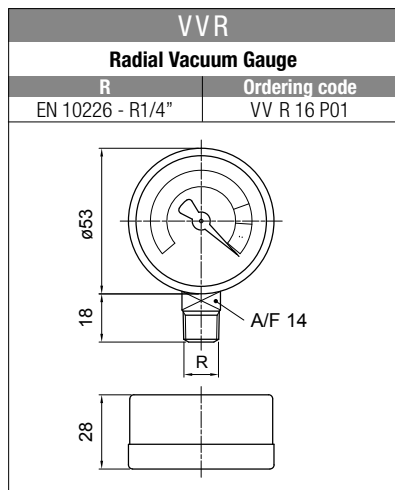


**Materials**

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

**Technical data**

- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529



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### DESIGNATION & ORDERING CODE

**Series**

<b>VE</b> Electrical vacuum indicator
<b>VL</b> Electrical/Visual vacuum indicator
<b>VV</b> Vacuum gauge

Configuration example 1: **VE** **A** **21** **A** **A** **50** **P01**

Configuration example 2: **VL** **A** **21** **A** **A** **71** **P01**

Configuration example 3: **VV** **R** **16**    **P01**

**Type VE - VL**

<b>A</b> Connection EN 10226 - R1/4"
--------------------------------------

**Type VV**

<b>A</b> Axial connection EN 10226 - R1/4"
<b>R</b> Radial connection EN 10226 - R1/4"

**Vacuum setting**

	VE	VL	VV
<b>16</b> -0.16 bar			•
<b>21</b> -0.21 bar	•	•	

**Seals**

	VE	VL	VV
<b>A</b> NBR	•	•	

**Thermostat**

	VE	VL	VV
<b>A</b> Without	•	•	

**Electrical connections**

	VE	VL	VV
<b>50</b> Connection EN 175301-803	•		
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc		•	
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc		•	
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vdc		•	
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		•	

**Option**

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

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

**They are available in 8 styles:**

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

## FILTER SIZING

For the proper corrective factor Y see chapter at page 24



# Return filters



MPFX	page 63	MPH	page 179
MPLX	91	MPI	203
MPTX	99	FRI	215
MFBX	117	RF2	231
MPF	125	INDICATORS	238
MPT	153	ACCESSORIES	248
MFB	171		



THE NEW FILTER CONCEPT

MPFX  
MPLX  
MPTX  
MFBX  
MFX  
series

### NEW FILTER ELEMENT WITH EXCLUSIVE INTERFACE CONNECTION

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

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



The products identified as MPFX, MPLX, MPTX, MFBX and MFX are protected by:

Italian Patent n° 102014902261205  
Canadian Patent n° 2,937,258

and by the following patent applications:

European Patent n° 16181725.9  
US Patent Pending n° 15/224,337



Return filters

# MPFX series

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





# MPFX GENERAL INFORMATION

## Description

### 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 750 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to 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

## Technical data

### Filter housing materials

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

### Bypass valve

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

### Δp element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPFX filters are provided for vertical mounting



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

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



# GENERAL INFORMATION MPFX

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

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

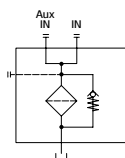
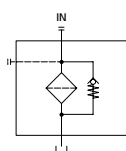
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

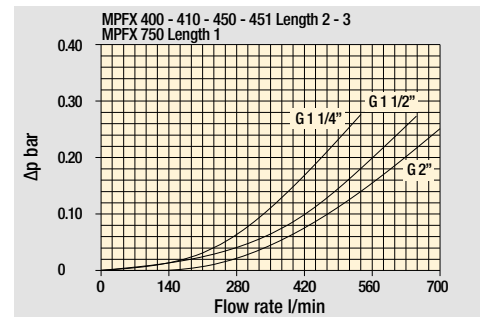
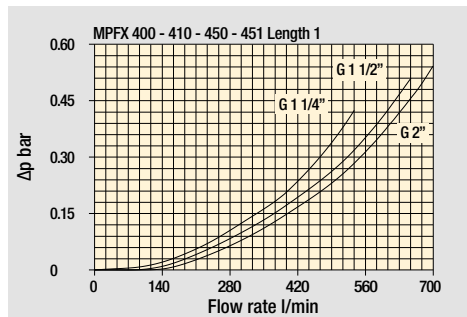
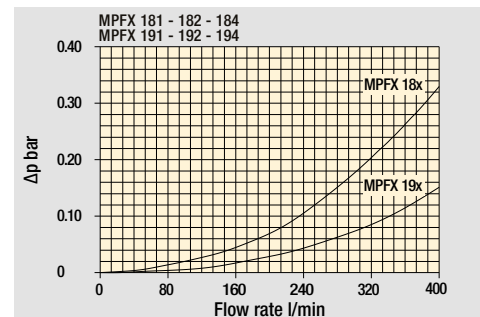
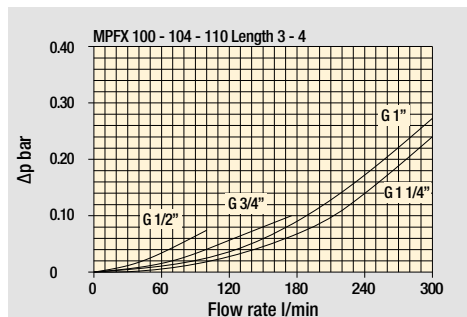
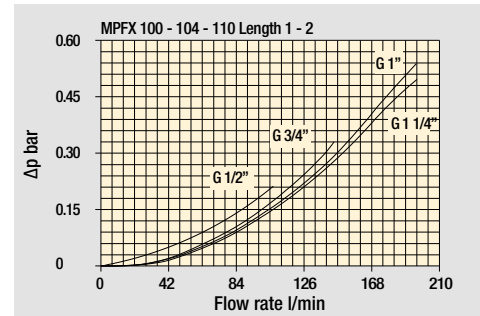
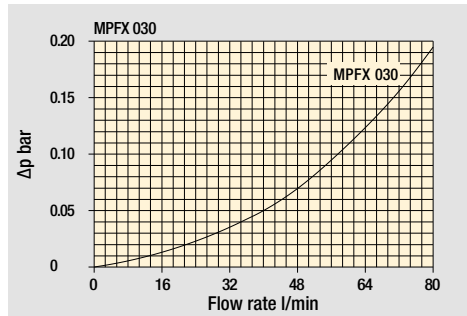
Filter series	Style 1 connection	Style 2 connections
<b>MPFX 030</b>	•	
<b>MPFX 100</b>	•	
<b>MPFX 104</b>	•	
<b>MPFX 110</b>		•
<b>MPFX 181</b>	•	
<b>MPFX 182</b>		•
<b>MPFX 184</b>	•	•
<b>MPFX 191</b>	•	
<b>MPFX 192</b>	•	
<b>MPFX 194</b>	•	•
<b>MPFX 400</b>	•	
<b>MPFX 410</b>		•
<b>MPFX 450</b>	•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



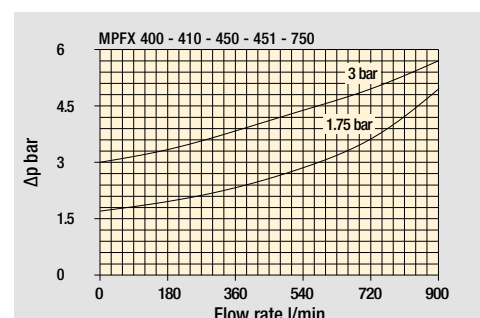
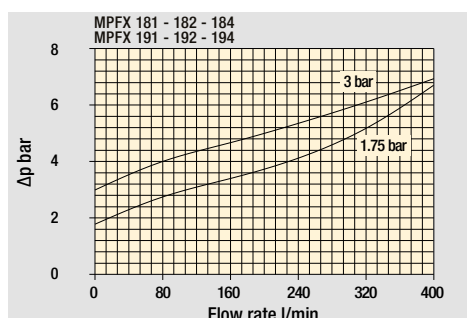
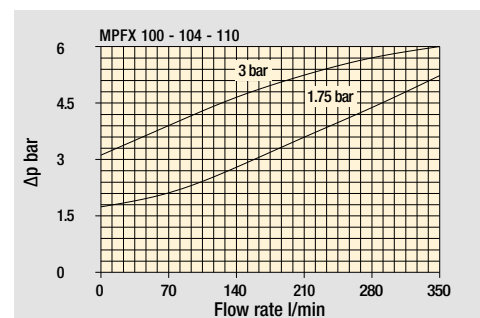
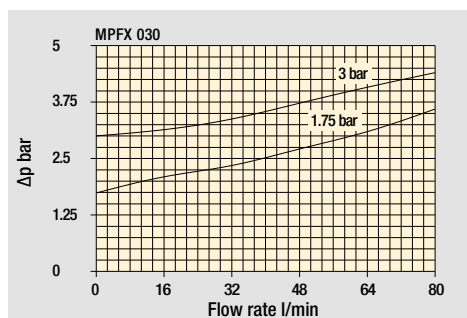
# MPFX GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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

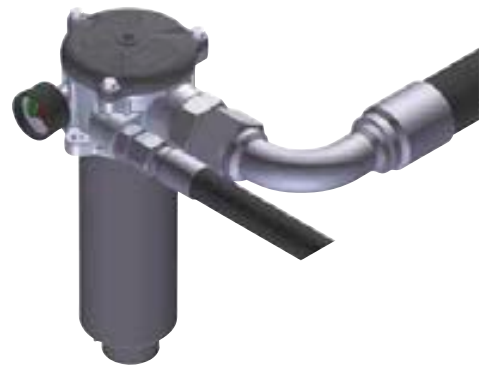
# GENERAL INFORMATION MPFX

Multiport

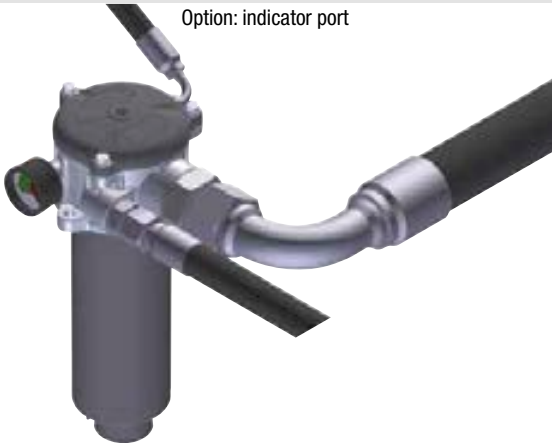
Standard - Single IN port



Double IN port  
Option: double indicator port



Double IN port - Drain port  
Option: indicator port



Double IN port - Double drain port



# MPFX MPFX030

## Designation & Ordering code

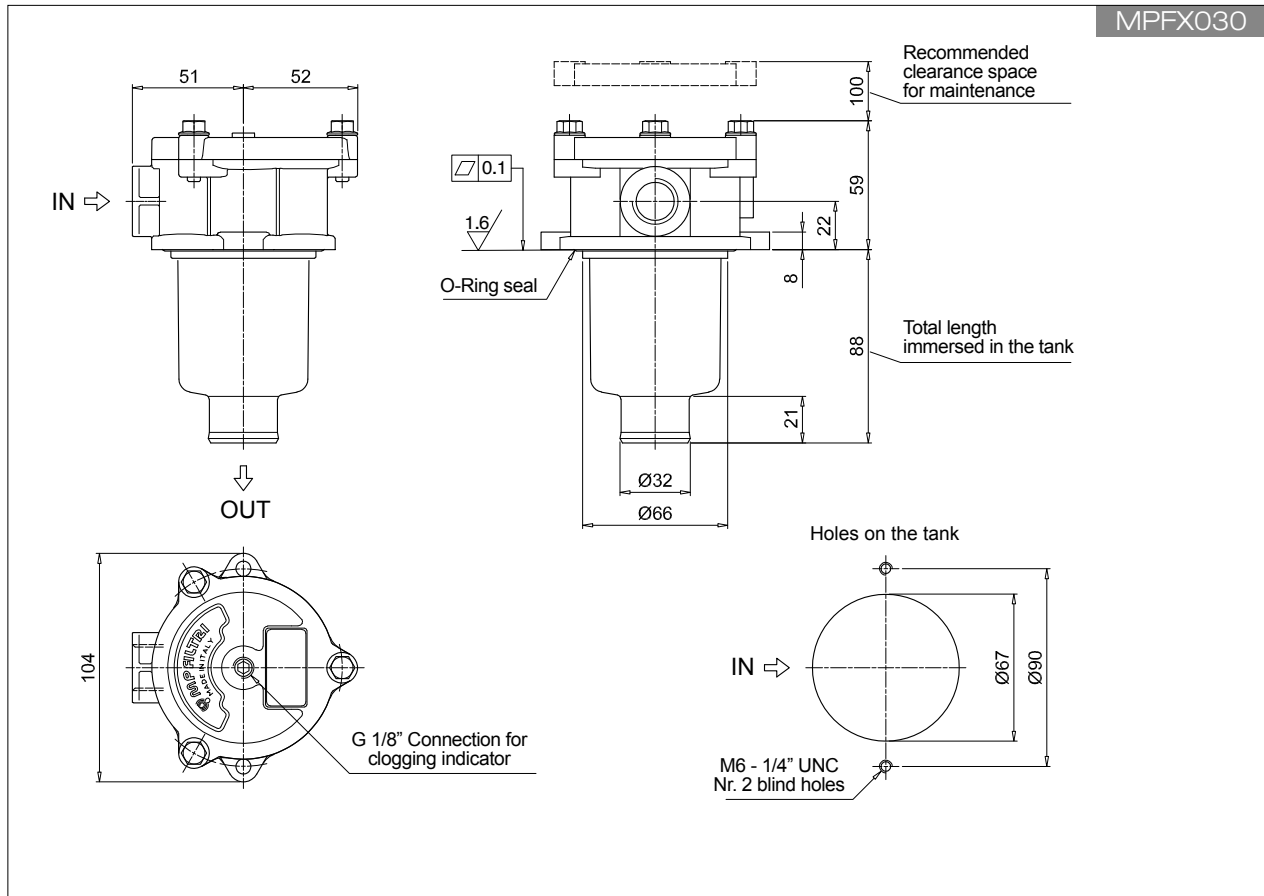
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPFX030</b>   <b>1</b>   <b>V</b>   <b>G1</b>   <b>M25</b>   <b>N</b>   <b>B</b>   <b>P01</b>							
<b>MPFX030</b> Filter element with private spigot		Configuration example 2: <b>MPFX030</b>   <b>1</b>   <b>A</b>   <b>G4</b>   <b>A10</b>   <b>H</b>   <b>E</b>   <b>P01</b>							
<b>Length</b>		1							
<b>Seals and treatments</b>									
<b>A</b> NBR									
<b>V</b> FPM									
<b>W</b> NBR head anodized									
<b>Z</b> FPM head anodized									
<b>Connections</b>									
<b>G1</b> G 1/2"									
<b>G4</b> 1/2" NPT									
<b>G7</b> SAE 8 - 3/4" - 16 UNF									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber		<b>M25</b> Wire mesh							
<b>A06</b> Inorganic microfiber		<b>M60</b> Wire mesh							
<b>A10</b> Inorganic microfiber		<b>M90</b> Wire mesh							
<b>A16</b> Inorganic microfiber		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber		<b>P25</b> Resin impregnated paper							
<b>Element Δp</b>		Filter media							
		Axx   Mxx   Pxx							
<b>N</b> 10 bar									
<b>H</b> 10 bar		•							
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		• •							
		<b>Bypass valve</b>		<b>Execution</b>					
		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard					
		<b>B</b> 1.75 bar		<b>Pxx</b> Customized					

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MFX030</b>   <b>1</b>   <b>M25</b>   <b>N</b>   <b>V</b>   <b></b>   <b>P01</b>							
<b>MFX030</b> Filter element with private spigot		Configuration example 2: <b>MFX030</b>   <b>1</b>   <b>A10</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>							
<b>Element length</b>		1							
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		Filter media							
		Axx   Mxx   Pxx							
<b>N</b> 10 bar									
<b>H</b> 10 bar		•							
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		• •							
		<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>			
		<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard			
		<b>V</b> FPM		<b></b> 1.75 bar		<b>Pxx</b> Customized			

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

# MPFX030 MPFX

## Dimensions



# MPFX MPFX100 - MPFX104

## Designation & Ordering code

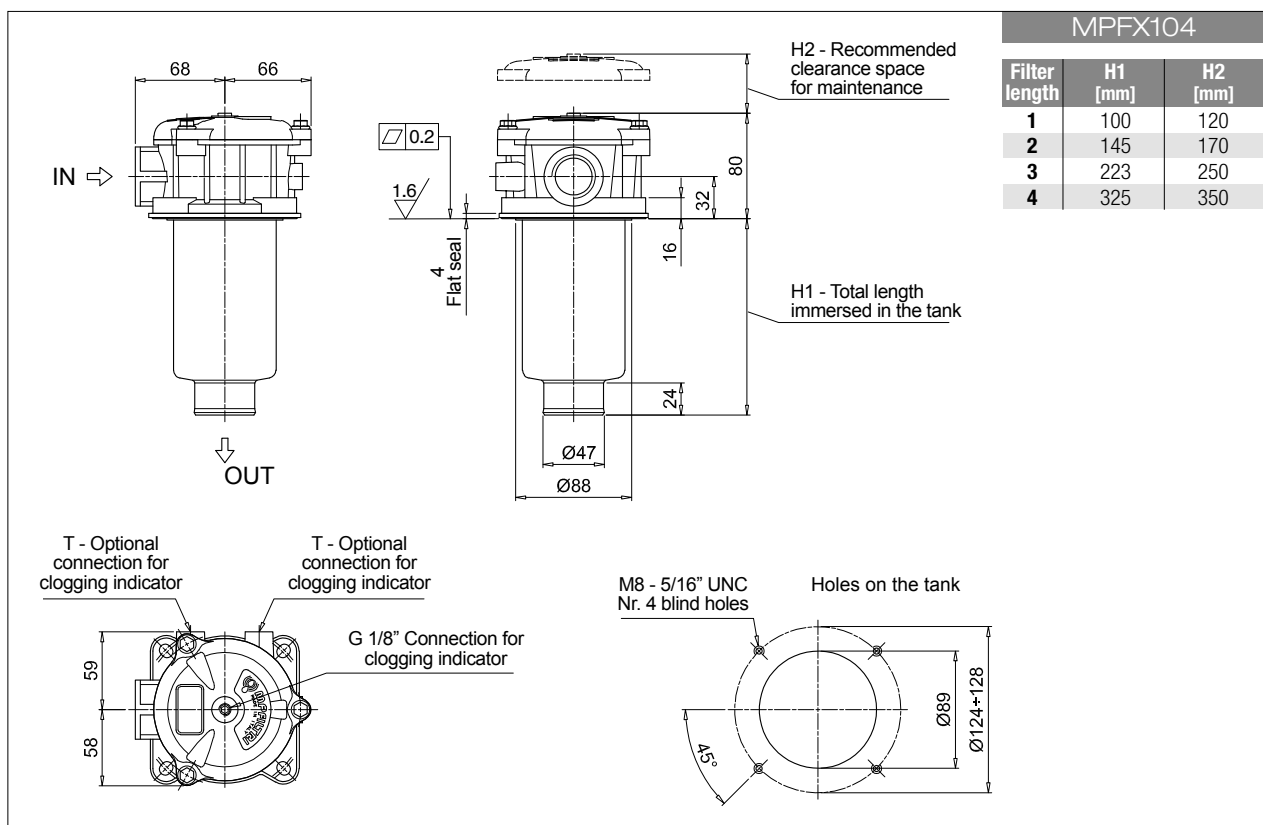
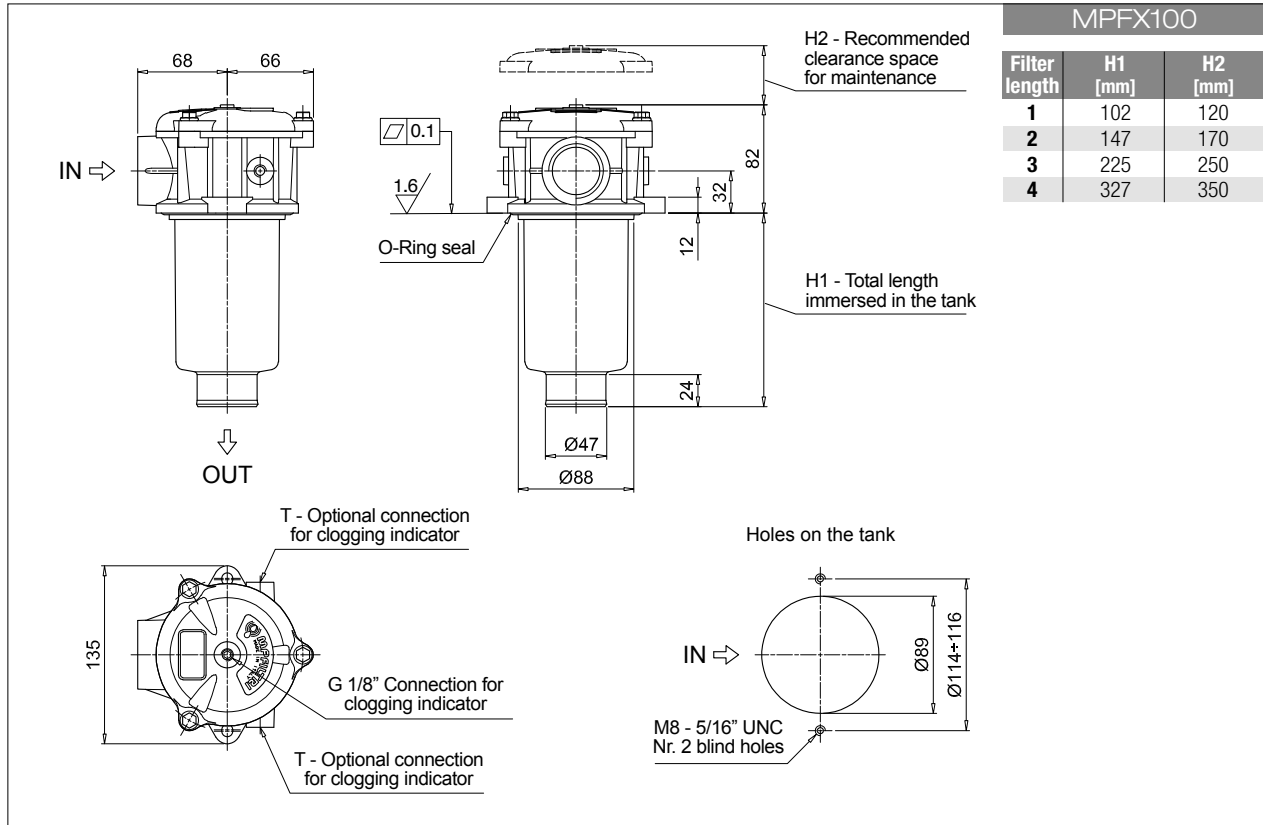
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPFX100</b>   <b>2</b>   <b>W</b>   <b>G3</b>   <b>A06</b>   <b>W</b>   <b>B</b>   <b>P01</b>							
<b>MPFX100</b>   <b>MPFX104</b> Filter element with private spigot		Configuration example 2: <b>MPFX104</b>   <b>4</b>   <b>A</b>   <b>G8</b>   <b>P10</b>   <b>N</b>   <b>E</b>   <b>P01</b>							
<b>Length</b>									
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
<b>Seals and treatments</b>									
<b>A</b> NBR									
<b>V</b> FPM									
<b>W</b> NBR head anodized									
<b>Z</b> FPM head anodized									
<b>Connections</b>		<b>Size 100</b>		<b>Size 104</b>		<b>Connections</b>			
<b>G1</b> G 1/2"		•		•		<b>G7</b> SAE 8 - 3/4" - 16 UNF			
<b>G2</b> G 3/4"		•		•		<b>G8</b> SAE 12 - 1 1/16" - 12 UN			
<b>G3</b> G 1"		•		•		<b>G9</b> SAE 16 - 1 5/16" - 12 UN			
<b>G4</b> 1/2" NPT		•		•					
<b>G5</b> 3/4" NPT		•		•					
<b>G6</b> 1" NPT		•		•					
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		<b>Axx</b>		<b>Mxx</b>		<b>Pxx</b>			
<b>N</b> 10 bar		•		•		•			
<b>H</b> 10 bar		•		•		•			
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•		•		•			
						<b>Bypass valve</b>		<b>Execution</b>	
						<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
						<b>B</b> 1.75 bar		<b>Pxx</b> Customized	

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MFXX100</b>   <b>2</b>   <b>A06</b>   <b>W</b>   <b>B</b>   <b></b>   <b>P01</b>							
<b>MFXX100</b> Filter element with private spigot		Configuration example 2: <b>MFXX100</b>   <b>4</b>   <b>P10</b>   <b>N</b>   <b>B</b>   <b>E</b>   <b>P01</b>							
<b>Element length</b>									
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		<b>Axx</b>		<b>Mxx</b>		<b>Pxx</b>			
<b>N</b> 10 bar		•		•		•			
<b>H</b> 10 bar		•		•		•			
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•		•		•			
						<b>Seals</b>		<b>Bypass valve</b>	
						<b>B</b> NBR		<b>E</b> 3 bar	
						<b>V</b> FPM		<b>1.75 bar</b>	
								<b>P01</b> MP Filtri standard	
								<b>Pxx</b> Customized	

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

# MPFX100 - MPFX104 MPFX

## Dimensions





# MPFX MPFX110

## Designation & Ordering code

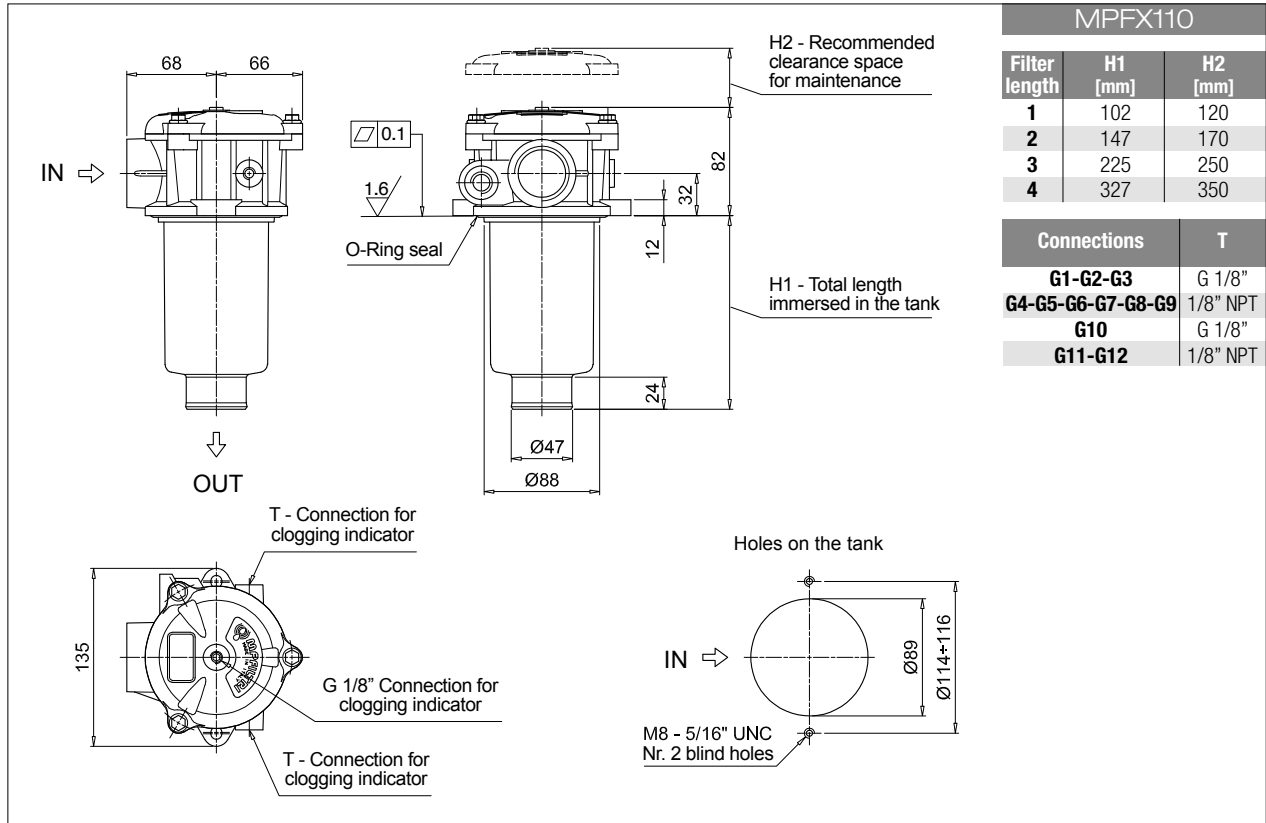
COMPLETE FILTER									
Series and size			Configuration example 1: <b>MPFX110</b>   <b>3</b>   <b>Z</b>   <b>G4</b>   <b>2</b>   <b>M25</b>   <b>W</b>   <b>B</b>   <b>P01</b>						
<b>MPFX110</b> Filter element with private spigot			Configuration example 2: <b>MPFX110</b>   <b>4</b>   <b>A</b>   <b>G8</b>   <b>1</b>   <b>P10</b>   <b>N</b>   <b>E</b>   <b>P01</b>						
Length									
1   2   3   4									
Seals and treatments									
<b>A</b> NBR		<b>W</b> NBR head anodized							
<b>V</b> FPM		<b>Z</b> FPM head anodized							
Main Connections		Aux size 1	Aux size 2	Main Connections		Aux size 1	Aux size 2		
<b>G1</b> G 1/2"		G 3/8"	G 1/2"	<b>G7</b> SAE 8 - 3/4" - 16 UNF		SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF		
<b>G2</b> G 3/4"				<b>G8</b> SAE 12 - 1 1/16" - 12 UN					
<b>G3</b> G 1"		3/8" NPT	1/2" NPT	<b>G9</b> SAE 16 - 1 5/16" - 12 UN		G 3/8"	G 1/2"		
<b>G4</b> 1/2" NPT				<b>G10</b> G 1 1/4"					
<b>G5</b> 3/4" NPT		1" NPT		<b>G11</b> 1 1/4" NPT		3/8" NPT	1/2" NPT		
<b>G6</b> 1" NPT				<b>G12</b> SAE 20 - 1 5/8" - 12 UN					
Aux connection - see previous table									
1 Aux size 1			2 Aux size 2						
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
Element Δp									
<b>N</b> 10 bar		Axx	Mxx	Pxx					
<b>H</b> 10 bar		•	•	•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•	•	•					
					Bypass valve		Execution		
					<b>E</b> 3 bar		<b>P01</b> MP Filtri standard		
					<b>B</b> 1.75 bar		<b>Pxx</b> Customized		

FILTER ELEMENT									
Element series and size			Configuration example 1: <b>MFx100</b>   <b>3</b>   <b>M25</b>   <b>W</b>   <b>V</b>   <b></b>   <b>P01</b>						
<b>MFx100</b> Filter element with private spigot			Configuration example 2: <b>MFx100</b>   <b>4</b>   <b>P10</b>   <b>N</b>   <b>B</b>   <b>E</b>   <b>P01</b>						
Element length									
1   2   3   4									
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
Element Δp									
<b>N</b> 10 bar		Axx	Mxx	Pxx					
<b>H</b> 10 bar		•	•	•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•	•	•					
					Seals		Bypass valve		Execution
					<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard
					<b>V</b> FPM		1.75 bar		<b>Pxx</b> Customized

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

# MPFX110 MPFX

## Dimensions



# MPFX MPFX181 - MPFX191

## Designation & Ordering code

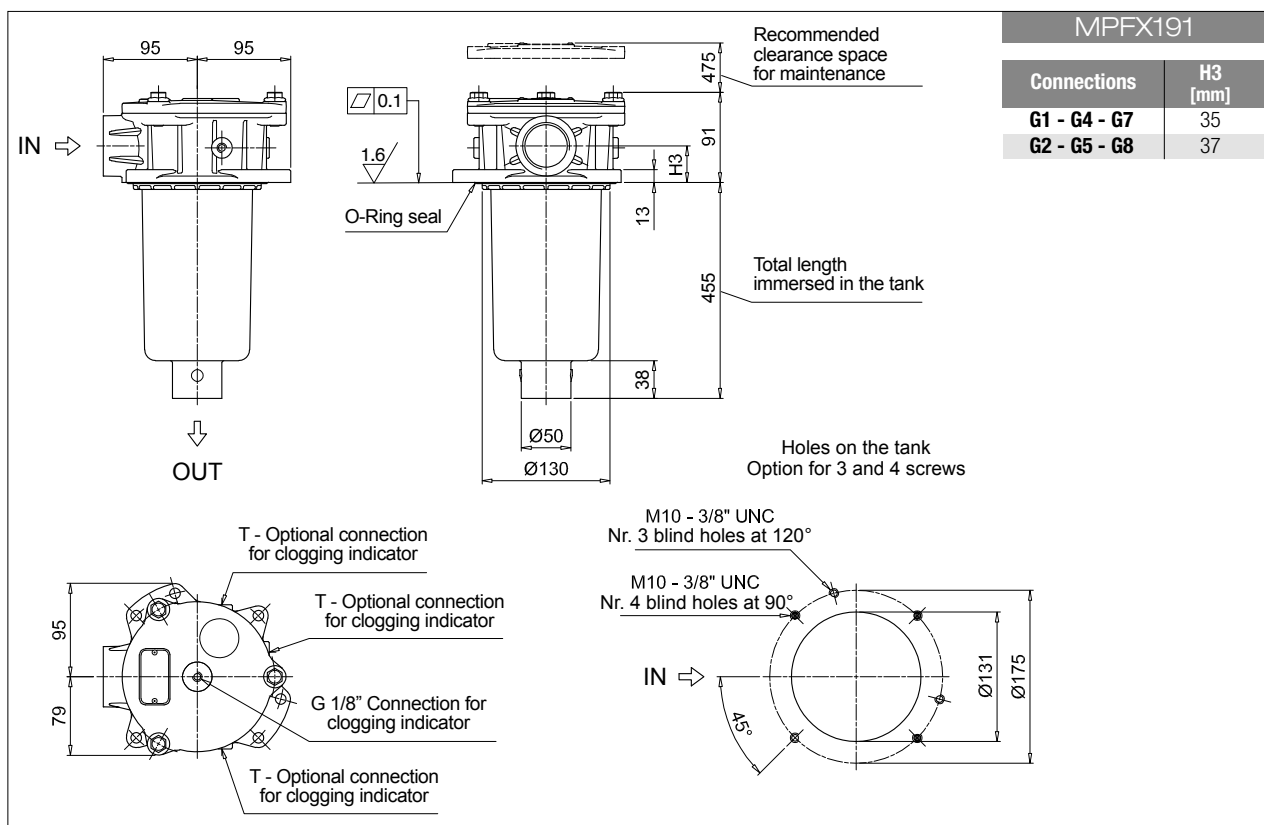
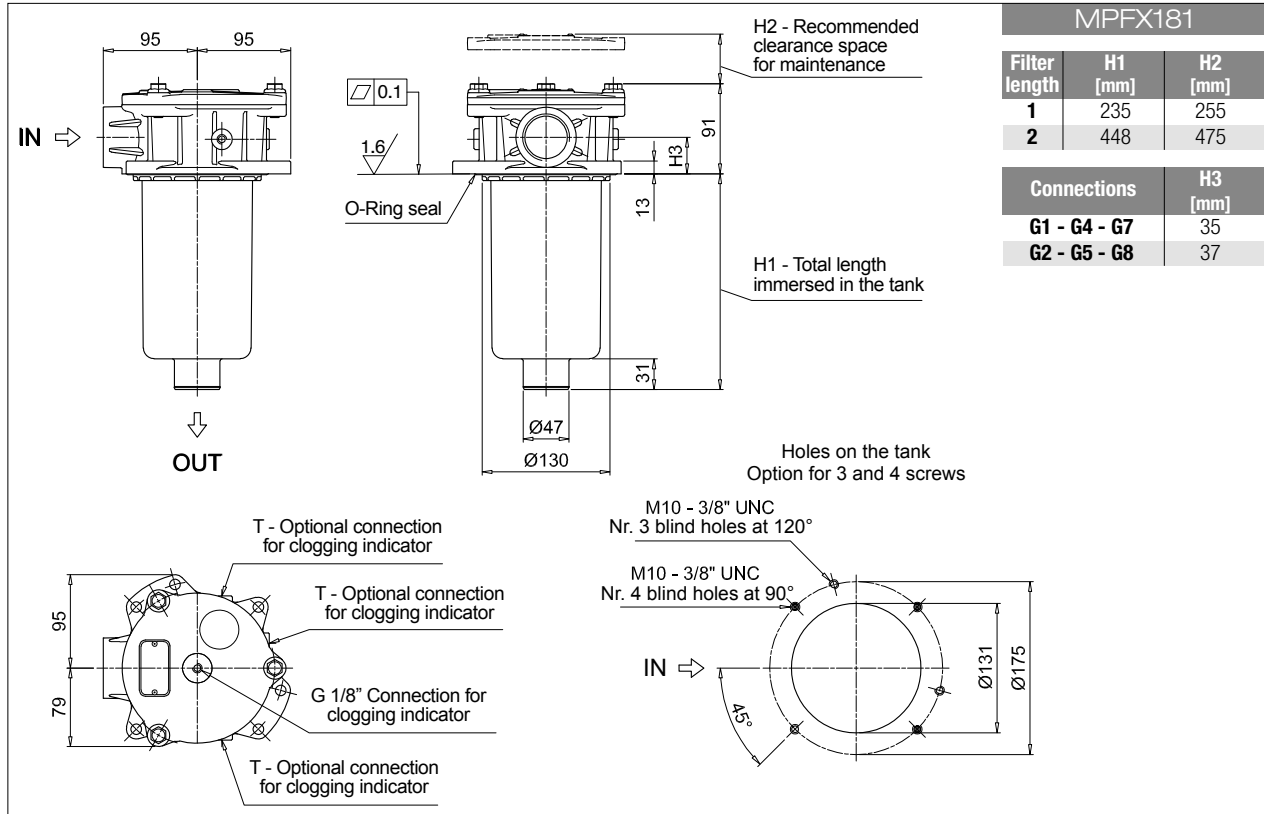
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPFX181</b> 1 A G1 A25 H E P01							
<b>MPFX181</b>   <b>MPFX191</b> Filter element with private spigot		Configuration example 2: <b>MPFX191</b> 2 V G2 P10 N B P01							
<b>Length</b>	<b>Size 181</b>	<b>Size 191</b>						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

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MFX180</b> 1 A25 H B E P01							
<b>MFX180</b> Filter element with private spigot		Configuration example 2: <b>MFX180</b> 2 P10 N V P01							
<b>Element length</b>									
1									
2									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm								
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm								
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm								
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm								
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm								
<b>Element Δp</b>		<b>Filter media</b>							
<b>N</b> 10 bar		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>					
<b>H</b> 10 bar			•	•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•	•						
		<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>			
		<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard			
		<b>V</b> FPM		<b>1.75 bar</b>		<b>Pxx</b> Customized			

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

# MPFX181 - MPFX191 MPFX

## Dimensions



# MPFX MPFX182 - MPFX192

## Designation & Ordering code

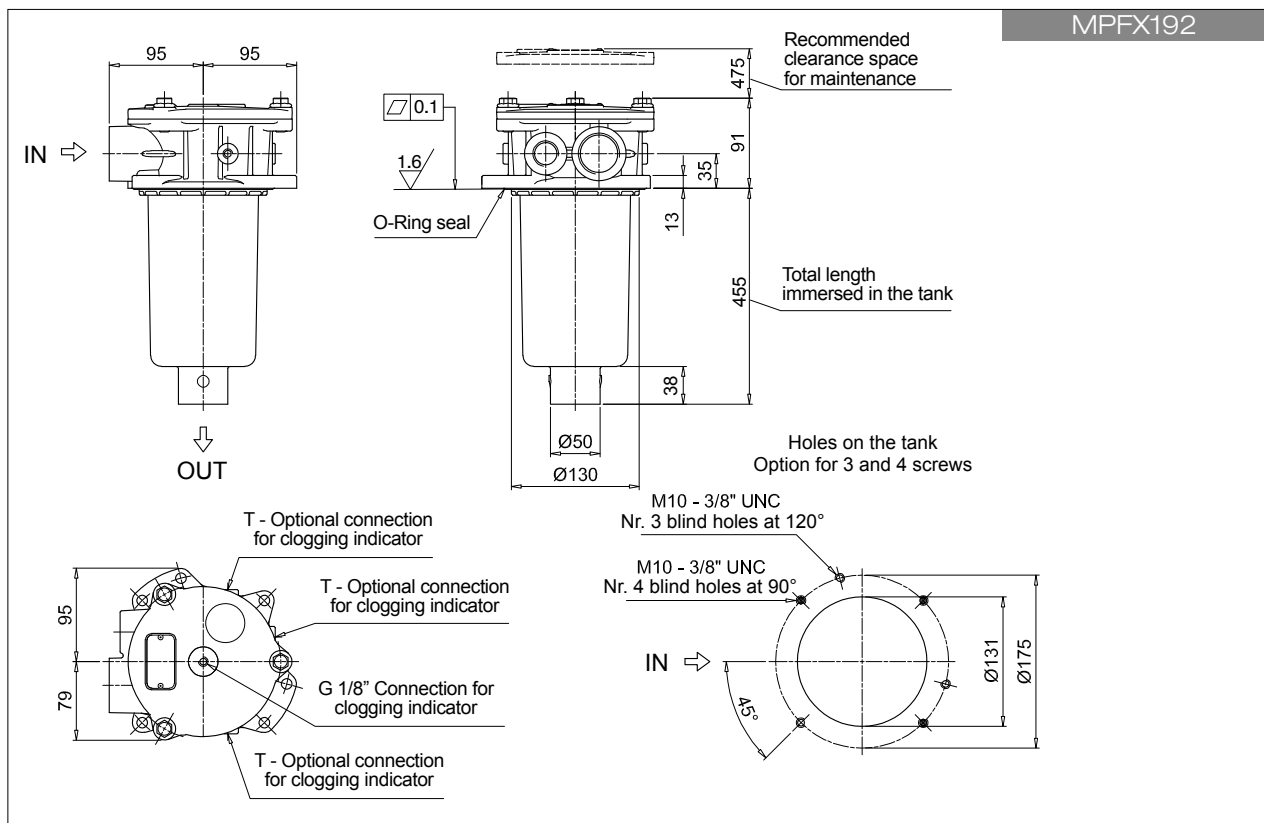
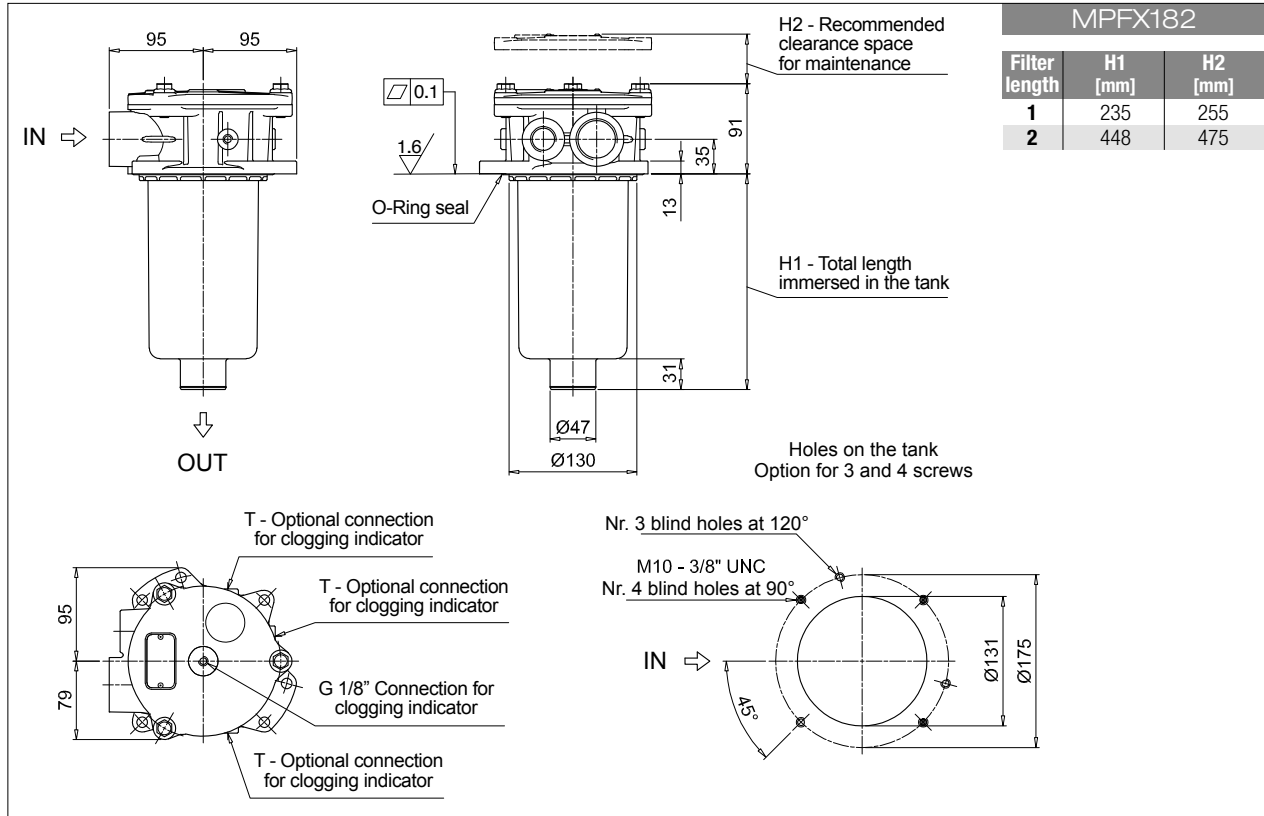
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPFX182</b>   1   A   G1   1   A25   H   E   P01							
<b>MPFX182</b>   <b>MPFX192</b> Filter element with private spigot		Configuration example 2: <b>MPFX192</b>   2   V   G4   2   P10   N   B   P01							
<b>Length</b>		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

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MFX180</b>   1   A25   H   B   E   P01							
<b>MFX180</b> Filter element with private spigot		Configuration example 2: <b>MFX180</b>   2   P10   N   V     P01							
<b>Element length</b>		1		2					
1									
2									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>									
<b>N</b> 10 bar		<b>Axx</b>		<b>Mxx</b>		<b>Pxx</b>			
<b>H</b> 10 bar		•		•		•			
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•		•		•			
						<b>Seals</b>		<b>Bypass valve</b>	
						<b>B</b> NBR		<b>E</b> 3 bar	
						<b>V</b> FPM		1.75 bar	
								<b>P01</b> MP Filtri standard	
								<b>Pxx</b> Customized	

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

# MPFX182 - MPFX192 MPFX

## Dimensions



# MPFX MPFX184 - MPFX194

## Designation & Ordering code

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

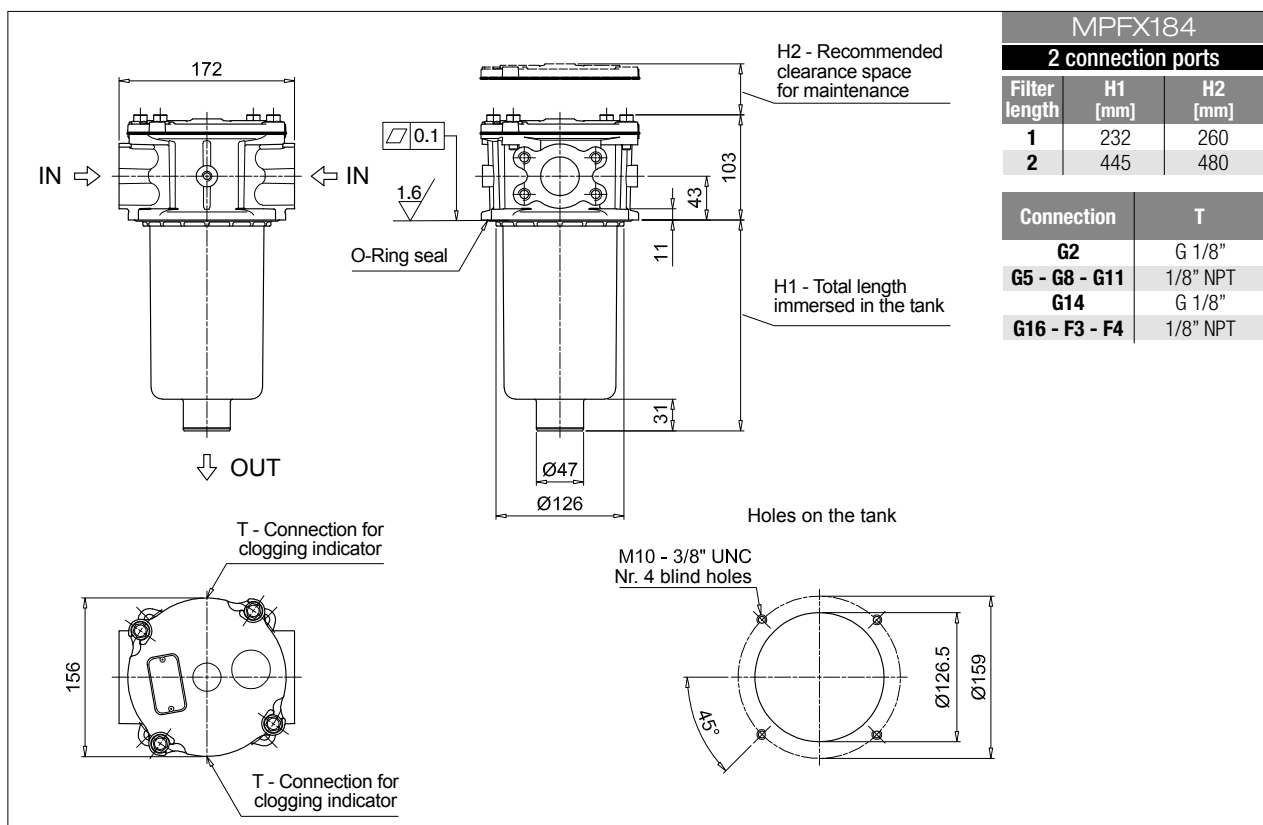
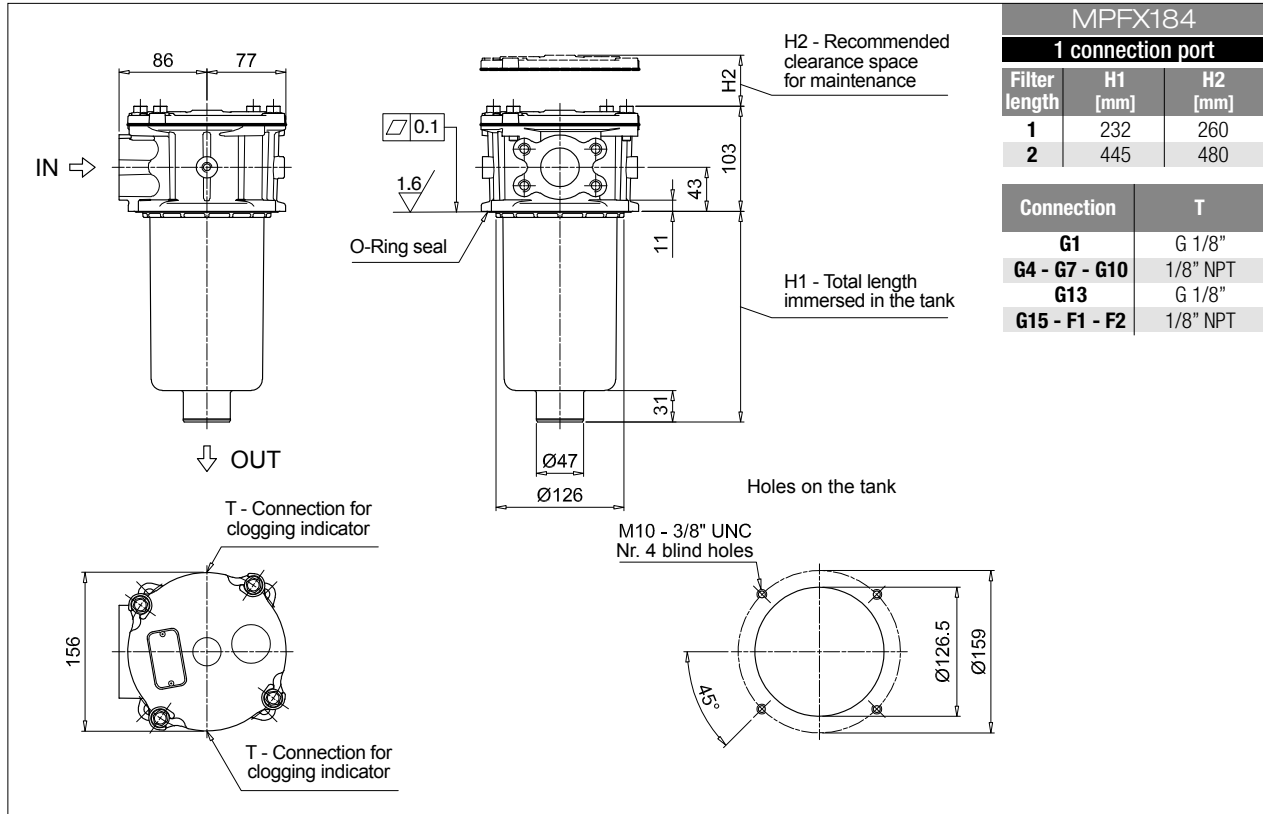
FILTER ELEMENT									
<b>Element series and size</b> MFX180 Filter element with private spigot			Configuration example 1: MFX180 1 A25 H B E P01						
			Configuration example 2: MFX180 2 P10 N V P01						
<b>Element length</b>									
1									
2									
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm							
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm							
<b>Element Δp</b>				Filter media					
N 10 bar		Axx		Mxx		Pxx			
H 10 bar		•		•		•			
W 10 bar, compatible with fluids HFA, HFB and HFC		•		•		•			
				<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>	
				B NBR		E 3 bar		P01 MP Filtri standard	
				V FPM		1.75 bar		Pxx Customized	

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



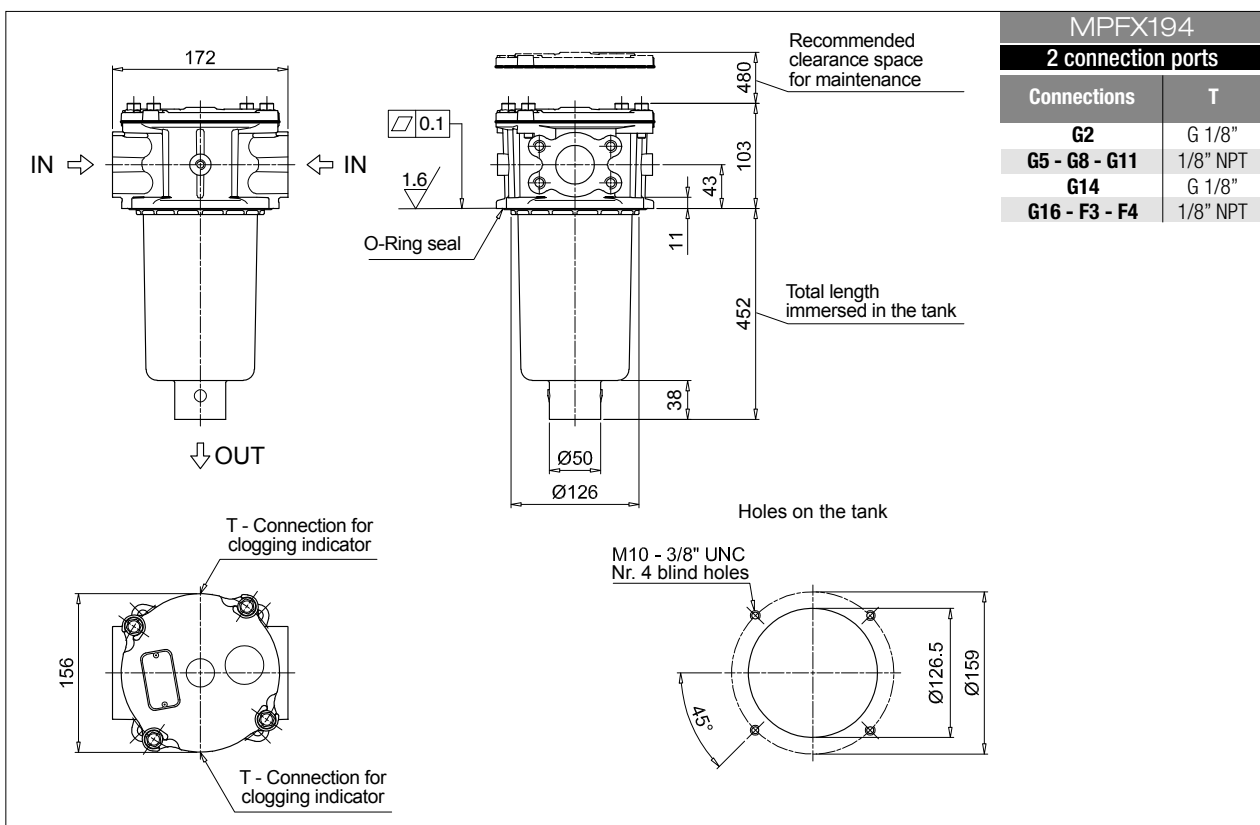
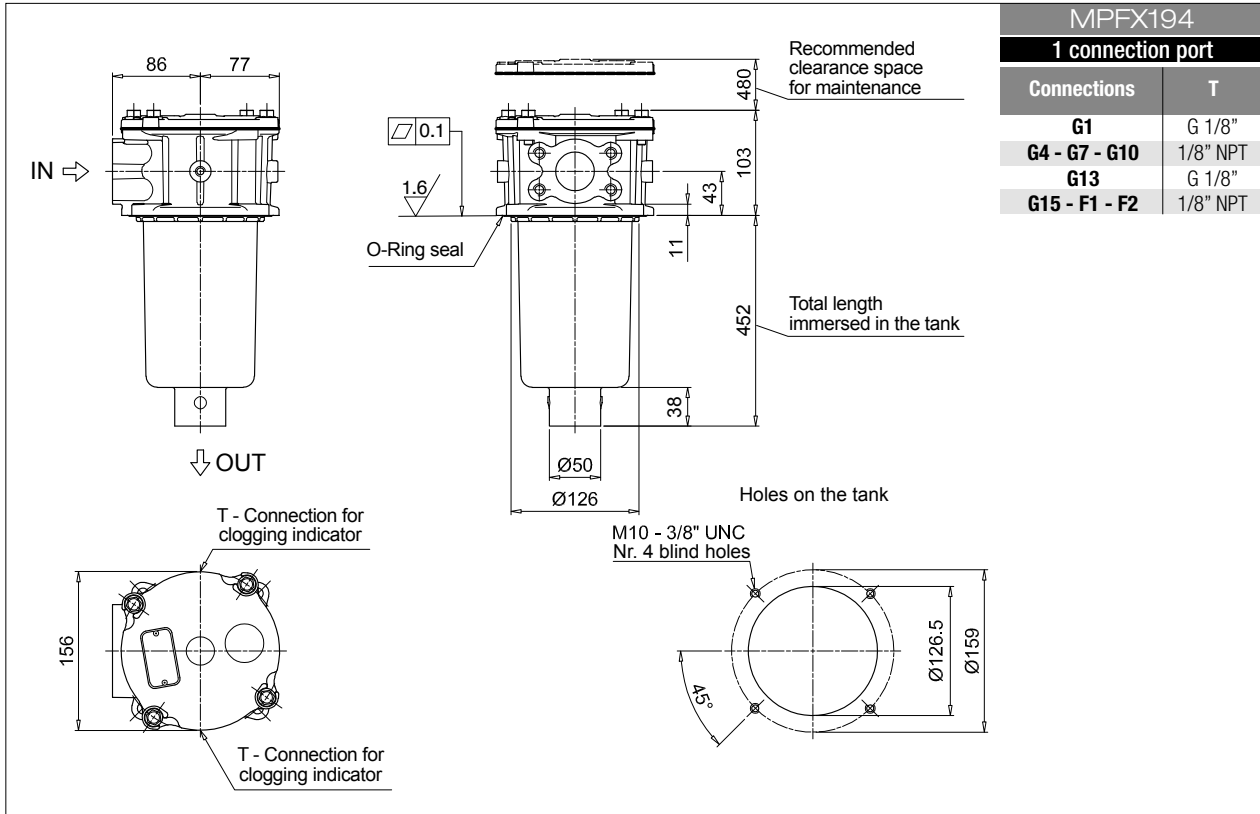
# MPFX184 - MPFX194 MPFX

## Dimensions



# MPFX MPFX184 - MPFX194

## Dimensions



# MPFX

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# MPFX MPFX400

## Designation & Ordering code

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

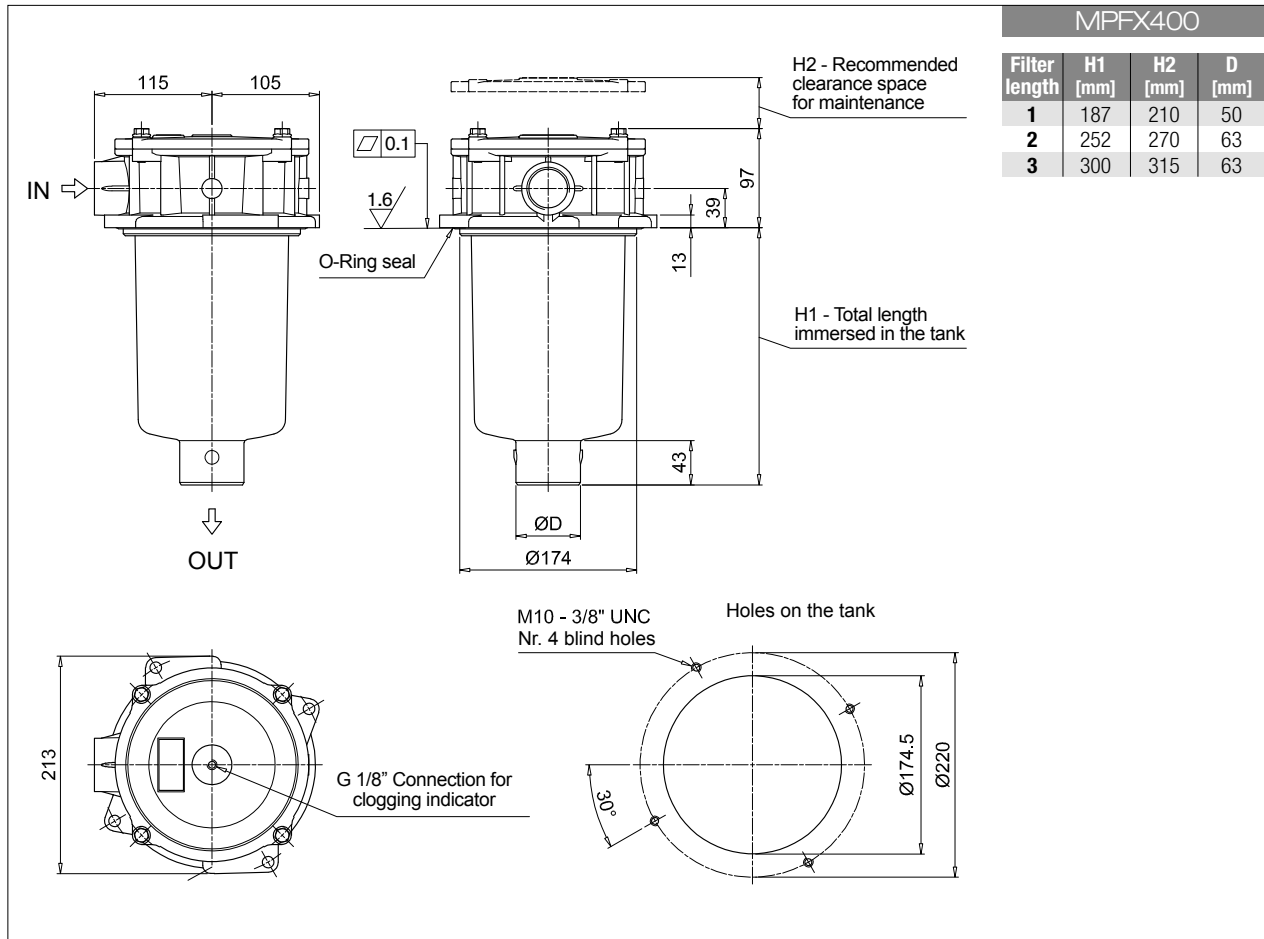
FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MFX400</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b></b>   <b>P01</b>							
<b>MFX400</b> Filter element with private spigot		Configuration example 2: <b>MFX400</b>   <b>2</b>   <b>P10</b>   <b>N</b>   <b>V</b>   <b>E</b>   <b>P01</b>							
<b>Element length</b>									
<b>1</b>   <b>2</b>   <b>3</b>									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm									
<b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm									
<b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm									
<b>A16</b> Inorganic microfiber 16 µm   <b>P10</b> Resin impregnated paper 10 µm									
<b>A25</b> Inorganic microfiber 25 µm   <b>P25</b> Resin impregnated paper 25 µm									
<b>Element Δp</b>		Filter media							
		Axx		Mxx		Pxx			
<b>N</b> 10 bar				•		•			
<b>H</b> 10 bar				•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•		•					
								<b>Seals</b>	
								<b>B</b> NBR	
								<b>V</b> FPM	
								<b>Bypass valve</b>	
								<b>E</b> 3 bar	
								<b>B</b> 1.75 bar	
								<b>Execution</b>	
								<b>P01</b> MP Filtri standard	
								<b>Pxx</b> Customized	

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

Additional features	page
<b>T5</b> Filler plug M30x1.5	249

# MPFX400 MPFX

## Dimensions



# MPFX MPFX410

## Designation & Ordering code

COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPFX410</b>   1   V   G4   1   P10   N   E   P01							
<b>MPFX410</b> Filter element with private spigot		Configuration example 2: <b>MPFX410</b>   1   A   G1   1   A25   H   B   P01							
<b>Length</b>									
1   2   3									
<b>Seals and treatments</b>									
A NBR									
V FPM									
W NBR head anodized									
Z FPM head anodized									
<b>Main Connections</b>		<b>Aux size 1</b>							
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							
<b>Aux connection</b> - see previous table									
1 Aux size 1									
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm							
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm							
<b>Element Δp</b>		<b>Filter media</b>							
N 10 bar		Axx Mxx Pxx							
H 10 bar		• • •							
W 10 bar, compatible with fluids HFA, HFB and HFC		• • •							
		<b>Bypass valve</b>		<b>Execution</b>					
		E 3 bar		P01 MP Filtri standard					
		B 1.75 bar		Pxx Customized					

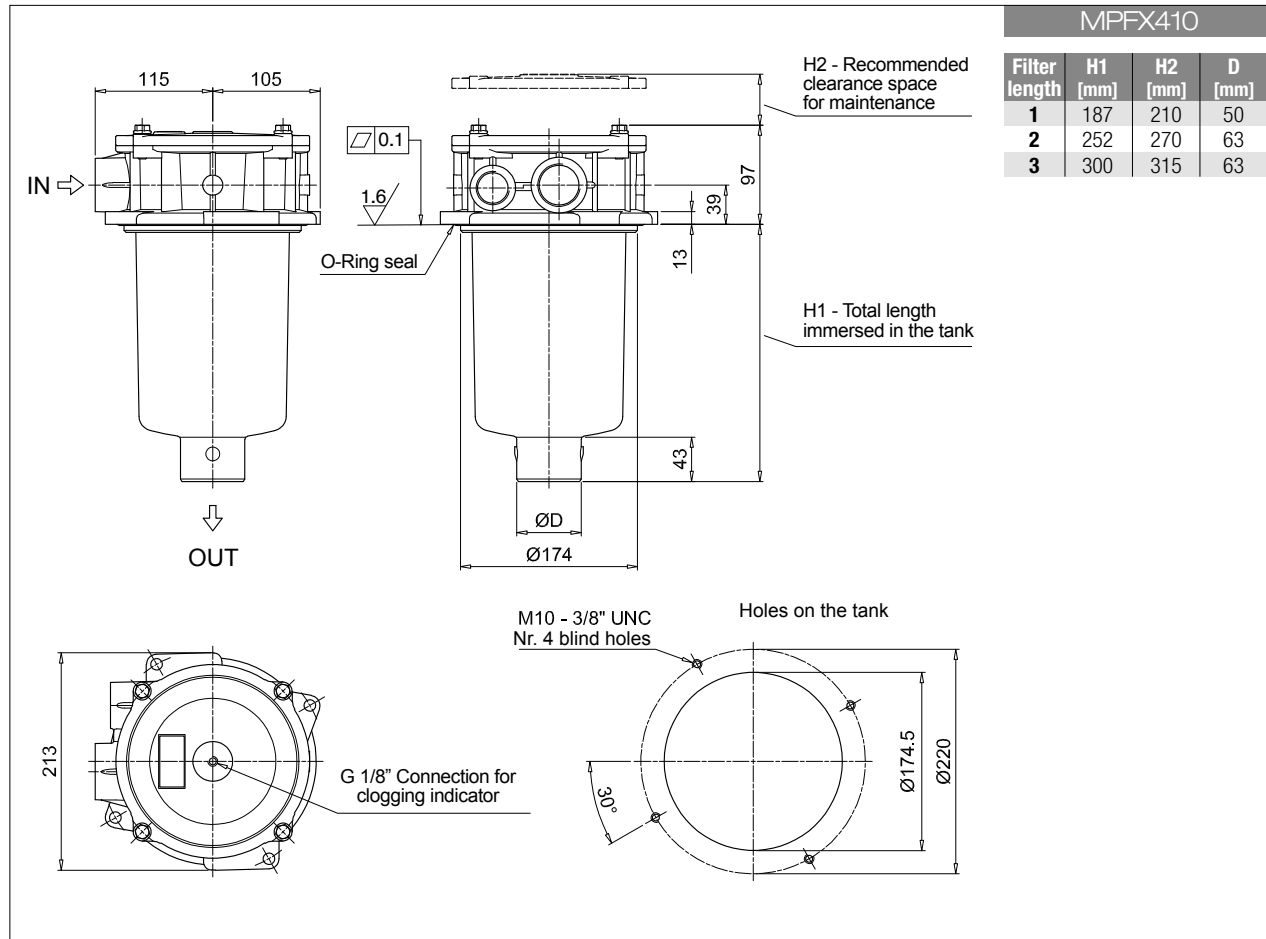
FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MF400</b>   1   P10   N   V   E   P01							
<b>MF400</b> Filter element with private spigot		Configuration example 2: <b>MF400</b>   1   A25   H   B   P01							
<b>Element length</b>									
1   2   3									
<b>Filtration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

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

Additional features	page
<b>T5</b> Filler plug M30x1.5	249

# MPFX410 MPFX

## Dimensions





# MPFX MPFX450 - MPFX451 - MPFX750

## Designation & Ordering code

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

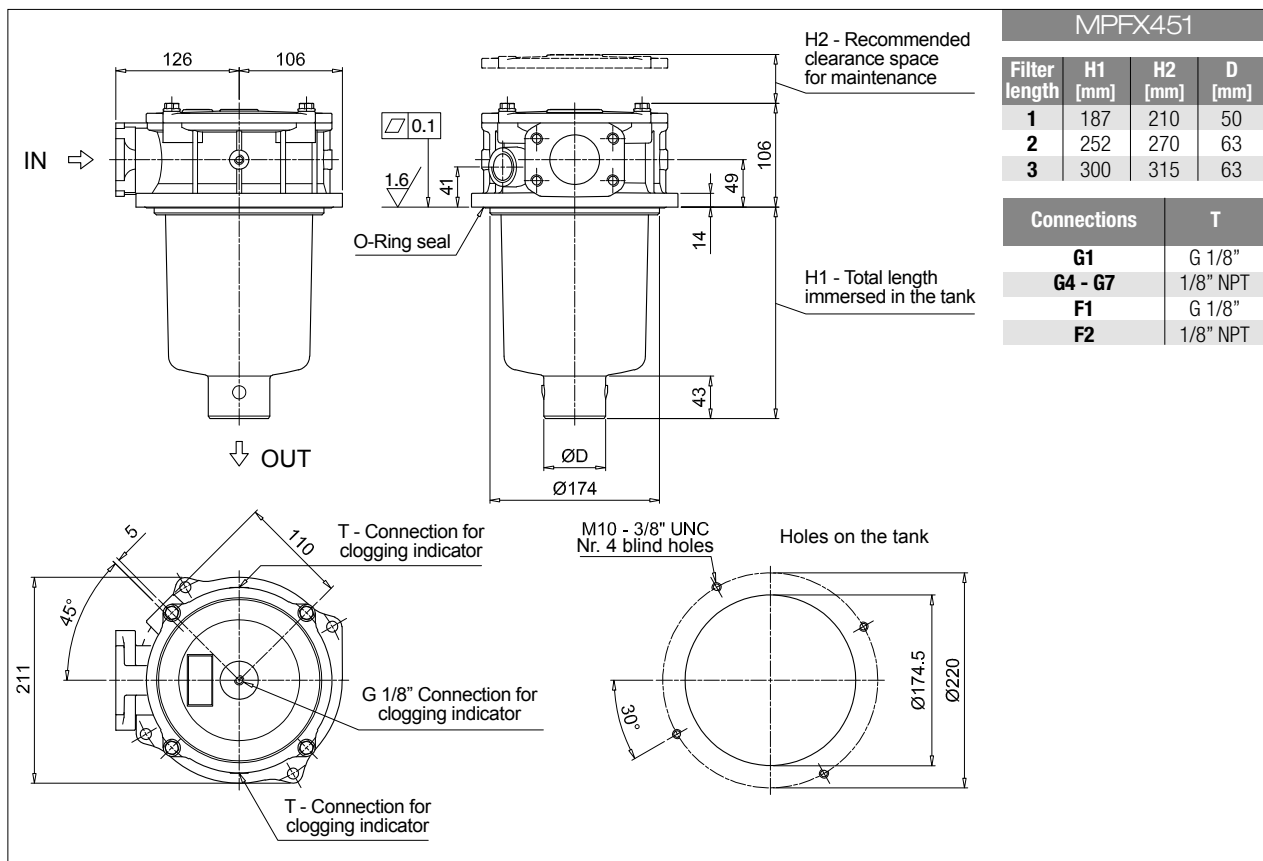
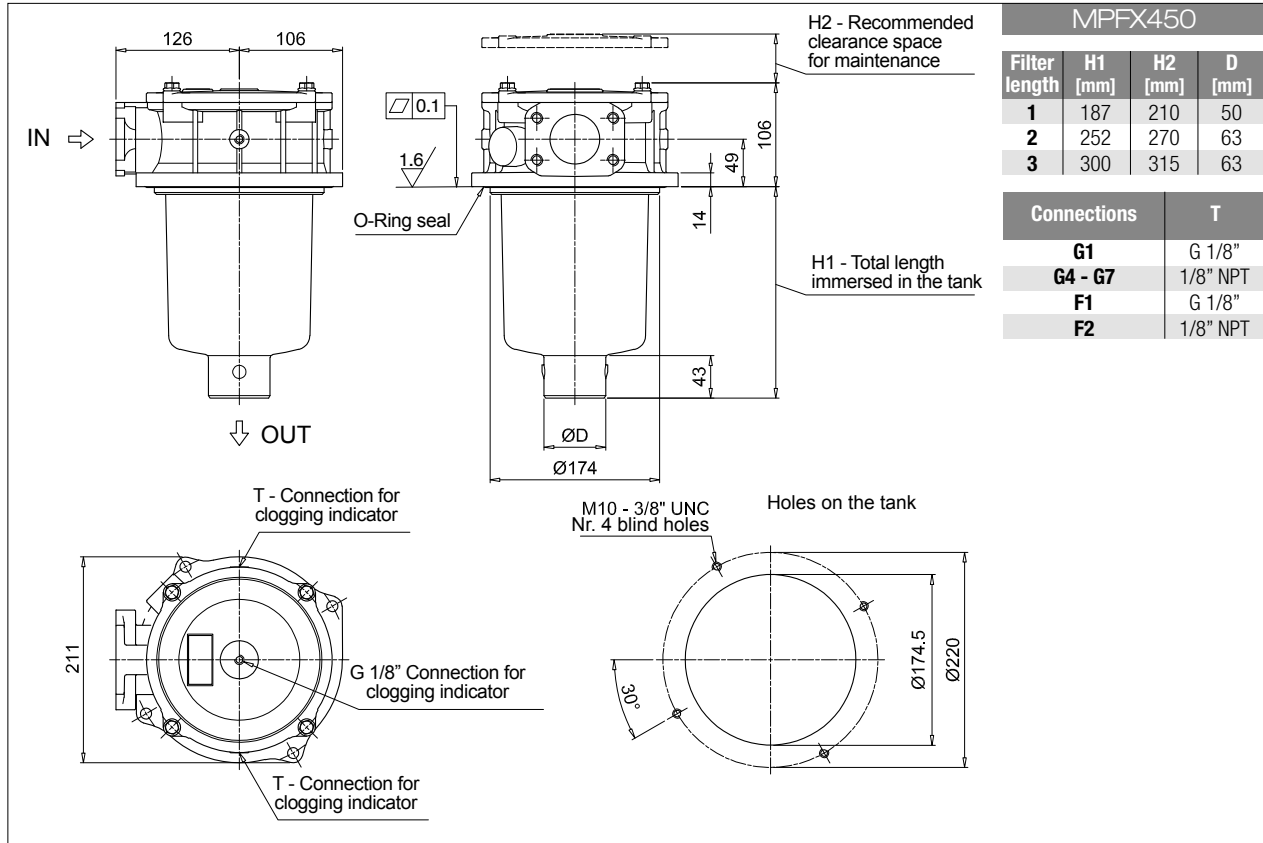
FILTER ELEMENT									
<b>Element series and size</b> MFX400   MFX750 Filter element with private spigot			Configuration example 1: MFX400 1 A25 H B P01						
			Configuration example 2: MFX750 1 P10 N V E P01						
<b>Element length</b>	MPFX 450	MPFX 451	MPFX 750						
1	•	•	•						
2	•	•							
3	•	•							
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm								
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm								
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm								
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm								
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm								
<b>Element Δp</b>			Filter media						
N 10 bar	Axx	Mxx	Pxx						
H 10 bar		•	•						
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•							
			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>		
			B NBR		E 3 bar		P01 MP Filtri standard		
			V FPM		1.75 bar		Pxx Customized		

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

Additional features	page
T5 Filler plug M30x1.5	249

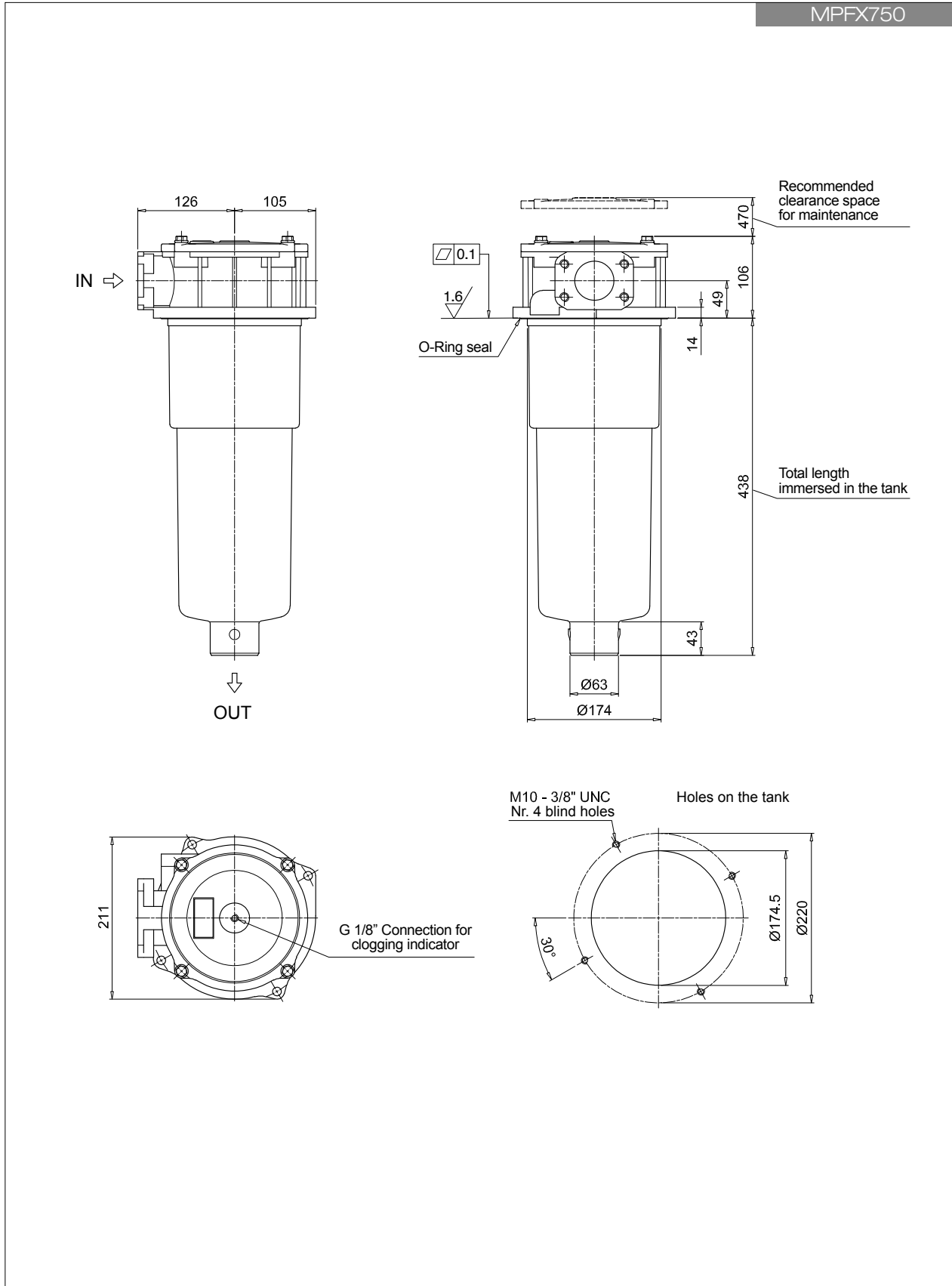
# MPFX450 - MPFX451 - MPFX750 MPFX

## Dimensions



# MPFX MPFX450 - MPFX451 - MPFX750

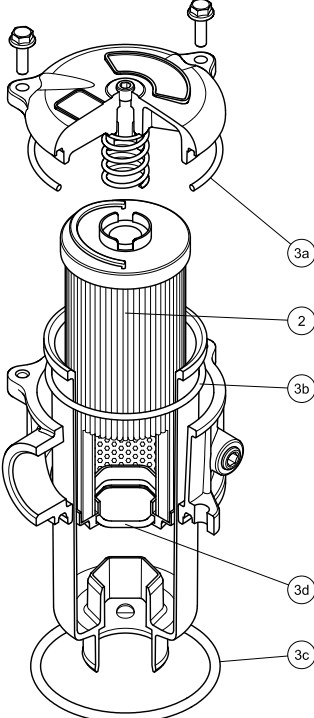
## Dimensions



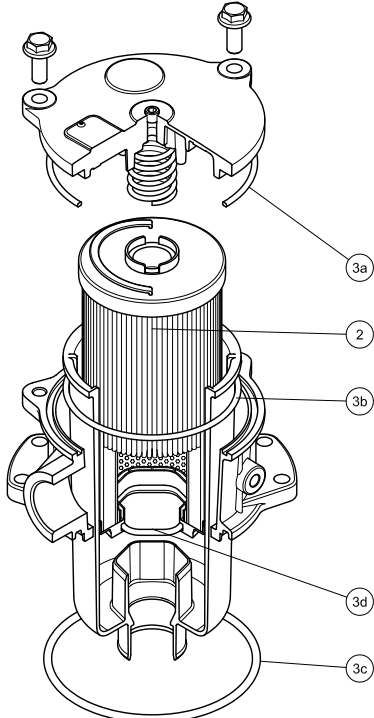
# SPARE PARTS MPFX

Order number for spare parts

**MPFX 100**

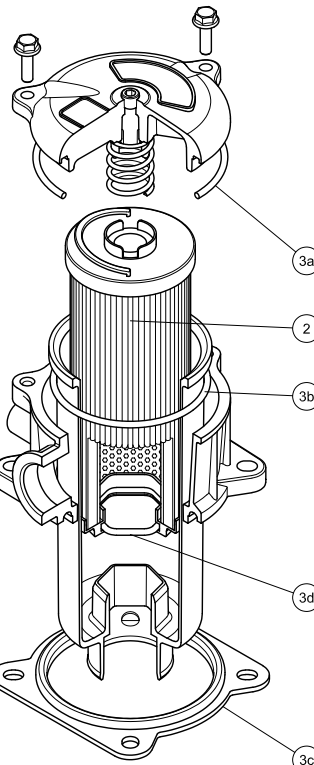


**MPFX 181**

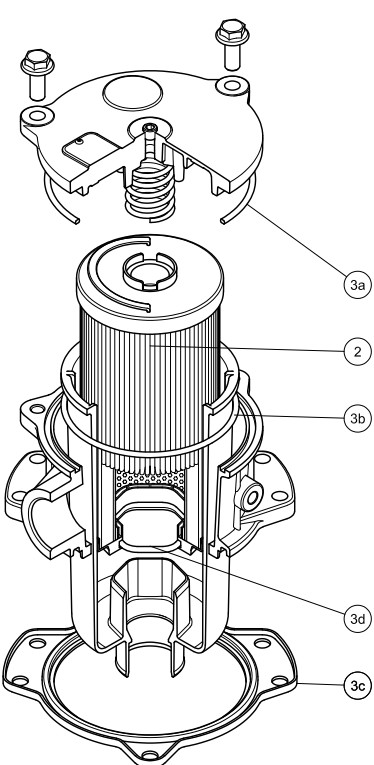


O-RING SEAL			
	Q.ty: 1 pc.	Q.ty: 1 pc.	
Item:	2	3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPFX 030</b>	See order table	02050675	02050676
<b>MPFX 100-110</b>		02050677	02050678
<b>MPFX 181-182</b>		02050681	02050682
<b>MPFX 184</b>		02050685	02050686
<b>MPFX 191-192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

**MPFX 104**



**MPFX 181**



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





Return filters

# MPLX series

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



# MPLX GENERAL INFORMATION

## Description

### 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

### Common applications:

- Heavy duty industrial equipment
- Heavy duty mobile equipment

## Technical data

### Filter housing materials

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

### Bypass valve

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

### $\Delta p$ element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPLX filters are provided for vertical mounting



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

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



# GENERAL INFORMATION MPLX

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

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

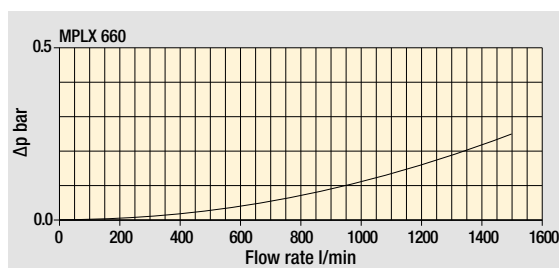
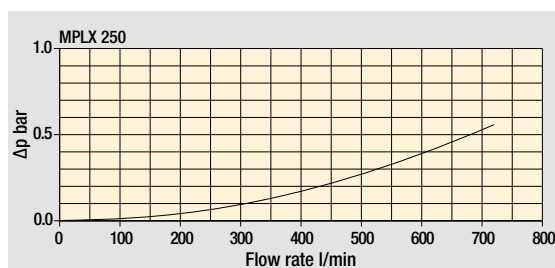
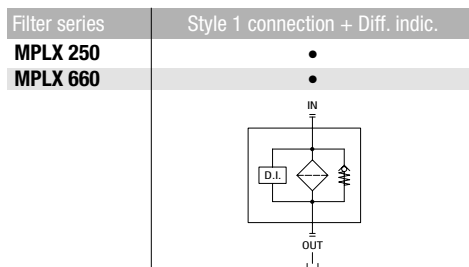
### Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

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

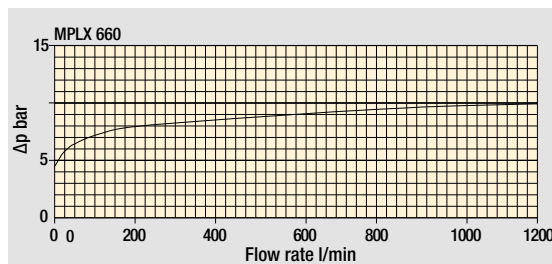
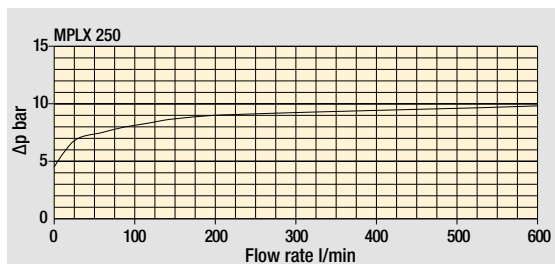
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

## Hydraulic symbols



Pressure drop  
Filter housings  
 $\Delta p$  pressure drop



Bypass valve  
pressure drop

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

# MPLX MPLX250 - MPLX660

## Designation & Ordering code

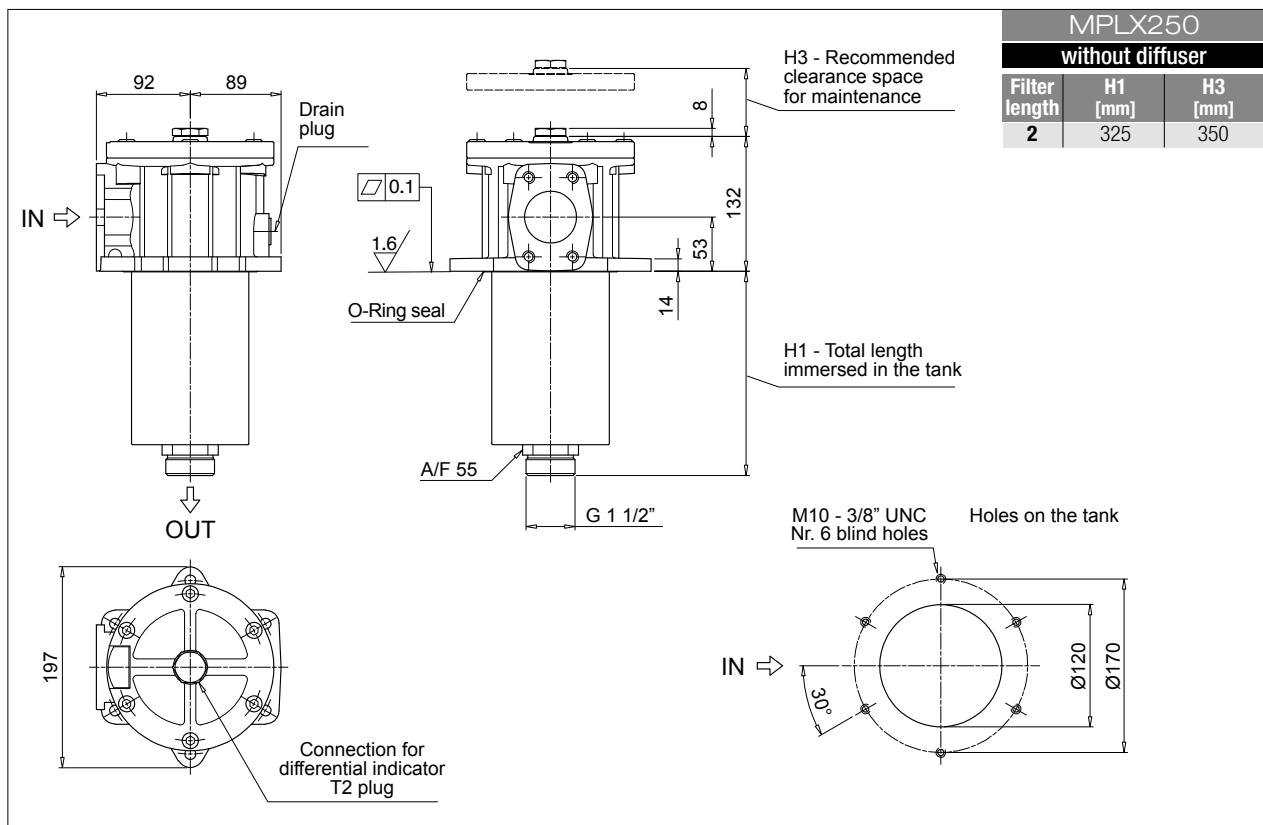
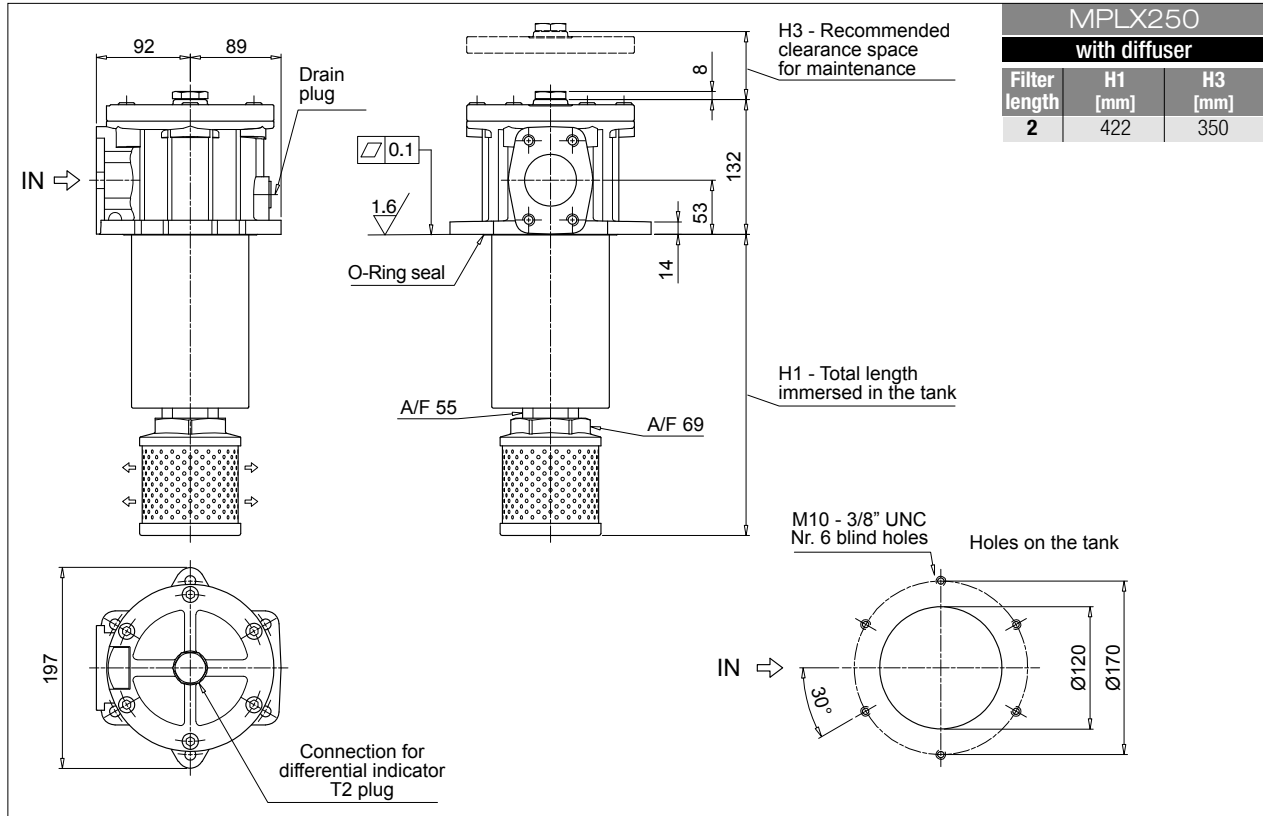
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ACCESSORIES			
<b>Indicators</b>			
<b>DEA</b>	Electrical differential indicator	242	<b>DTA</b> Electronic differential indicator 245
<b>DEM</b>	Electrical differential indicator	242-243	<b>DVA</b> Visual differential indicator 245
<b>DLA</b>	Electrical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

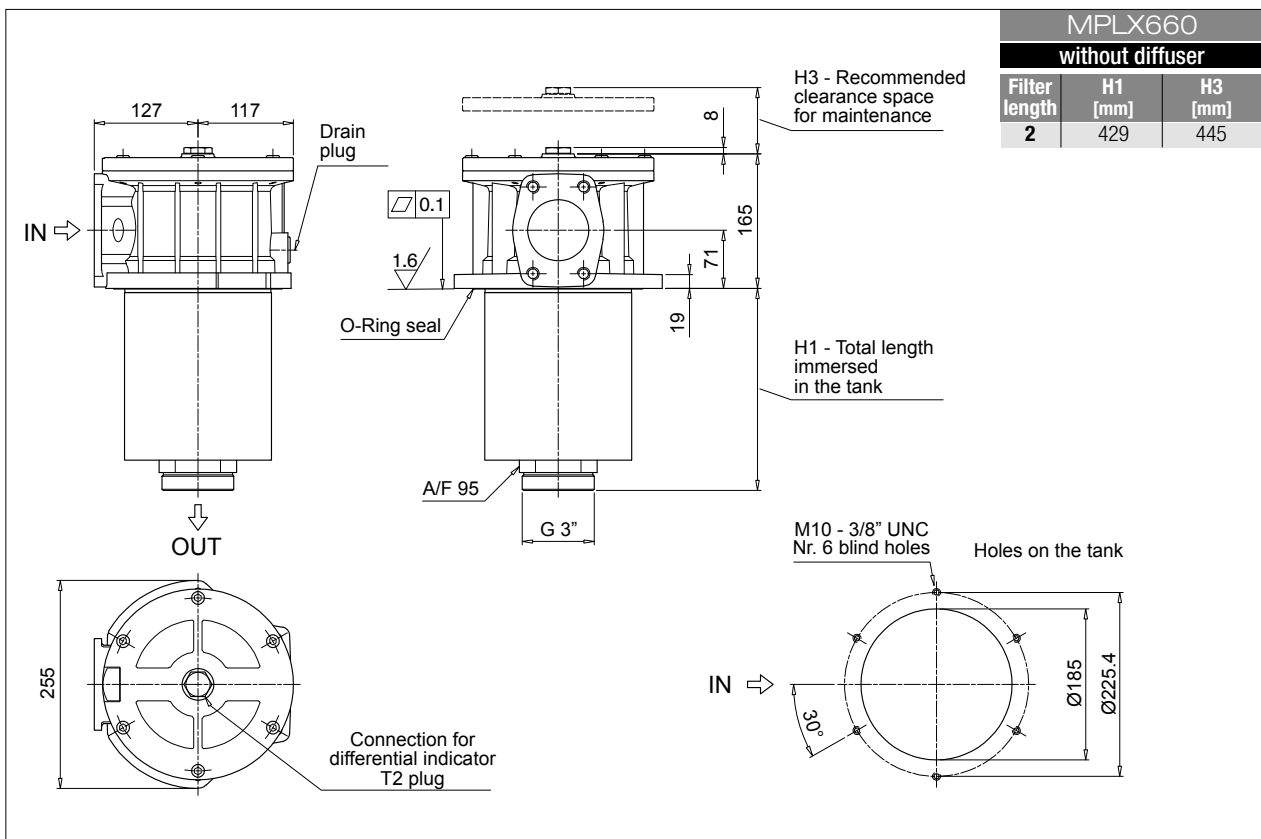
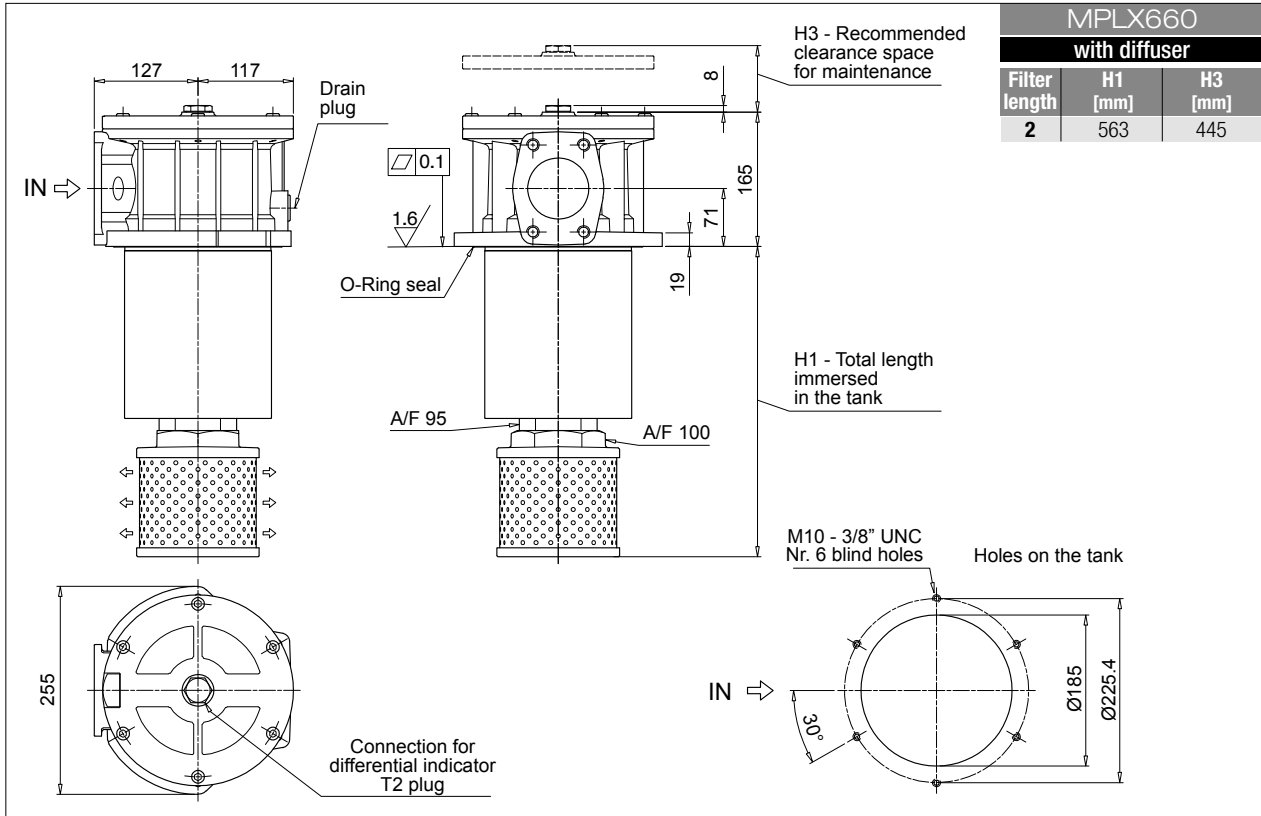
# MPLX250 MPLX

## Dimensions



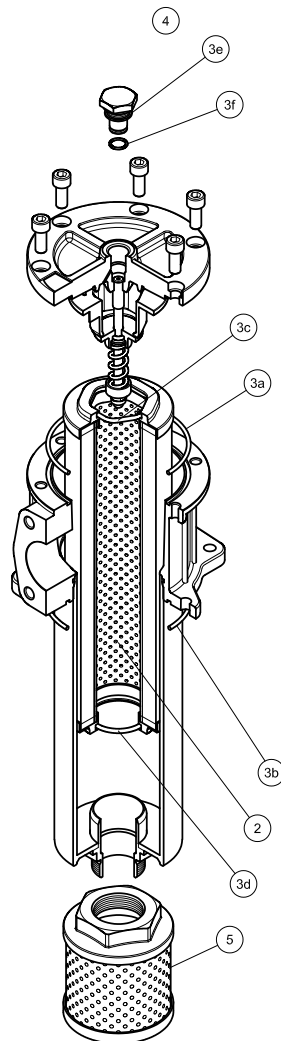
# MPLX MPLX660

## Dimensions



# SPARE PARTS MPLX

Order number for spare parts



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





Return filters

# MPTX series

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



# MPTX GENERAL INFORMATION

## Description

## Technical data

### Return filter

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

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

#### Available features:

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

#### Common applications:

- Light industrial equipment
- Mobile application

### Filter housing materials

- Head: Aluminium
- Cover: Nylon
- Bowl: Nylon

### Bypass valve

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

### $\Delta p$ element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPTX filters are provided for vertical mounting



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

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



# GENERAL INFORMATION MPTX

## FILTER ASSEMBLY SIZING 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
<b>MPTX 025-027</b>	<b>1</b>	7	10	23	28	42	59	51	54
	<b>2</b>	17	20	45	48	56	72	64	67
	<b>3</b>	21	24	50	55	59	76	74	75
<b>MPTX 110-120 114-116</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289

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

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

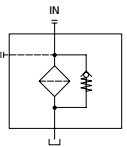
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

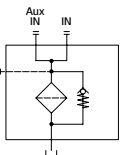
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

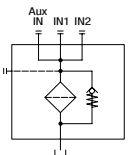
## Hydraulic symbols

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



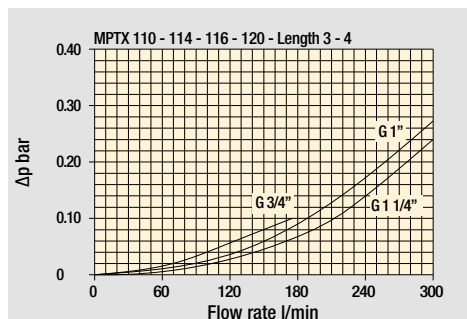
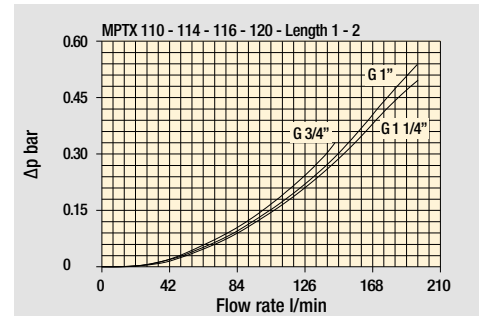
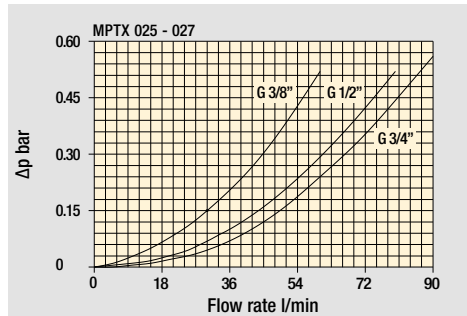




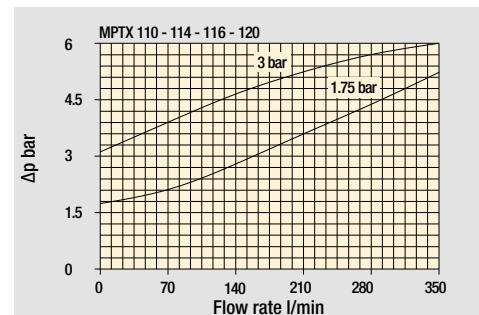
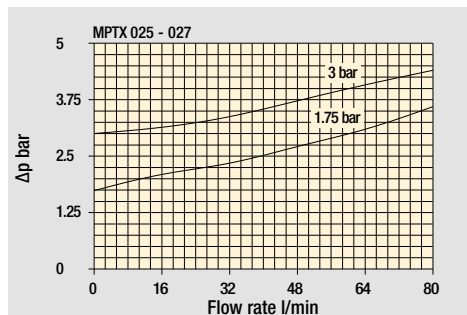
# MPTX GENERAL INFORMATION

## Pressure drop

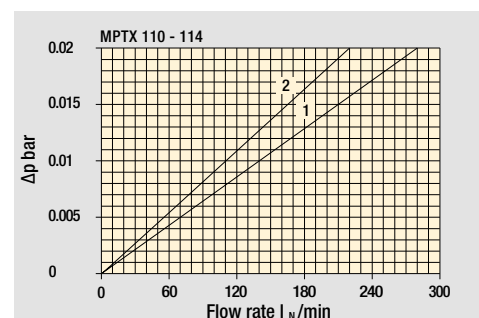
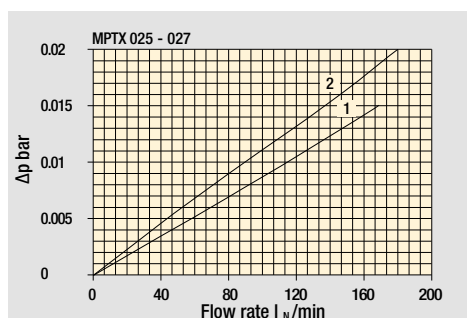
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Air breather pressure drop



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





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


# GENERAL INFORMATION MPTX

Multifunction

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

Multiport - Multifunction

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

MPTX 120
Triple IN port Option: double drain port


# MPTX MPTX025 - MPTX027

## Designation & Ordering code

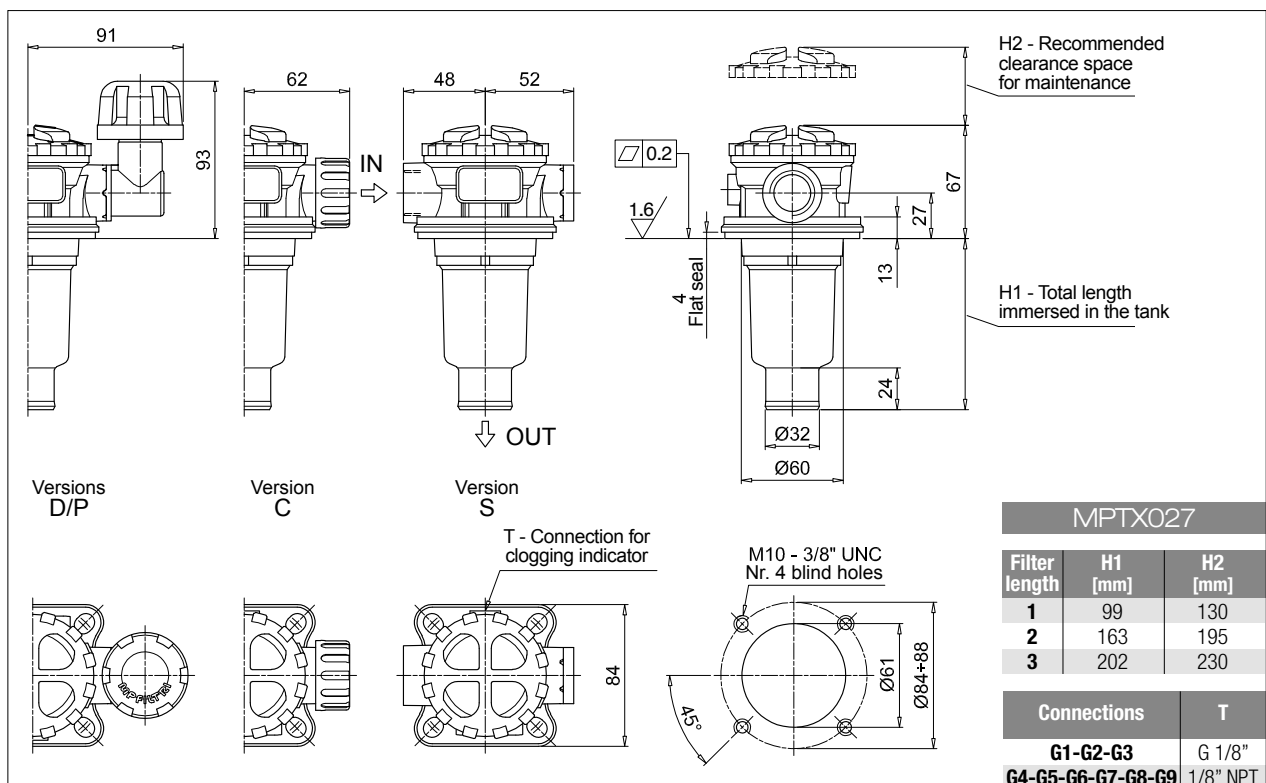
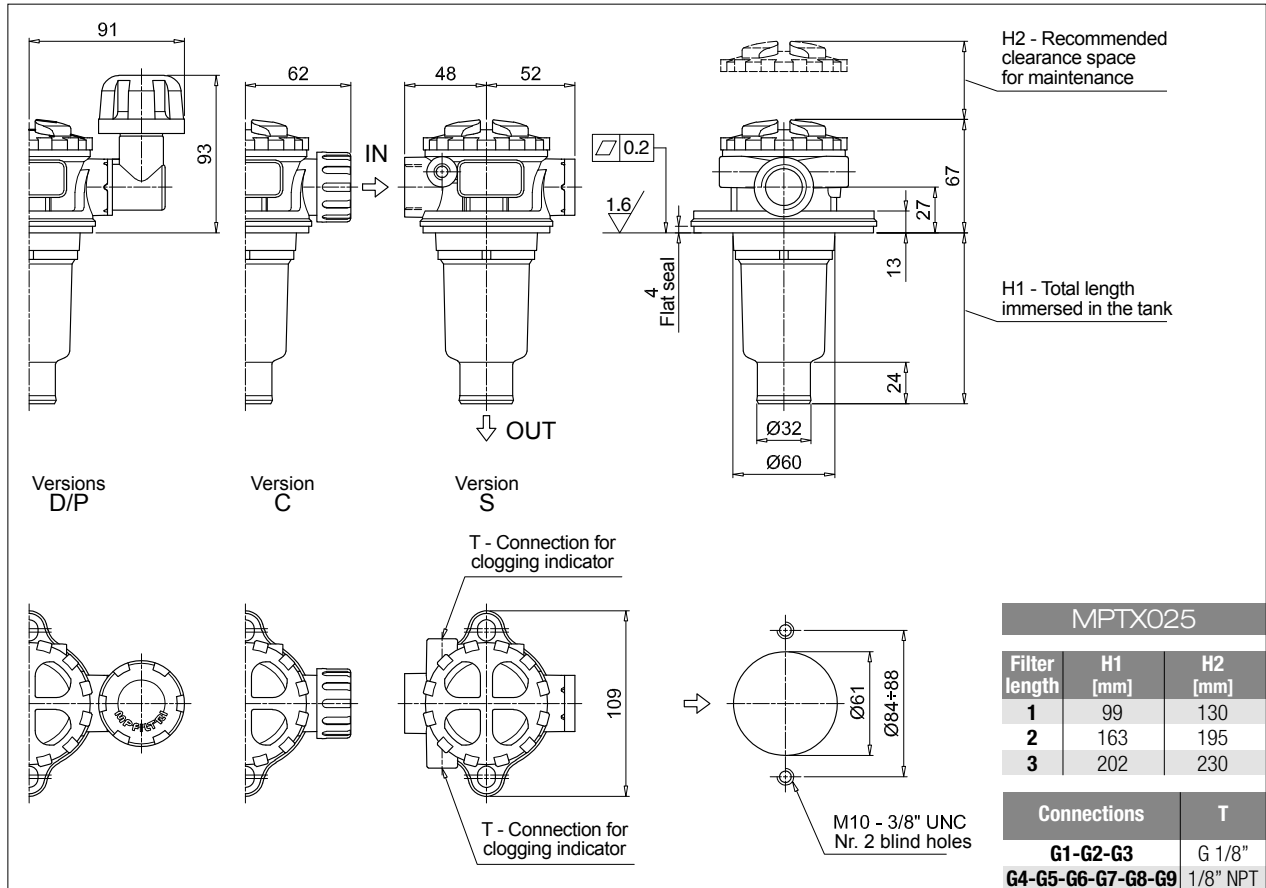
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<b>MPTX025</b>   <b>MPTX027</b> Filter element with private spigot		Configuration example 2: <b>MPTX027</b>   <b>3</b>   <b>C</b>   <b>W</b>   <b>G6</b>   <b>A03</b>   <b>B</b>   <b>P01</b>																											
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		B 1.75 bar		Pxx Customized																									

FILTER ELEMENT																									
<b>Element series and size</b>		Configuration example 2: <b>MFx020</b>   <b>1</b>   <b>A10</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>																							
<b>MFx020</b> Filter element with private spigot		Configuration example 1: <b>MFx020</b>   <b>3</b>   <b>A03</b>   <b>W</b>   <b>B</b>   <b></b>   <b>P01</b>																							
<b>Element length</b>		1   2   3																							
<b>Filtration rating (filter media)</b>		<table border="1"> <tbody> <tr> <td>A03 Inorganic microfiber 3 µm</td> <td>M25 Wire mesh 25 µm</td> </tr> <tr> <td>A06 Inorganic microfiber 6 µm</td> <td>M60 Wire mesh 60 µm</td> </tr> <tr> <td>A10 Inorganic microfiber 10 µm</td> <td>M90 Wire mesh 90 µm</td> </tr> <tr> <td>A16 Inorganic microfiber 16 µm</td> <td>P10 Resin impregnated paper 10 µm</td> </tr> <tr> <td>A25 Inorganic microfiber 25 µm</td> <td>P25 Resin impregnated paper 25 µm</td> </tr> </tbody> </table>								A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm	A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm	A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm	A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm	A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm						
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm																								
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm																								
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm																								
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm																								
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm																								
<b>Element Δp</b>		<table border="1"> <thead> <tr> <th></th> <th>Axx</th> <th>Mxx</th> <th>Pxx</th> </tr> </thead> <tbody> <tr> <td>N 10 bar</td> <td></td> <td>•</td> <td>•</td> </tr> <tr> <td>H 10 bar</td> <td></td> <td>•</td> <td></td> </tr> <tr> <td>W 10 bar, compatible with fluids HFA, HFB and HFC</td> <td>•</td> <td>•</td> <td></td> </tr> </tbody> </table>									Axx	Mxx	Pxx	N 10 bar		•	•	H 10 bar		•		W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	
	Axx	Mxx	Pxx																						
N 10 bar		•	•																						
H 10 bar		•																							
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•																							
		<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>																			
		B NBR		E 3 bar		P01 MP Filtri standard																			
		V FPM		1.75 bar		Pxx Customized																			

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

# MPTX025 - MPTX027 MPTX

## Dimensions



# MPTX MPTX110

## Designation & Ordering code

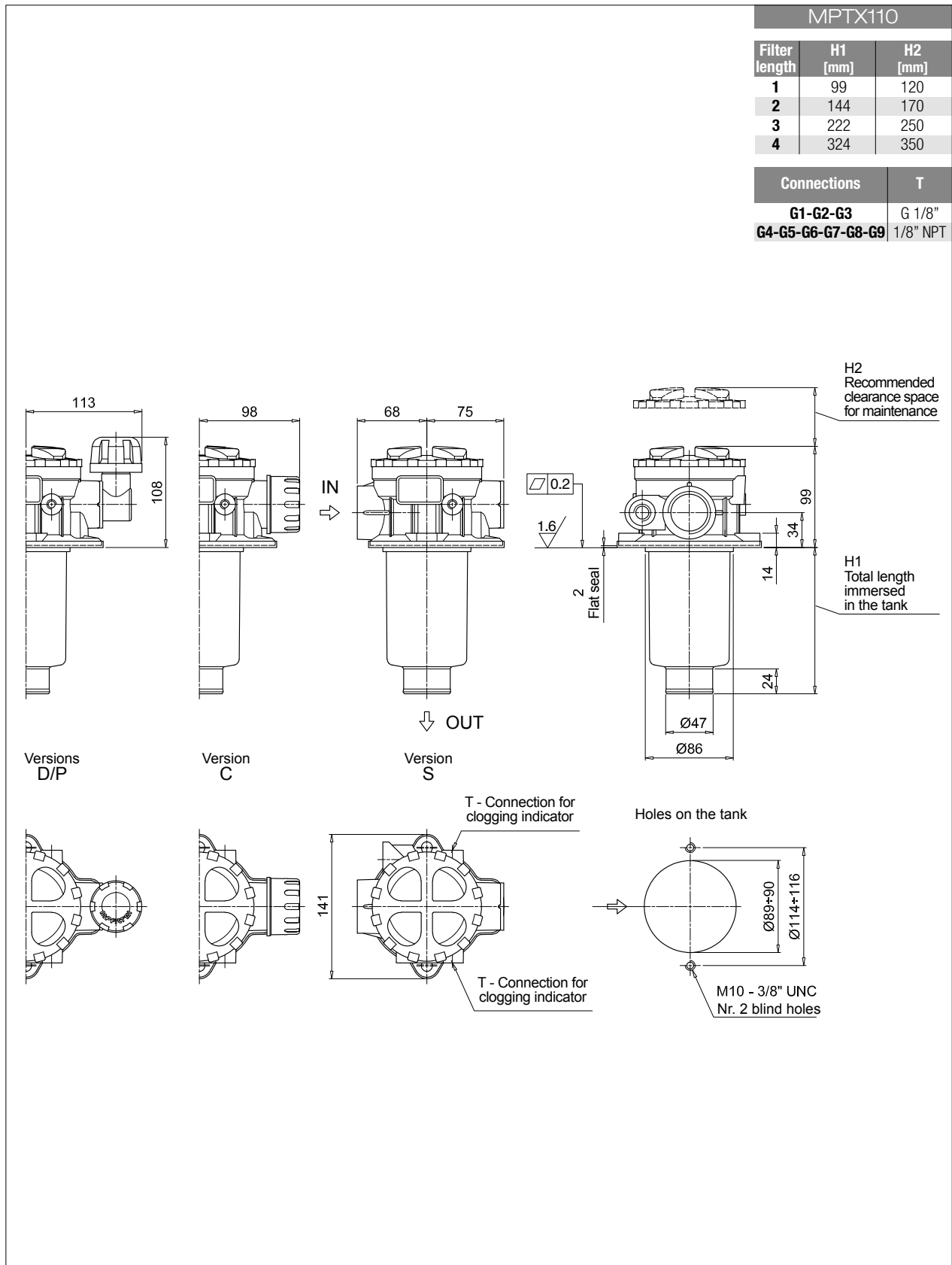
COMPLETE FILTER										
<b>Series and size</b>			Configuration example 1: <b>MPTX110</b>   <b>1</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>0</b>   <b>A06</b>   <b>E</b>   <b>P01</b>							
<b>MPTX110</b> Filter element with private spigot			Configuration example 2: <b>MPTX110</b>   <b>3</b>   <b>P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

FILTER ELEMENT										
<b>Element series and size</b>			Configuration example 1: <b>MFX100</b>   <b>1</b>   <b>A06</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>							
<b>MFX100</b> Filter element with private spigot			Configuration example 2: <b>MFX100</b>   <b>3</b>   <b>M25</b>   <b>N</b>   <b>V</b>   <b></b>   <b>P01</b>							
<b>Element length</b>										
1   2   3   4										
<b>Filtration rating (filter media)</b>										
A03 Inorganic microfiber 3 µm			M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm			M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm			M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm			P10 Resin impregnated paper 10 µm							
A25 Inorganic microfiber 25 µm			P25 Resin impregnated paper 25 µm							
<b>Element Δp</b>			Filter media							
			Axx Mxx Pxx							
N 10 bar			• •							
H 10 bar			•							
W 10 bar, compatible with fluids HFA, HFB and HFC			• •							
			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>			
			B NBR		E 3 bar		P01 MP Filtri standard			
			V FPM		1.75 bar		Pxx Customized			

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

# MPTX110 MPTX

## Dimensions



# MPTX MPTX114

## Designation & Ordering code

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

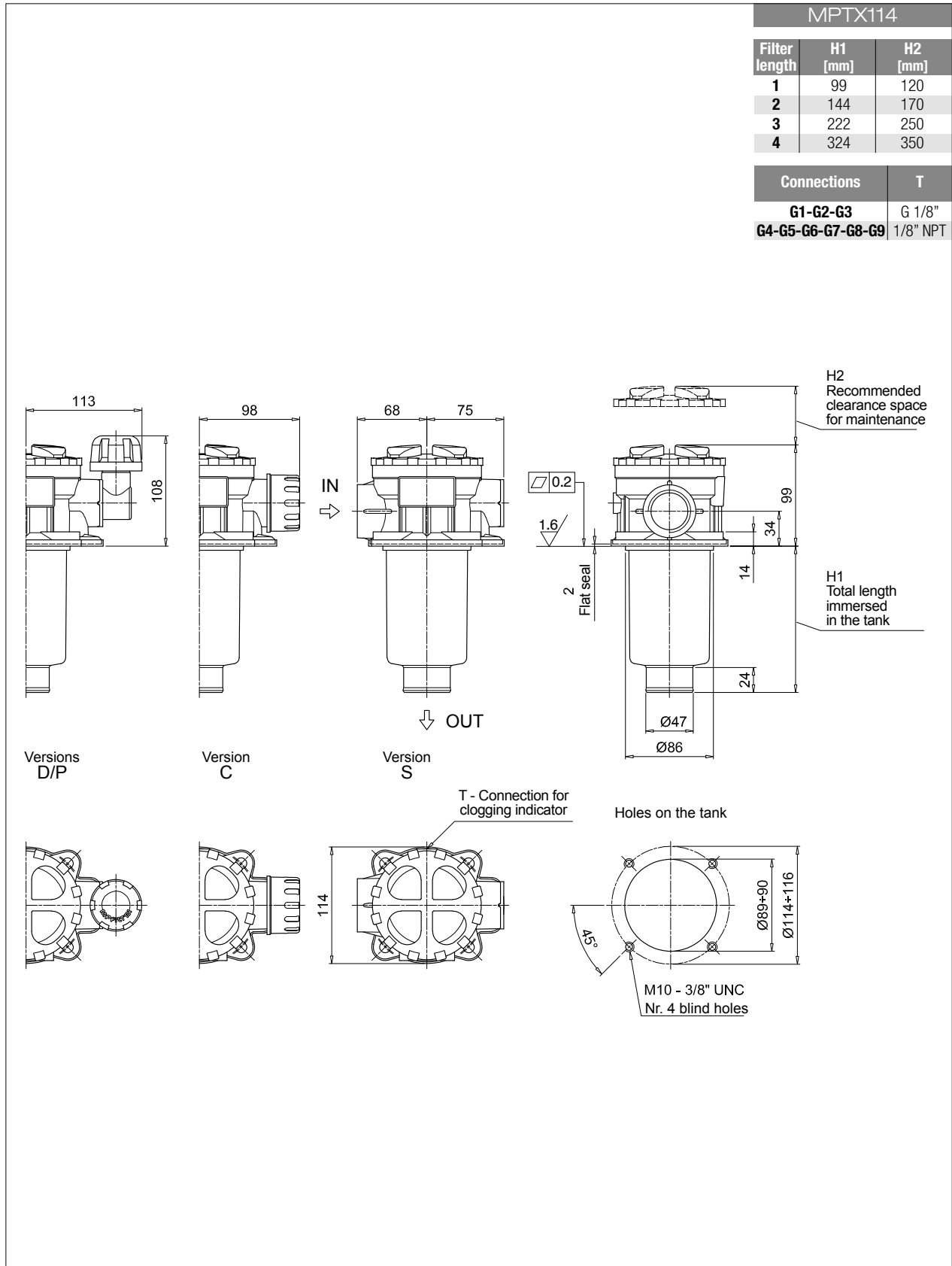
FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 2: <b>MFX100</b> <b>4</b> <b>A10</b> <b>H</b> <b>B</b> <b>E</b> <b>P01</b>							
<b>MFX100</b> Filter element with private spigot		Configuration example 1: <b>MFX100</b> <b>3</b> <b>A03</b> <b>W</b> <b>B</b> <b>P01</b>							
<b>Element length</b>									
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		<b>Filter media</b>							
<b>N</b> 10 bar		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>					
<b>H</b> 10 bar		•	•	•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•	•						
				<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>	
				<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
				<b>V</b> FPM		<b>1.75 bar</b>		<b>Pxx</b> Customized	

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



# MPTX114 MPTX

## Dimensions



# MPTX MPTX116

## Designation & Ordering code

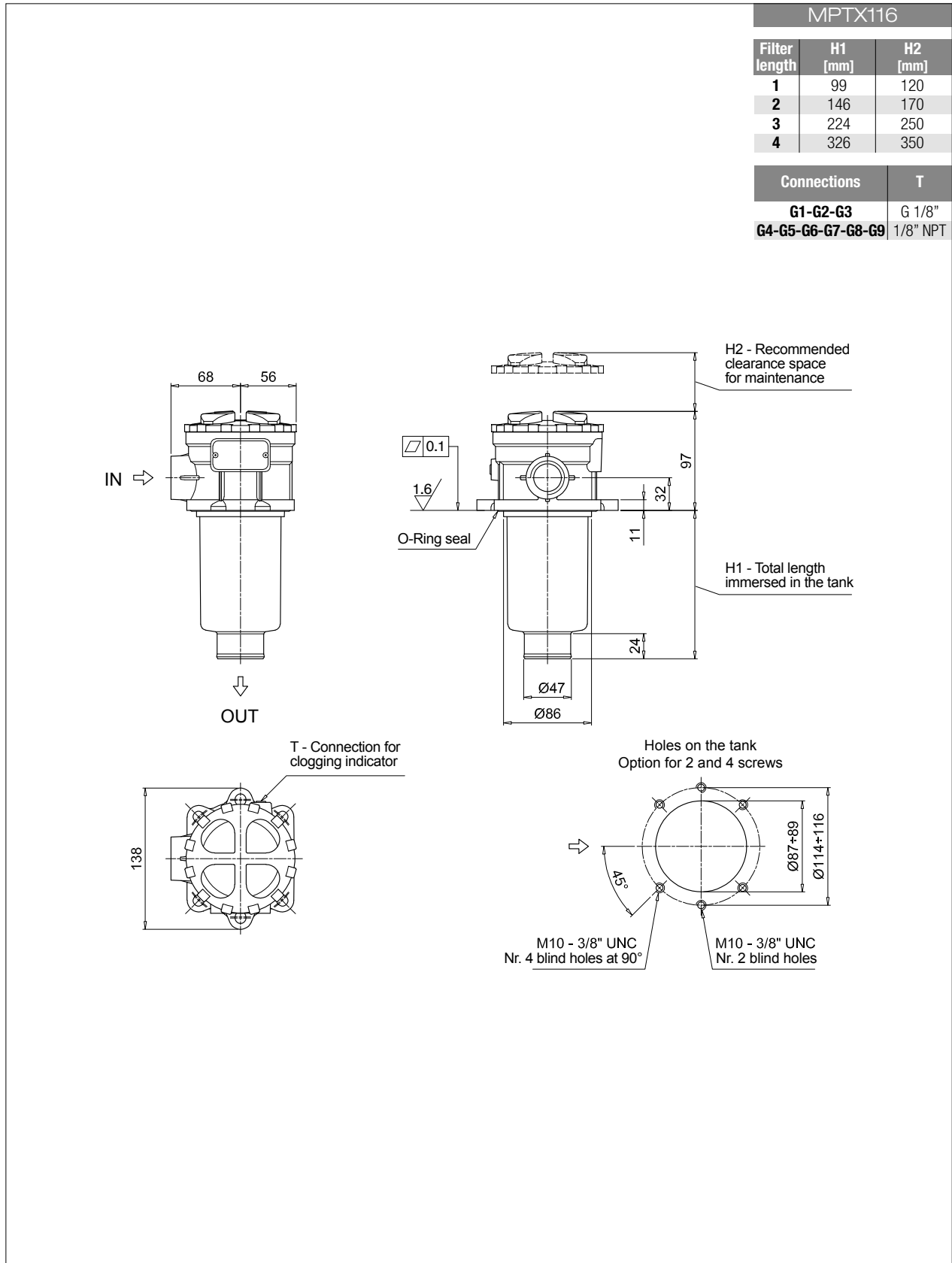
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPTX116</b>   <b>1</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>M90</b>   <b>E</b>   <b>P01</b>							
<b>MPTX116</b> Filter element with private spigot		Configuration example 2: <b>MPTX116</b>   <b>2</b>   <b>S</b>   <b>Z</b>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

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 2: <b>MFx100</b>   <b>1</b>   <b>M90</b>   <b>N</b>   <b>B</b>   <b>E</b>   <b>P01</b>							
<b>MFx100</b> Filter element with private spigot		Configuration example 1: <b>MFx100</b>   <b>2</b>   <b>A03</b>   <b>W</b>   <b>V</b>   <b>P01</b>							
<b>Element length</b>									
1   2   3   4									
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm		P10 Resin impregnated paper 10 µm							
A25 Inorganic microfiber 25 µm		P25 Resin impregnated paper 25 µm							
<b>Element Δp</b>		<b>Filter media</b>							
		Axx	Mxx	Pxx					
N 10 bar			•	•					
H 10 bar			•						
W 10 bar, compatible with fluids HFA, HFB and HFC		•	•						
		<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>			
		B NBR		E 3 bar		P01 MP Filtri standard			
		V FPM		1.75 bar		Pxx Customized			

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

# MPTX116 MPTX

## Dimensions



# MPTX MPTX120

## Designation & Ordering code

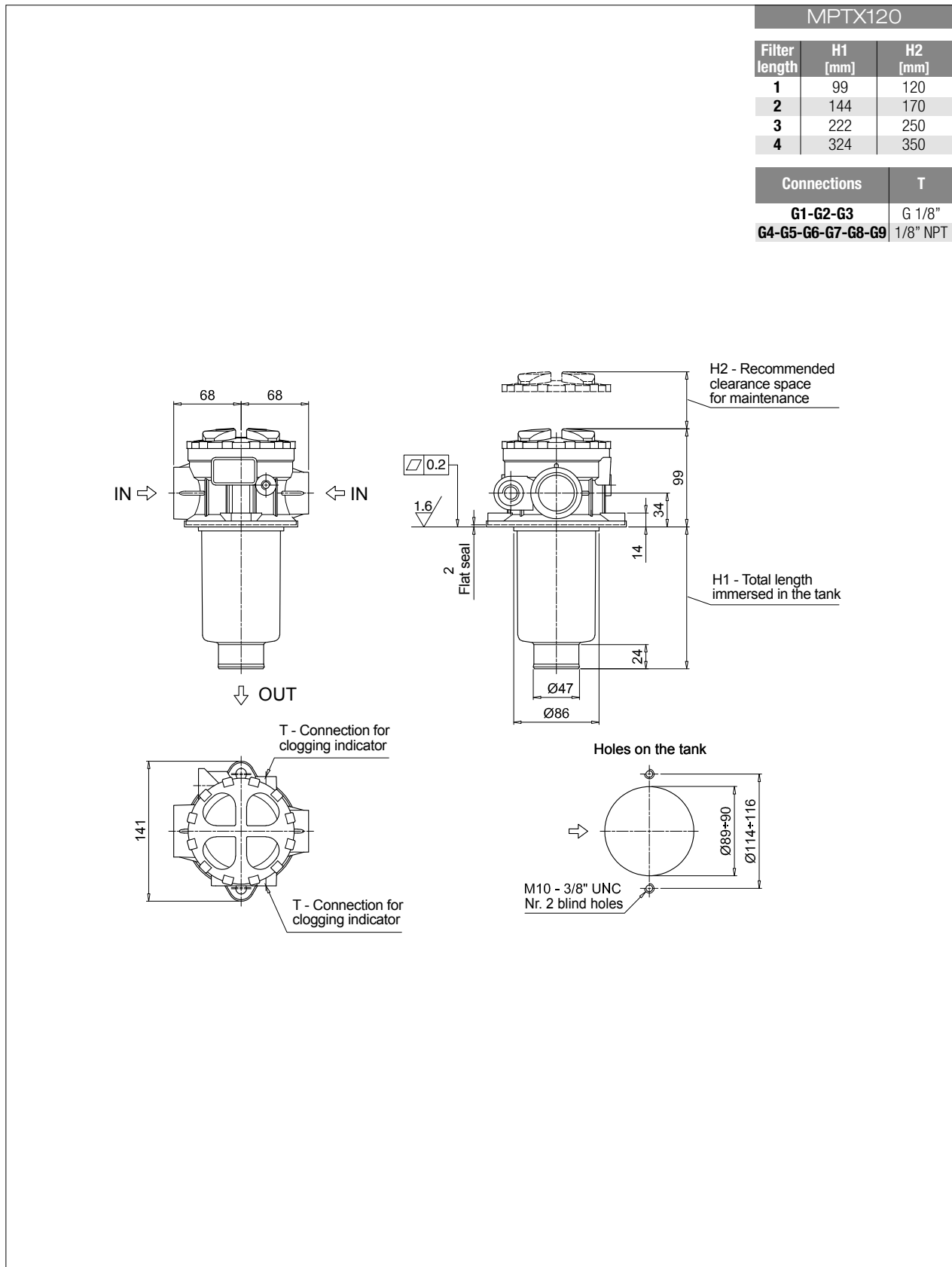
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPTX120</b>   <b>1</b>   <b>A</b>   <b>G1</b>   <b>0</b>   <b>A06</b>   <b>E</b>   <b>P01</b>							
<b>MPTX120</b> Filter element with private spigot		Configuration example 2: <b>MPTX120</b>   <b>3</b>   <b>V</b>   <b>G4</b>   <b>1</b>   <b>M25</b>   <b>B</b>   <b>P01</b>							
<b>Length</b>									
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
<b>Seals and treatments</b>		Filtration rating							
		Axx   Mxx   Pxx							
<b>A</b> NBR		• • •							
<b>V</b> FPM		• • •							
<b>W</b> NBR head anodized		filter element compatible with fluids HFA-HFB-HFC							
<b>Z</b> FPM head anodized		• •							
<b>Main Connections</b>		<b>Rear connections</b>		<b>Aux size 1</b>		<b>Aux size 2</b>			
<b>G1</b> G 3/4"		<b>G 3/4"</b>							
<b>G2</b> G 1"		<b>G 1"</b>		<b>G 3/8"</b>		<b>G 1/2"</b>			
<b>G3</b> G 1 1/4"		<b>G 3/4"</b>							
<b>G4</b> 3/4" NPT		<b>3/4" NPT</b>							
<b>G5</b> 1" NPT		<b>1" NPT</b>		<b>3/8" NPT</b>		<b>1/2" NPT</b>			
<b>G6</b> 1 1/4" NPT		<b>3/4" NPT</b>							
<b>G7</b> SAE 12 - 1 1/16" - 12 UN		<b>SAE 12 - 1 1/16" - 12 UN</b>							
<b>G8</b> SAE 16 - 1 5/16" - 12 UN		<b>SAE 16 - 1 5/16" - 12 UN</b>		<b>SAE 6 - 9/16" - 18 UNF</b>		<b>SAE 8 - 3/4" - 16 UNF</b>			
<b>G9</b> SAE 20 - 1 5/8" - 12 UN		<b>SAE 12 - 1 1/16" - 12 UN</b>							
<b>Aux connection</b> - see previous table									
<b>0</b> Not machined		<b>1</b> Aux size 1		<b>2</b> Aux size 2					
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
						<b>Bypass valve</b>		<b>Execution</b>	
						<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
						<b>B</b> 1.75 bar		<b>Pxx</b> Customized	

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>MFX100</b>   <b>1</b>   <b>A06</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>							
<b>MFX100</b> Filter element with private spigot		Configuration example 2: <b>MFX100</b>   <b>3</b>   <b>M25</b>   <b>N</b>   <b>V</b>   <b></b>   <b>P01</b>							
<b>Element length</b>									
<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		Filter media							
		Axx   Mxx   Pxx							
<b>N</b> 10 bar		• •							
<b>H</b> 10 bar		•							
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		• •							
		<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>			
		<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard			
		<b>V</b> FPM		1.75 bar		<b>Pxx</b> Customized			

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

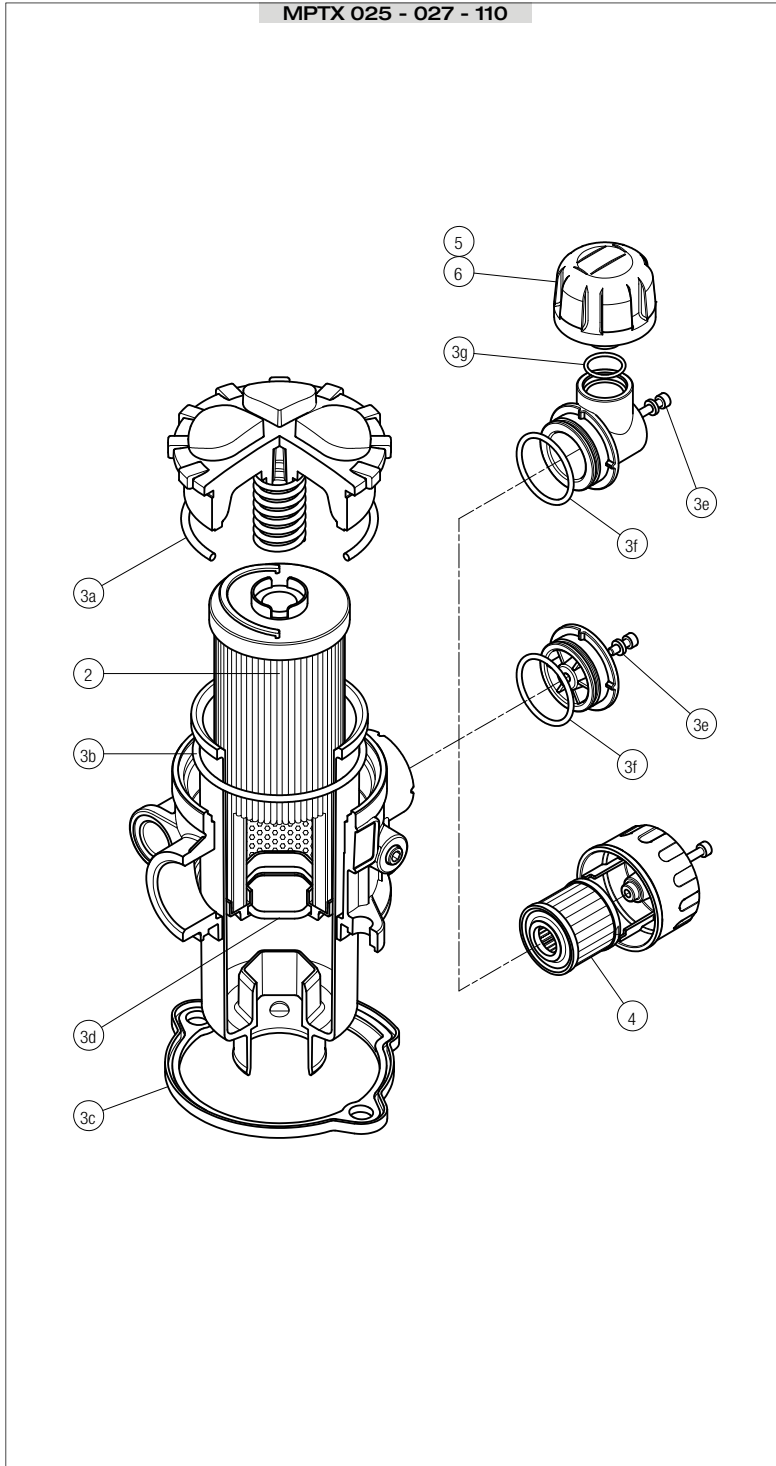
# MPTX120 MPTX

## Dimensions

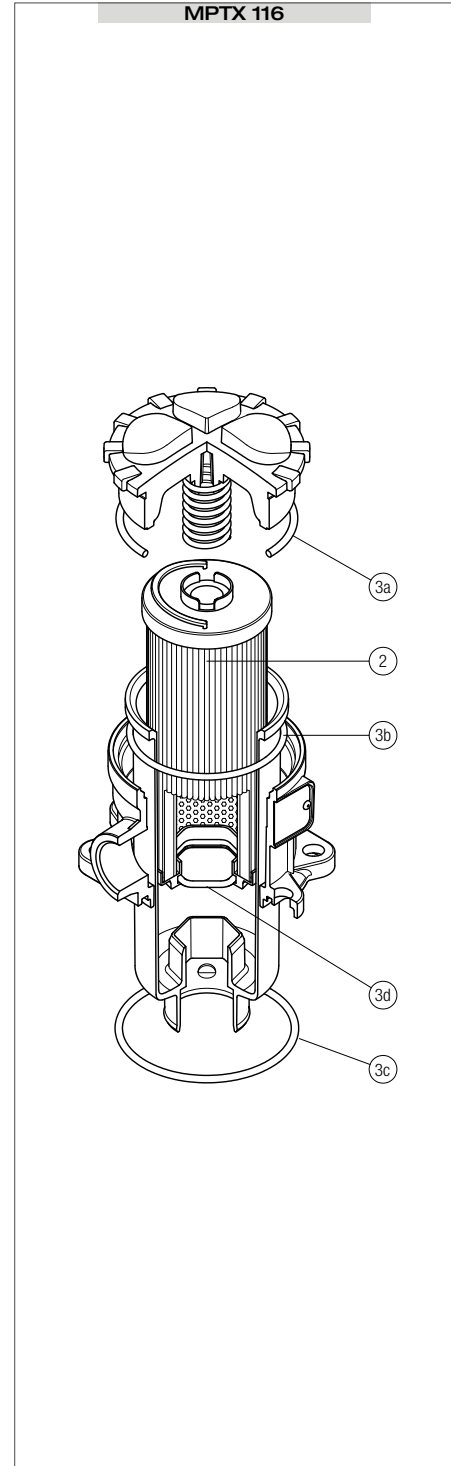


# MPTX SPARE PARTS

Order number for spare parts



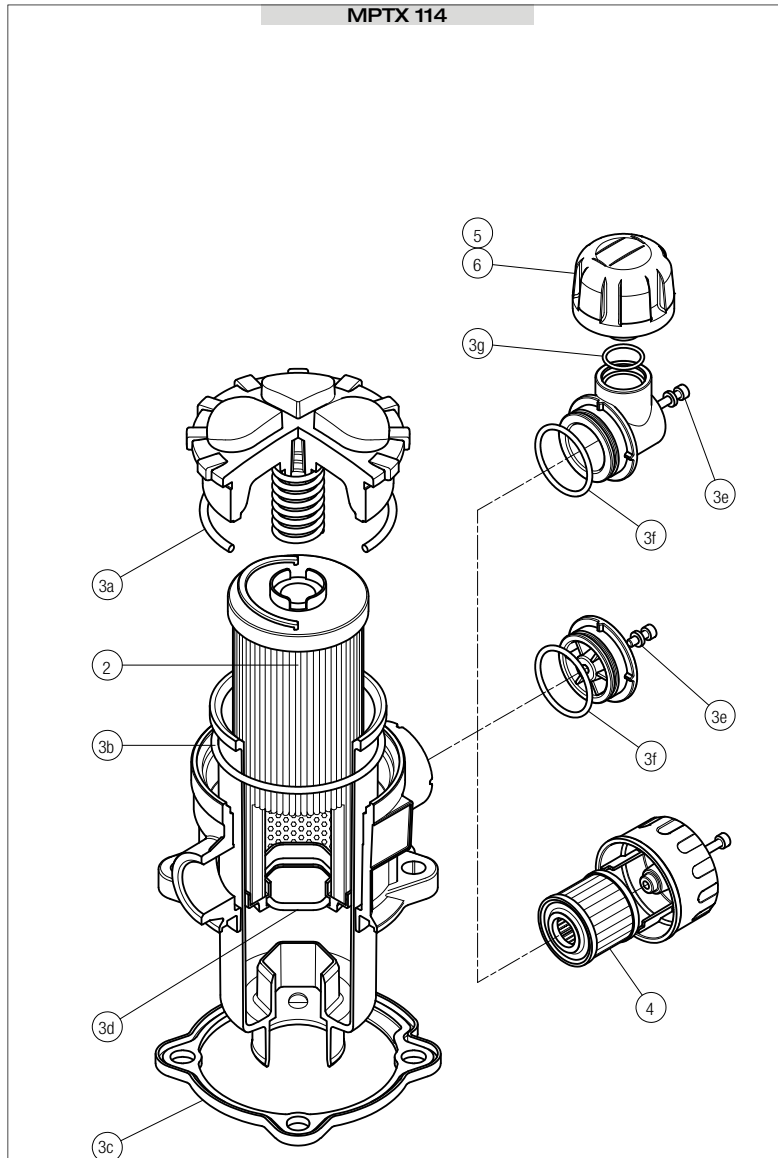
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		
		NBR	FPM	C	D	P
<b>MPTX 025</b>	See order table	02050701	02050702	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
<b>MPTX 027</b>		02050703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



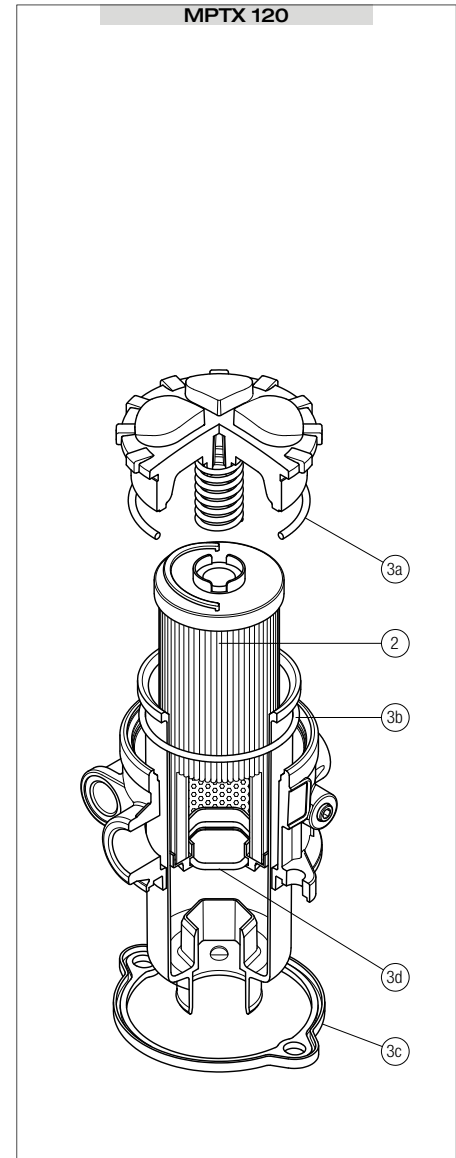
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number
	See order table	NBR FPM
<b>MPTX 116</b>	See order table	02050737 02050738

# SPARE PARTS MPTX

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	<b>2</b>	<b>3</b> (3a ÷ 3g)	<b>4</b>	<b>5</b>	<b>6</b>
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:	
	See order table	NBR	FPM	C	D
<b>MPTX 114</b>	See order table	02050707	02050708	10 µm A5L03	10 µm SAP50G3L03A0P01
					10 µmm SAP50G3L03A1P01



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







Return filters

# MFBX series

## BOWL ASSEMBLY

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



# MFBX GENERAL INFORMATION

## Description

### 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

## Technical data

### Bowl assembly materials

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

- Bowl: Nylon

### Filter element materials

- Caps: Nylon
- Spring: Spring steel

### Bypass valve

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

### $\Delta p$ element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MFBX filters are provided for vertical mounting



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

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

# GENERAL INFORMATION MFBX

## FILTER ASSEMBLY SIZING 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.

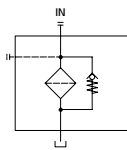
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

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



# MFBX MFBX020 - MFBX030 - MFBX100 - MFBX180 - MFBX190

## Designation & Ordering code

COMPLETE FILTER									
<b>Series and size</b> MFBX020   MFBX030   MFBX100   MFBX180   MFBX190				Configuration example 1: MFBX100 1 A 2 A10 H E P01					
Filter element with private spigot				Configuration example 2: MFBX180 2 V 1 M25 N B P01					
<b>Length</b>	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190				
1	•	•	•	•					
2	•		•	•	•				
3	•		•						
4			•						
<b>Seals</b>									
A NBR									
V FPM									
<b>Version</b>									
1	Without cover	•	•	•	•	•			
2	With flanged cover type MPF		•	•	•	•			
3	With threaded cover type MPT	•		•					
<b>Filtration rating (filter media)</b>									
A03	Inorganic microfiber 3 µm		M25	Wire mesh 25 µm					
A06	Inorganic microfiber 6 µm		M60	Wire mesh 60 µm					
A10	Inorganic microfiber 10 µm		M90	Wire mesh 90 µm					
A16	Inorganic microfiber 16 µm		P10	Resin impregnated paper 10 µm					
A25	Inorganic microfiber 25 µm		P25	Resin impregnated paper 25 µm					
<b>Element Δp</b>									
N	10 bar								
H	10 bar			•					
W	10 bar, compatible with fluids HFA, HFB and HFC			•	•				
<b>Filter media</b>									
		Axx	Mxx	Pxx					
<b>Bypass valve</b>									
E 3 bar									
B 1.75 bar									
<b>Execution</b>									
P01 MP Filtri standard									
Pxx Customized									

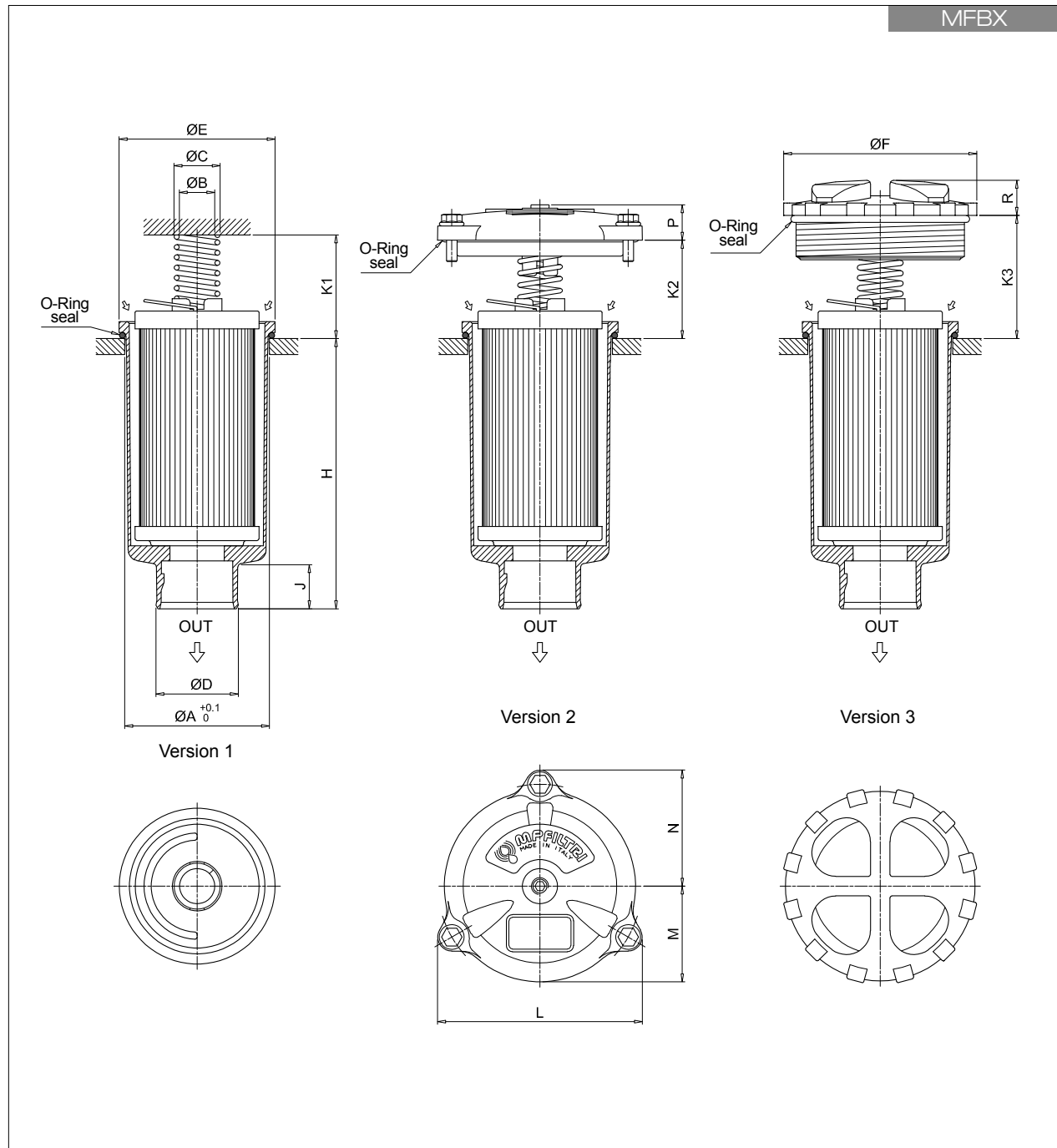
FILTER ELEMENT									
<b>Element series and size</b> MFX020   MFX030   MFX100   MFX180				Configuration example 1: MFX180 2 M25 H V [ ] P01					
Filter element with private spigot				Configuration example 2: MFX100 1 A10 N B E P01					
<b>Element length</b>	MFX020	MFX030	MFX100	MFX180	MFX190				
1	•	•	•	•					
2	•		•	•	•				
3	•		•						
4			•						
<b>Filtration rating (filter media)</b>									
A03	Inorganic microfiber 3 µm		M25	Wire mesh 25 µm					
A06	Inorganic microfiber 6 µm		M60	Wire mesh 60 µm					
A10	Inorganic microfiber 10 µm		M90	Wire mesh 90 µm					
A16	Inorganic microfiber 16 µm		P10	Resin impregnated paper 10 µm					
A25	Inorganic microfiber 25 µm		P25	Resin impregnated paper 25 µm					
<b>Element Δp</b>									
N	10 bar								
H	10 bar			•					
<b>Filter media</b>									
		Axx	Mxx	Pxx					
<b>Seals</b>									
B NBR									
V FPM									
<b>Bypass valve</b>									
E 3 bar									
[ ] 1.75 bar									
<b>Execution</b>									
P01 MP Filtri standard									
Pxx Customized									

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

MFBX020 - MFBX030 - MFBX100 - MFBX180 - MFBX190

# MFBX

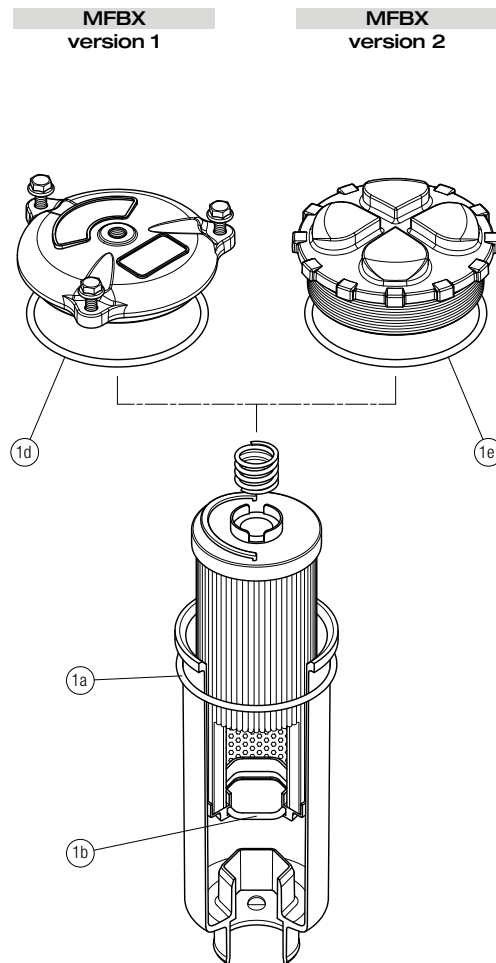
Dimensions



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

# MFBX SPARE PARTS

Order number for spare parts



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









Return filters

# MPF series

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



# MPF GENERAL INFORMATION

## Description

### 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 750 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to 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

## Technical data

### Filter housing materials

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

### Bypass valve

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

### $\Delta p$ element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPF filters are provided for vertical mounting



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

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

# GENERAL INFORMATION MPF

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

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

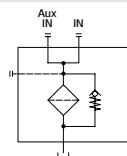
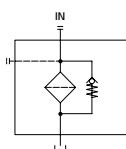
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

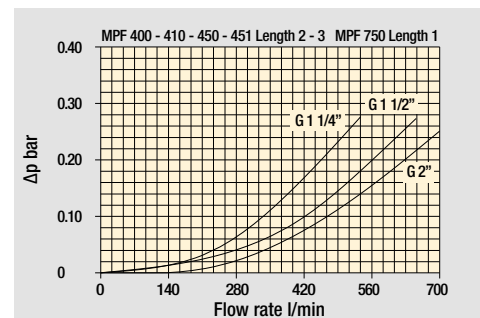
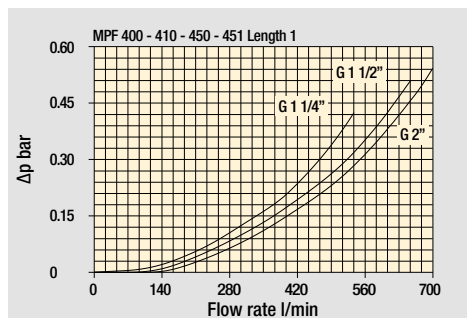
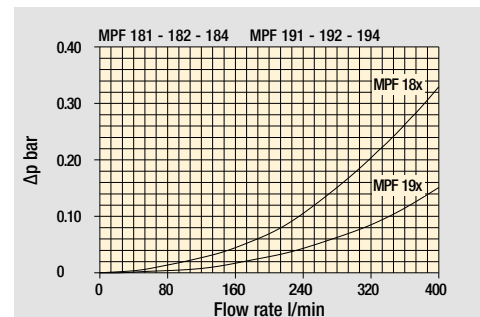
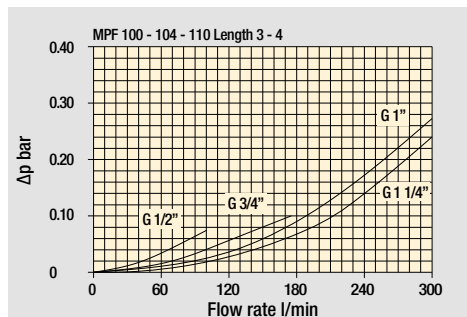
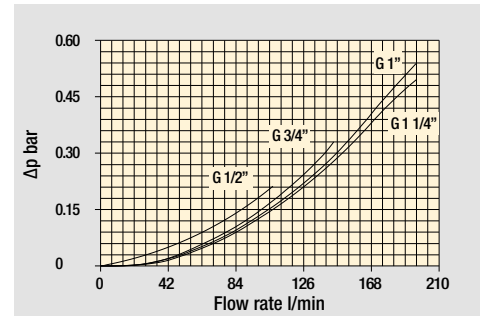
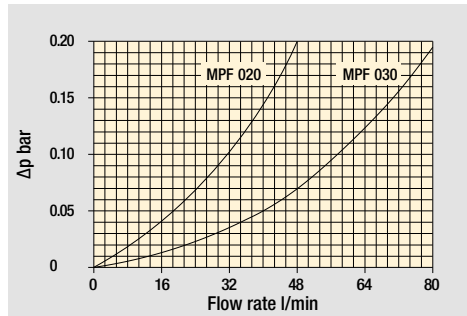
Filter series	Style 1 connection	Style 2 connections
<b>MPF 020</b>	•	
<b>MPF 030</b>	•	
<b>MPF 100</b>	•	
<b>MPF 104</b>	•	
<b>MPF 110</b>		•
<b>MPF 181</b>	•	
<b>MPF 182</b>		•
<b>MPF 184</b>	•	•
<b>MPF 191</b>	•	
<b>MPF 192</b>	•	
<b>MPF 194</b>	•	•
<b>MPF 400</b>	•	
<b>MPF 410</b>		•
<b>MPF 450</b>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



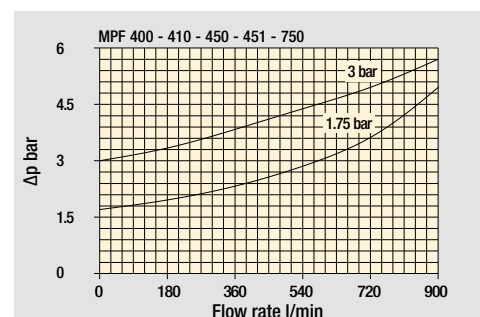
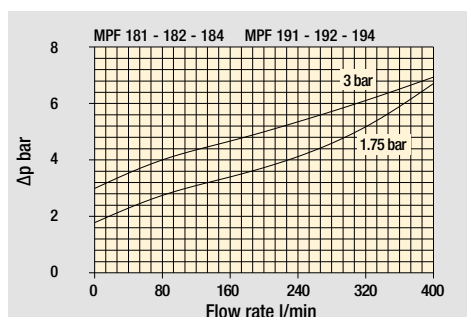
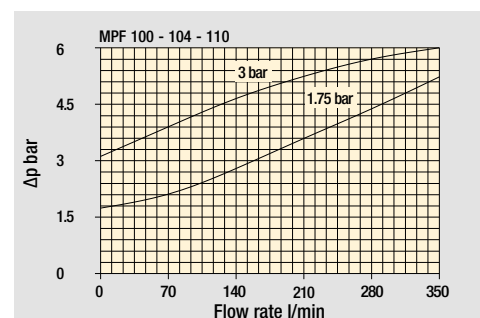
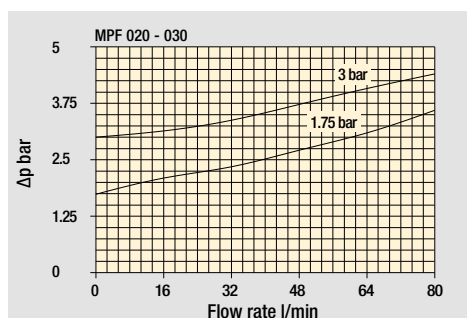
# MPF GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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

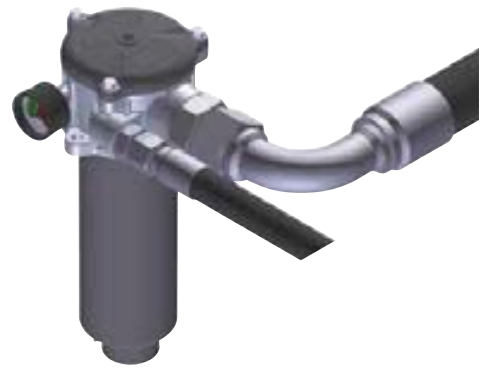
# GENERAL INFORMATION MPF

Multiport

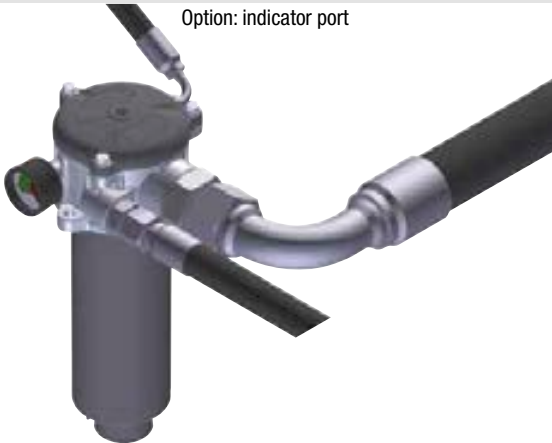
Standard - Single IN port



Double IN port  
Option: double indicator port



Double IN port - Drain port  
Option: indicator port



Double IN port - Double drain port



# MPF MPF020 - MPF030

## Designation & Ordering code

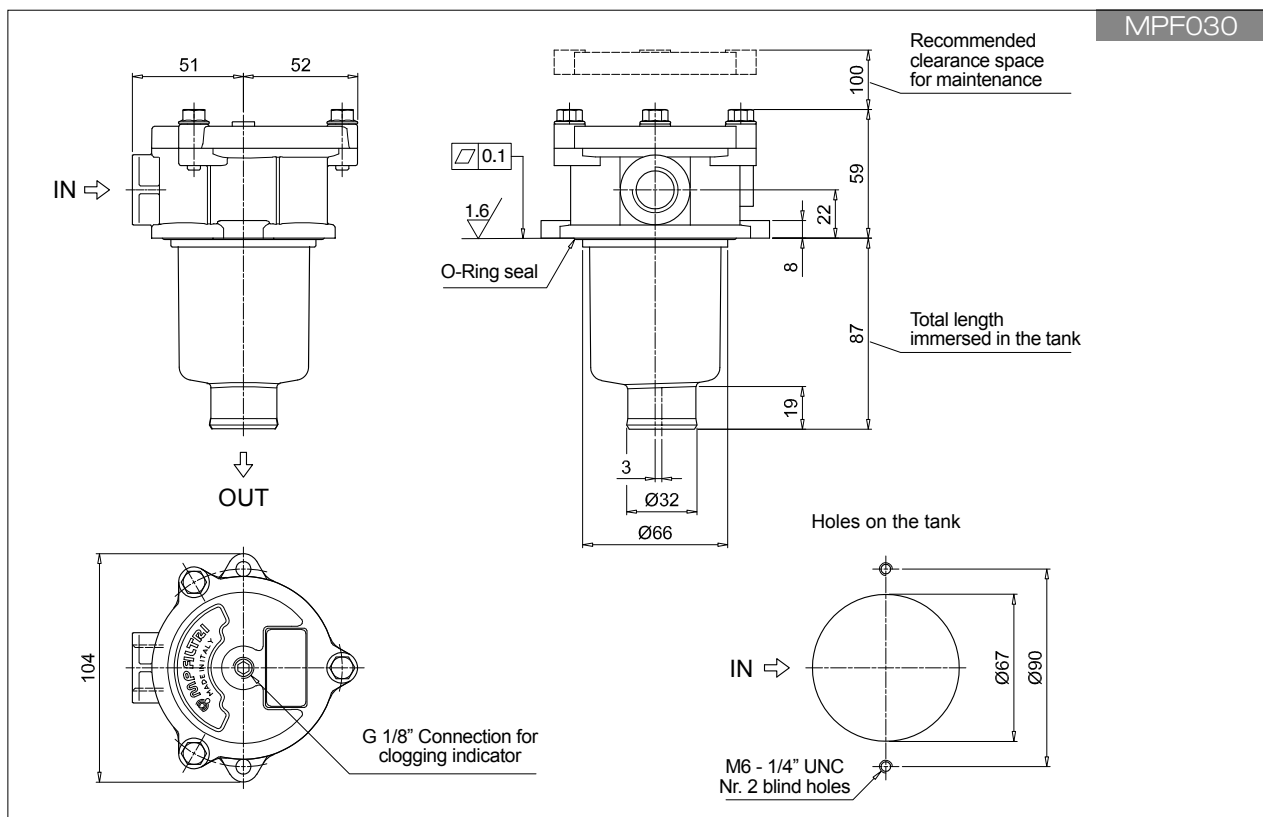
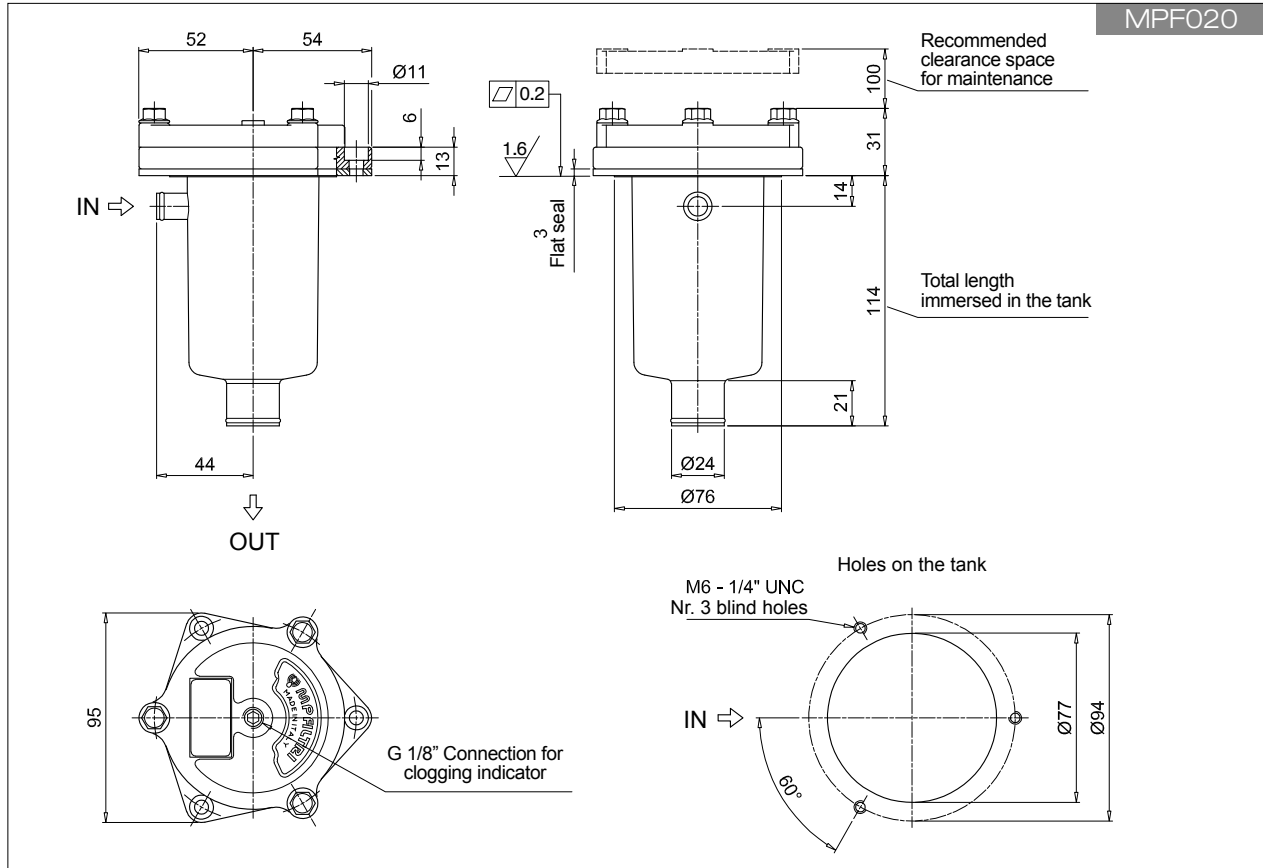
COMPLETE FILTER									
<b>Series and size</b>			Configuration example 1: <b>MPF020</b>   <b>1</b>   <b>A</b>   <b>P1</b>   <b>A10</b>   <b>H</b>   <b>E</b>   <b>P01</b>						
<b>MPF020   MPF030</b> Filter element with standard spigot			Configuration example 2: <b>MPF030</b>   <b>1</b>   <b>V</b>   <b>G1</b>   <b>M25</b>   <b>N</b>   <b>B</b>   <b>P01</b>						
<b>Length</b>									
<b>1</b>									
<b>Seals and treatments</b>									
<b>A</b> NBR									
<b>V</b> FPM									
<b>W</b> NBR head anodized									
<b>Z</b> FPM head anodized									
<b>Connections</b>			Size 20		Size 30				
<b>P1</b> Hose barb ø12			•						
<b>G1</b> G 1/2"					•				
<b>G4</b> 1/2" NPT					•				
<b>G7</b> SAE 8 - 3/4" - 16 UNF					•				
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm						
<b>Element Δp</b>			Filter media						
			Axx		Mxx		Pxx		
<b>N</b> 10 bar					•		•		
<b>H</b> 10 bar					•				
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC			•		•				
			<b>Bypass valve</b>		<b>Execution</b>				
			<b>E</b> 3 bar		<b>P01</b> MP Filtri standard				
			<b>B</b> 1.75 bar		<b>Pxx</b> Customized				

FILTER ELEMENT									
<b>Element series and size</b>			Configuration example 1: <b>MF030</b>   <b>1</b>   <b>A10</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>						
<b>MF030</b> Filter element with standard spigot			Configuration example 2: <b>MF030</b>   <b>1</b>   <b>M25</b>   <b>N</b>   <b>V</b>   <b></b>   <b>P01</b>						
<b>Element length</b>									
<b>1</b>									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm						
<b>Element Δp</b>			Filter media						
			Axx		Mxx		Pxx		
<b>N</b> 10 bar					•		•		
<b>H</b> 10 bar					•				
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC			•		•				
			<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>		
			<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard		
			<b>V</b> FPM		1.75 bar		<b>Pxx</b> Customized		

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

# MPF020 - MPF030 MPF

## Dimensions



# MPF MPF100 - MPF104

## Designation & Ordering code

COMPLETE FILTER									
<b>Series and size</b> <b>MPF100   MPF104</b> Filter element with standard spigot		Configuration example 1: <b>MPF100</b> <b>2</b> <b>W</b> <b>G3</b> <b>A06</b> <b>W</b> <b>B</b> <b>P01</b>							
		Configuration example 2: <b>MPF104</b> <b>4</b> <b>A</b> <b>G8</b> <b>P10</b> <b>N</b> <b>E</b> <b>P01</b>							
<b>Length</b>									
1   2   3   4									
<b>Seals and treatments</b>									
<b>A</b> NBR									
<b>V</b> FPM									
<b>W</b> NBR head anodized									
<b>Z</b> FPM head anodized									
<b>Connections</b>		Size 100		Size 104		<b>Connections</b>			
<b>G1</b> G 1/2"		•		•		<b>G7</b> SAE 8 - 3/4" - 16 UNF			
<b>G2</b> G 3/4"		•		•		<b>G8</b> SAE 12 - 1 1/16" - 12 UN			
<b>G3</b> G 1"		•		•		<b>G9</b> SAE 16 - 1 5/16" - 12 UN			
<b>G4</b> 1/2" NPT		•		•					
<b>G5</b> 3/4" NPT		•		•					
<b>G6</b> 1" NPT		•		•					
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>		Axx		Mxx		Pxx			
<b>N</b> 10 bar		•		•		•			
<b>H</b> 10 bar		•		•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•		•					
						<b>Bypass valve</b>		<b>Execution</b>	
						<b>E</b> 3 bar		<b>P01</b> MP Filtri standard	
						<b>B</b> 1.75 bar		<b>Pxx</b> Customized	

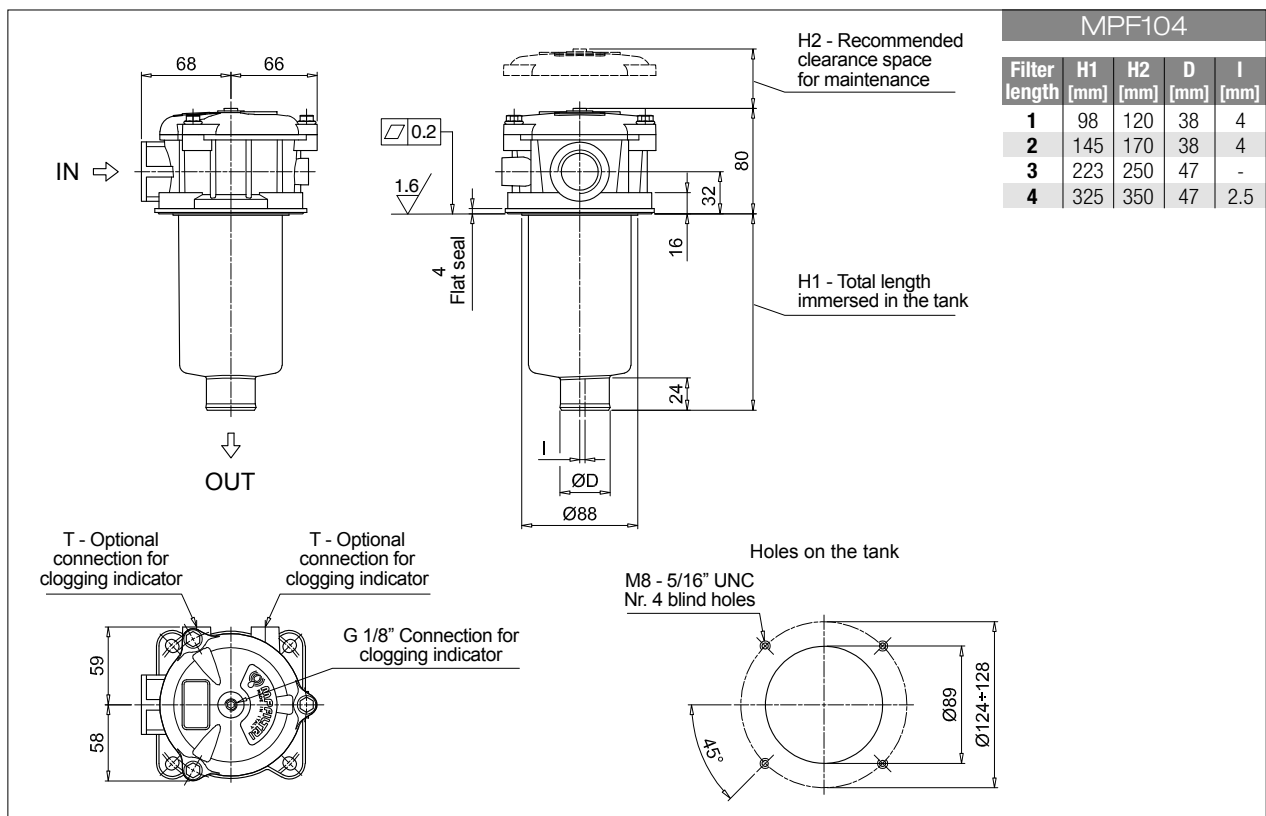
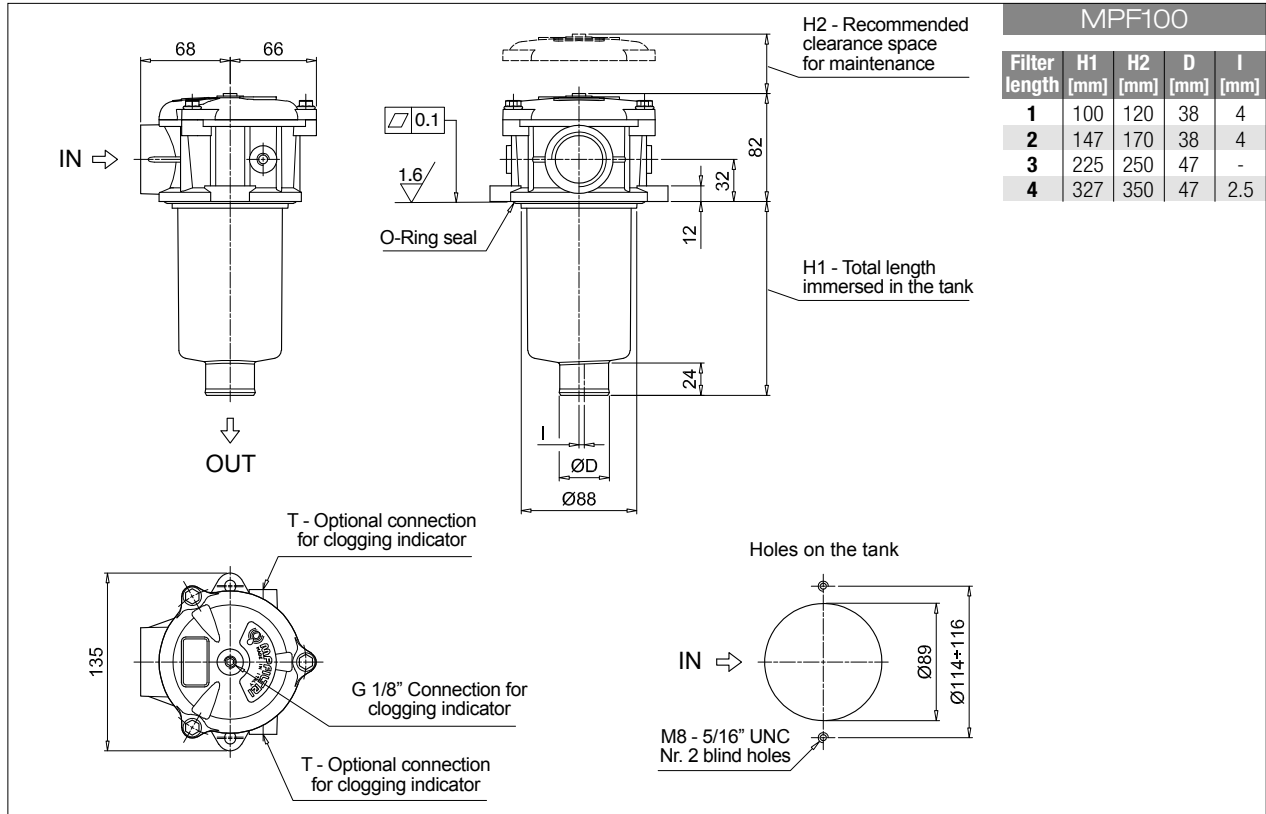
FILTER ELEMENT									
<b>Element series and size</b> <b>MF100</b> Filter element with standard spigot		Configuration example 1: <b>MF100</b> <b>2</b> <b>A06</b> <b>W</b> <b>B</b> <b></b> <b>P01</b>							
		Configuration example 2: <b>MF100</b> <b>4</b> <b>P10</b> <b>N</b> <b>B</b> <b>E</b> <b>P01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

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



# MPF100 - MPF104 MPF

## Dimensions



# MPF MPF110

## Designation & Ordering code

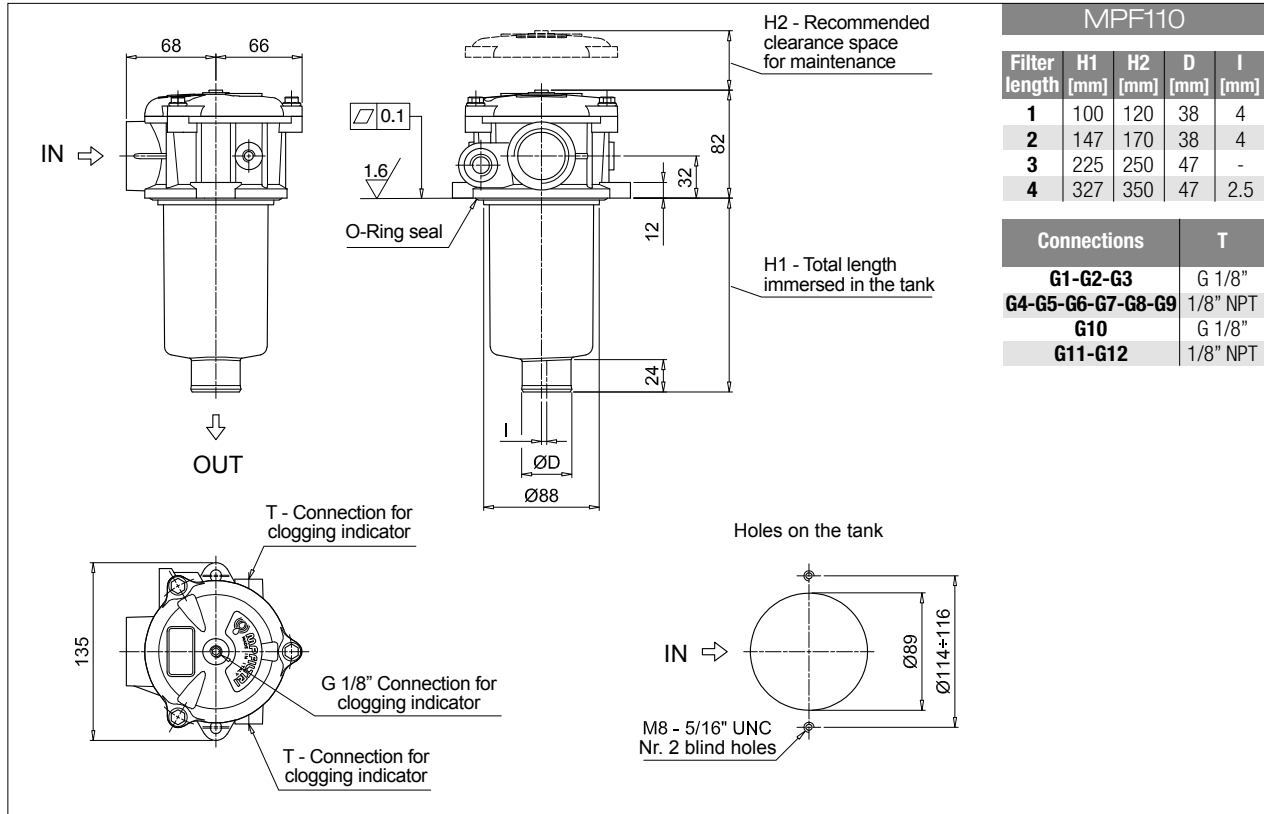
COMPLETE FILTER													
<b>Series and size</b>		Configuration example 1: <b>MPF110</b>   <b>2</b>   <b>A</b>   <b>G2</b>   <b>1</b>   <b>A16</b>   <b>H</b>   <b>E</b>   <b>P01</b>											
<b>MPF110</b> Filter element with standard spigot		Configuration example 2: <b>MPF110</b>   <b>4</b>   <b>V</b>   <b>G12</b>   <b>1</b>   <b>M60</b>   <b>N</b>   <b>B</b>   <b>P01</b>											
<b>Length</b>		<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>											
<b>Seals and treatments</b>		<table border="0"> <tr> <td><b>A</b> NBR</td> <td><b>W</b> NBR head anodized</td> </tr> <tr> <td><b>V</b> FPM</td> <td><b>Z</b> FPM head anodized</td> </tr> </table>								<b>A</b> NBR	<b>W</b> NBR head anodized	<b>V</b> FPM	<b>Z</b> FPM head anodized
<b>A</b> NBR	<b>W</b> NBR head anodized												
<b>V</b> FPM	<b>Z</b> FPM head anodized												
<b>Main Connections</b>	<b>Aux size 1</b>	<b>Aux size 2</b>	<b>Main Connections</b>	<b>Aux size 1</b>	<b>Aux size 2</b>								
<b>G1</b> G 1/2"	G 3/8"	G 1/2"	<b>G7</b> SAE 8 - 3/4" - 16 UNF	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF								
<b>G2</b> G 3/4"			<b>G8</b> SAE 12 - 1 1/16" - 12 UN										
<b>G3</b> G 1"	3/8" NPT	1/2" NPT	<b>G9</b> SAE 16 - 1 5/16" - 12 UN	G 3/8"	G 1/2"								
<b>G4</b> 1/2" NPT			<b>G10</b> G 1 1/4"										
<b>G5</b> 3/4" NPT			<b>G11</b> 1 1/4" NPT										
<b>G6</b> 1" NPT			<b>G12</b> SAE 20 - 1 5/8" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF								
<b>Aux connection - see previous table</b>													
<b>1</b> Aux size 1	<b>2</b> Aux size 2												
<b>Filtration rating (filter media)</b>													
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm										
<b>Element Δp</b>		<b>Filter media</b>											
<b>N</b> 10 bar	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>										
<b>H</b> 10 bar		•	•										
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC	•	•	•										
				<b>Bypass valve</b>	<b>Execution</b>								
				<b>E</b> 3 bar	<b>P01</b> MP Filtri standard								
				<b>B</b> 1.75 bar	<b>Pxx</b> Customized								

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

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

# MPF110 MPF

## Dimensions



# MPF MPF181 - MPF191

## Designation & Ordering code

### COMPLETE FILTER

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

### FILTER ELEMENT

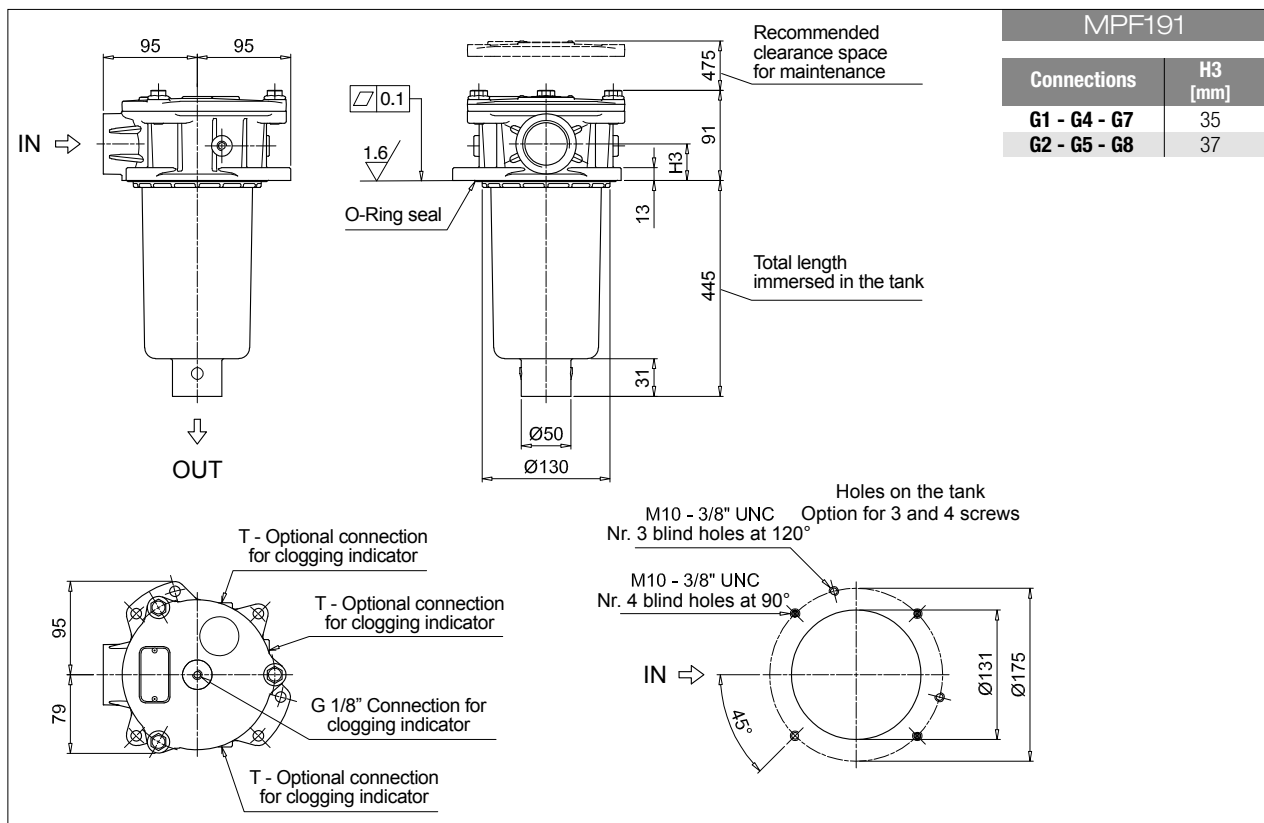
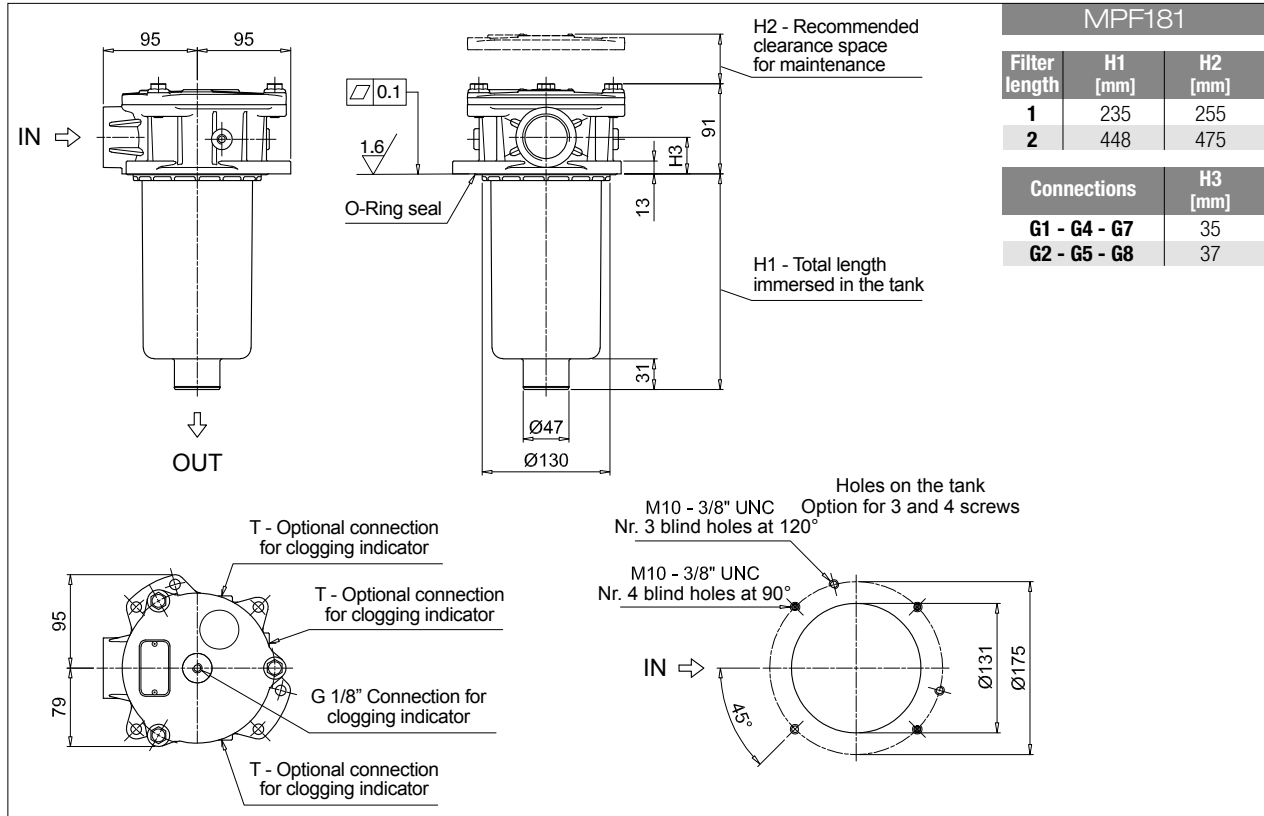
<b>Element series and size</b>		Configuration example 1: <b>MF180</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>	
<b>MF180</b>   <b>MF190</b> Filter element with standard spigot		Configuration example 2: <b>MF190</b>   <b>2</b>   <b>P10</b>   <b>N</b>   <b>V</b>   <b></b> 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

### ACCESSORIES

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

# MPF181 - MPF191 MPF

## Dimensions



# MPF MPF182 - MPF192

## Designation & Ordering code

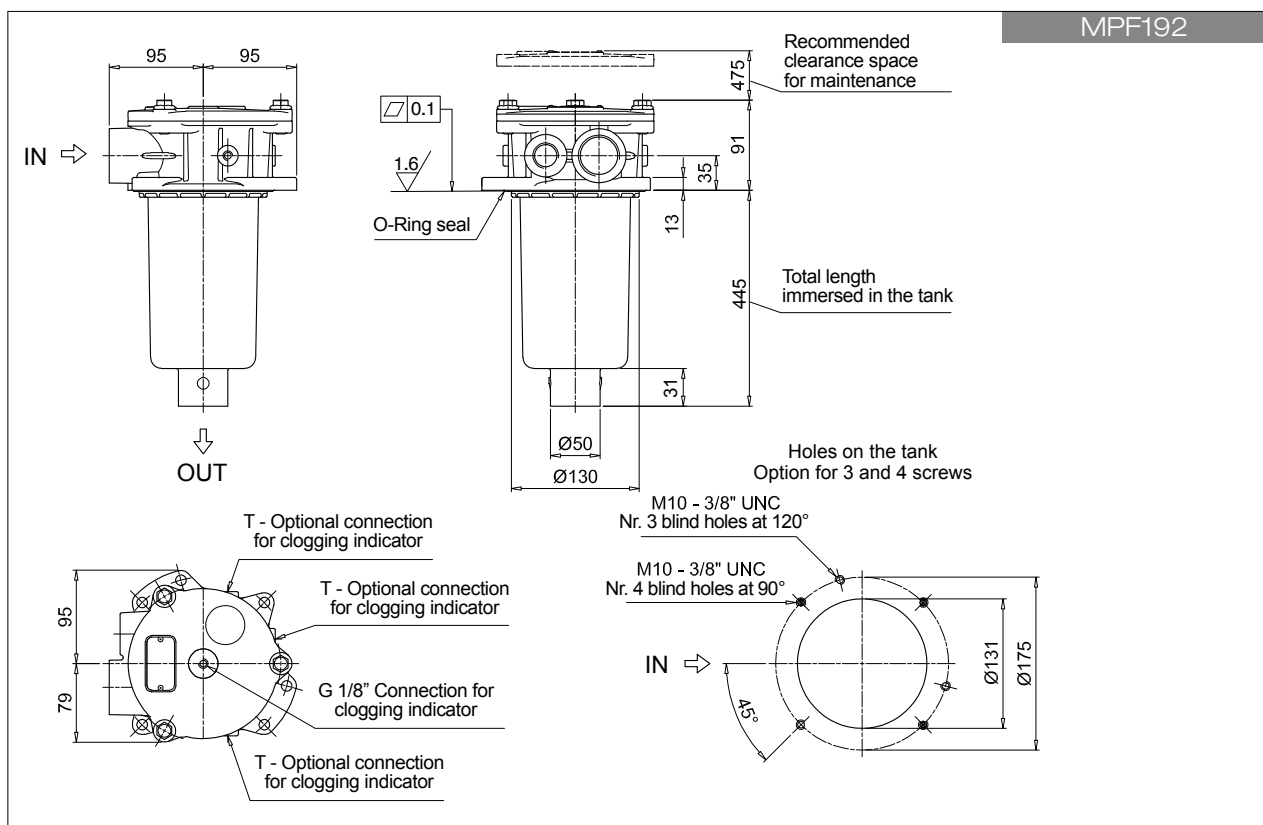
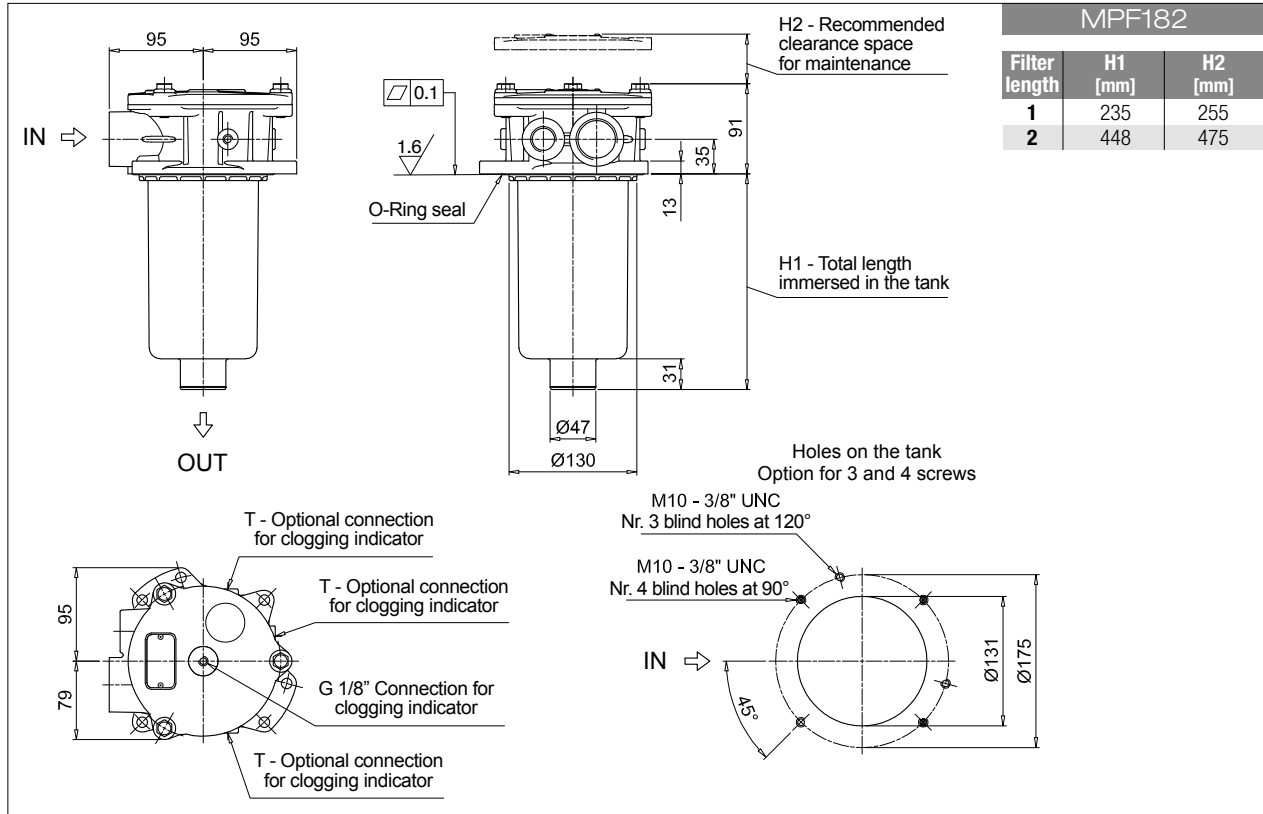
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPF182</b>   1   A   G1   1   A25   H   E   P01							
<b>MPF182   MPF192</b> Filter element with standard spigot		Configuration example 2: <b>MPF192</b>   2   V   G4   2   P10   N   B   P01							
<b>Length</b>		Size 182	Size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

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

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

# MPF182 - MPF192 MPF

## Dimensions



# MPF MPF184 - MPF194

## Designation & Ordering code

COMPLETE FILTER									
<b>Series and size</b>			Configuration example 1: <b>MPF184</b>   <b>1</b>   <b>A</b>   <b>G1</b>   <b>A25</b>   <b>H</b>   <b>E</b>   <b>P01</b>						
<b>MPF184</b>   <b>MPF194</b> Filter element with standard spigot			Configuration example 2: <b>MPF194</b>   <b>2</b>   <b>V</b>   <b>F3</b>   <b>P10</b>   <b>N</b>   <b>B</b>   <b>P01</b>						
<b>Length</b>		<b>Size 184</b>	<b>Size 194</b>						
<b>1</b>		•							
<b>2</b>		•	•						
<b>Seals and treatments</b>									
<b>A</b> NBR		<b>W</b> NBR head anodized							
<b>V</b> FPM		<b>Z</b> FPM head anodized							
<b>Main Connections</b>		<b>Rear connections</b>		<b>Main Connections</b>		<b>Rear connections</b>			
<b>G1</b> G 1 1/4"		-		<b>G13</b> G 1 1/2"		-			
<b>G2</b> G 1 1/4"		G 1 1/4"		<b>G14</b> G 1 1/2"		G 1 1/4"			
<b>G4</b> 1 1/4" NPT		-		<b>G15</b> 1 1/2" NPT		-			
<b>G5</b> 1 1/4" NPT		1 1/4" NPT		<b>G16</b> 1 1/2" NPT		1 1/4" NPT			
<b>G7</b> SAE 20 - 1 5/8" - 12 UN		-		<b>F1</b> 1 1/2" SAE 3000 psi/M		-			
<b>G8</b> SAE 20 - 1 5/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN		<b>F2</b> 1 1/2" SAE 3000 psi/UNC		-			
<b>G10</b> SAE 24 - 1 7/8" - 12 UN		-		<b>F3</b> 1 1/2" SAE 3000 psi/M		1 1/2" SAE 3000 psi/M			
<b>G11</b> SAE 24 - 1 7/8" - 12 UN		SAE 20 - 1 5/8" - 12 UN		<b>F4</b> 1 1/2" SAE 3000 psi/UNC		1 1/2" SAE 3000 psi/UNC			
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm						
Filter media									
<b>Element Δp</b>		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>					
<b>N</b> 10 bar			•	•					
<b>H</b> 10 bar			•						
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•	•						
					<b>Bypass valve</b>		<b>Execution</b>		
					<b>E</b> 3 bar		<b>P01</b> MP Filtri standard		
					<b>B</b> 1.75 bar		<b>Pxx</b> Customized		

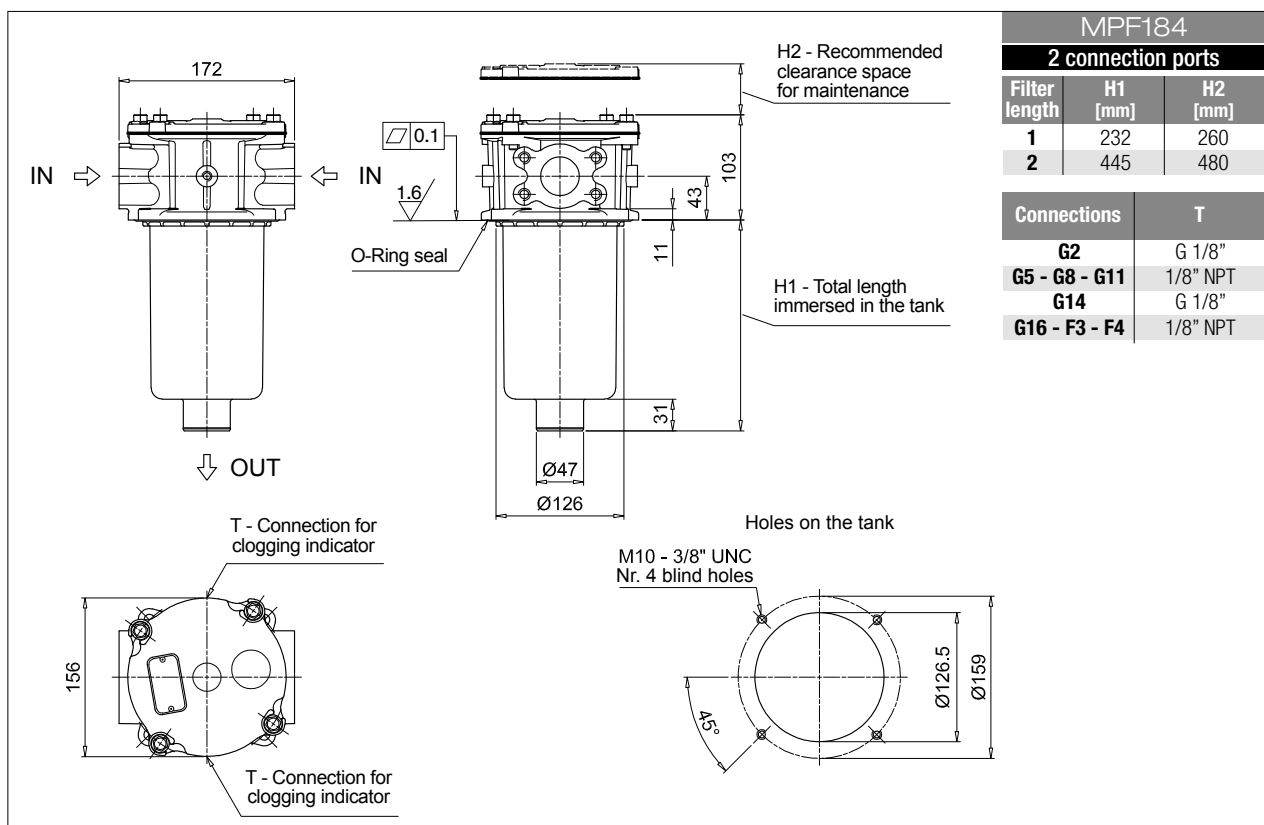
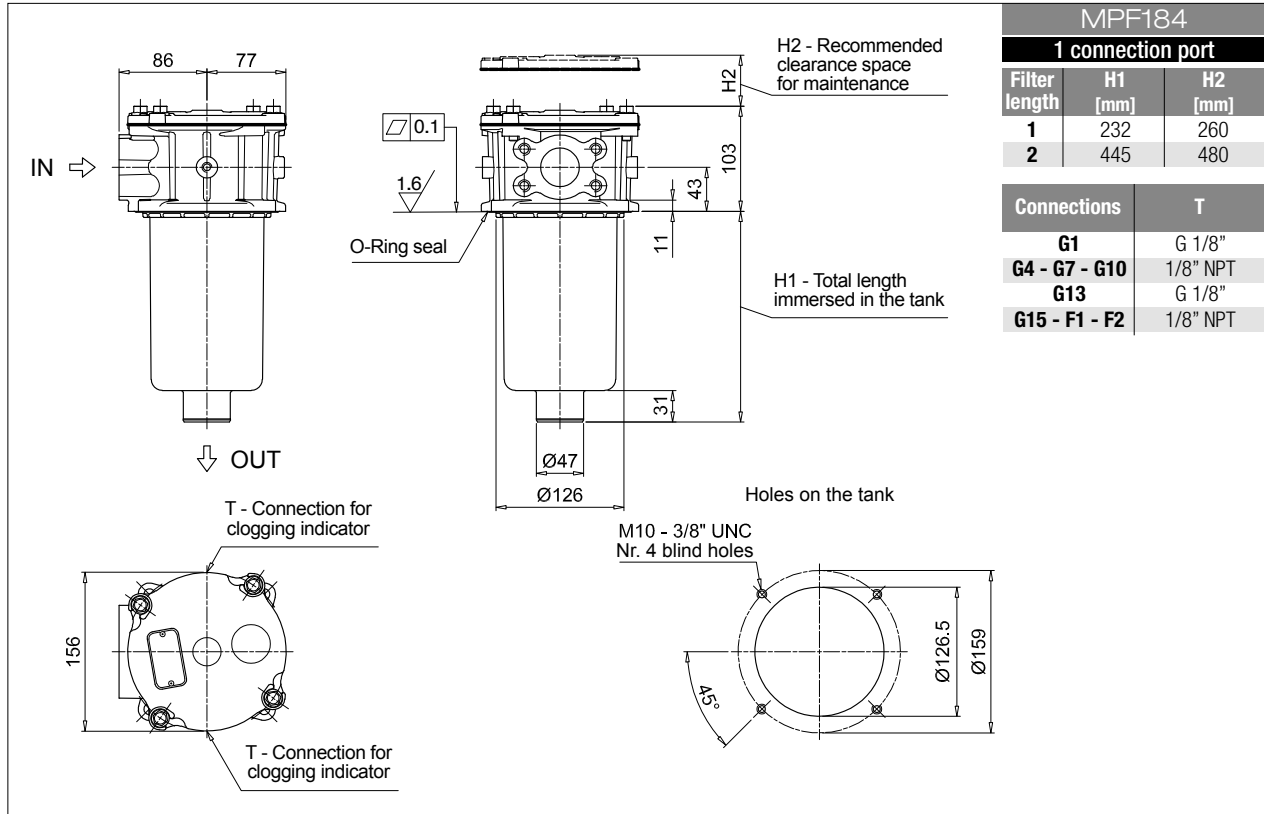
FILTER ELEMENT									
<b>Element series and size</b>			Configuration example 1: <b>MF180</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>						
<b>MF180</b>   <b>IMF190</b> Filter element with standard spigot			Configuration example 2: <b>MF190</b>   <b>2</b>   <b>P10</b>   <b>N</b>   <b>V</b>   <b></b>   <b>P01</b>						
<b>Element length</b>		<b>Size 180</b>	<b>Size 190</b>						
<b>1</b>		•							
<b>2</b>		•	•						
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm						
Filter media									
<b>Element Δp</b>		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>					
<b>N</b> 10 bar			•	•					
<b>H</b> 10 bar			•						
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC		•	•						
					<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>
					<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard
					<b>V</b> FPM		<b></b> 1.75 bar		<b>Pxx</b> Customized

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



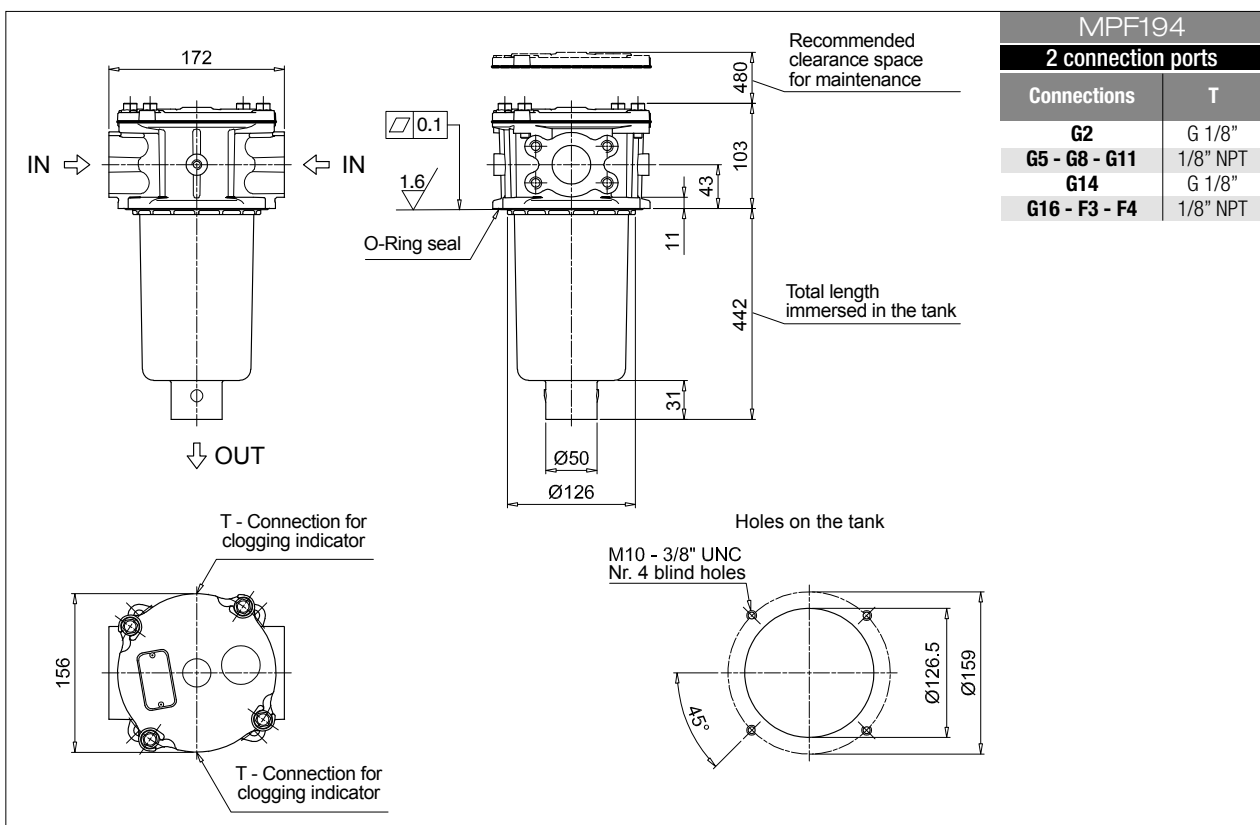
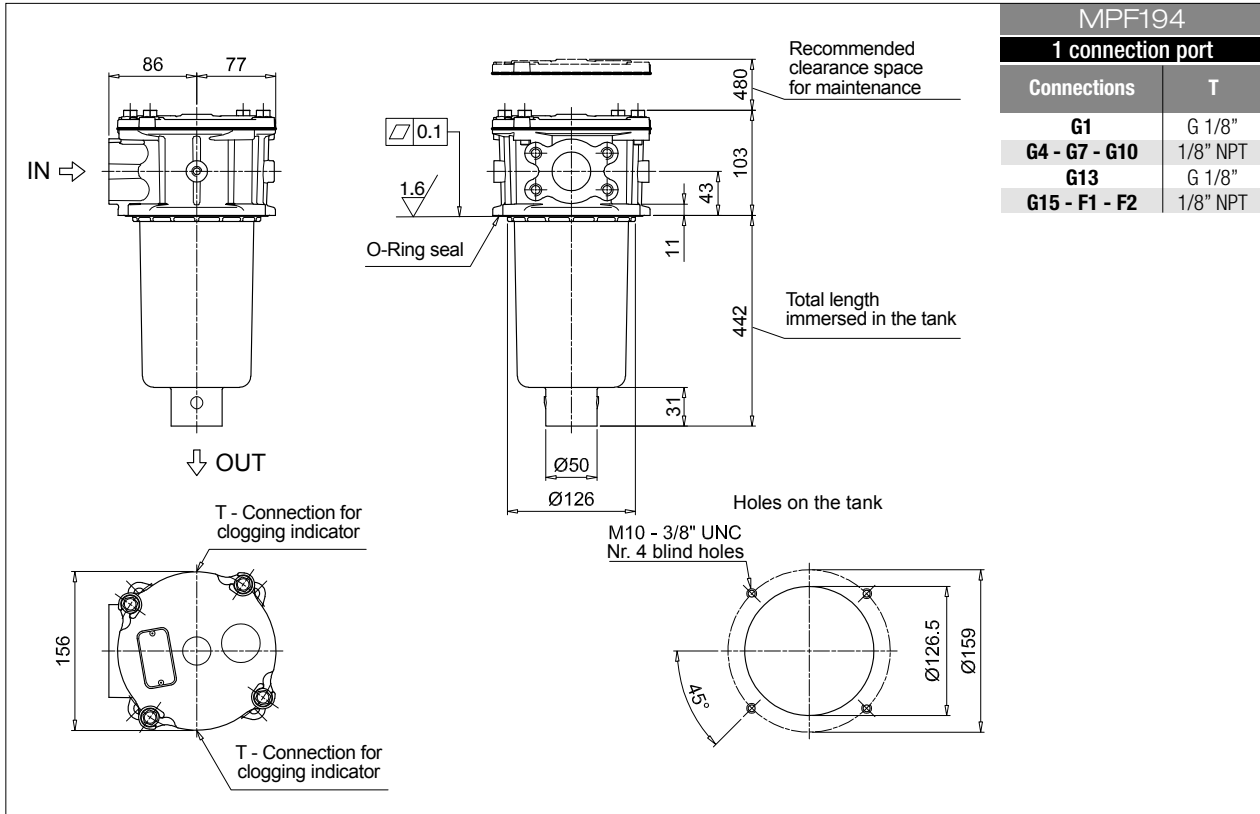
# MPF184 - MPF194 MPF

## Dimensions



# MPF MPF184 - MPF194

## Dimensions



# MPF

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# MPF MPF400

## Designation & Ordering code

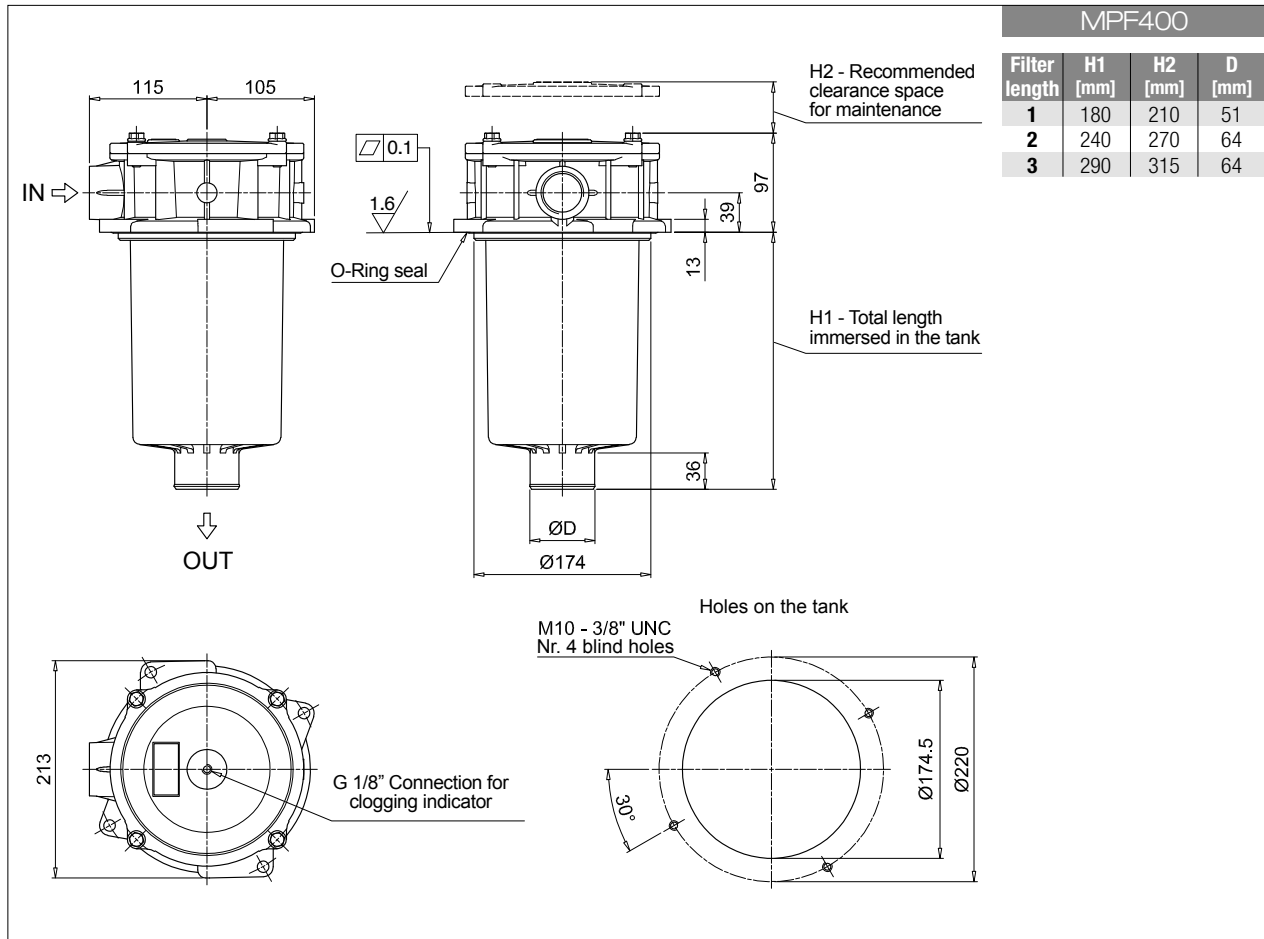
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPF400</b>   <b>1</b>   <b>A</b>   <b>G9</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>P01</b>							
<b>MPF400</b> Filter element with standard spigot		Configuration example 2: <b>MPF400</b>   <b>2</b>   <b>V</b>   <b>G4</b>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

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

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

# MPF400 MPF

## Dimensions



# MPF MPF410

## Designation & Ordering code

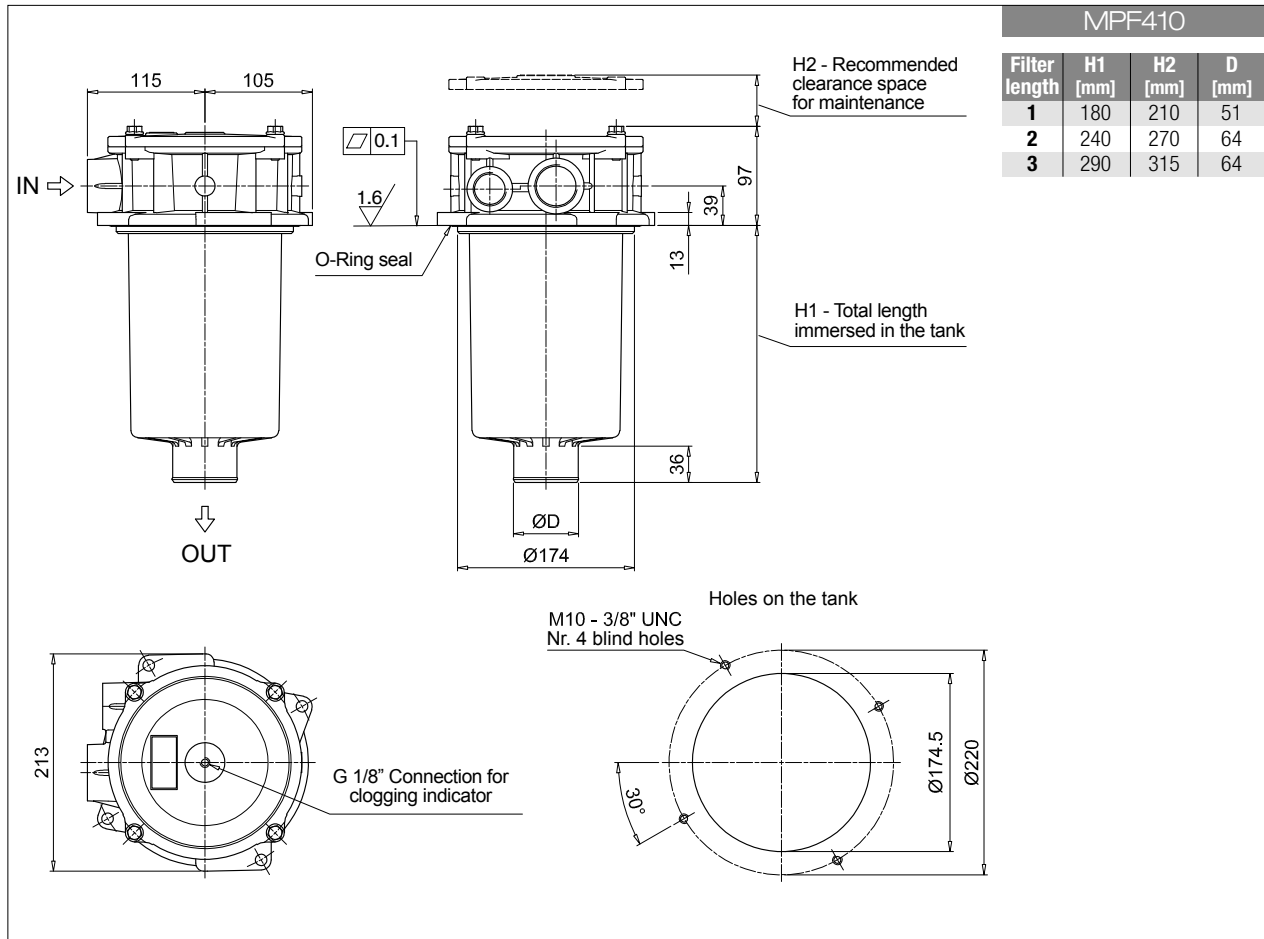
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPF410</b>   <b>1</b>   <b>A</b>   <b>G1</b>   <b>1</b>   <b>A25</b>   <b>H</b>   <b>B</b>   <b>P01</b>							
<b>MPF410</b> Filter element with standard spigot		Configuration example 2: <b>MPF410</b>   <b>1</b>   <b>V</b> 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

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

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

# MPF410 MPF

## Dimensions



# MPF MPF450 - MPF451 - MPF750

## Designation & Ordering code

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

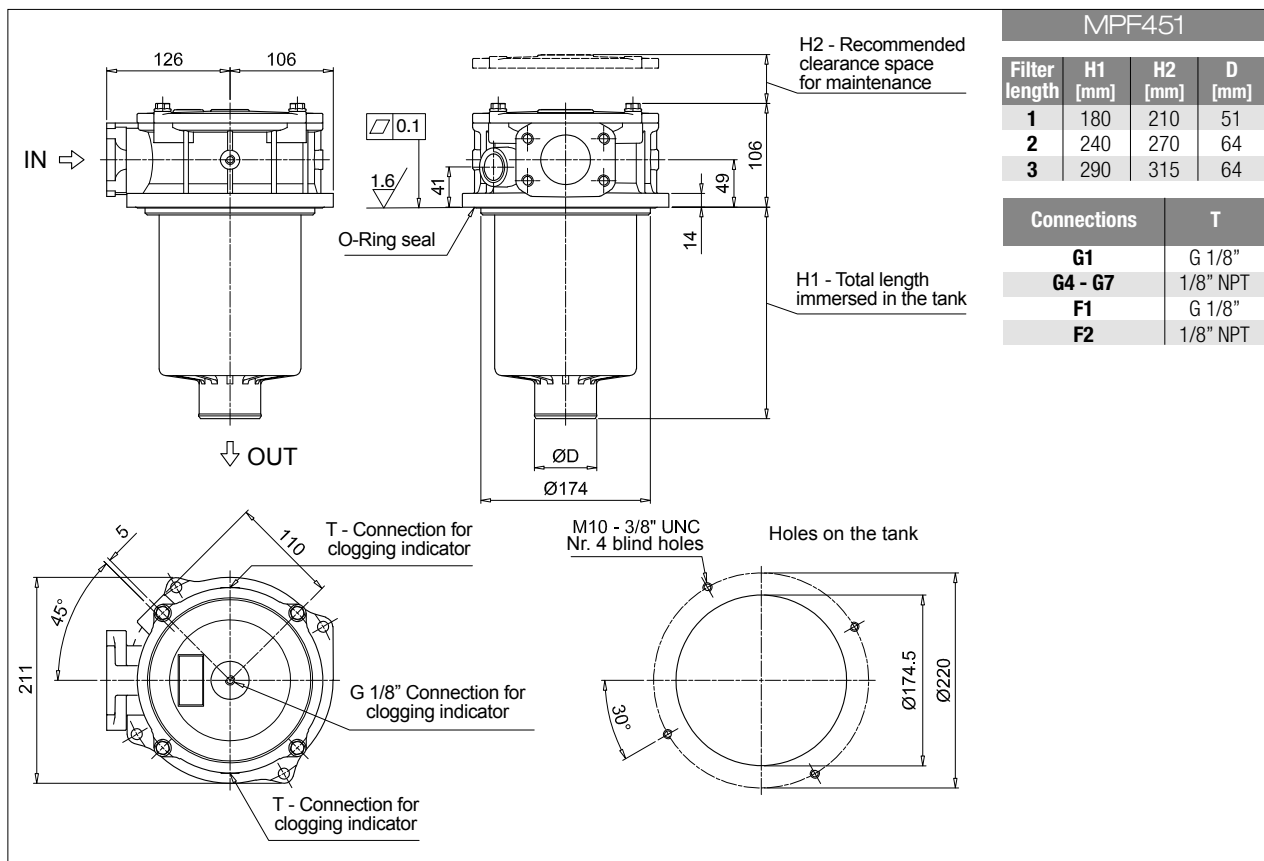
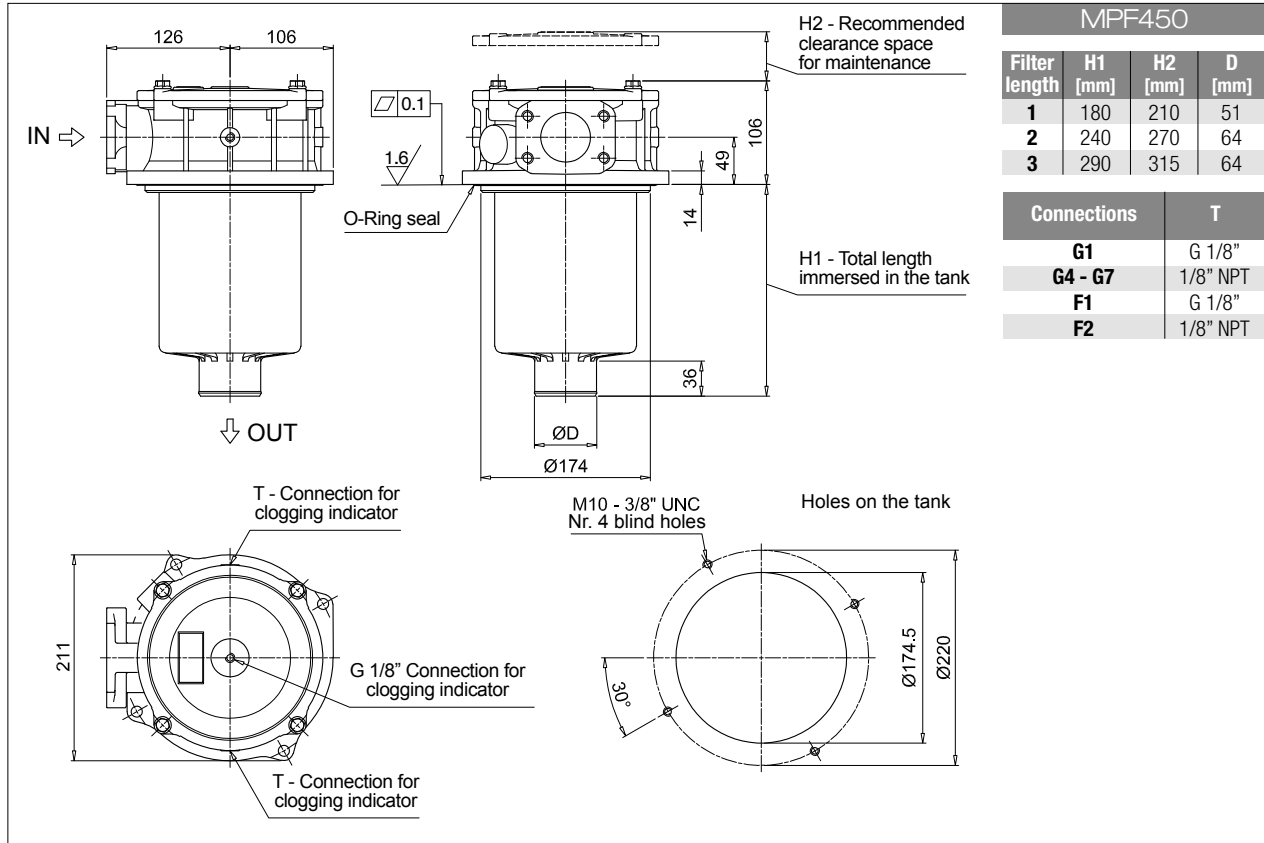
FILTER ELEMENT										
<b>Element series and size</b>			Configuration example 1: <b>MF400</b>   1   A25   H   B       P01							
<b>MF400</b>   <b>MF750</b>	Filter element with standard spigot		Configuration example 2: <b>MFX750</b>   1   P10   N   V   E   P01							
<b>Element length</b>			<b>MPF 450</b>	<b>MPF 451</b>	<b>MPF 750</b>					
<b>1</b>			•	•	•					
<b>2</b>			•	•						
<b>3</b>			•	•						
<b>Filtration rating (filter media)</b>										
<b>A03</b> Inorganic microfiber 3 µm			<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm			<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm			<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm			<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm			<b>P25</b> Resin impregnated paper 25 µm							
<b>Element Δp</b>			<b>Filter media</b>							
<b>N</b> 10 bar			<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>					
<b>H</b> 10 bar				•	•					
<b>W</b> 10 bar, compatible with fluids HFA, HFB and HFC			•	•						
						<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>
						<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard
						<b>V</b> FPM		<b>1.75 bar</b>		<b>Pxx</b> Customized

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



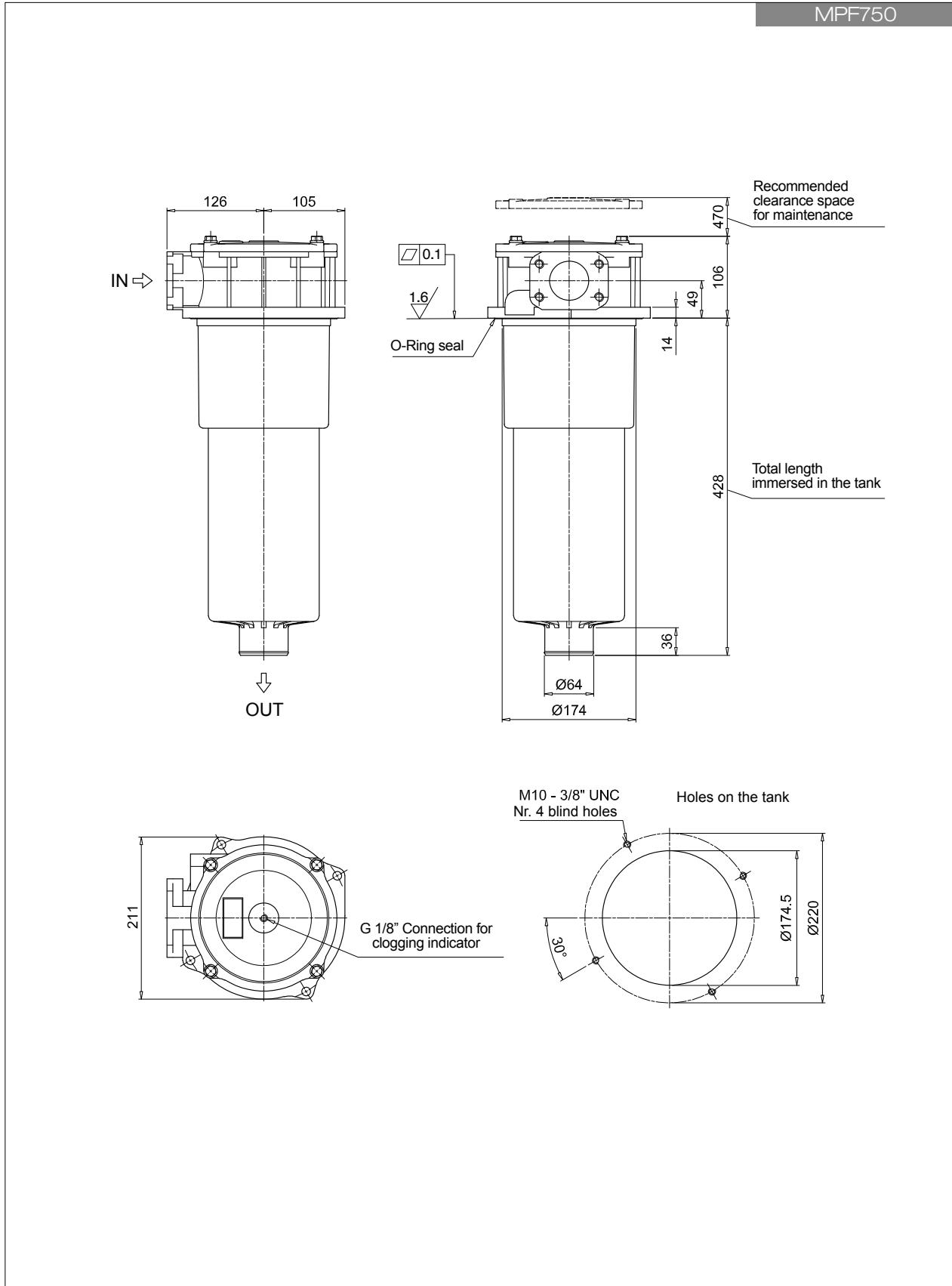
# MPF450 - MPF451 - MPF750 MPF

## Dimensions



# MPF MPF450 - MPF451 - MPF750

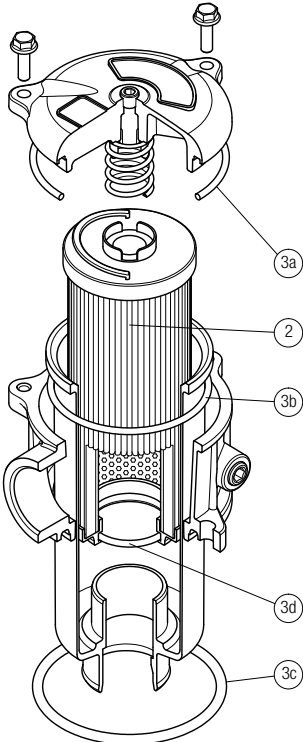
## Dimensions



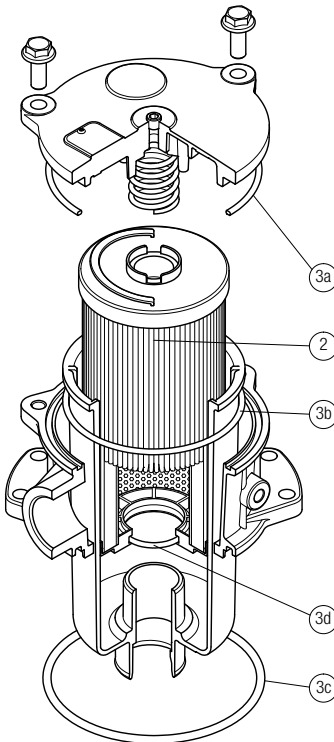
# SPARE PARTS MPF

Order number for spare parts

**MPF 100**

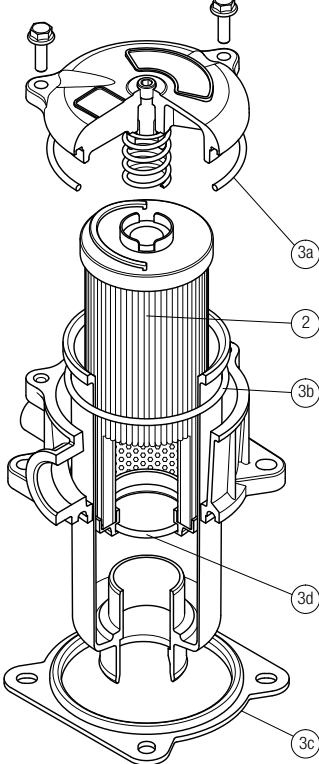


**MPF 181**

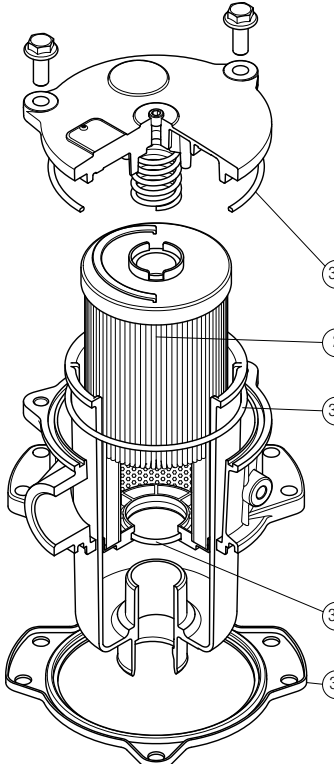


O-RING SEAL			
	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPF 030</b>	See order table	02050055	02050056
<b>MPF 100-110</b>		02050057	02050058
<b>MPF 181-182</b>		02050059	02050060
<b>MPF 184</b>		02050455	02050456
<b>MPF 191-192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

**MPF 104**



**MPF 181**



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





Return filters

# MPT series

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



# MPT GENERAL INFORMATION

## Description

### 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

## Technical data

### Filter housing materials

- Head: Aluminium
- Cover: Nylon
- Bowl: Nylon

### Bypass valve

- Opening pressure 175 kPa (1.75 bar) ±10%
- Opening pressure 300 kPa (3 bar) ±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 [dm<sup>3</sup>]

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

# GENERAL INFORMATION MPT

## FILTER ASSEMBLY SIZING 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
<b>MPT 025-027</b>	<b>1</b>	7	10	23	28	42	59	51	54
	<b>2</b>	17	20	45	48	56	72	64	67
	<b>3</b>	21	24	50	55	59	76	74	75
<b>MPT 110-114 116-120</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289

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

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

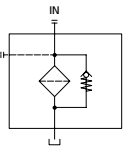
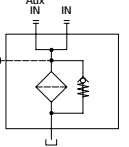
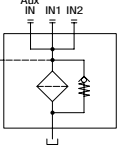
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

## Hydraulic symbols

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

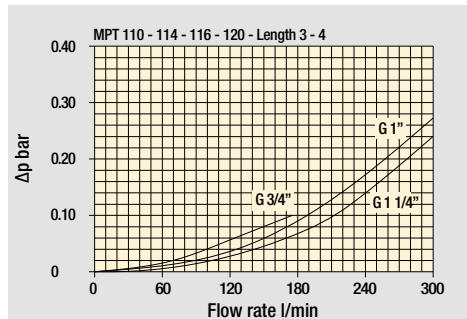
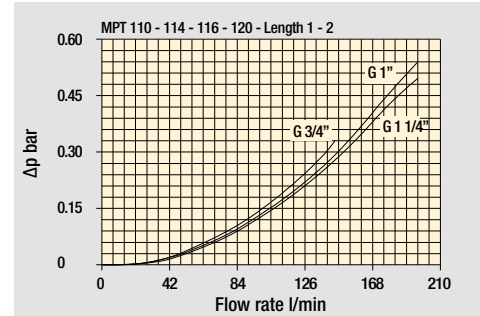
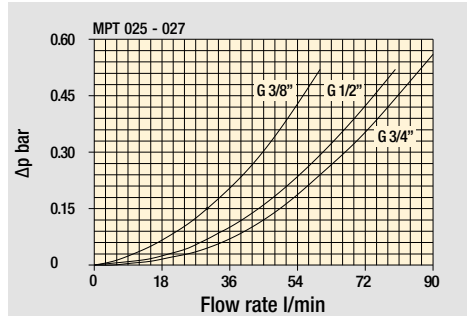
  

		
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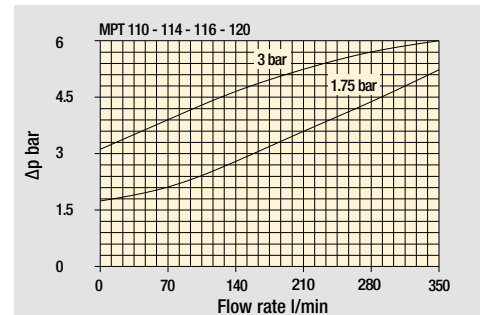
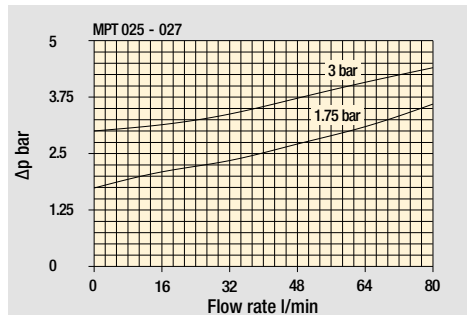
# MPT GENERAL INFORMATION

## Pressure drop

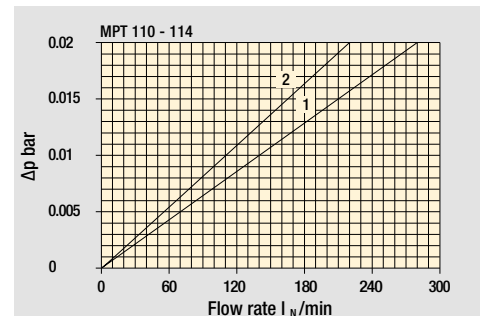
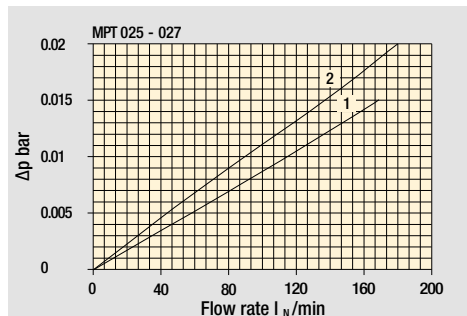
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Air breather pressure drop



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

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








# GENERAL INFORMATION MPT

Multifunction

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

Multiport - Multifunction

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

MPT 120
Triple IN port Option: double drain port


# MPT MPT025 - MPT027

## Designation & Ordering code

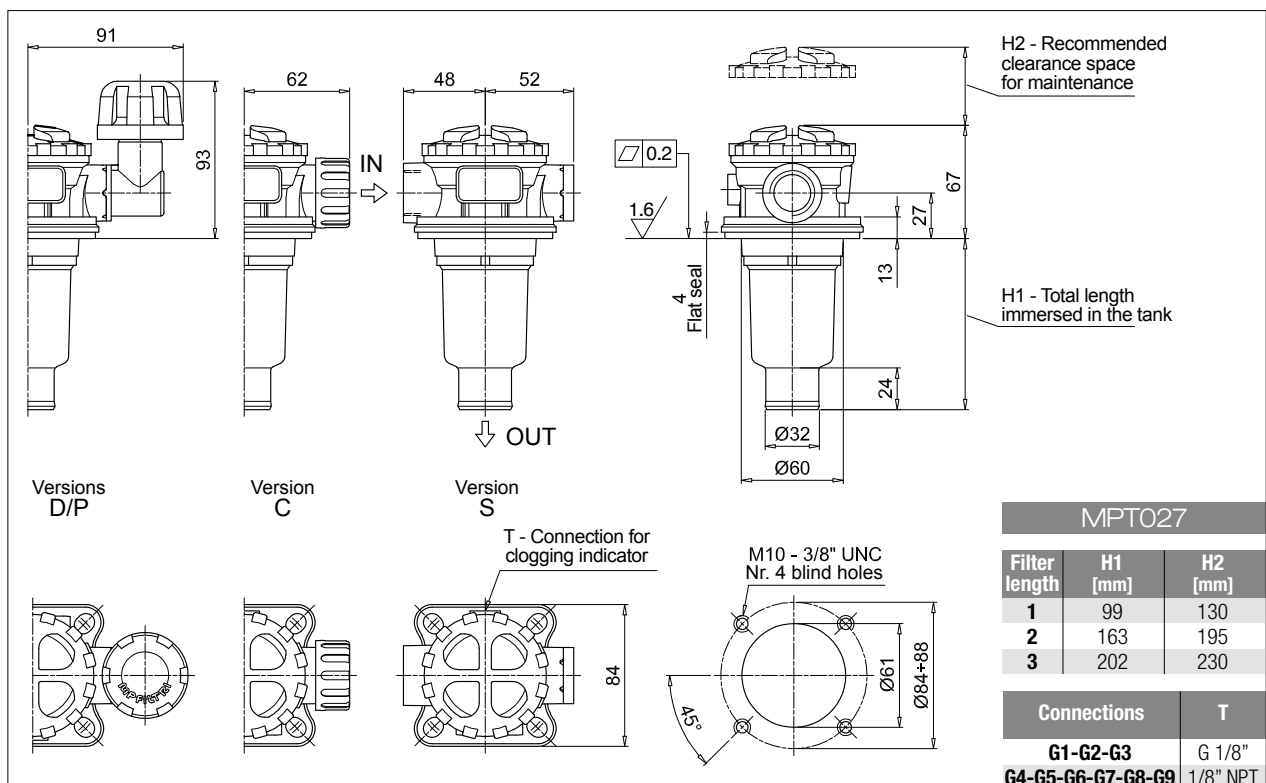
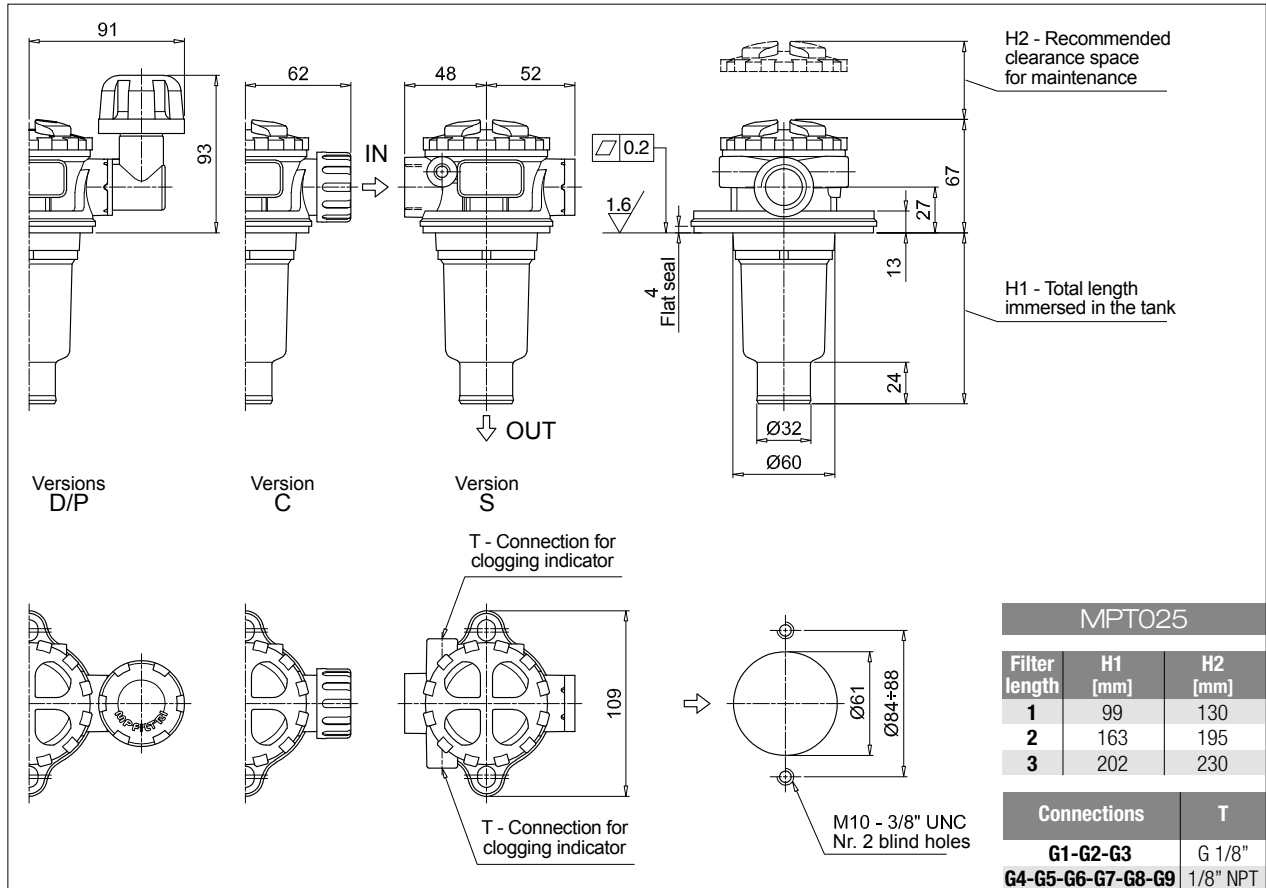
COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>MPT025</b>   <b>1</b>   <b>S</b>   <b>A</b>   <b>G3</b>   <b>A10</b>   <b>E</b>   <b>P01</b>							
<b>MPT025</b>   <b>MPT027</b> Filter element with standard spigot		Configuration example 2: <b>MPT027</b>   <b>3</b>   <b>C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

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

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

# MPT025 - MPT027 MPT

## Dimensions



# MPT MPT110

## Designation & Ordering code

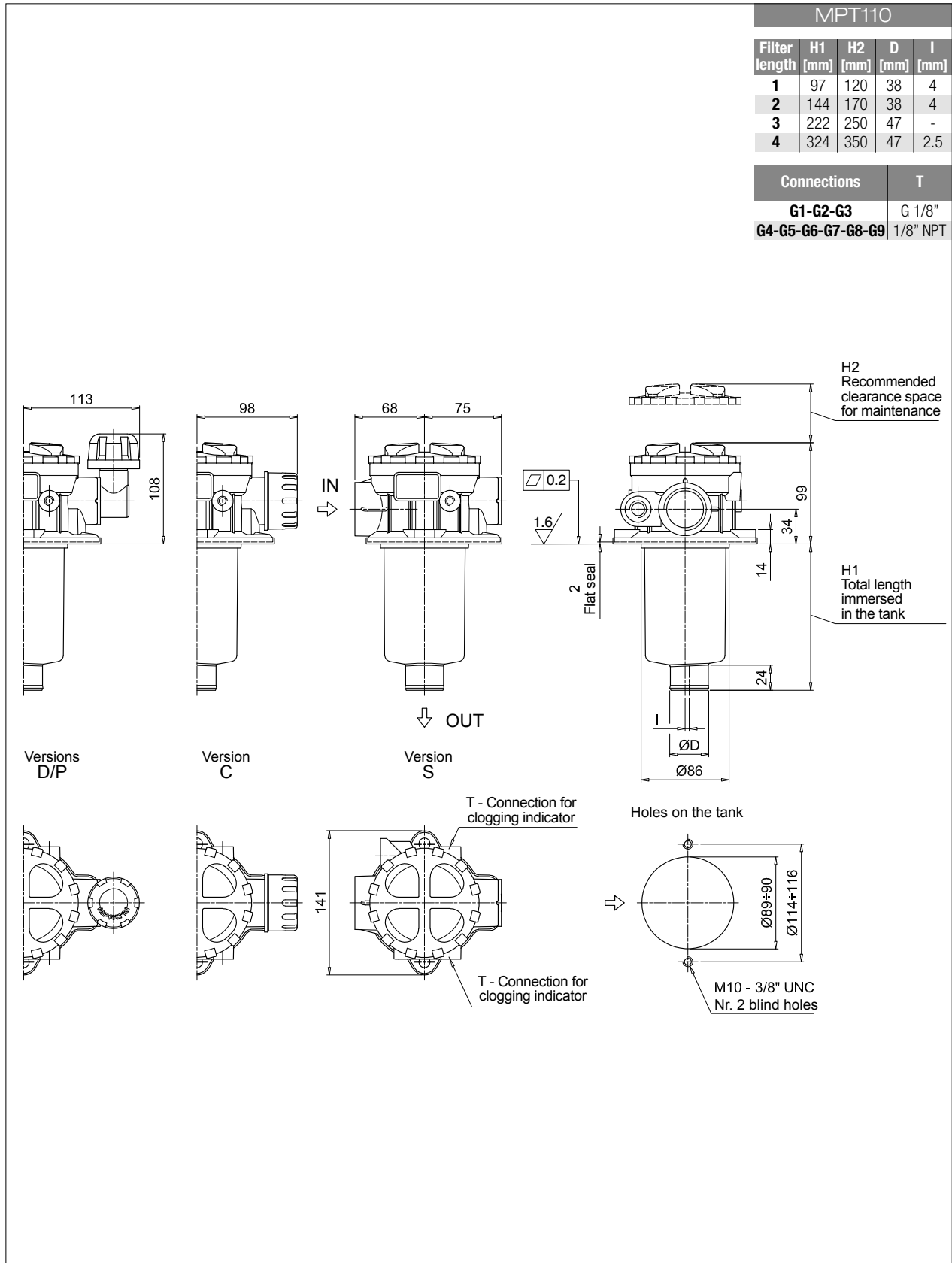
COMPLETE FILTER											
<b>Series and size</b>			Configuration example 1: <b>MPT110</b>   <b>1</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>0</b>   <b>A06</b>   <b>E</b>   <b>P01</b>								
<b>MPT110</b> Filter element with standard spigot			Configuration example 2: <b>MPT110</b>   <b>3</b>   <b>P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

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

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

# MPT110 MPT

## Dimensions



# MPT MPT114

## Designation & Ordering code

### COMPLETE FILTER

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

### FILTER ELEMENT

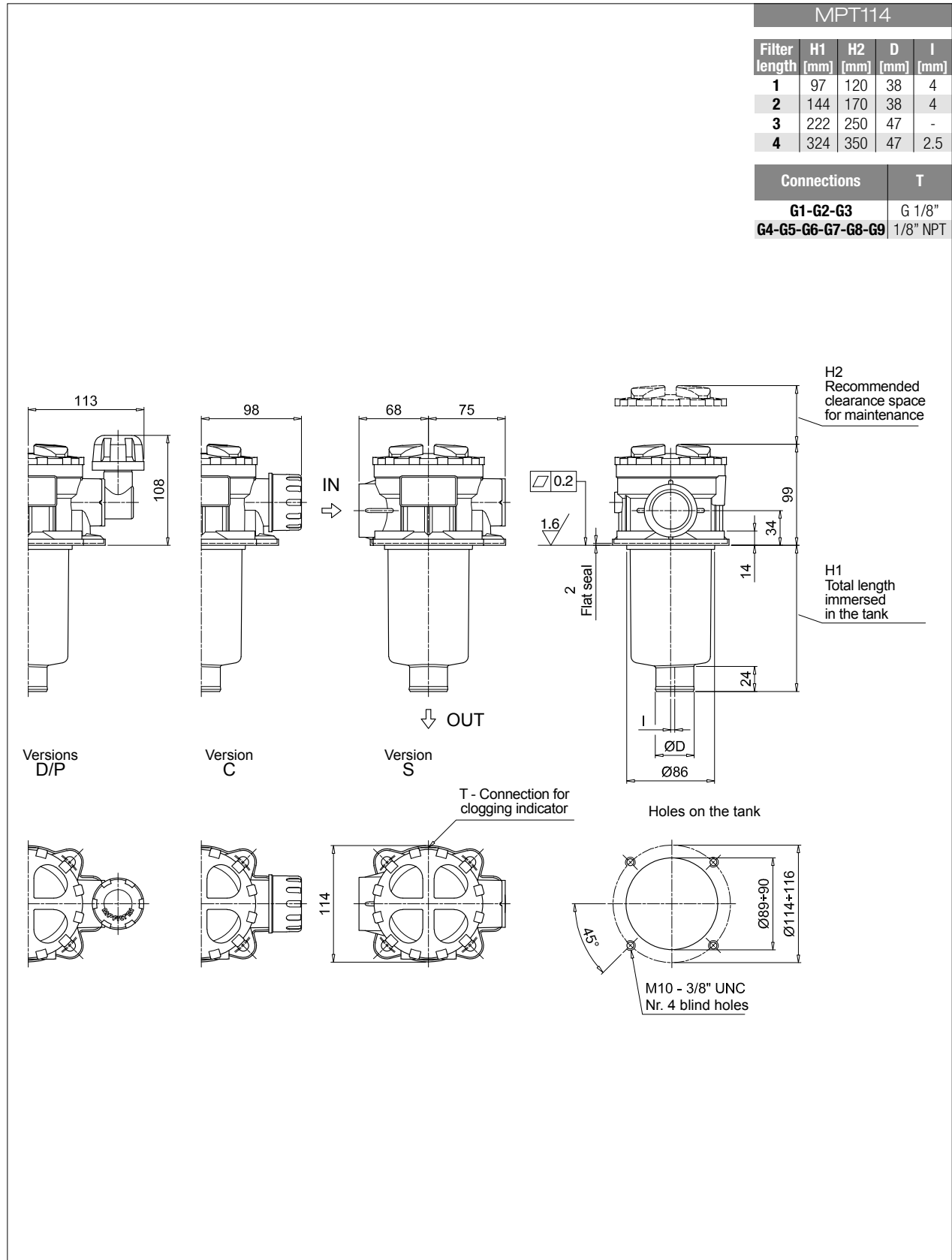
<b>Element series and size</b>	Configuration example 2:	MF100	4	A10	H	B	E	P01
<b>MF100</b> Filter element with standard spigot	Configuration example 1:	MF100	3	A03	W	B		P01
<b>Element length</b>								
1   2   3   4								
<b>Filtration rating (filter media)</b>								
A03 Inorganic microfiber 3 µm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

### ACCESSORIES

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

# MPT114 MPT

## Dimensions



# MPT MPT116

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>MPT116</b> Filter element with standard spigot	Configuration example 1: <b>MPT116</b> <b>1</b> <b>S</b> <b>A</b> <b>G1</b> <b>M90</b> <b>E</b> <b>P01</b>
	Configuration example 2: <b>MPT116</b> <b>2</b> <b>S</b> <b>Z</b> <b>G9</b> <b>A03</b> <b>B</b> <b>P01</b>
<b>Length</b> 1   2   3   4	
<b>Air breather</b> <b>S</b> Without air breather	
<b>Seals and treatments</b>	<b>Filtration rating</b>
<b>A</b> NBR	<b>Axx</b> <b>Mxx</b> <b>Pxx</b>
<b>V</b> FPM	• • •
<b>W</b> NBR head anodized	filter element compatible with fluids HFA-HFB-HFC
<b>Z</b> FPM head anodized	• •
Flat seal on the head on request	
<b>Connections</b>	
<b>G1</b> G 3/4"	<b>G6</b> 1 1/4" NPT
<b>G2</b> G 1"	<b>G7</b> SAE 12 - 1 1/16" - 12 UN
<b>G3</b> G 1 1/4"	<b>G8</b> SAE 16 - 1 5/16" - 12 UN
<b>G4</b> 3/4" NPT	<b>G9</b> SAE 20 - 1 5/8" - 12 UN
<b>G5</b> 1" NPT	
<b>Filtration rating (filter media)</b>	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
	<b>Bypass valve</b>
	<b>E</b> 3 bar
	<b>B</b> 1.75 bar
	<b>Execution</b>
	<b>P01</b> MP Filtri standard
	<b>Pxx</b> Customized

### FILTER ELEMENT

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

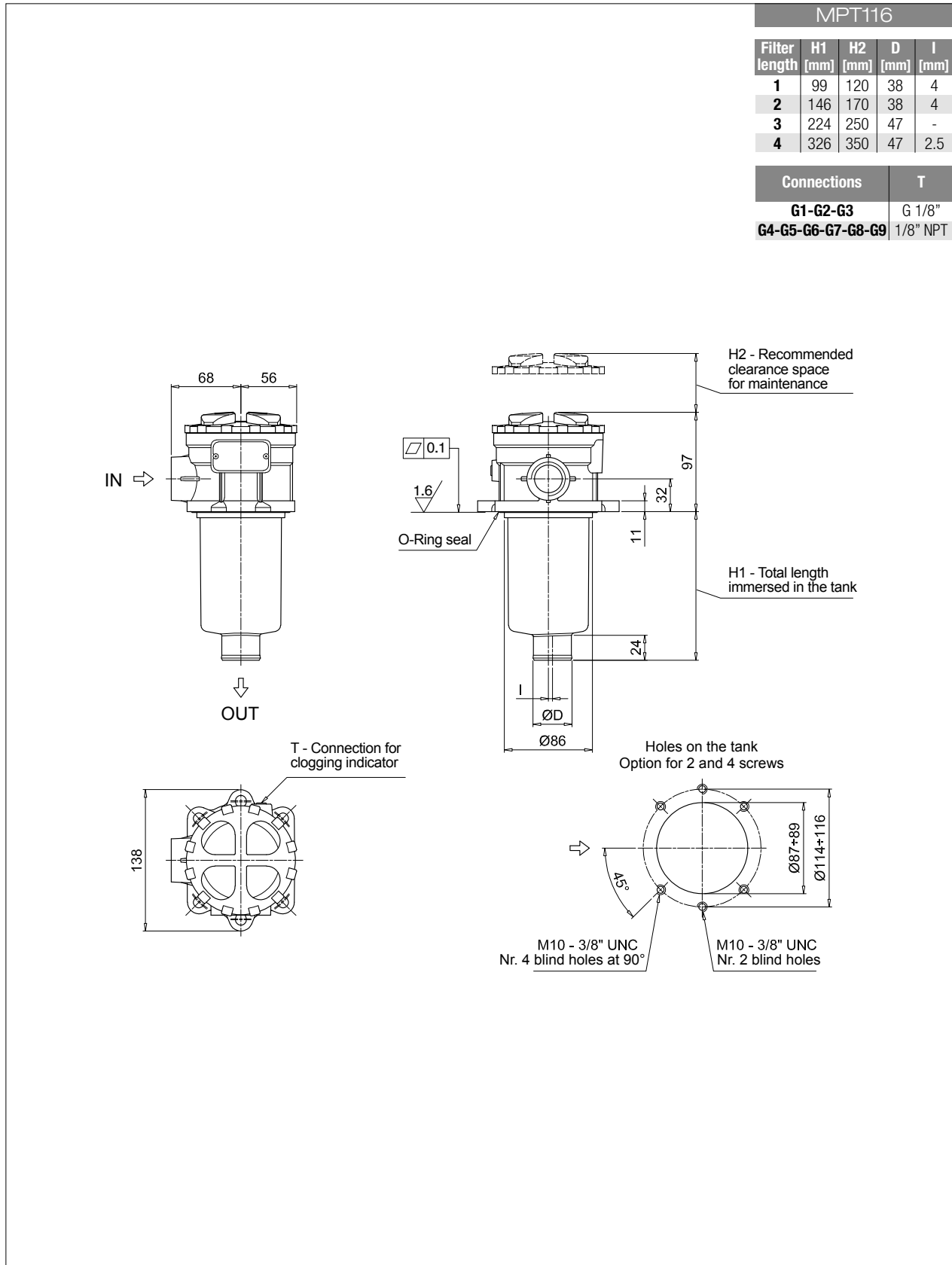
### ACCESSORIES

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



# MPT116 MPT

## Dimensions



# MPT MPT120

## Designation & Ordering code

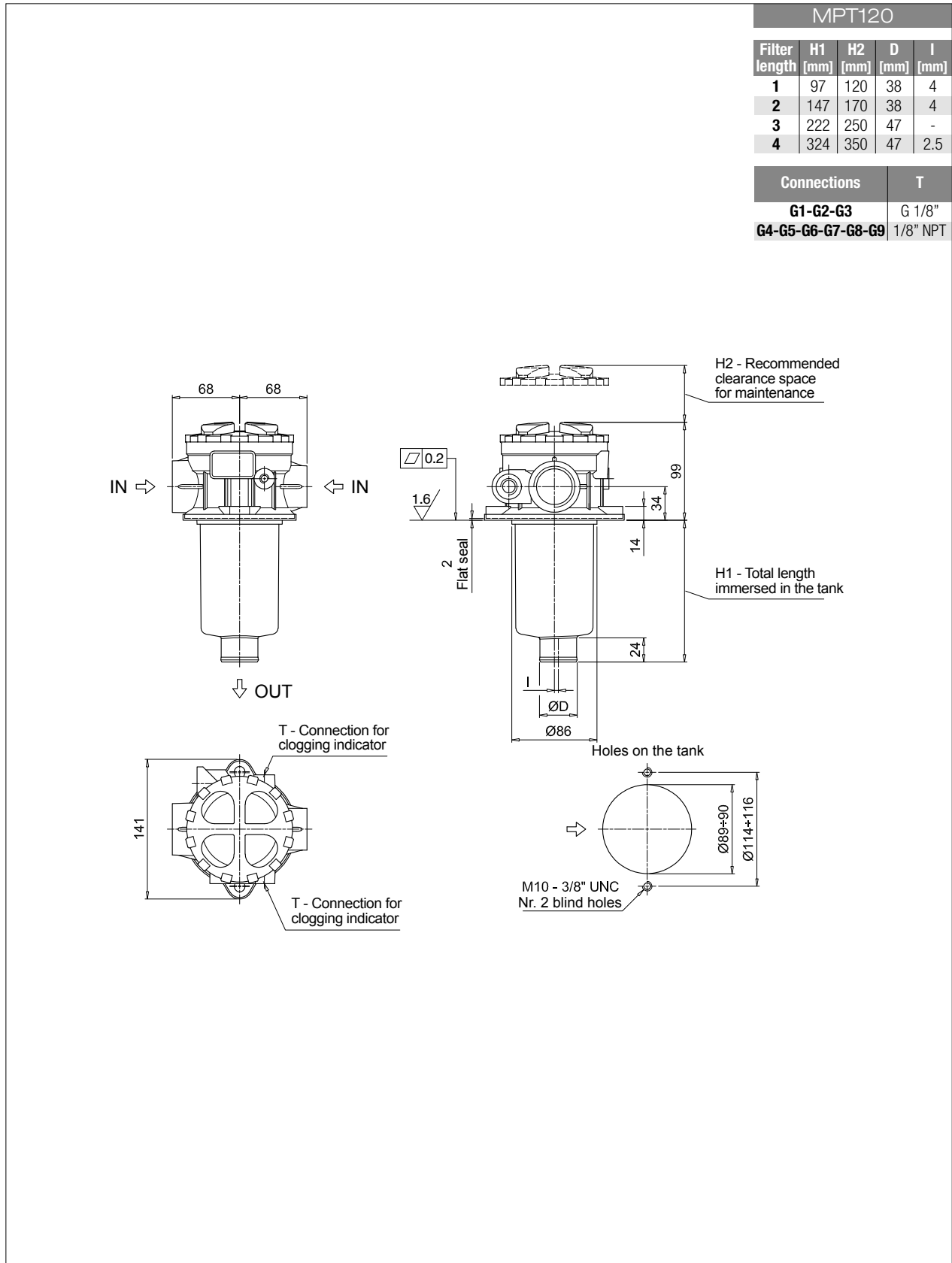
COMPLETE FILTER																																							
<b>Series and size</b>		Configuration example 1: <b>MPT120</b>   <b>1</b>   <b>A</b>   <b>G1</b>   <b>0</b>   <b>A06</b>   <b>E</b>   <b>P01</b>																																					
<b>MPT120</b> Filter element with standard spigot		Configuration example 2: <b>MPT120</b>   <b>3</b>   <b>V</b>   <b>G4</b>   <b>1</b>   <b>M25</b>   <b>B</b>   <b>P01</b>																																					
<b>Length</b>		<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>																																					
<b>Seals and treatments</b>		<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="3">Filtration rating</th> </tr> <tr> <th colspan="2"></th> <th>Axx</th> <th>Mxx</th> <th>Pxx</th> </tr> </thead> <tbody> <tr> <td><b>A</b></td> <td>NBR</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td><b>V</b></td> <td>FPM</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td><b>W</b></td> <td>NBR head anodized</td> <td>•</td> <td>•</td> <td></td> </tr> <tr> <td><b>Z</b></td> <td>FPM head anodized</td> <td>•</td> <td>•</td> <td></td> </tr> </tbody> </table>										Filtration rating					Axx	Mxx	Pxx	<b>A</b>	NBR	•	•	•	<b>V</b>	FPM	•	•	•	<b>W</b>	NBR head anodized	•	•		<b>Z</b>	FPM head anodized	•	•	
		Filtration rating																																					
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<b>V</b>	FPM	•	•	•																																			
<b>W</b>	NBR head anodized	•	•																																				
<b>Z</b>	FPM head anodized	•	•																																				
<b>Main Connections</b>		<b>Rear connections</b>		<b>Aux size 1</b>		<b>Aux size 2</b>																																	
<b>G1</b>	G 3/4"	<b>G 3/4"</b>																																					
<b>G2</b>	G 1"	<b>G 1"</b>		G 3/8"		G 1/2"																																	
<b>G3</b>	G 1 1/4"	<b>G 3/4"</b>																																					
<b>G4</b>	3/4" NPT	<b>3/4" NPT</b>																																					
<b>G5</b>	1" NPT	<b>1" NPT</b>		3/8" NPT		1/2" NPT																																	
<b>G6</b>	1 1/4" NPT	<b>3/4" NPT</b>																																					
<b>G7</b>	SAE 12 - 1 1/16" - 12 UN	<b>SAE 12 - 1 1/16" - 12 UN</b>																																					
<b>G8</b>	SAE 16 - 1 5/16" - 12 UN	<b>SAE 16 - 1 5/16" - 12 UN</b>		SAE 6 - 9/16" - 18 UNF		SAE 8 - 3/4" - 16 UNF																																	
<b>G9</b>	SAE 20 - 1 5/8" - 12 UN	<b>SAE 12 - 1 1/16" - 12 UN</b>																																					
<b>Aux connection - see previous table</b>																																							
<b>0</b>	Not machined	<b>1</b>	Aux size 1	<b>2</b>	Aux size 2																																		
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<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>		Wire mesh 90 µm																																			
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>		Resin impregnated paper 10 µm																																			
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						<b>E</b> 3 bar		<b>P01</b> MP Filtri standard																															
						<b>B</b> 1.75 bar		<b>Pxx</b> Customized																															

FILTER ELEMENT																																		
<b>Element series and size</b>		Configuration example 1: <b>MF100</b>   <b>1</b>   <b>A06</b>   <b>H</b>   <b>B</b>   <b>E</b>   <b>P01</b>																																
<b>MF100</b> Filter element with standard spigot		Configuration example 2: <b>MF100</b>   <b>3</b>   <b>M25</b>   <b>N</b>   <b>V</b>   <b></b>   <b>P01</b>																																
<b>Element length</b>		<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>																																
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<b>Element Δp</b>		<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="3">Filter media</th> </tr> <tr> <th colspan="2"></th> <th>Axx</th> <th>Mxx</th> <th>Pxx</th> </tr> </thead> <tbody> <tr> <td><b>N</b></td> <td>10 bar</td> <td></td> <td>•</td> <td>•</td> </tr> <tr> <td><b>H</b></td> <td>10 bar</td> <td></td> <td>•</td> <td></td> </tr> <tr> <td><b>W</b></td> <td>10 bar, compatible with fluids HFA, HFB and HFC</td> <td>•</td> <td>•</td> <td></td> </tr> </tbody> </table>										Filter media					Axx	Mxx	Pxx	<b>N</b>	10 bar		•	•	<b>H</b>	10 bar		•		<b>W</b>	10 bar, compatible with fluids HFA, HFB and HFC	•	•	
		Filter media																																
		Axx	Mxx	Pxx																														
<b>N</b>	10 bar		•	•																														
<b>H</b>	10 bar		•																															
<b>W</b>	10 bar, compatible with fluids HFA, HFB and HFC	•	•																															
		<b>Seals</b>		<b>Bypass valve</b>		<b>Execution</b>																												
		<b>B</b> NBR		<b>E</b> 3 bar		<b>P01</b> MP Filtri standard																												
		<b>V</b> FPM		1.75 bar		<b>Pxx</b> Customized																												

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

# MPT120 MPT

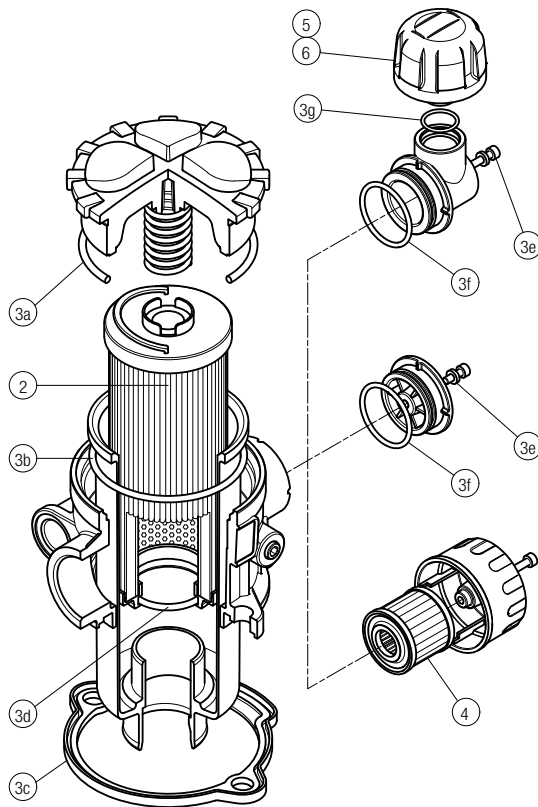
## Dimensions



# MPT SPARE PARTS

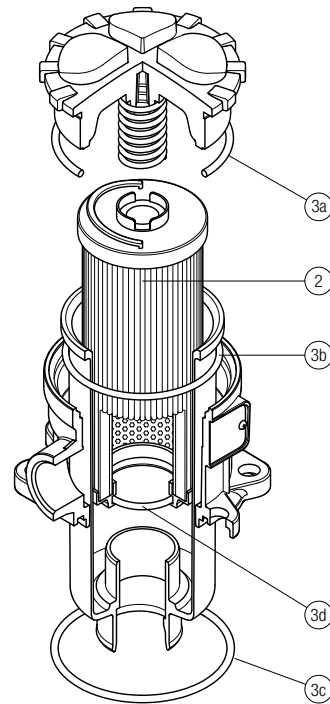
Order number for spare parts

**MPT 025 - 027 - 110**



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

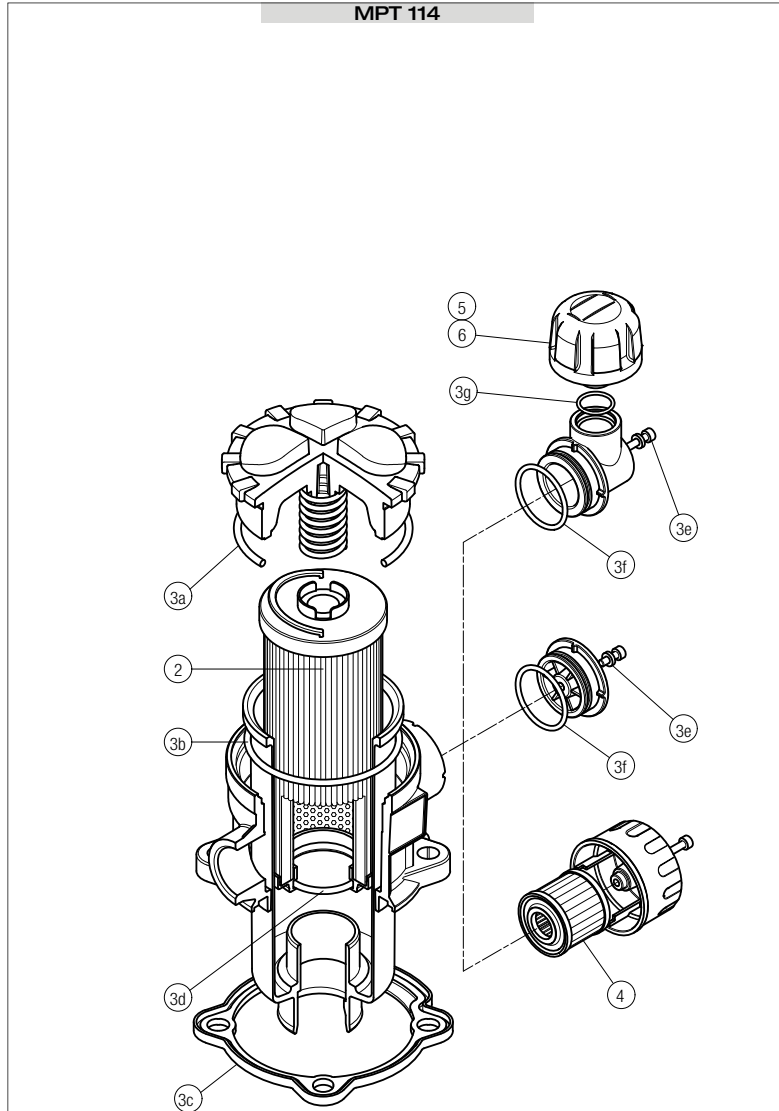
**MPT 116**



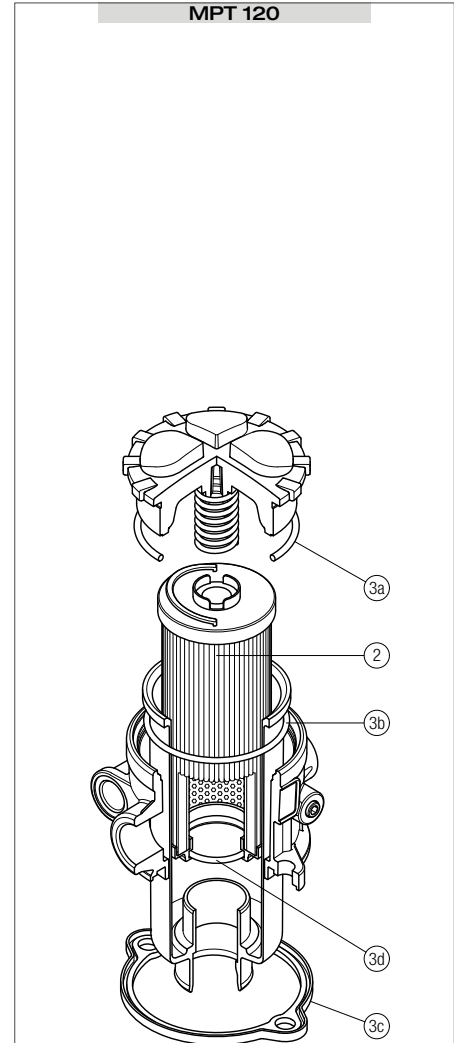
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPT 116</b>	See order table	02050466	02050467

# SPARE PARTS MPT

Order number for spare parts



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		Air breather filter element - version:		
	See order table	NBR	FPM	C	D	P
<b>MPT 114</b>	See order table	02050580	02050581	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01



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





Return filters

# MFB series

## BOWL ASSEMBLY

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



# MFB GENERAL INFORMATION

## Description

### 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

## Technical data

### Bowl assembly materials

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

- Bowl: Nylon

### Filter element materials

- Caps: Nylon
- Spring: Spring steel

### Bypass valve

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

### $\Delta p$ element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MFB filters are provided for vertical mounting



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

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



# GENERAL INFORMATION MFB

## FILTER ASSEMBLY SIZING 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
<b>MFB 020</b>	<b>1</b>	7	10	23	28	42	59	51	54
	<b>2</b>	17	20	45	48	56	72	64	67
	<b>3</b>	21	24	50	55	59	76	74	75
<b>MFB 030</b>	<b>1</b>	7	10	24	29	47	84	60	66
<b>MFB 100</b>	<b>1</b>	18	20	53	56	65	153	87	96
	<b>2</b>	28	38	65	75	95	158	111	123
	<b>3</b>	48	55	125	135	169	289	224	251
	<b>4</b>	79	89	180	185	198	306	264	289
<b>MFB 180</b>	<b>1</b>	127	148	235	243	278	441	285	299
	<b>2</b>	231	262	358	382	388	472	404	412
<b>MFB 190</b>	<b>2</b>	261	305	489	528	546	696	583	598

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

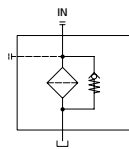
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

Filter series	Style 1 connection
<b>MFB 020</b>	•
<b>MFB 030</b>	•
<b>MFB 100</b>	•
<b>MFB 180</b>	•
<b>MFB 190</b>	•



# MFB MFB020 - MFB030 - MFB100 - MFB180 - MFB190

## Designation & Ordering code

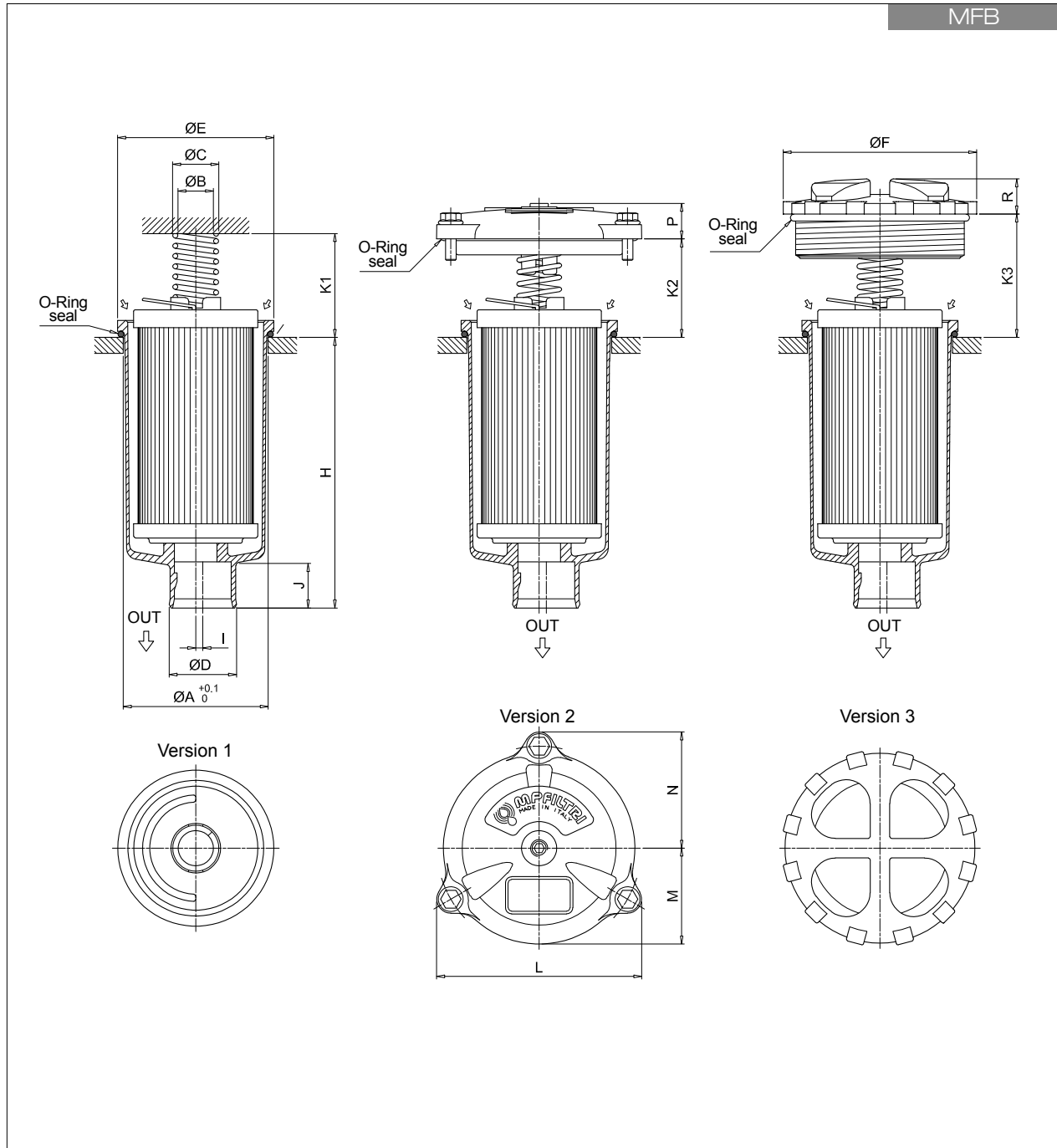
COMPLETE FILTER										
<b>Series and size</b>				Configuration example 1: MFB100 1 A 2 A10 H E P01						
<b>MFB020   MFB030   MFB100   MFB180   MFB190</b>				Configuration example 2: MFB180 2 V 1 M25 N B P01						
Filter element with private spigot										
<b>Length</b>	MFB020	MFB030	MFB100	MFB180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

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

ACCESSORIES						
<b>Additional features</b>						
MFB020 MFB030 MFB100 MFB180 MFB190						
TE Extension tube	•	•	•	•	•	248
DFS Diffuser with fast lock connection			•			249

# MFB020 - MFB030 - MFB100 - MFB180 - MFB190 MFB

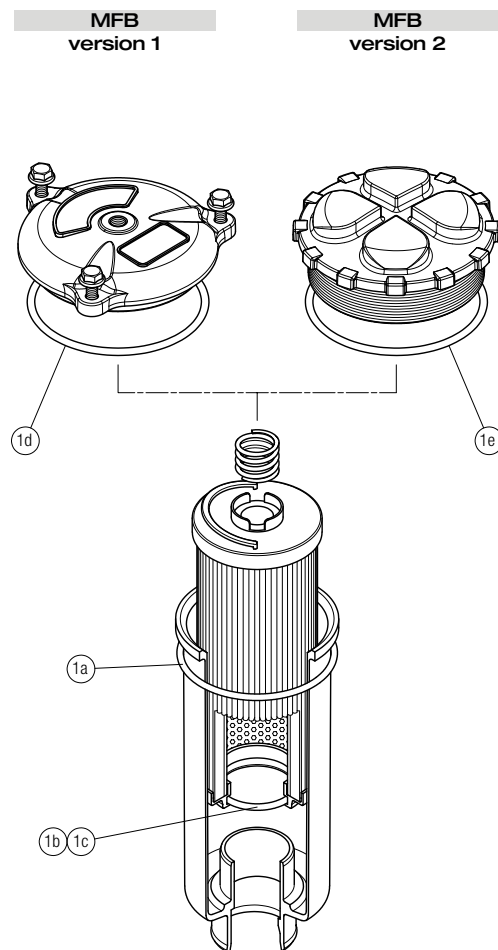
## Dimensions



Filter size	Filter Length	Ø A [mm]	Ø B [mm]	Ø C [mm]	Ø D [mm]	Ø E [mm]	Ø F [mm]	H [mm]	I [mm]	J [mm]	K1 [mm]	K2 [mm]	K3 [mm]	L [mm]	M [mm]	N [mm]	P [mm]	R [mm]
<b>020</b>	1	52	20.5	26	32	56	75	111	0	24	42	-	36	-	-	-	-	18
	2	52	20.5	26	32	56	75	175	0	24	42	-	36	-	-	-	-	18
	3	52	20.5	26	32	56	75	214	0	24	42	-	36	-	-	-	-	18
<b>030</b>	1	60.5	20	25.5	32	68	-	92	3	21	33	35	-	92	42	52	18	-
	1	80.5	20	26	38	88	111	107	4	24	58	55	69	116	54	66	20	20
	2	80.5	20	26	38	88	111	154	4	24	58	55	69	116	54	66	20	20
<b>100</b>	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
	1	112.5	26	33.5	47	121	-	234	0	31	58	58	69	159	76	95	21	-
<b>180</b>	2	112.5	26	33.5	47	121	-	447	0	31	58	58	69	159	76	95	21	-
	2	112.5	26	33.5	50	121	-	454	0	38	58	58	69	159	76	95	21	-

# MFB SPARE PARTS

Order number for spare parts



Q.ty: 1 pc.  
1 (1a ÷ 1e)

Filter series	Seal Kit code number	
	NBR	FPM
<b>MFB 020</b>	02050572	02050573
<b>MFB 030</b>	02050574	02050575
<b>MFB 100</b>	02050555	02050556
<b>MFB 180</b>	02050576	02050577
<b>MFB 190</b>	02050578	02050579







Return filters

# MPH series

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



# MPH GENERAL INFORMATION

## Description

### 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 3000 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic 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

## Technical data

### Filter housing materials

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

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

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

- Diffuser: Tinned Steel

- Valve: Phosphatized Steel

### Bypass valve

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

### Δp element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPH filters are provided for vertical mounting



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

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



# GENERAL INFORMATION MPH

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

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

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

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

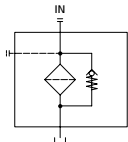
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

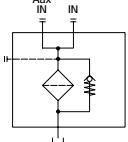
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

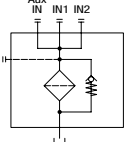
## Hydraulic symbols

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



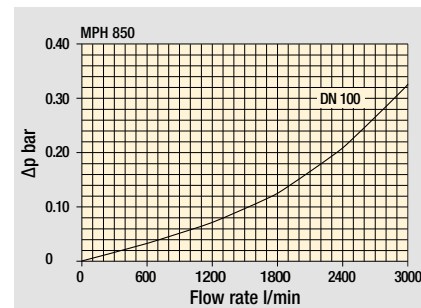
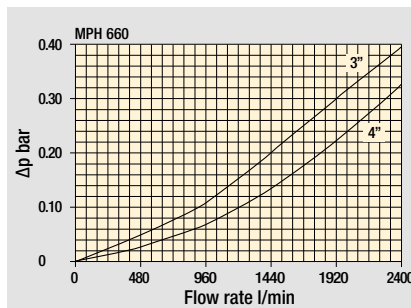
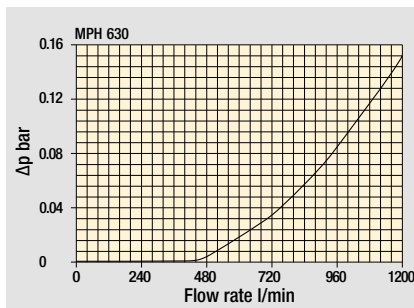
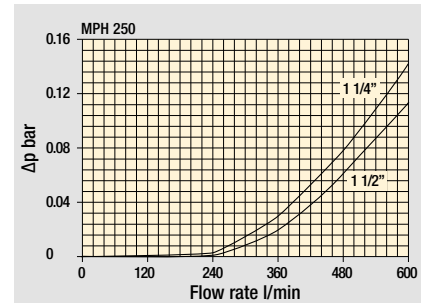
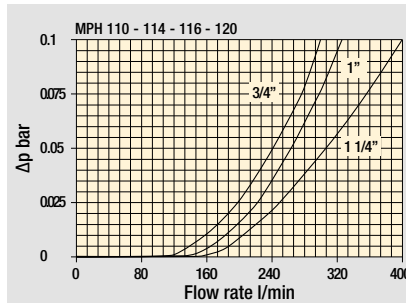




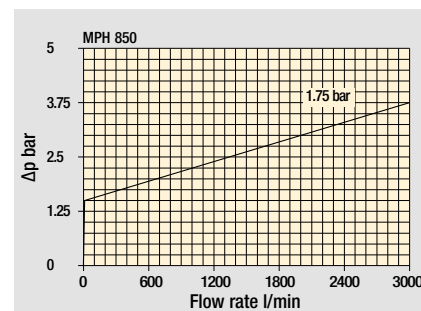
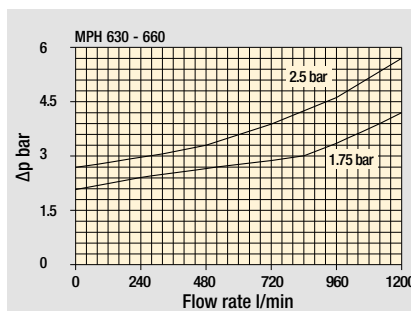
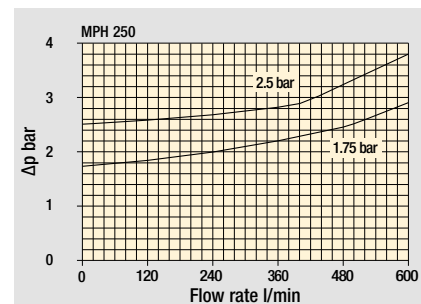
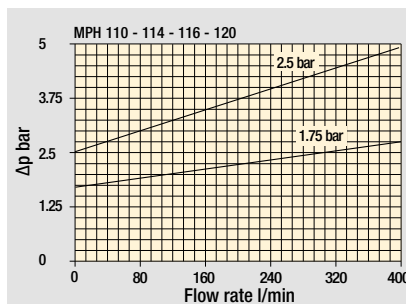
# MPH GENERAL INFORMATION

## Pressure drop

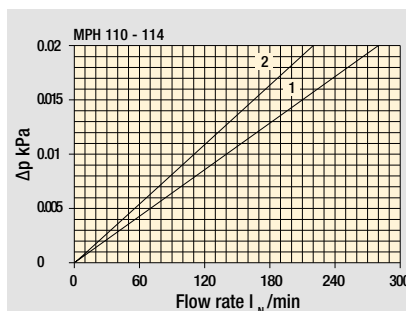
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Air breather pressure drop



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

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

# MPH

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# MPH MPH110

## Designation & Ordering code

### COMPLETE FILTER

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

**MPH110**

Length  
1 | 2 | 3 | 4 | 5 |

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

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

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

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized filter element compatible with fluids HFA-HFB-HFC	•	•	
<b>Z</b> FPM head anodized	•	•	

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

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

Filtration rating (filter media)

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

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

### FILTER ELEMENT

Element series and size Configuration example: **MR100** | **1** | **A10** | **A** | **P01**

**MR100**

Element length  
1 | 2 | 3 | 4 | 5 |

Filtration rating (filter media)

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

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

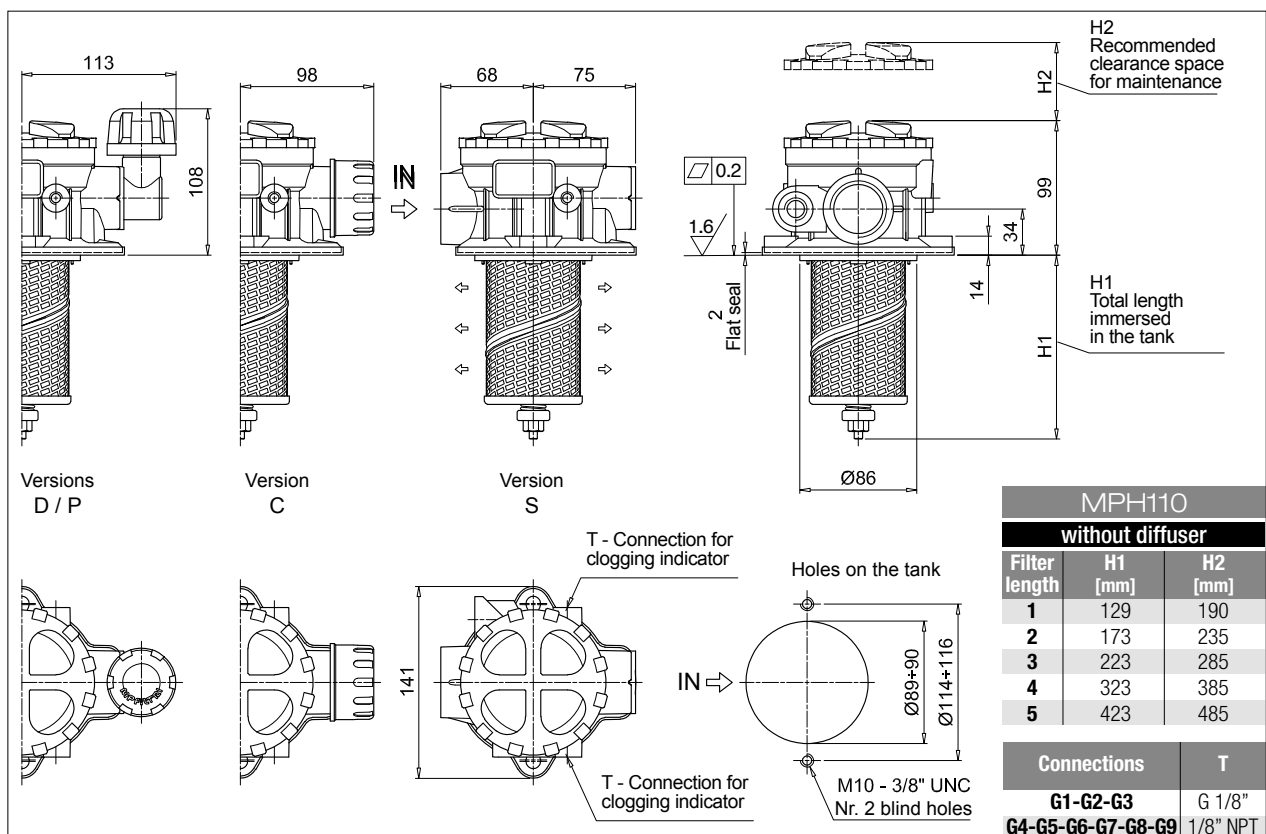
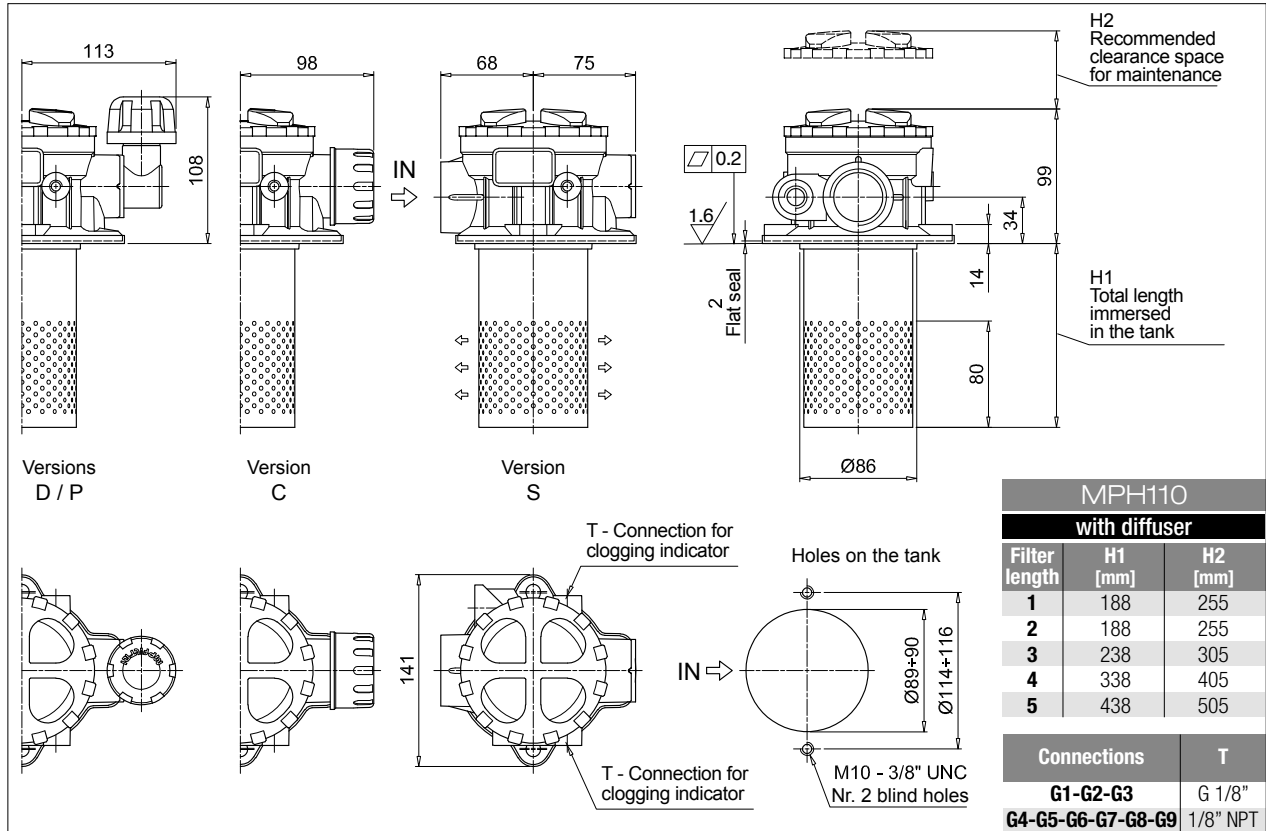
Execution  
**P01** MP Filtri standard  
**Pxx** Customized

### ACCESSORIES

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

# MPH110 MPH

## Dimensions



# MPH MPH114

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH114** **3** **C** **E** **C** **Z** **G6** **M60** **P01**

**Series and size**  
**MPH114**

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

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

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

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

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

**Connections**

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

**Filtration rating (filter media)**

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

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

### FILTER ELEMENT

Configuration example: **MR100** **3** **M60** **V** **P01**

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

**Element length**  
1 | 2 | 3 | 4 | 5 |

**Filtration rating (filter media)**

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

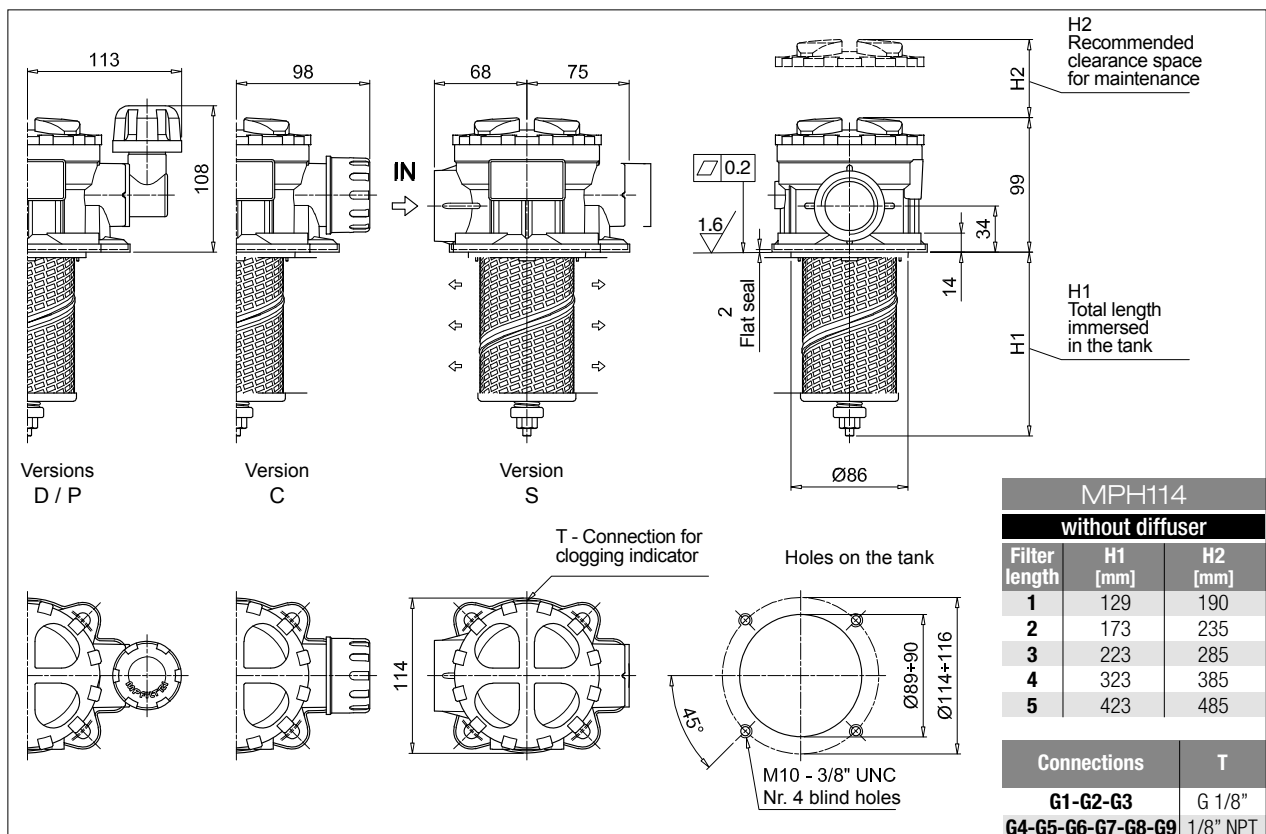
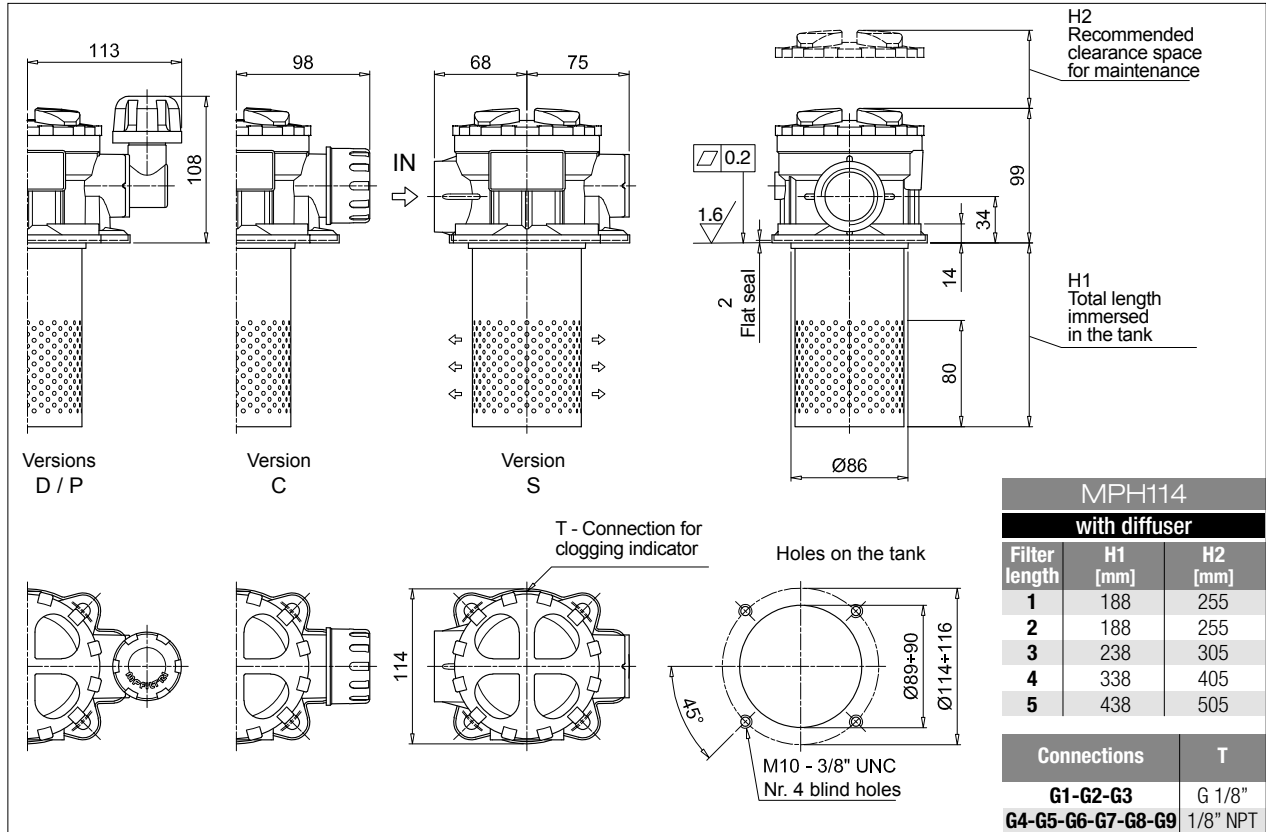
Seals	Execution
<b>A</b> NBR	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>Pxx</b> Customized

### ACCESSORIES

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

# MPH114 MPH

## Dimensions



# MPH MPH116

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>MPH116</b>	Configuration example: <b>MPH116</b>   <b>5</b>   <b>S</b>   <b>D</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>A10</b>   <b>P01</b>																																	
<b>Length</b>	<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>																																	
<b>Bypass valve</b>	<b>S</b> Without bypass   <b>C</b> 1.75 bar   <b>E</b> 2.5 bar																																	
<b>Diffuser and magnetic filter</b>	<b>D</b> With diffuser, with magnetic filter <b>F</b> With diffuser, without magnetic filter <b>O</b> Without diffuser, with magnetic filter <b>E</b> Without diffuser, without magnetic filter																																	
<b>Air breather</b>	<b>S</b> Without air breather																																	
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### FILTER ELEMENT

<b>Element series and size</b> <b>MR100</b>	Configuration example: <b>MR100</b>   <b>5</b>   <b>A10</b>   <b>A</b>   <b>P01</b>															
<b>Element length</b>	<b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>															
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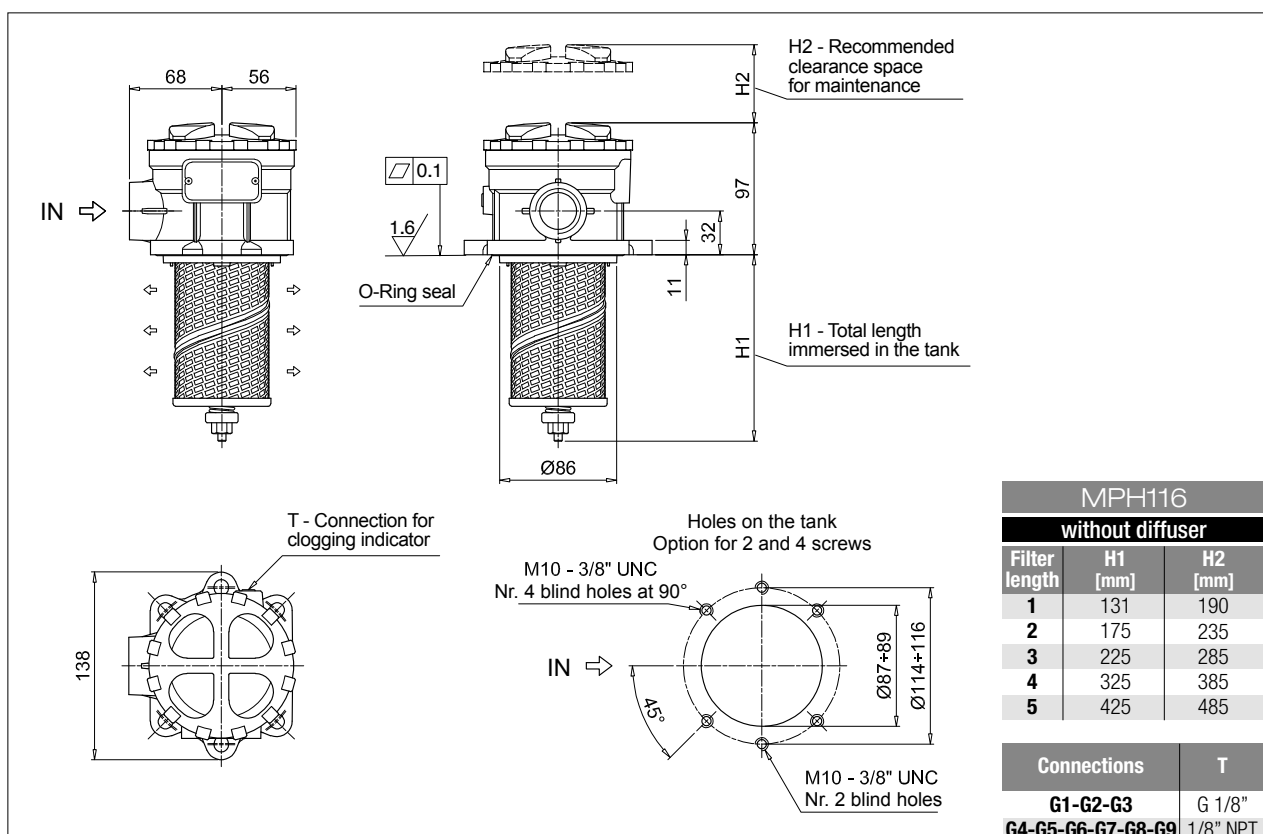
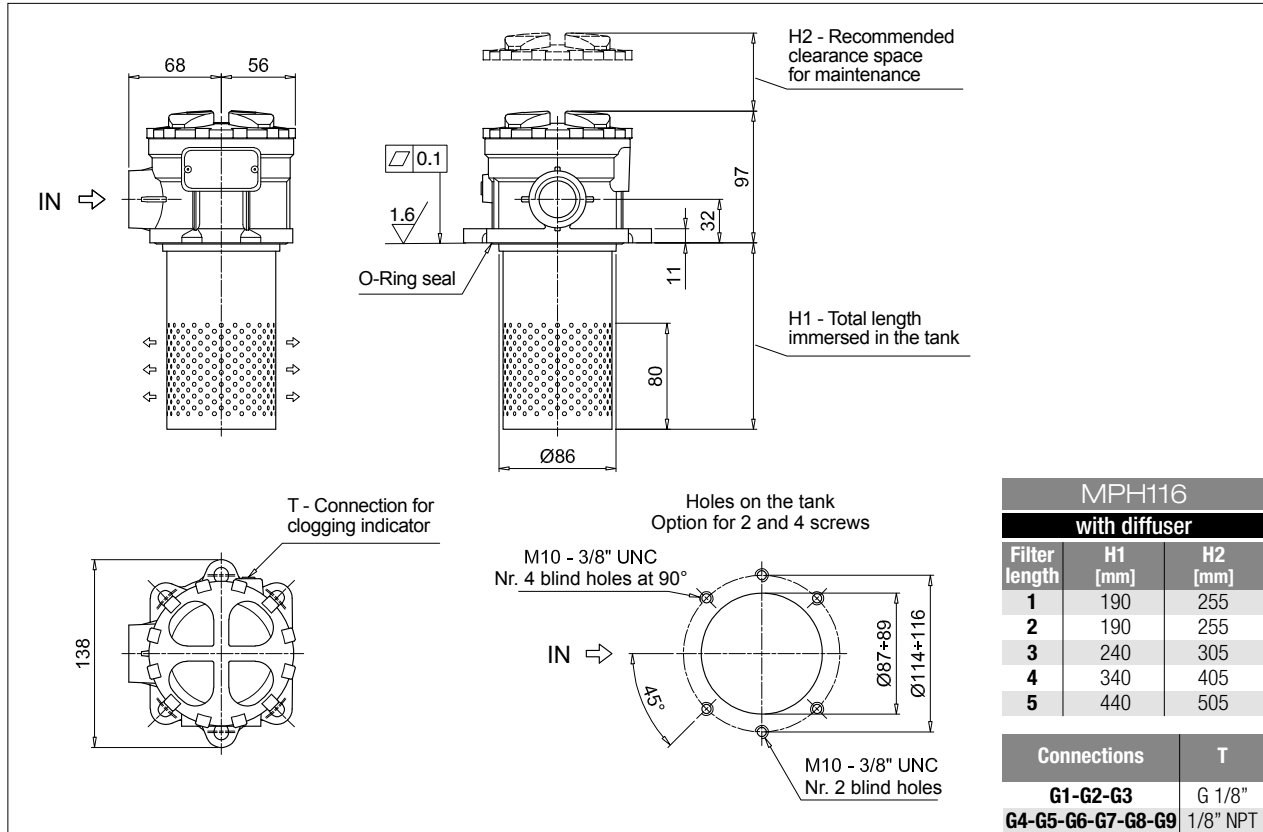
### ACCESSORIES

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



# MPH116 MPH

## Dimensions



# MPH MPH120

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH120** | **1** | **S** | **D** | **A** | **G1** | **1** | **A10** | **P01**

**Series and size**  
**MPH120**

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

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

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

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

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

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

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

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

### FILTER ELEMENT

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

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

**Element length**  
1 | 2 | 3 | 4 | 5 |

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

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

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

### ACCESSORIES

Indicators	page		page
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<b>BVQ</b> Visual pressure indicator with manual reset	241		
Additional features	page		
<b>DPT</b> Dipstick	249		



# MPH MPH250

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: MPH250 1 C D S A G1 A10 P01									
<b>MPH250</b>										
<b>Length</b>	1   2   3   4									
<b>Bypass valve</b>	S Without bypass C 1.75 bar E 2.5 bar									
<b>Diffuser and magnetic filter</b>	D With diffuser, with magnetic filter F With diffuser, without magnetic filter O Without diffuser, with magnetic filter E Without diffuser, without magnetic filter									
<b>Air breather</b>	S Without air breather									
<b>Seals and treatments</b>	Filtration rating									
	Axx	Mxx	Pxx							
A NBR	•	•	•							
V FPM	•	•	•							
W NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC						
Z FPM head anodized	•	•								
<b>Main Connections</b>	<b>Rear connections</b>									
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									
<b>Filtration rating (filter media)</b>										
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm									
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm									
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm									
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm									
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm									
	<b>Execution</b>									
	P01 MP Filtri standard									
	Pxx Customized									

### FILTER ELEMENT

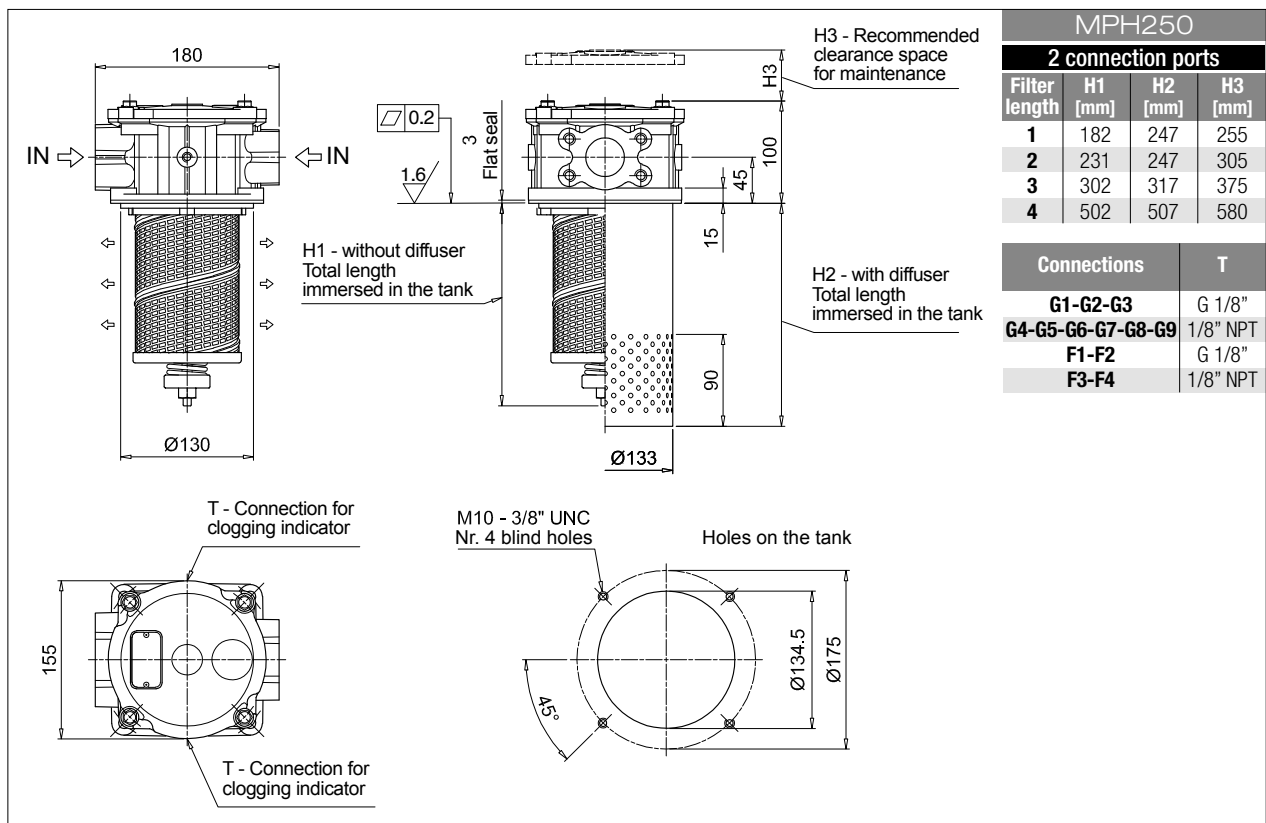
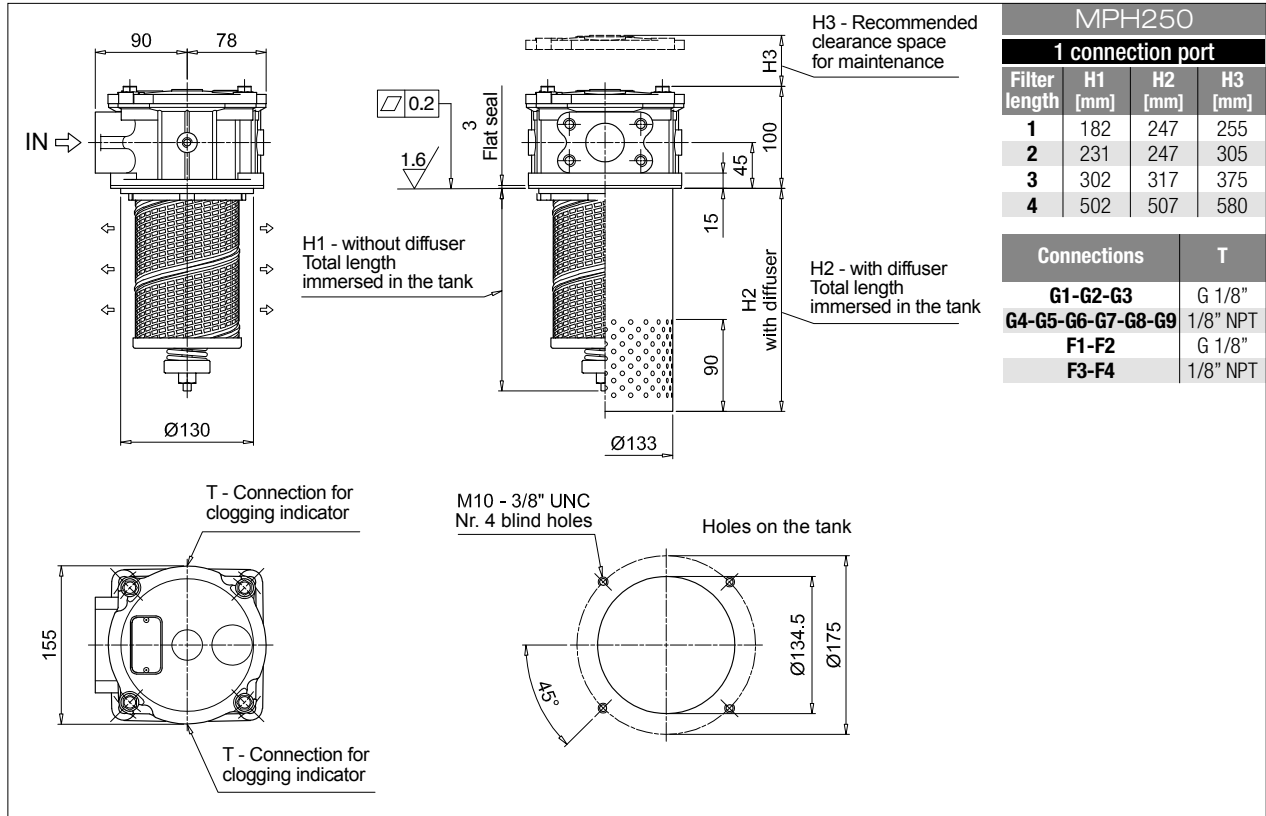
<b>Element series and size</b>	Configuration example: MR250 1 A10 A P01			
<b>MR250</b>				
<b>Element length</b>	1   2   3   4			
<b>Filtration rating (filter media)</b>				
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm			
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm			
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm			
A16 Inorganic microfiber 16 µm	P10 Resin impregnated paper 10 µm			
A25 Inorganic microfiber 25 µm	P25 Resin impregnated paper 25 µm			
	<b>Seals</b>		<b>Execution</b>	
	A NBR	P01	MP Filtri standard	
	V FPM	Pxx	Customized	

### ACCESSORIES

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

# MPH250 MPH

## Dimensions



# MPH MPH630

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH630** | **1** | **S** | **E** | **S** | **W** | **F1** | **M25** | **P01**

**Series and size**  
**MPH630**

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

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

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

**Air breather**  
**S** Without air breather

Seals and treatments	Filtration rating		
	Axx	Mxx	Pxx
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized filter element compatible with fluids HFA-HFB-HFC	•	•	
<b>Z</b> FPM head anodized	•	•	

Main Connections	Rear connections
<b>F1</b> 2 1/2" SAE 3000 psi/M	-
<b>F2</b> 2 1/2" SAE 3000 psi/M	2" SAE 3000 psi/M
<b>F3</b> 2 1/2" SAE 3000 psi/UNC	-
<b>F4</b> 2 1/2" SAE 3000 psi/UNC	2" SAE 3000 psi/UNC

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

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

### FILTER ELEMENT

Configuration example: **MR630** | **1** | **M25** | **A** | **P01**

**Element series and size**  
**MR630**

**Element length**  
1 | 2 | 3 | 4 | 5

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

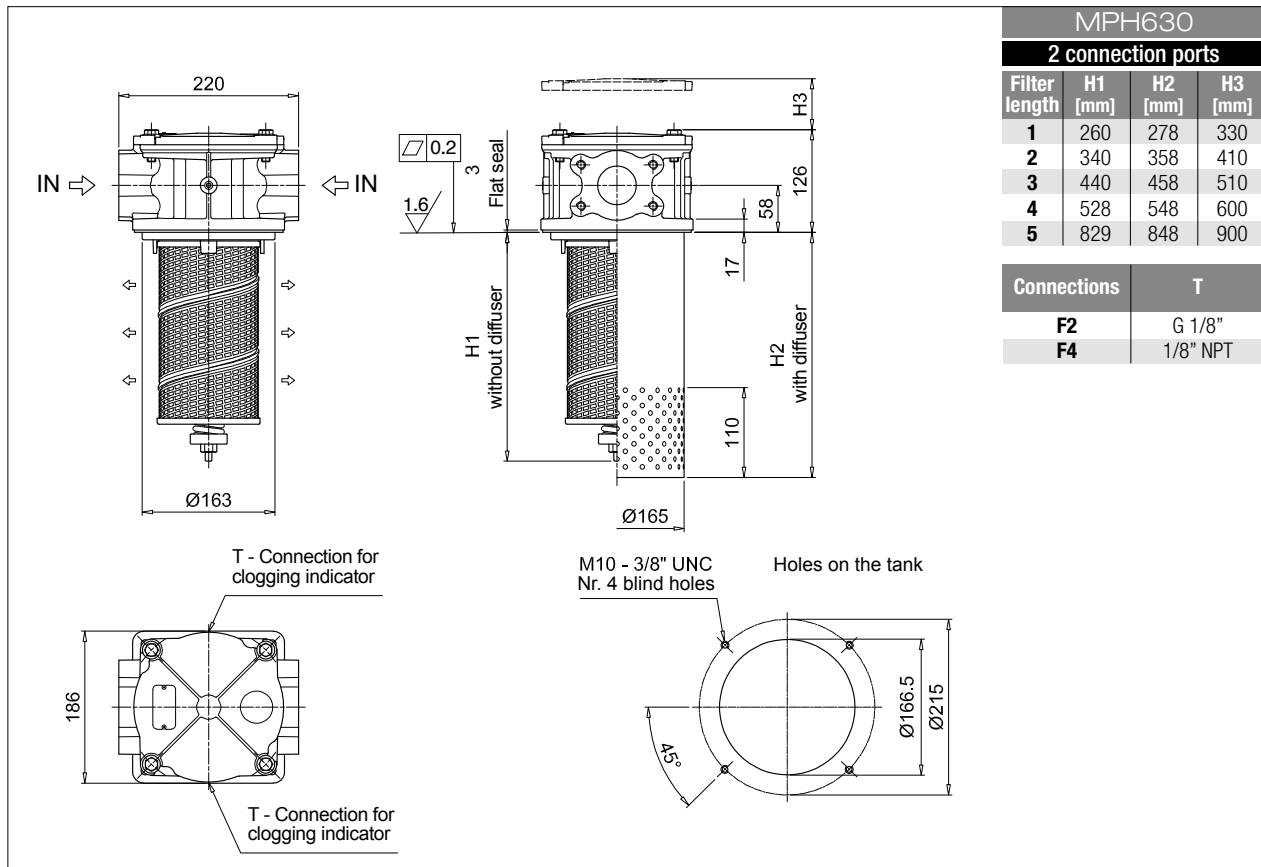
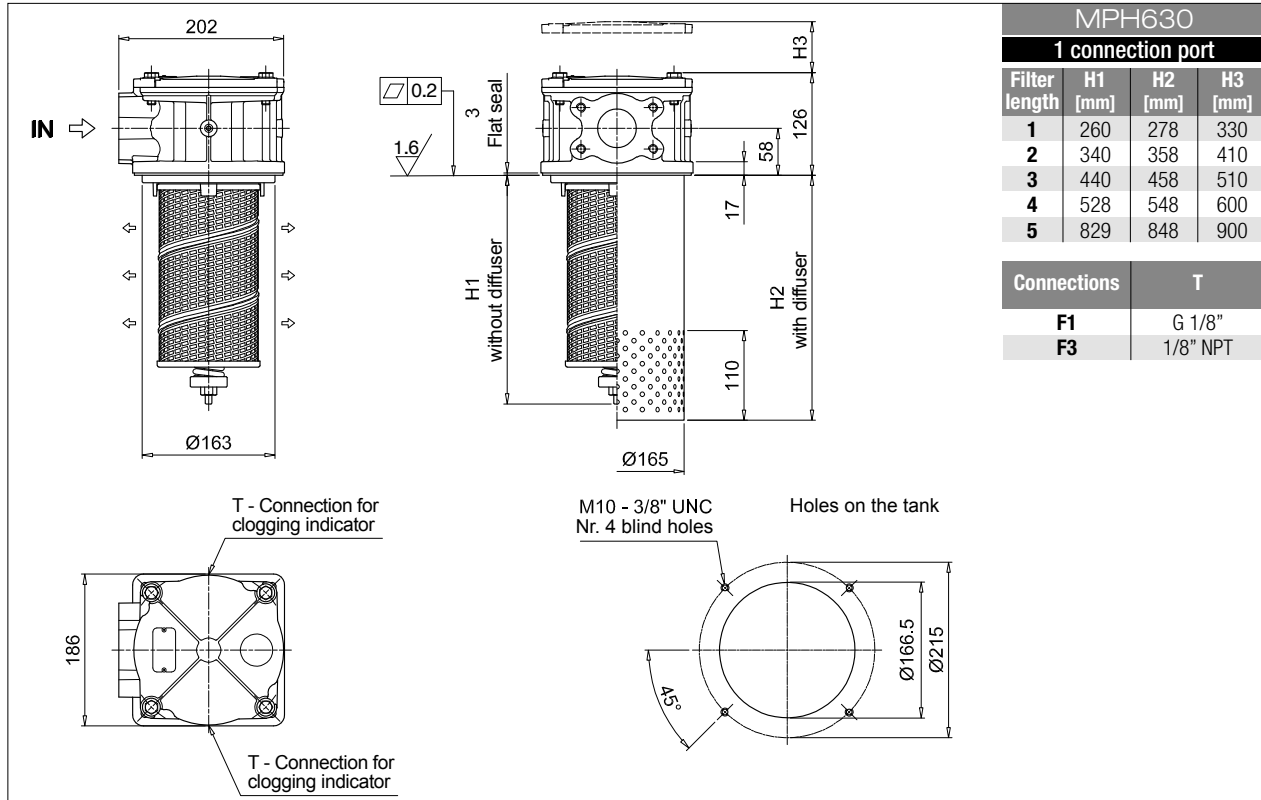
Seals	Execution
<b>A</b> NBR	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>Pxx</b> Customized

### ACCESSORIES

Indicators	page		page
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<b>BVP</b> Visual pressure indicator with automatic reset	241	<b>BLA</b> Electrical / visual pressure indicator	239-240
<b>BVQ</b> Visual pressure indicator with manual reset	241		

# MPH630 MPH

## Dimensions



# MPH MPH660

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **MPH660** | **4** | **C** | **D** | **S** | **A** | **F2** | **A10** | **P01**

**Series and size**  
**MPH660**

**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
<b>A</b> NBR	•	•	•
<b>V</b> FPM	•	•	•
<b>W</b> NBR head anodized filter element compatible with fluids HFA-HFB-HFC	•	•	
<b>Z</b> FPM head anodized	•	•	

**Main Connections**  
**F1** 3" SAE 3000 psi/M  
**F2** 4" SAE 3000 psi/M

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

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

### FILTER ELEMENT

Configuration example: **MR630** | **5** | **M25** | **A** | **P01**

**Element series and size**  
**MR630**

**Element length**  
**4** | **5**

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

Seals	Execution
<b>A</b> NBR	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>Pxx</b> Customized

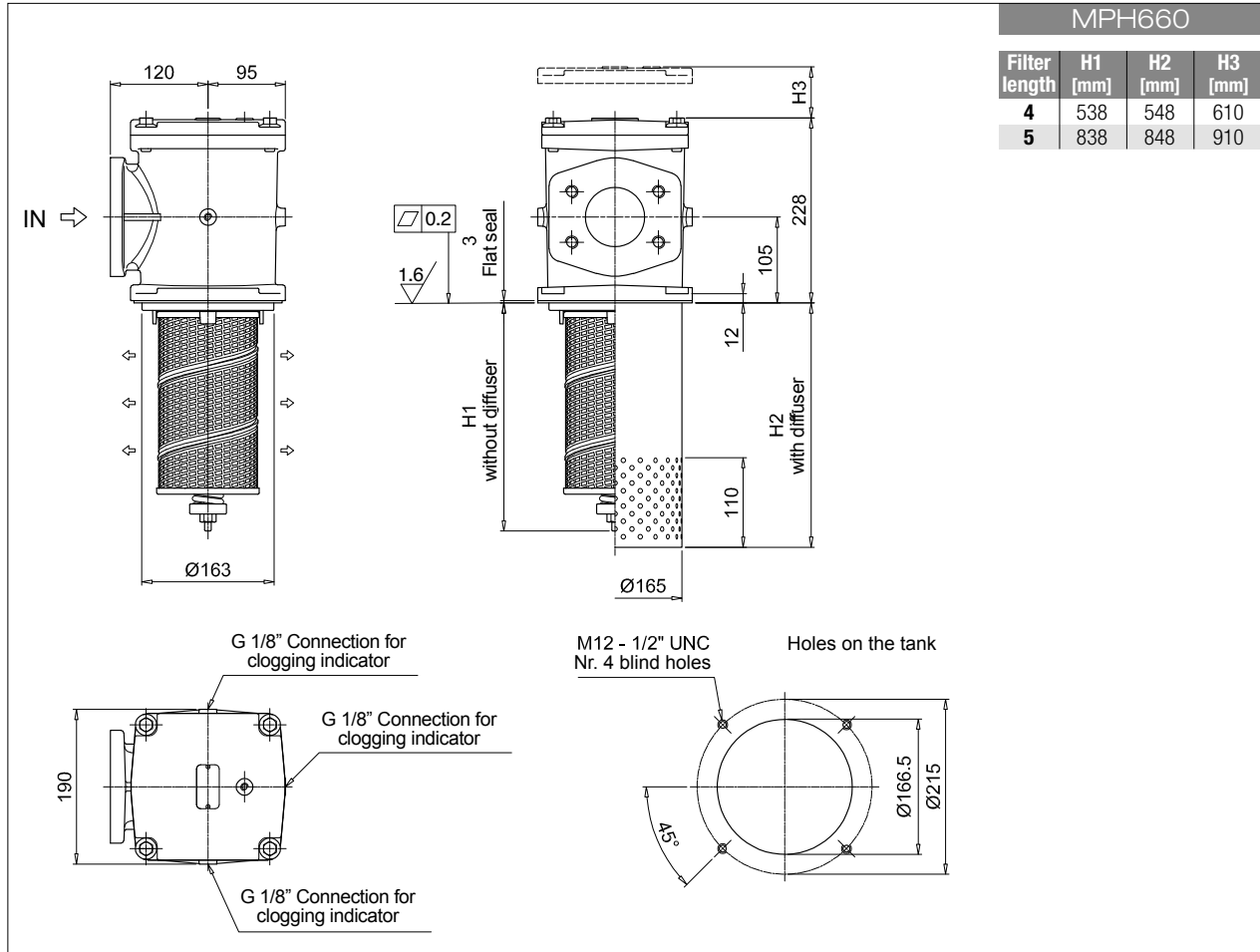
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<b>BVP</b> Visual pressure indicator with automatic reset	241	<b>BLA</b> Electrical / visual pressure indicator	239-240
<b>BVQ</b> Visual pressure indicator with manual reset	241		



# MPH660 MPH

## Dimensions



# MPH MPH850

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: MPH850 1 C D S A F1 A10 P01										
<b>MPH850</b>											
<b>Length</b>	1   2   3   4										
<b>Bypass valve</b>	S Without bypass C 1.75 bar										
<b>Diffuser and magnetic filter</b>	D With diffuser, with magnetic filter F With diffuser, without magnetic filter O Without diffuser, with magnetic filter E Without diffuser, without magnetic filter										
<b>Air breather</b>	S Without air breather										
<b>Seals and treatments</b>			Filtration rating								
	Axx	Mxx	Pxx								
<b>A</b> NBR	•	•	•								
<b>V</b> FPM	•	•	•								
<b>W</b> NBR head anodized	•	•		filter element compatible							
<b>Z</b> FPM head anodized	•	•		with fluids HFA-HFB-HFC							
<b>Main Connections</b>	<b>Rear connections</b>										
<b>F1</b> UNI 2223 DN 100 PN 10/16	3" SAE 3000 psi/M										
<b>F2</b> UNI 2223 DN 100 PN 10/16	3" SAE 3000 psi/UNC										
<b>F5</b> Not machined	3" SAE 3000 psi/M										
<b>F6</b> Not machined	3" SAE 3000 psi/UNC										
<b>F7</b> 4" SAE 3000 psi/M	3" SAE 3000 psi/M										
<b>F8</b> 4" SAE 3000 psi/UNC	3" SAE 3000 psi/UNC										
<b>Filtration rating (filter media)</b>											
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm										
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm										
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm										
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm										
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm										
	<b>Execution</b>										
	<b>P01</b> MP Filtri standard										
	<b>Pxx</b> Customized										

### FILTER ELEMENT

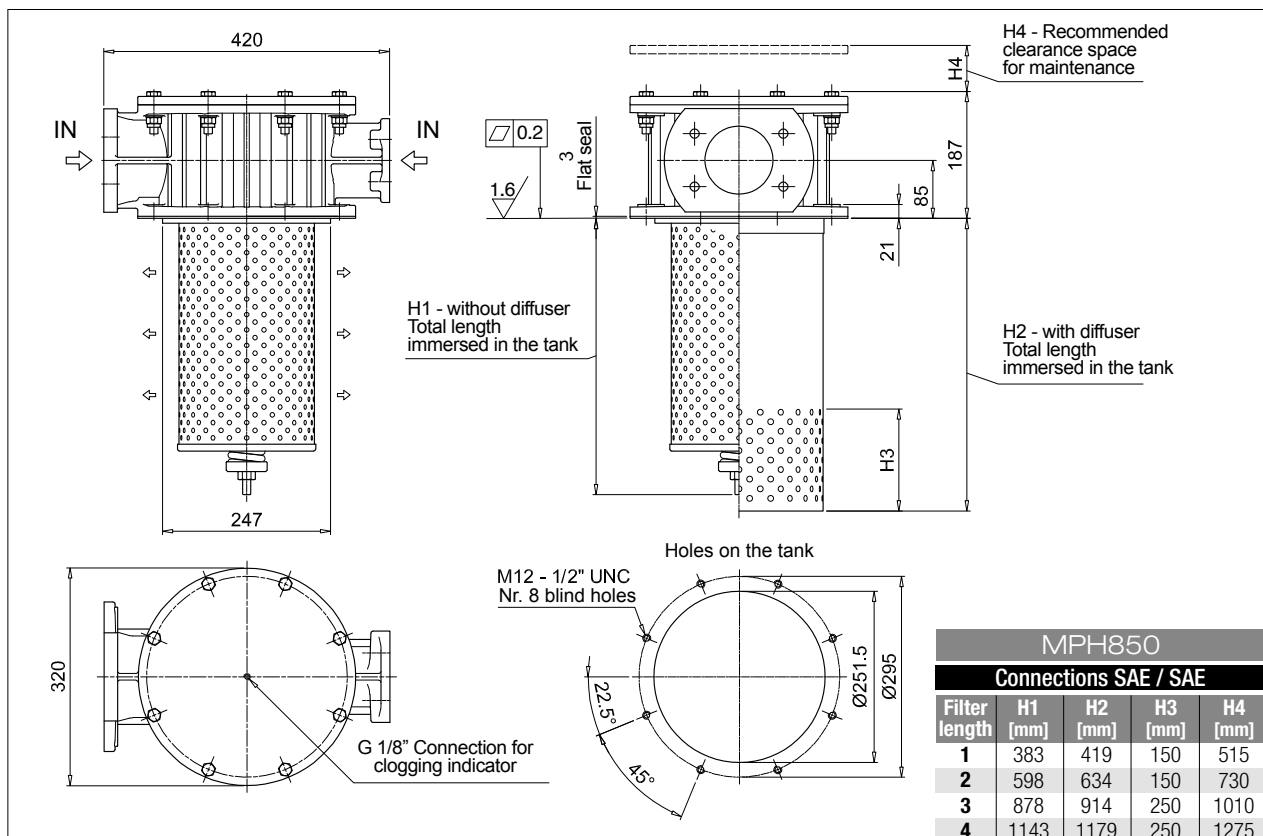
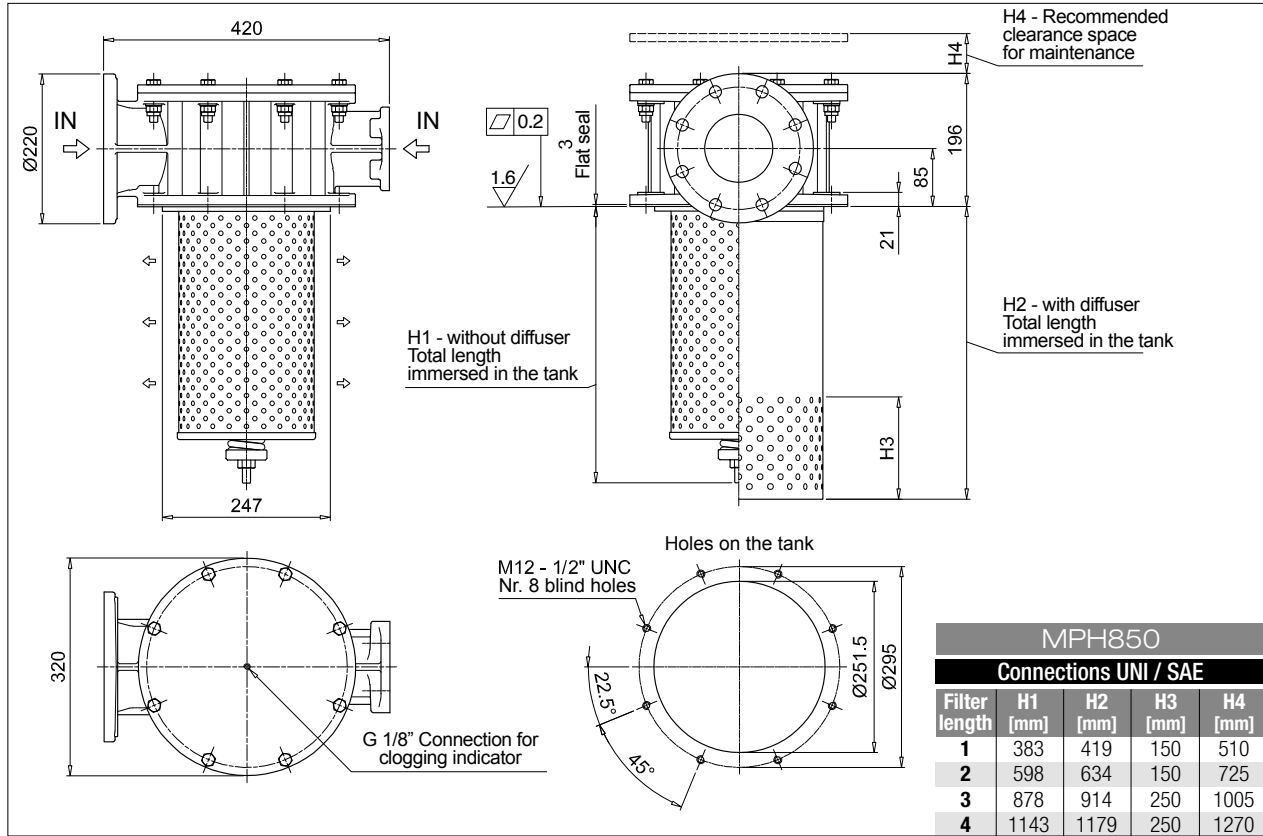
<b>Element series and size</b>	Configuration example: MR850 1 A10 A P01				
<b>MR850</b>					
<b>Element length</b>	1   2   3   4				
<b>Filtration rating (filter media)</b>					
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm				
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm				
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm				
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm				
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm				
	<b>Seals</b>		<b>Execution</b>		
	<b>A</b> NBR		<b>P01</b> MP Filtri standard		
	<b>V</b> FPM		<b>Pxx</b> Customized		

### ACCESSORIES

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

# MPH850 MPH

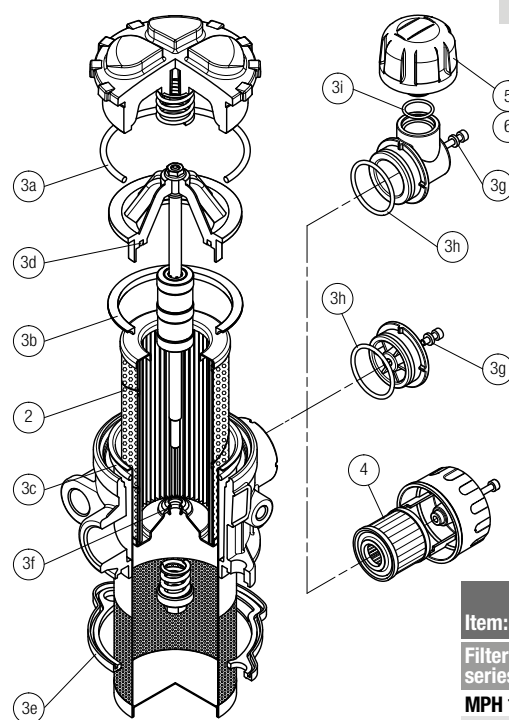
## Dimensions



# MPH SPARE PARTS

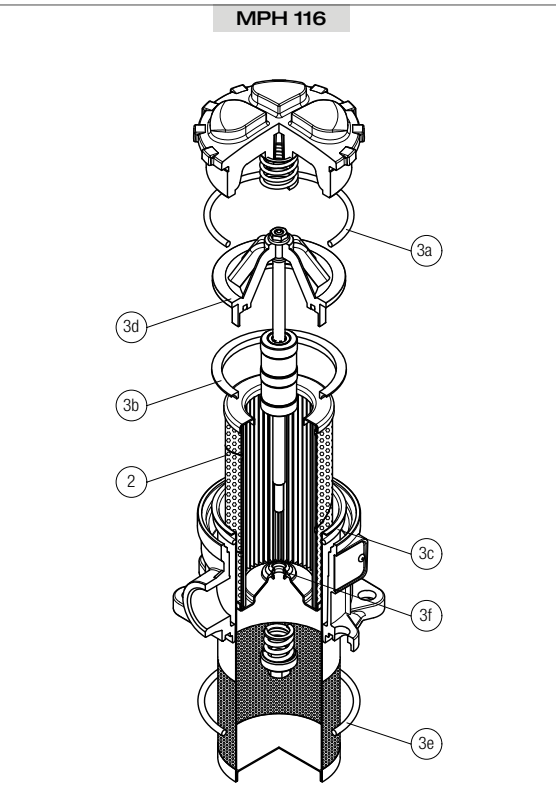
Order number for spare parts

**MPH 110 - 114**



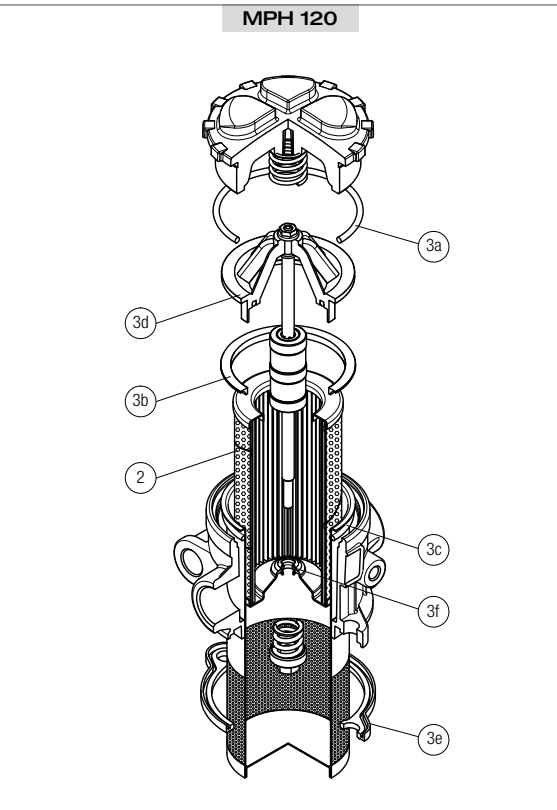
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number		Air breather filter element - version:		P	
		NBR	FPM	C	D		
<b>MPH 110</b>	See order table	02050565	02050566	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01	
<b>MPH 114</b>	See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

**MPH 116**



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

**MPH 120**

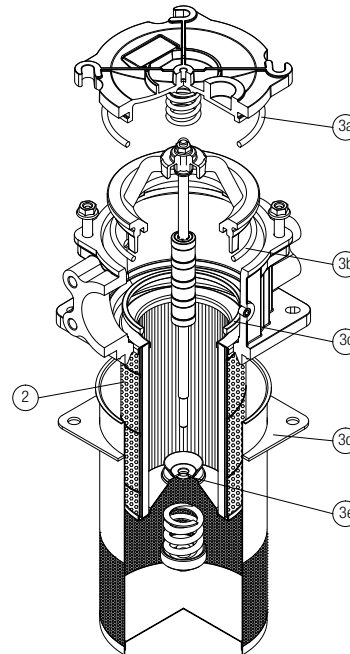


Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>MPH 120</b>	See order table	02050567	02050568

# SPARE PARTS MPH

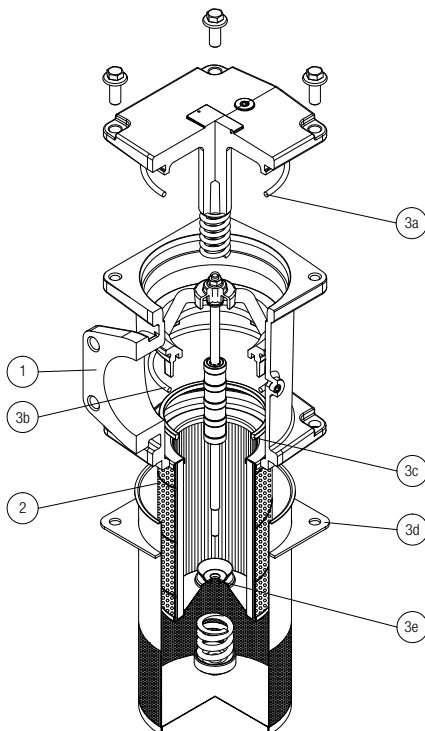
Order number for spare parts

## MPH 250 - 630



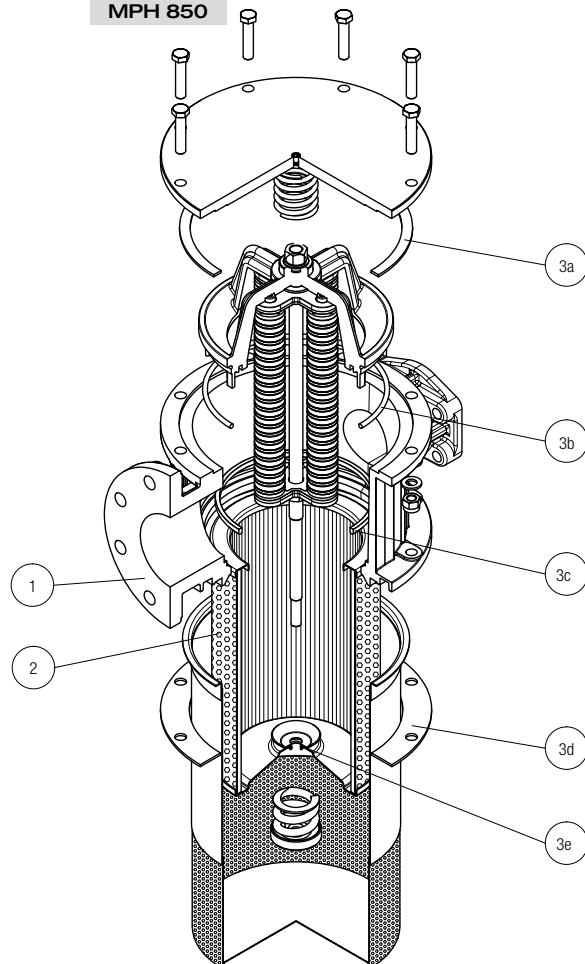
Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3e)
Filter series	Filter element	Seal Kit code number NBR FPM
<b>MPH 250</b>	See order table	02050151 02050152
<b>MPH 630</b>		02050153 02050154

## MPH 660



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

## MPH 850







Return filters

# MPI series

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



# MPI GENERAL INFORMATION

## Description

### 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

## Technical data

### 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) ±10%
- Opening pressure 250 kPa (2.5 bar) ±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 [dm<sup>3</sup>]

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



# GENERAL INFORMATION MPI

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

Filters series	Length	A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>MPI 100</b>	<b>1</b>	26	29	72	79	107	282	164	190
	<b>2</b>	43	46	112	114	161	318	164	190
	<b>3</b>	64	72	132	156	178	324	219	251
	<b>4</b>	90	99	184	198	216	324	266	302
	<b>5</b>	117	128	201	219	244	324	282	318
<b>MPI 250</b>	<b>1</b>	93	102	210	251	315	1093	339	383
	<b>2</b>	124	151	327	412	421	1122	460	514
	<b>3</b>	189	221	418	445	500	1137	544	616
	<b>4</b>	261	304	592	670	766	1166	832	923
<b>MPI 630</b>	<b>1</b>	160	200	369	423	518	1894	565	632
	<b>2</b>	240	257	571	611	1045	1929	1137	1285
	<b>3</b>	330	374	745	788	1308	1938	1416	1577
	<b>4</b>	374	403	887	1010	1348	1956	1448	1612
	<b>5</b>	625	698	1210	1257	1723	2121	1839	1929
<b>MPI 850</b>	<b>1</b>	775	1041	1246	1568	2242	3311	2371	2625
	<b>2</b>	1176	1522	1682	1747	2449	3378	2684	2886
	<b>3</b>	1490	1914	1995	2014	3035	3405	3144	3220
	<b>4</b>	1668	2088	2305	2363	3169	3517	3272	3378

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

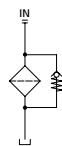
The reference fluid has a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$  (cSt) and a density of  $0.86 \text{ kg}/\text{dm}^3$ .

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

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

### Hydraulic symbol

Filter series	Style 1 connection
<b>MPI 100</b>	•
<b>MPI 250</b>	•
<b>MPI 630</b>	•
<b>MPI 850</b>	•



# MPI MPI100 - MPI250 - MPI630 - MPI850

## Designation & Ordering code

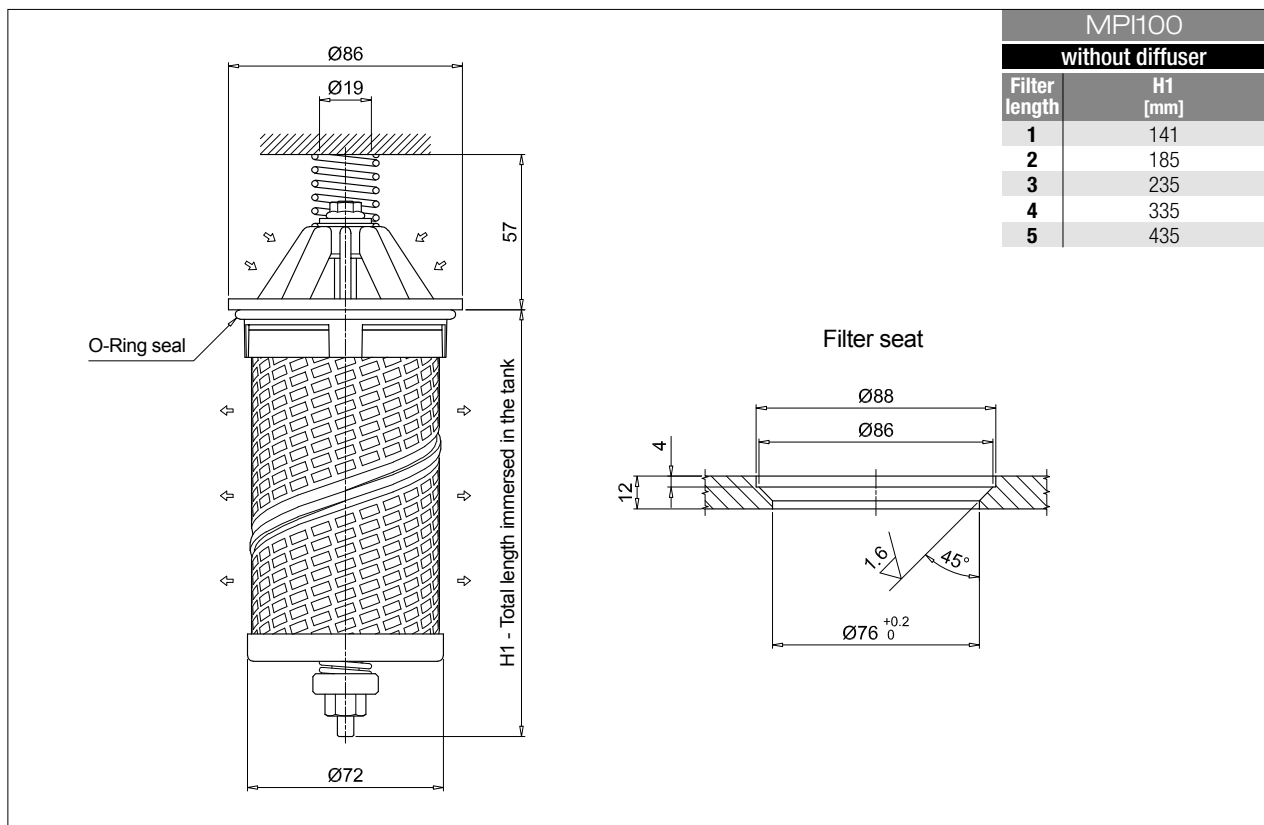
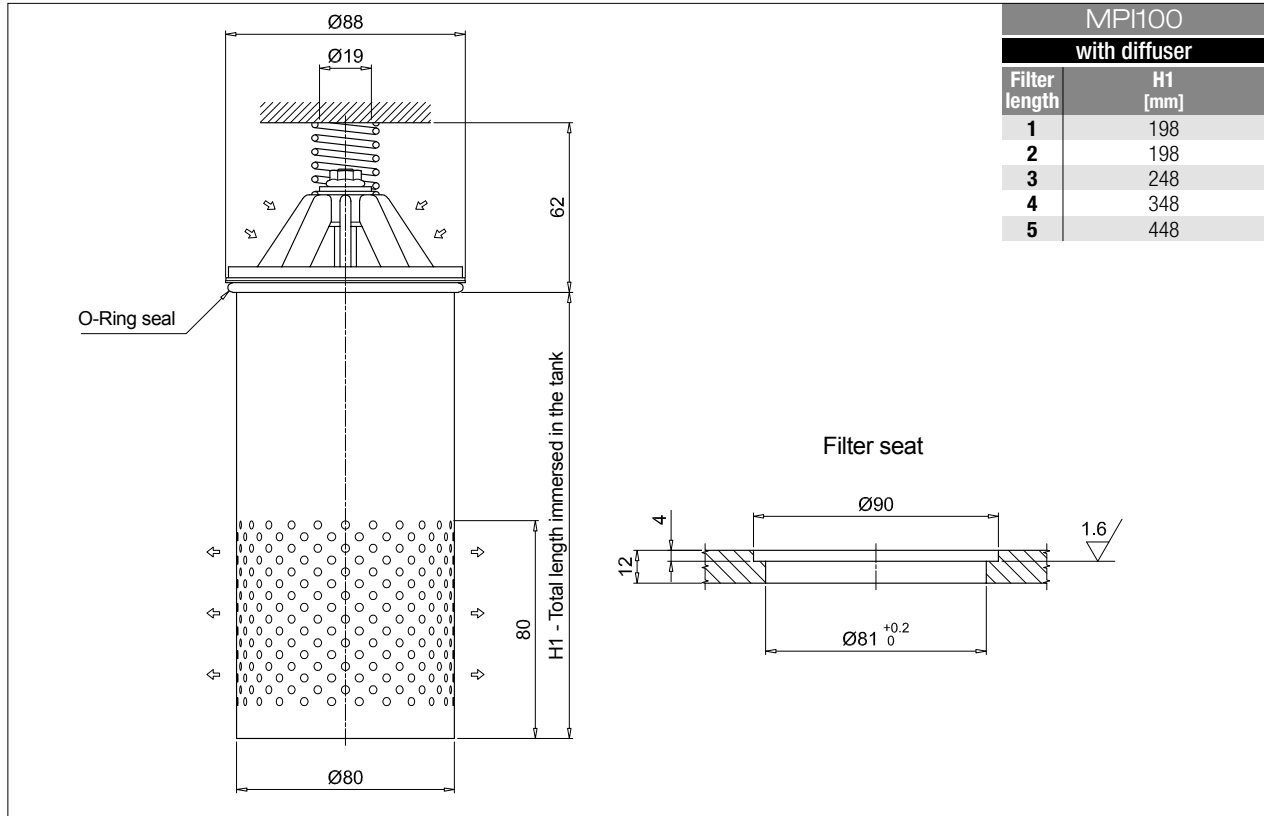
COMPLETE FILTER									
<b>Series and size</b>				Configuration example 1: MPI100 1 C D A A10 P01					
MPI100				Configuration example 2: MPI630 5 E D Z M25 P01					
MPI250									
MPI630									
MPI850									
<b>Length</b>	MPI100	MPI250	MPI630	MPI850					
1	•	•	•	•					
2	•	•	•	•					
3	•	•	•	•					
4	•	•	•	•					
5	•	•	•	•					
<b>Bypass valve</b>	MPI100	MPI250	MPI630	MPI850					
S Without	•	•	•	•					
C 1.75 bar	•	•	•	•					
E 2.5 bar	•	•	•	•					
<b>Diffuser and magnetic filter</b>									
D With diffuser, with magnetic filter									
F With diffuser, without magnetic filter									
O Without diffuser, with magnetic filter									
E Without diffuser, without magnetic filter									
<b>Seals and treatments</b>				Filtration rating					
A NBR				Axx	Mxx	Pxx			
V FPM				•	•	•			
W NBR head anodized				•	•	•			
Z FPM head anodized				•	•	•			
				filter element compatible with fluids HFA-HFB-HFC					
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm				M25 Wire mesh 25 µm					
A06 Inorganic microfiber 6 µm				M60 Wire mesh 60 µm					
A10 Inorganic microfiber 10 µm				M90 Wire mesh 90 µm					
A16 Inorganic microfiber 16 µm				P10 Resin impregnated paper 10 µm					
A25 Inorganic microfiber 25 µm				P25 Resin impregnated paper 25 µm					
							<b>Execution</b>		
							P01 MP Filtri standard		
							Pxx Customized		

FILTER ELEMENT									
<b>Element series and size</b>				Configuration example 1: MR100 1 A10 A P01					
MR100				Configuration example 2: MR630 5 M25 V P01					
MR250									
MR630									
MR850									
<b>Element length</b>	Size 100	Size 250	Size 630	Size 850					
1	•	•	•	•					
2	•	•	•	•					
3	•	•	•	•					
4	•	•	•	•					
5	•	•	•	•					
<b>Filtration rating (filter media)</b>									
A03 Inorganic microfiber 3 µm				M25 Wire mesh 25 µm					
A06 Inorganic microfiber 6 µm				M60 Wire mesh 60 µm					
A10 Inorganic microfiber 10 µm				M90 Wire mesh 90 µm					
A16 Inorganic microfiber 16 µm				P10 Resin impregnated paper 10 µm					
A25 Inorganic microfiber 25 µm				P25 Resin impregnated paper 25 µm					
				Seals			Execution		
				A NBR			P01 MP Filtri standard		
				V FPM			Pxx Customized		

# MPI100 - MPI250 - MPI630 - MPI850

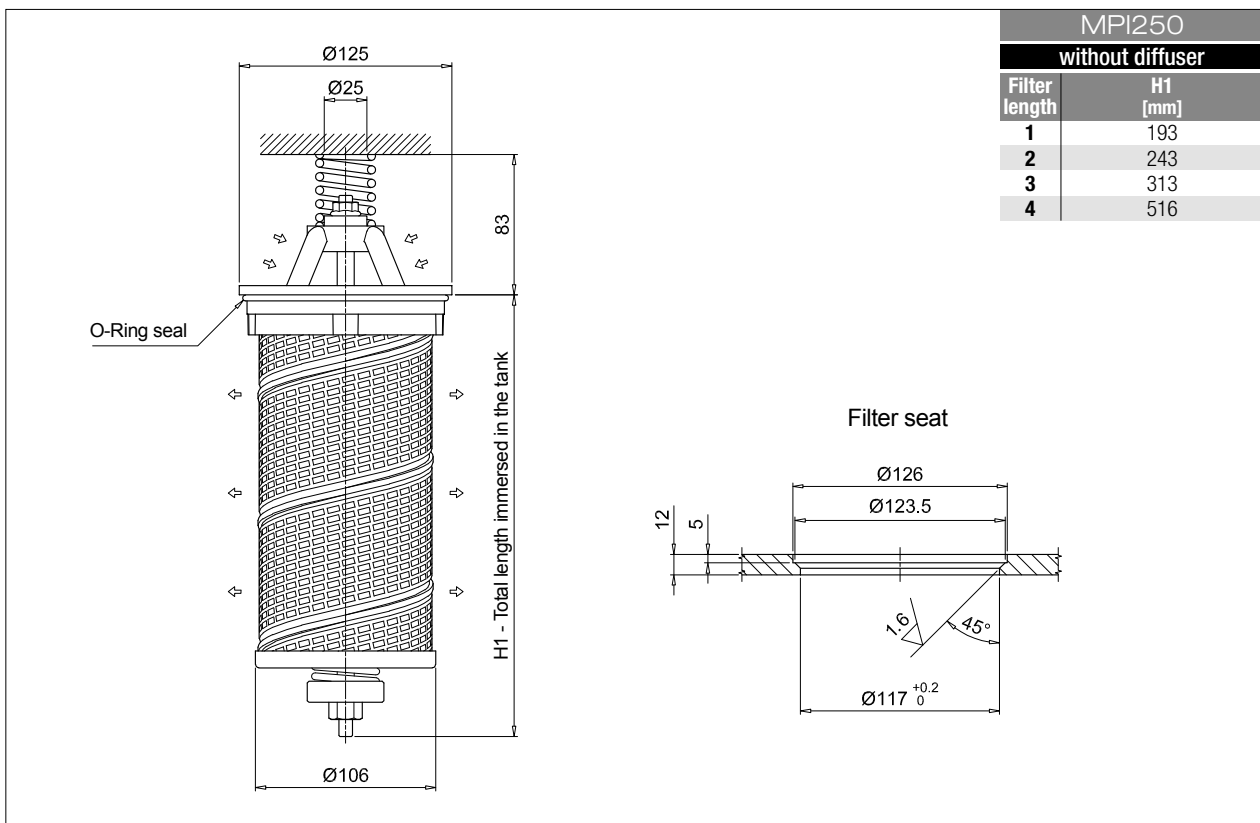
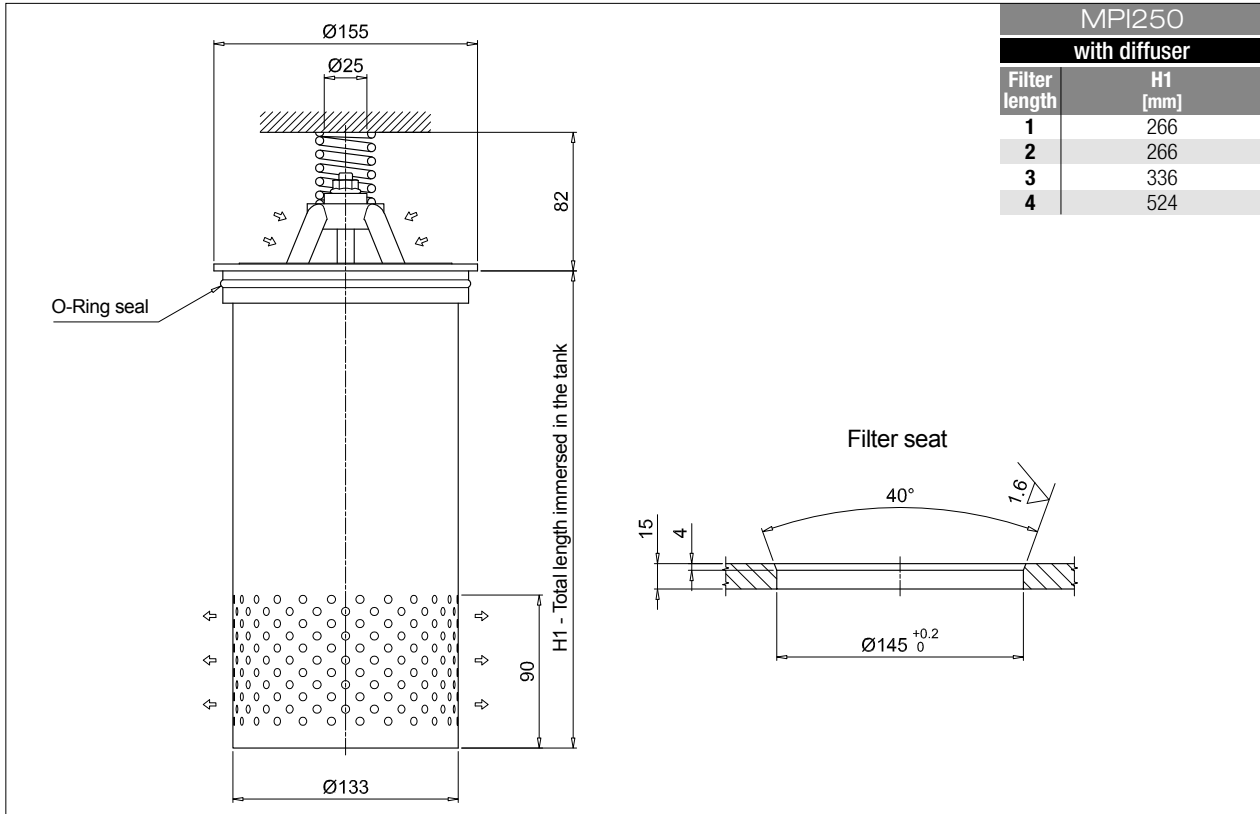
# MPI

## Dimensions



# MPI MPI100 - MPI250 - MPI630 - MPI850

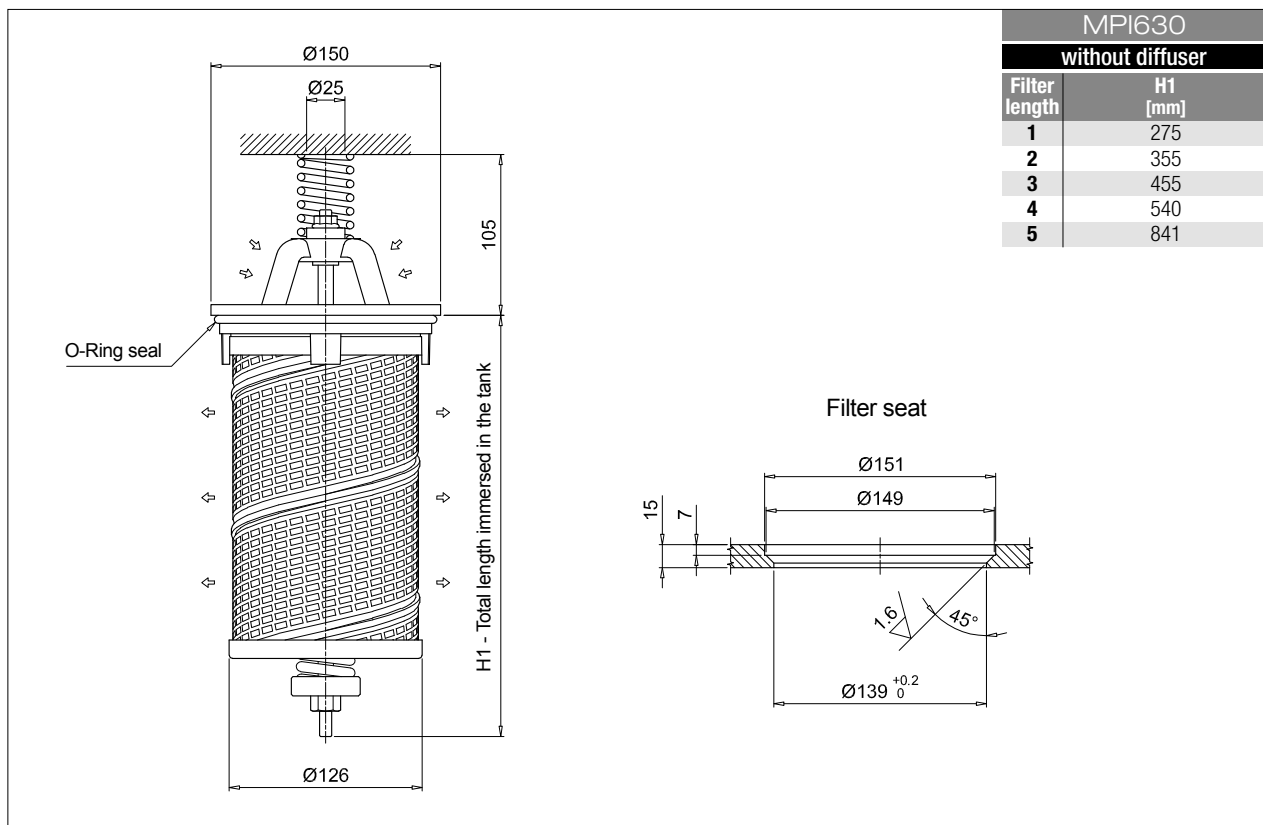
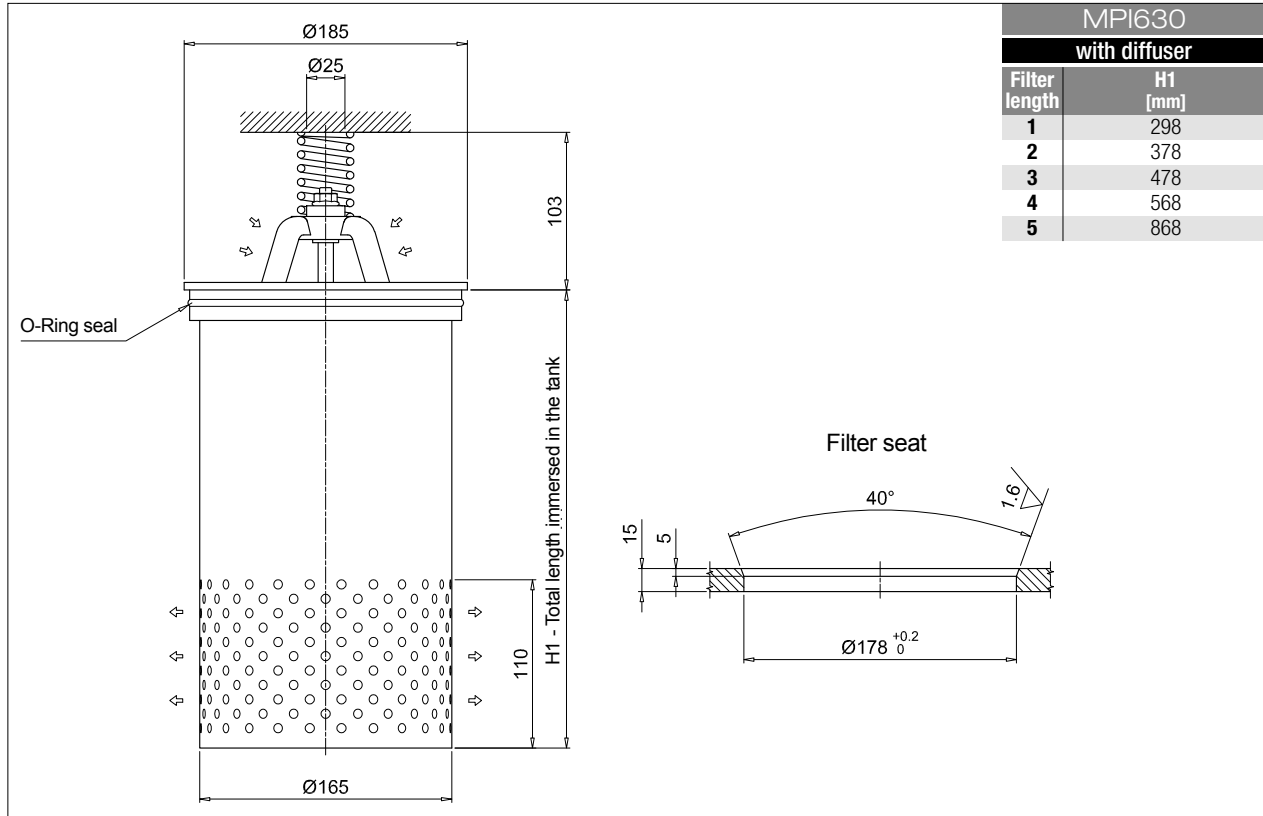
## Dimensions



# MPI100 - MPI250 - MPI630 - MPI850

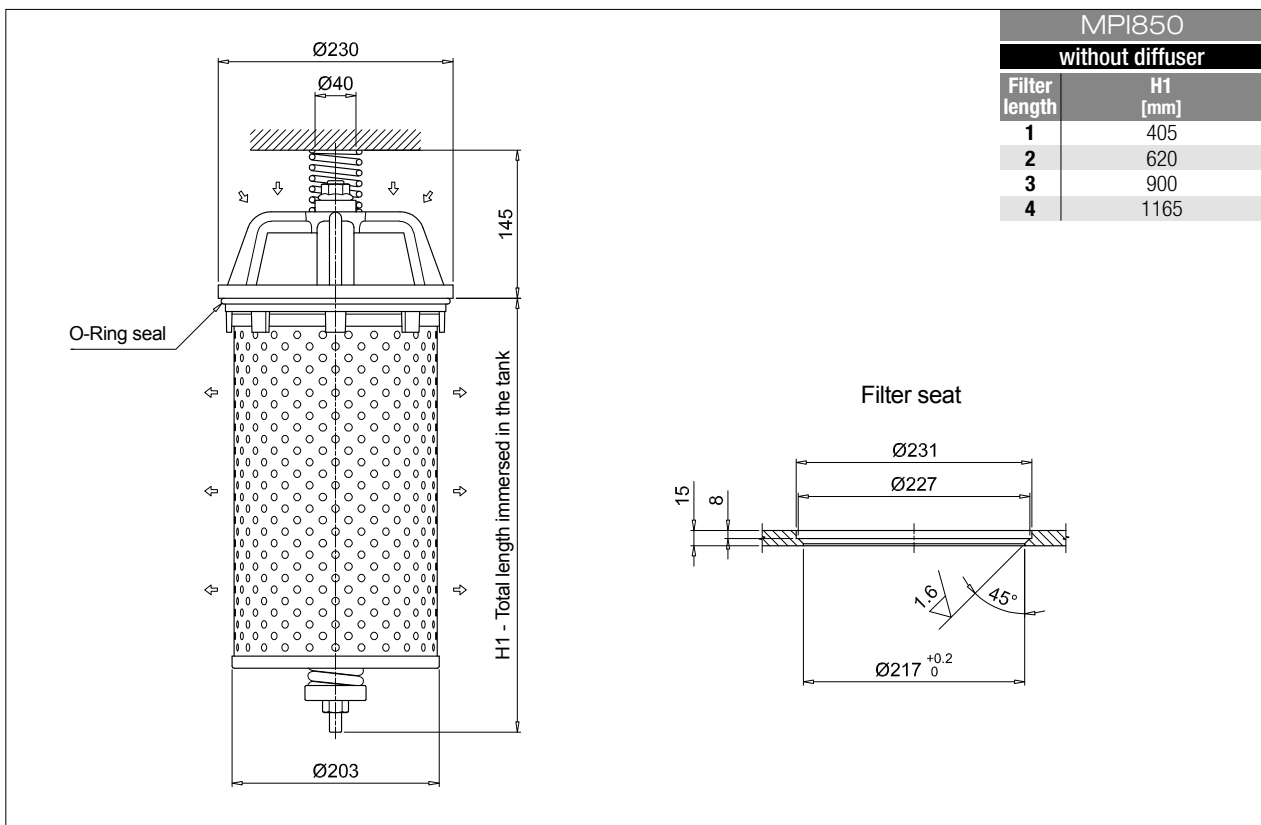
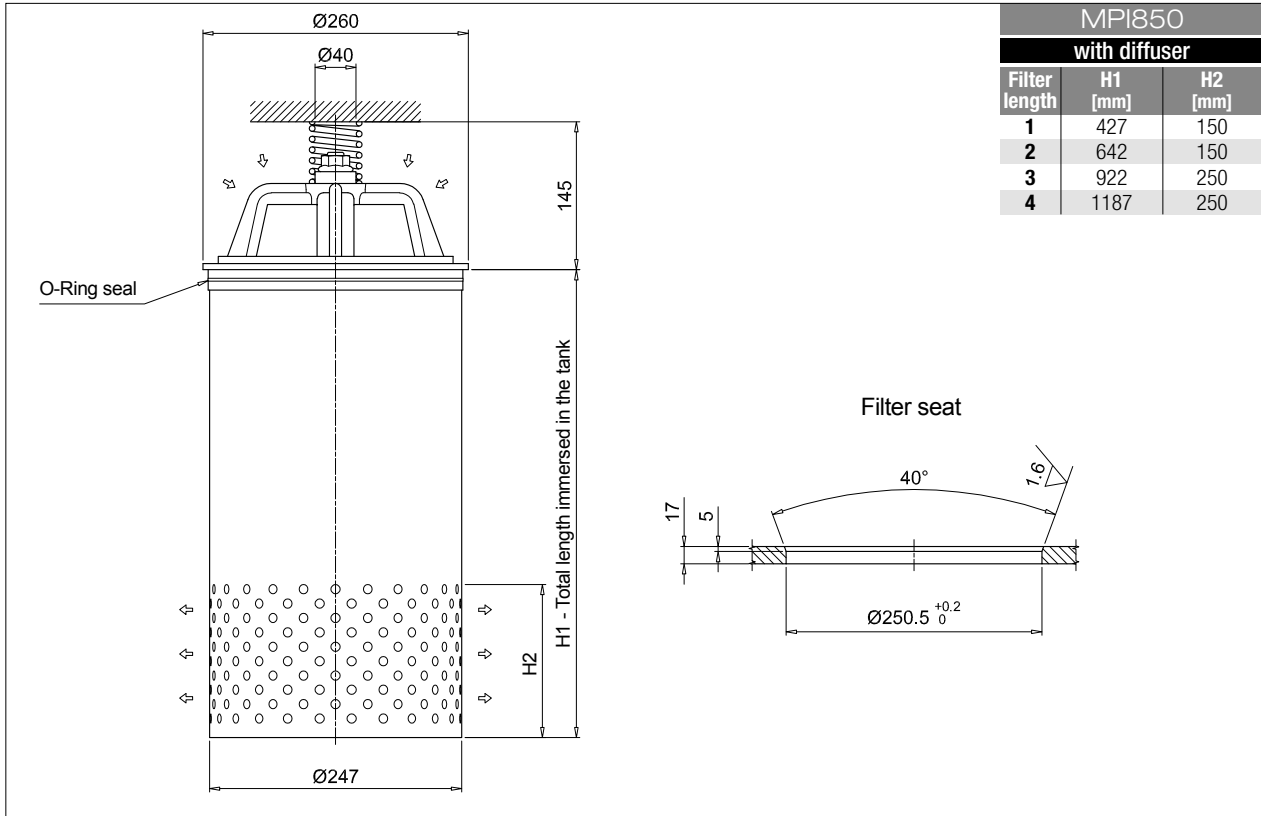
# MPI

## Dimensions



# MPI MPI100 - MPI250 - MPI630 - MPI850

## Dimensions



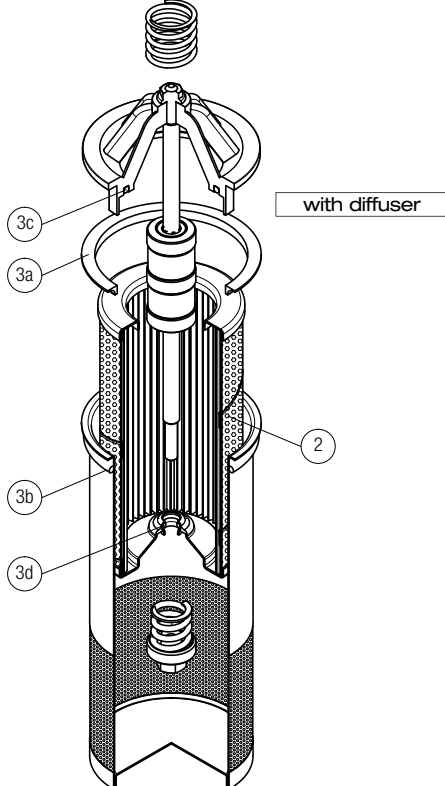
# MPI

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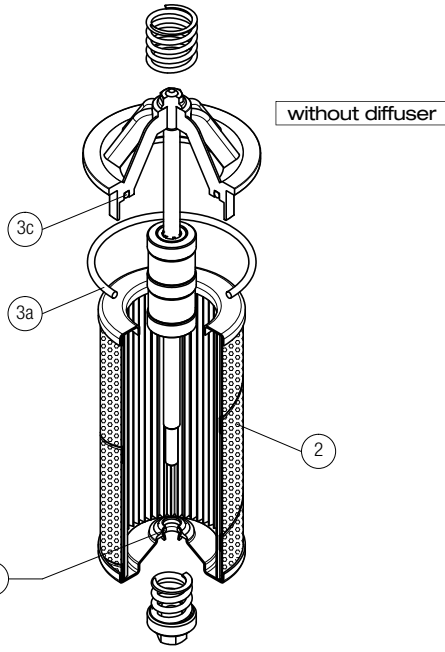
# MPI SPARE PARTS

Order number for spare parts

**MPI 100**



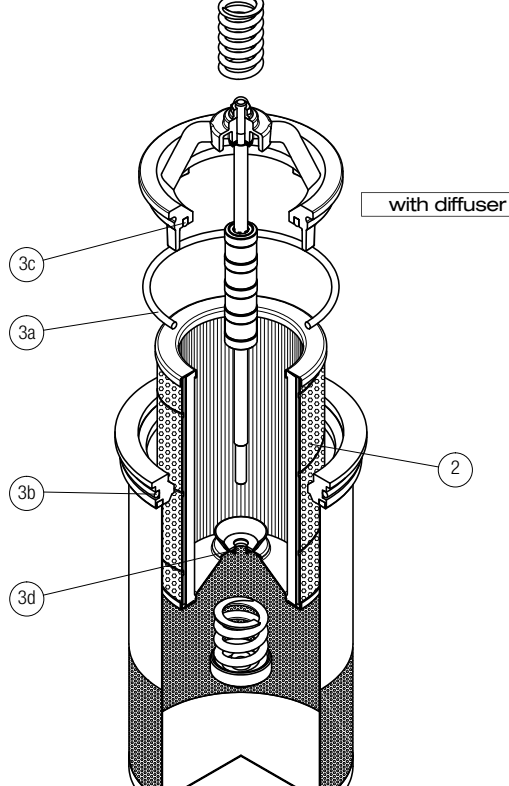
with diffuser



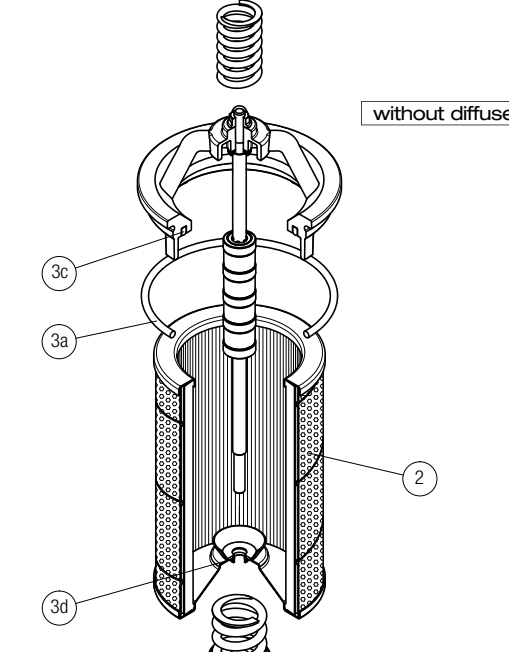
without diffuser

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

**MPI 250 - 630**



with diffuser



without diffuser

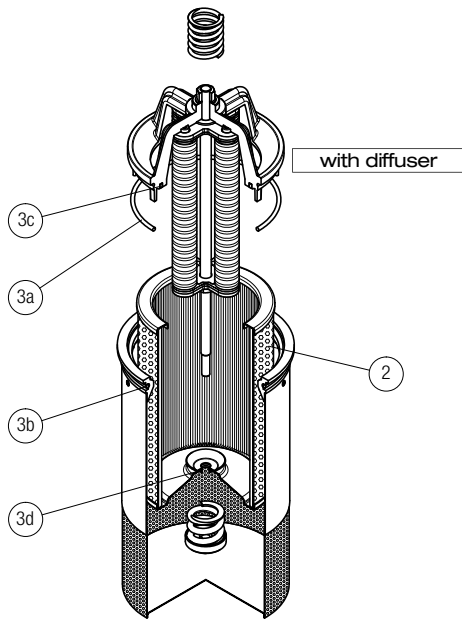
Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)
Filter series	Filter element	Seal Kit code number NBR FPM
<b>MPI 250 MPI 630</b>	See order table	02050147 02050148 02050112 02050113



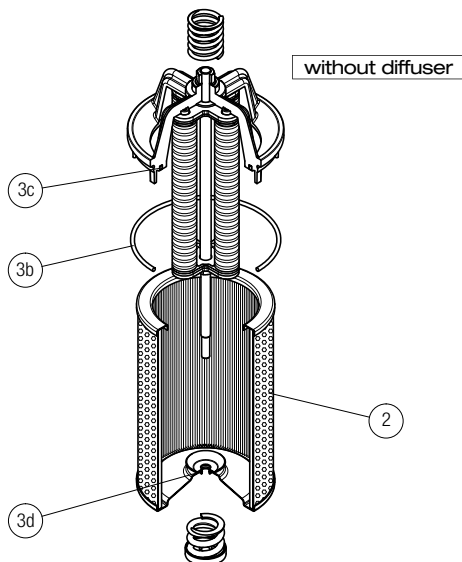
# SPARE PARTS MPI

Order number for spare parts

**MPI 850**



with diffuser



without diffuser

Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)
Filter series	Filter element	Seal Kit code number NBR FPM
<b>MPI 850</b>	See order table	02050114 02050115





Return filters

# FRI series

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



# FRI GENERAL INFORMATION

## Description

### 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 1500 l/min
- Double input connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Heavy duty industrial equipment

## Technical data

### Filter housing materials

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

### Bypass valve

Opening pressure 240 kPa (2.4 bar) ±10%

### Δp element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

FRI filters are provided for vertical mounting



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

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

# GENERAL INFORMATION

# FRI

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

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>FRI 025</b>	<b>1</b>	6	10	17	19	43	122	43	47
<b>FRI 040</b>	<b>1</b>	19	23	43	45	94	155	94	102
<b>FRI 100</b>	<b>1</b>	32	34	89	92	187	260	187	206
<b>FRI 250</b>	<b>1</b>	144	179	271	300	448	645	448	490
<b>FRI 255</b>	<b>1</b>	144	179	271	300	448	645	448	490
<b>FRI 630</b>	<b>1</b>	242	279	508	577	834	1446	834	911
<b>FRI 850</b>	<b>1</b>	440	541	971	1143	1705	2528	1705	1880

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

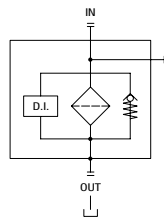
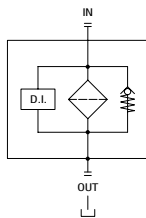
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

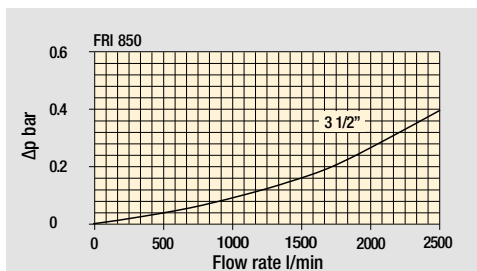
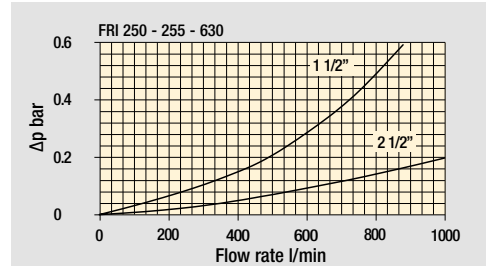
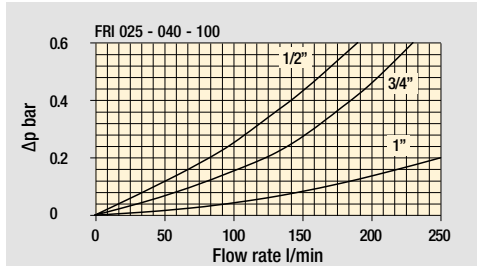
Filter series	Style 1 connection + Diff. indic.	Style 2 connections + Diff. indic.
<b>FRI 025</b>		•
<b>FRI 040</b>		•
<b>FRI 100</b>		•
<b>FRI 250</b>		•
<b>FRI 255</b>	•	
<b>FRI 630</b>		•
<b>FRI 850</b>	•	



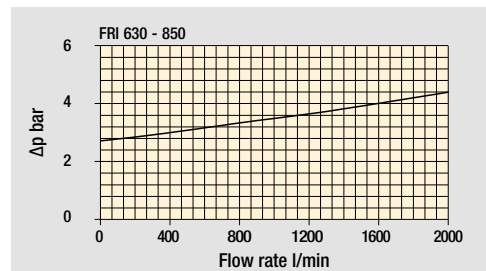
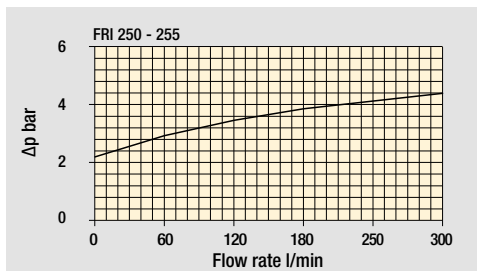
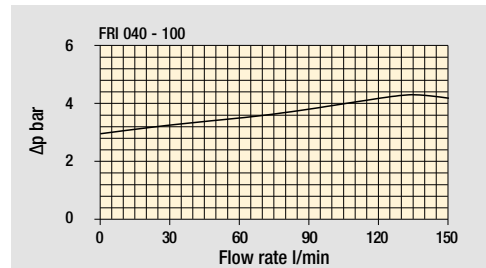
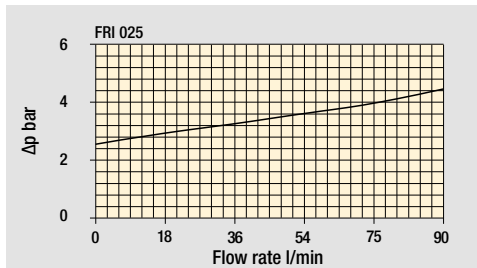
# FRI GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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

## GENERAL INFORMATION **FRI**

---

# FRI FRI025 - FRI040

## Designation & Ordering code

COMPLETE FILTER									
<b>Series and size</b>		Configuration example 1: <b>FRI025</b> <b>B</b> <b>A</b> <b>G1</b> <b>A25</b> <b>N</b> <b>P01</b>							
<b>FRI025</b>		Configuration example 2: <b>FRI040</b> <b>S</b> <b>W</b> <b>G2</b> <b>M25</b> <b>N</b> <b>P01</b>							
<b>FRI040</b>									
<b>Bypass valve</b>									
<b>B</b> With bypass									
<b>S</b> Without bypass									
<b>Seals and treatments</b>		Filtration rating							
		Axx		Mxx		Pxx			
<b>A</b> NBR		•		•		•			
<b>V</b> FPM		•		•		•			
<b>W</b> NBR head anodized		•		•				filter element compatible with fluids HFA-HFB-HFC	
<b>Z</b> FPM head anodized		•		•					
<b>Connections for FRI025</b>		<b>Connections for FRI040</b>							
<b>G1</b> G 1/2"		<b>G 3/4"</b>							
<b>G2</b> 1/2" NPT		<b>3/4" NPT</b>							
<b>G3</b> SAE 8 - 3/4" - 16 UNF		<b>SAE 12 - 1 1/16" - 12 UN</b>							
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
		<b>Element Δp</b>		<b>Execution</b>					
		<b>N</b> 10 bar		<b>P01</b> MP Filtri standard					
				<b>Pxx</b> Customized					

FILTER ELEMENT									
<b>Element series and size</b>		Configuration example 1: <b>CU025</b> <b>A25</b> <b>N</b> <b>P01</b>							
<b>CU025</b>		Configuration example 2: <b>CU040</b> <b>M25</b> <b>W</b> <b>P01</b>							
<b>CU040</b>									
<b>Filtration rating (filter media)</b>									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>Seals and treatments</b>		Filtration rating							
		Axx		Mxx		Pxx			
<b>N</b> NBR		•		•		•			
<b>V</b> FPM		•		•		•			
<b>W</b> NBR		•		•				filter element compatible with fluids HFA-HFB-HFC	
<b>Z</b> FPM		•		•					
				<b>Execution</b>					
				<b>P01</b> MP Filtri standard					
				<b>Pxx</b> Customized					

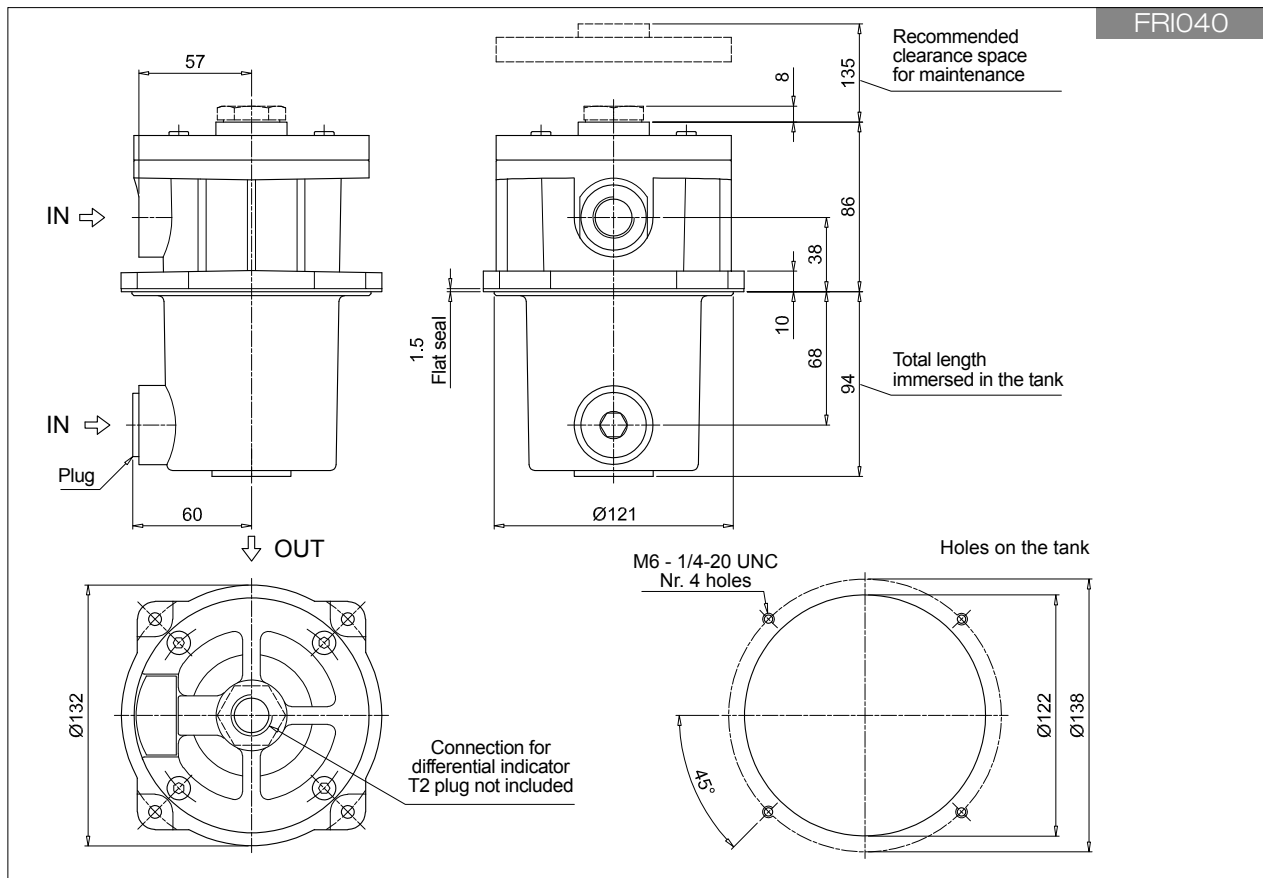
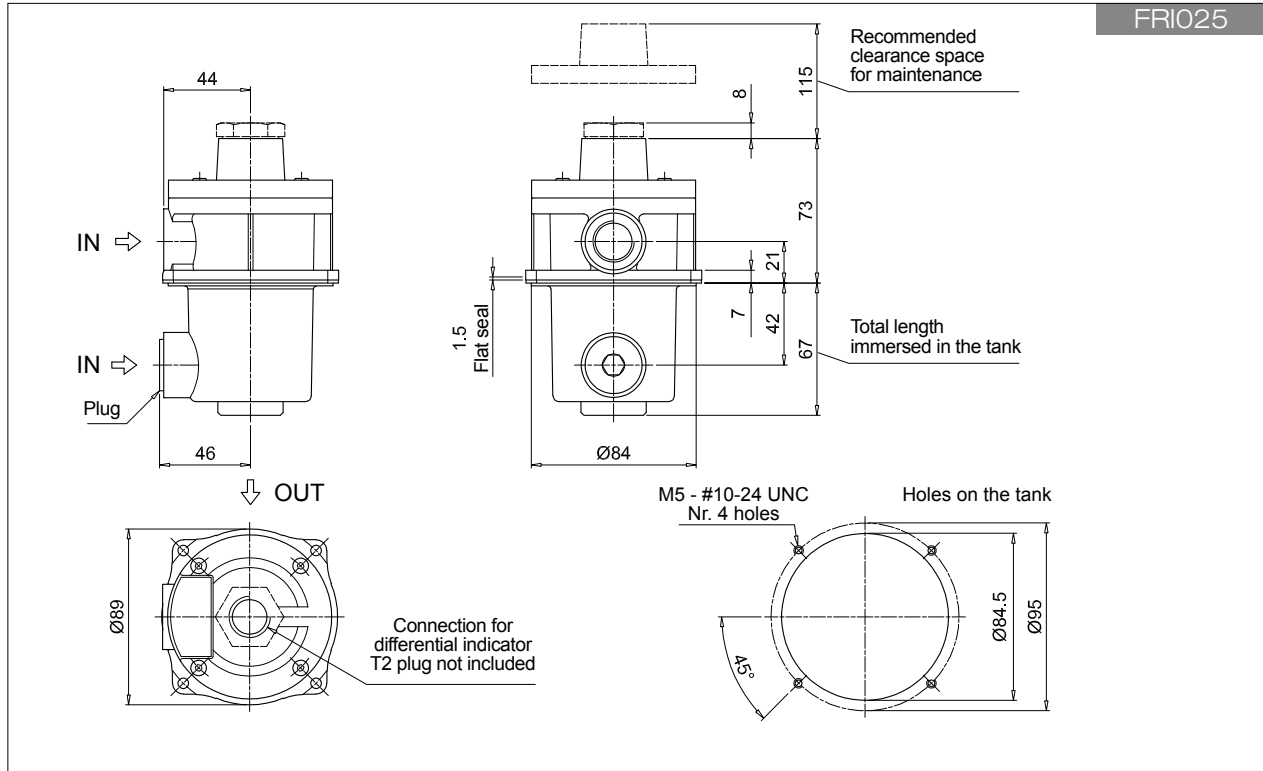
ACCESSORIES			
<b>Indicators</b>		page	
<b>DEA</b> Electrical differential indicator		242	
<b>DEM</b> Electrical differential indicator		242-243	
<b>DLA</b> Electrical / visual differential indicator		243-244	
<b>DLE</b> Electrical / visual differential indicator		244	
<b>Additional features</b>		page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



# FRI025 - FRI040

# FRI

## Dimensions



# FRI FRI100 - FRI250 - FRI630

## Designation & Ordering code

COMPLETE FILTER																
<b>Series and size</b>		Configuration example 1:								FRI100	B	A	G1	A25	N	P01
<b>FRI100</b>		Configuration example 2:								FRI630	S	W	F2	M25	N	P01
<b>FRI250</b>																
<b>FRI630</b>																
<b>Bypass valve</b>																
<b>B</b> With bypass																
<b>S</b> Without bypass																
<b>Seals and treatments</b>		Filtration rating														
		Axx	Mxx	Pxx												
<b>A</b> NBR		•	•	•												
<b>V</b> FPM		•	•	•												
<b>W</b> NBR head anodized		•	•		filter element compatible with fluids HFA-HFB-HFC											
<b>Z</b> FPM head anodized		•	•													
<b>Connections for FRI100</b>			<b>Connections for FRI250</b>			<b>Connections for FRI630</b>										
<b>G1</b> G 1"			<b>G1</b> 1 1/2"			<b>G2</b> 2 1/2"										
<b>G2</b> 1" NPT			<b>G2</b> 1 1/2" NPT			<b>G3</b> 2 1/2" NPT										
<b>G3</b> SAE 16 - 1 5/16" - 12 UN			<b>G3</b> SAE 24 - 1 7/8" - 12 UN			<b>F1</b> 2 1/2" SAE 3000 psi/M										
<b>F1</b> 1" SAE 3000 psi/M			<b>F1</b> 1 1/2" SAE 3000 psi/M			<b>F2</b> 2 1/2" SAE 3000 psi/UNC										
<b>F2</b> 1" SAE 3000 psi/UNC			<b>F2</b> 1 1/2" SAE 3000 psi/UNC			<b>F2</b> 2 1/2" SAE 3000 psi/UNC										
<b>Filtration rating (filter media)</b>																
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm														
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm														
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm														
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm														
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm														
<b>Element Δp</b>		<b>Execution</b>														
<b>N</b> 10 bar		<b>P01</b> MP Filtri standard														
		<b>Pxx</b> Customized														

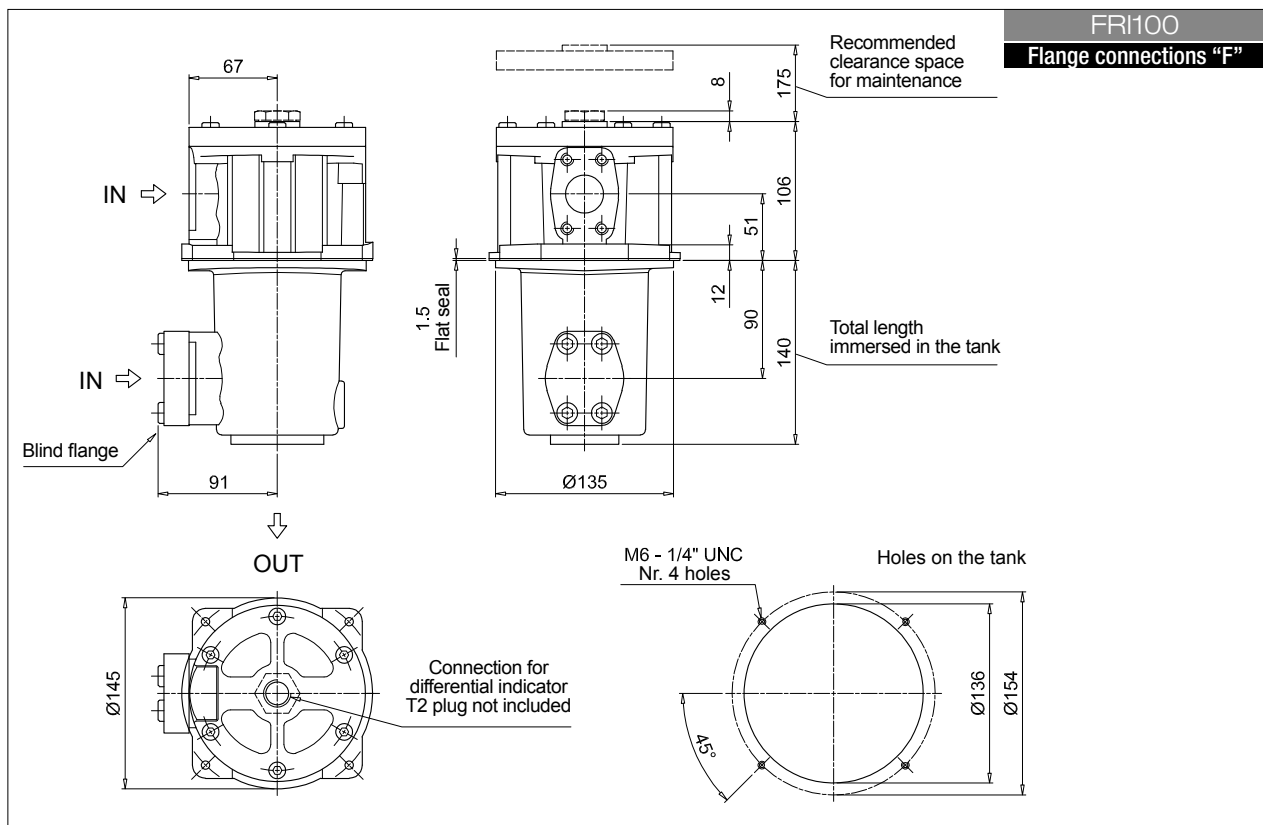
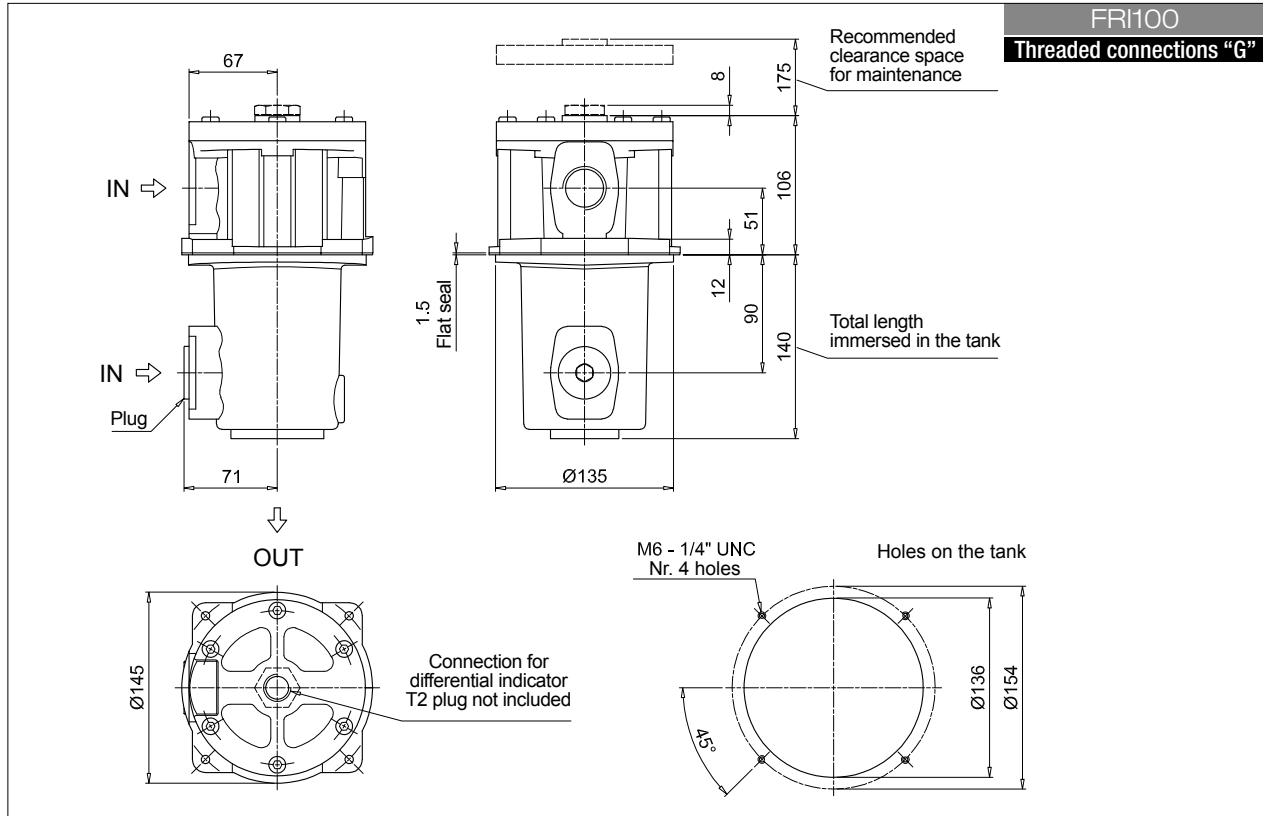
FILTER ELEMENT													
<b>Element series and size</b>		Configuration example 1:								CU100	A25	N	P01
<b>CU100</b>		Configuration example 2:								CU630	M25	W	P01
<b>CU250</b>													
<b>CU630</b>													
<b>Filtration rating (filter media)</b>													
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm											
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm											
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm											
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm											
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm											
<b>Seals and treatments</b>		Filtration rating											
		Axx	Mxx	Pxx									
<b>N</b> NBR		•	•	•									
<b>V</b> FPM		•	•	•									
<b>W</b> NBR		•	•		filter element compatible with fluids HFA-HFB-HFC								
<b>Z</b> FPM		•	•										
		<b>Execution</b>											
		<b>P01</b> MP Filtri standard											
		<b>Pxx</b> Customized											

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

# FRI100 - FRI250 - FRI630

# FRI

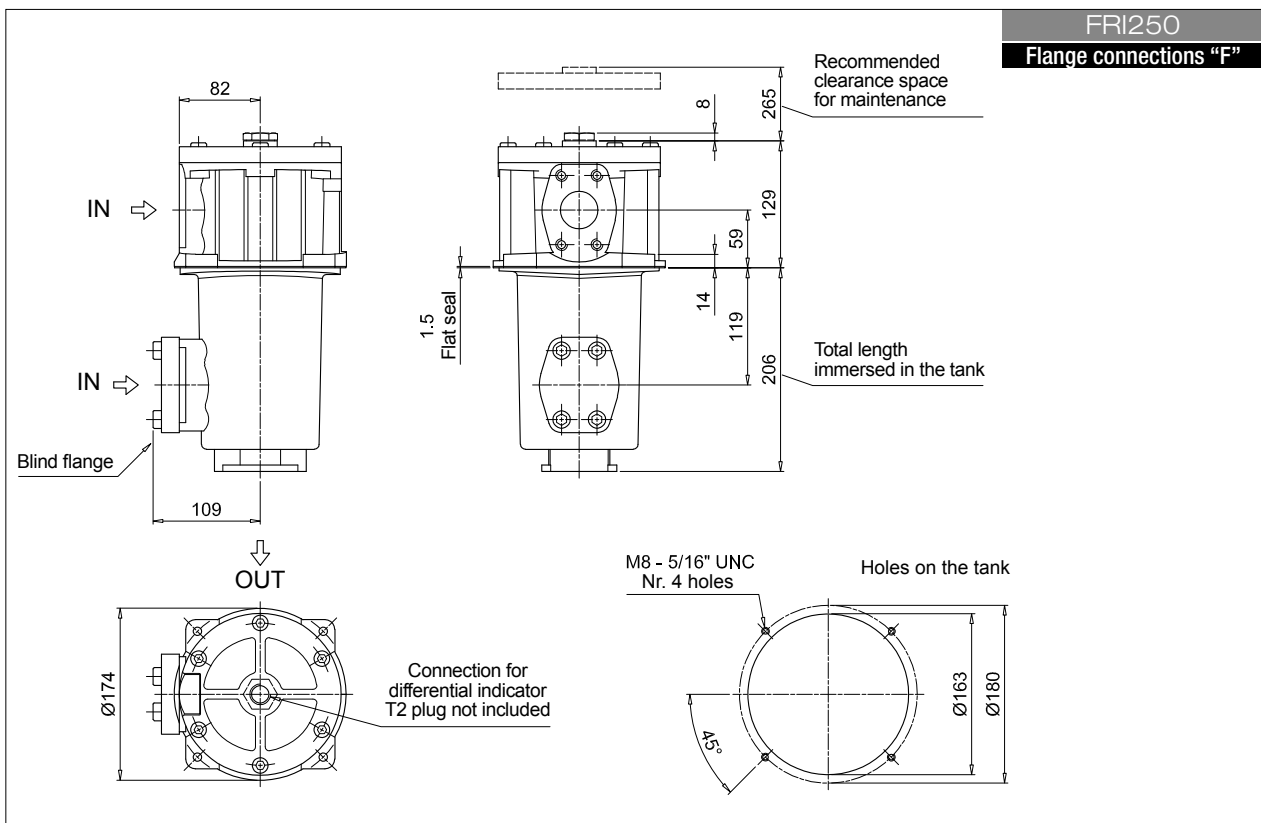
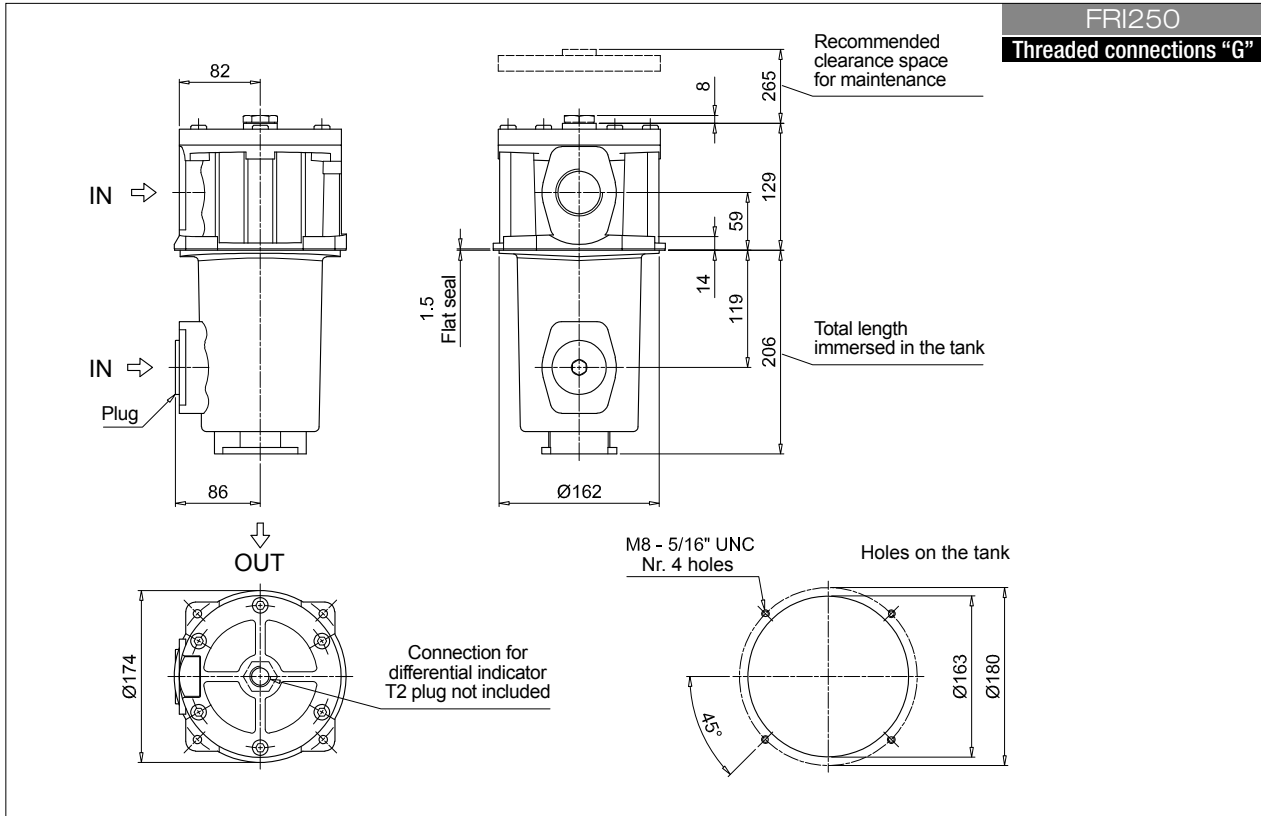
## Dimensions



# FRI

## FRI100 - FRI250 - FRI630

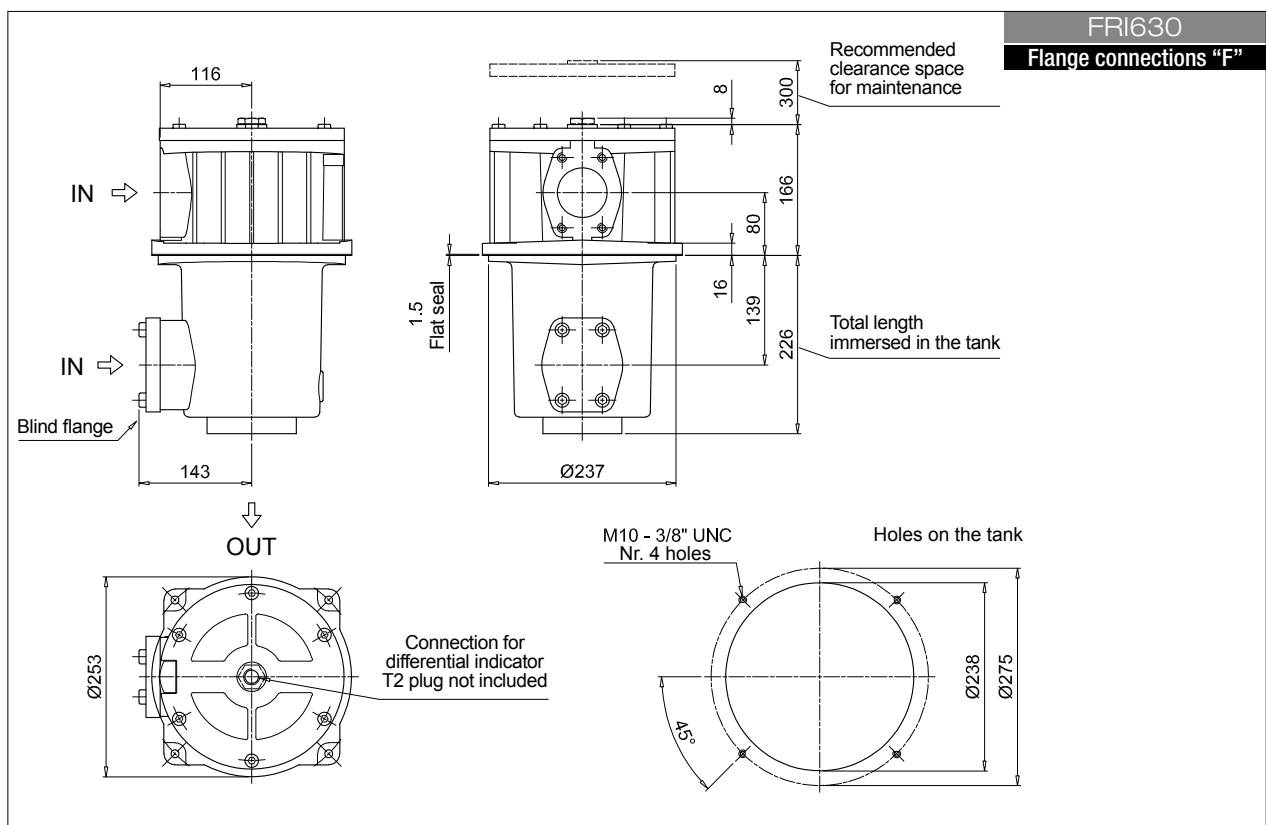
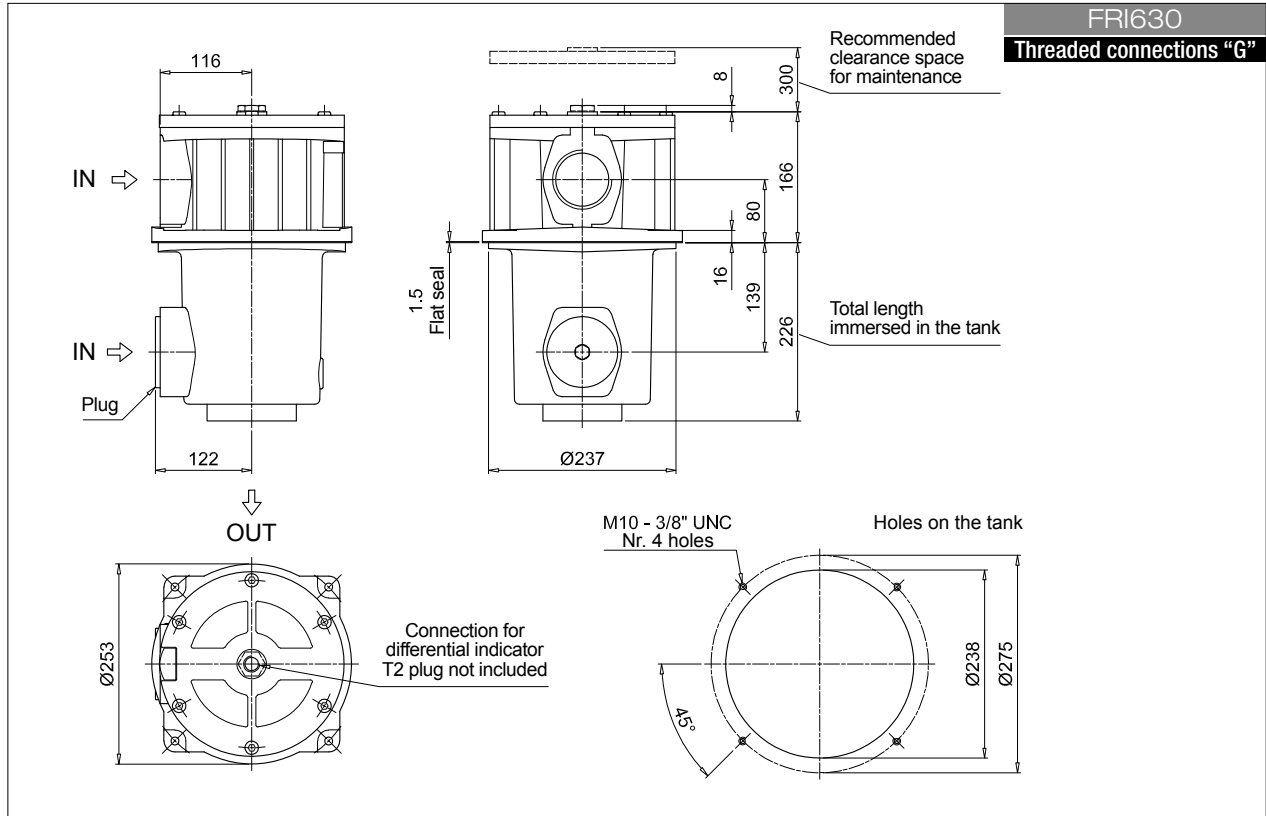
### Dimensions



# FRI100 - FRI250 - FRI630

# FRI

## Dimensions



# FRI FRI255 - FRI850

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example 1: <b>FRI255</b> <b>S</b> <b>W</b> <b>F2</b> <b>M25</b> <b>N</b> <b>P01</b>						
<b>FRI255</b>	Configuration example 2: <b>FRI850</b> <b>B</b> <b>A</b> <b>F1</b> <b>A25</b> <b>N</b> <b>P01</b>						
<b>FRI850</b>							
<b>Bypass valve</b>							
<b>B</b> With bypass							
<b>S</b> Without bypass							
<b>Seals and treatments</b>	Filtration rating						
	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>				
<b>A</b> NBR	•	•	•				
<b>V</b> FPM	•	•	•				
<b>W</b> NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC			
<b>Z</b> FPM head anodized	•	•					
<b>Connections for FRI255</b>	<b>Connections for FRI850</b>						
<b>G1</b> G 1 1/2"	<b>F1</b> 3 1/2" SAE 3000 psi/M						
<b>G2</b> 1 1/2" NPT	<b>F2</b> 3 1/2" SAE 3000 psi/UNC						
<b>G3</b> SAE 24 - 1 7/8" - 12 UN							
<b>G4</b> G 1 1/4"							
<b>G5</b> 1 1/4" NPT							
<b>G6</b> SAE 20 - 1 5/8" - 12 UN							
<b>F1</b> 1 1/2" SAE 3000 psi/M							
<b>F2</b> 1 1/2" SAE 3000 psi/UNC							
<b>Filtration rating (filter media)</b>							
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm						
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm						
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm						
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm						
	<b>Element Δp</b>		<b>Execution</b>				
	<b>N</b> 10 bar		<b>P01</b> MP Filtri standard				
			<b>Pxx</b> Customized				

### FILTER ELEMENT

<b>Element series and size</b>	Configuration example 1: <b>CU250</b> <b>M25</b> <b>W</b> <b>P01</b>			
<b>CU250</b>	Configuration example 2: <b>CU850</b> <b>A25</b> <b>N</b> <b>P01</b>			
<b>CU850</b>				
<b>Filtration rating (filter media)</b>				
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm			
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm			
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm			
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm			
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm			
<b>Seals and treatments</b>	Filtration rating			
	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>	
<b>N</b> NBR	•	•	•	
<b>V</b> FPM	•	•	•	
<b>W</b> NBR	•	•		filter element compatible with fluids HFA-HFB-HFC
<b>Z</b> FPM	•	•		
	<b>Execution</b>			
	<b>P01</b> MP Filtri standard			
	<b>Pxx</b> Customized			

### FRI255 ACCESSORIES

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

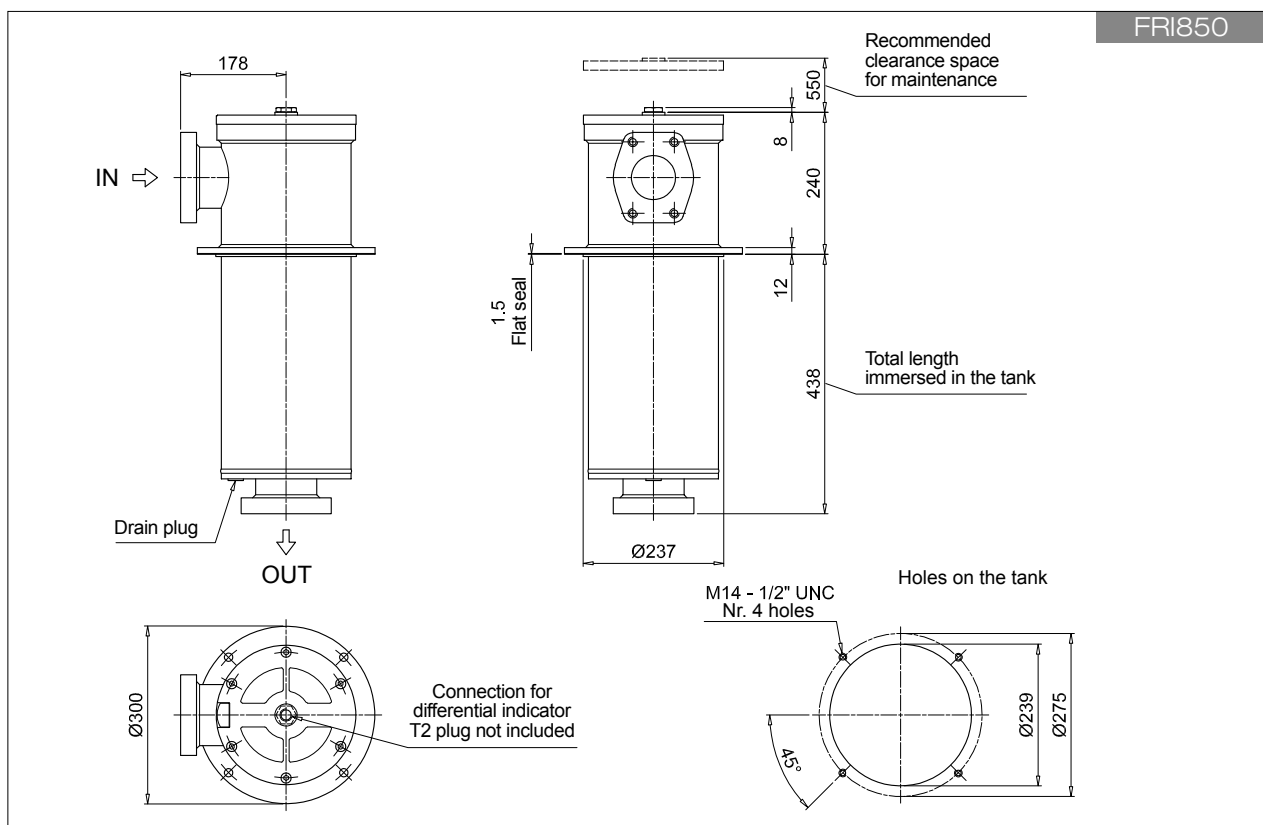
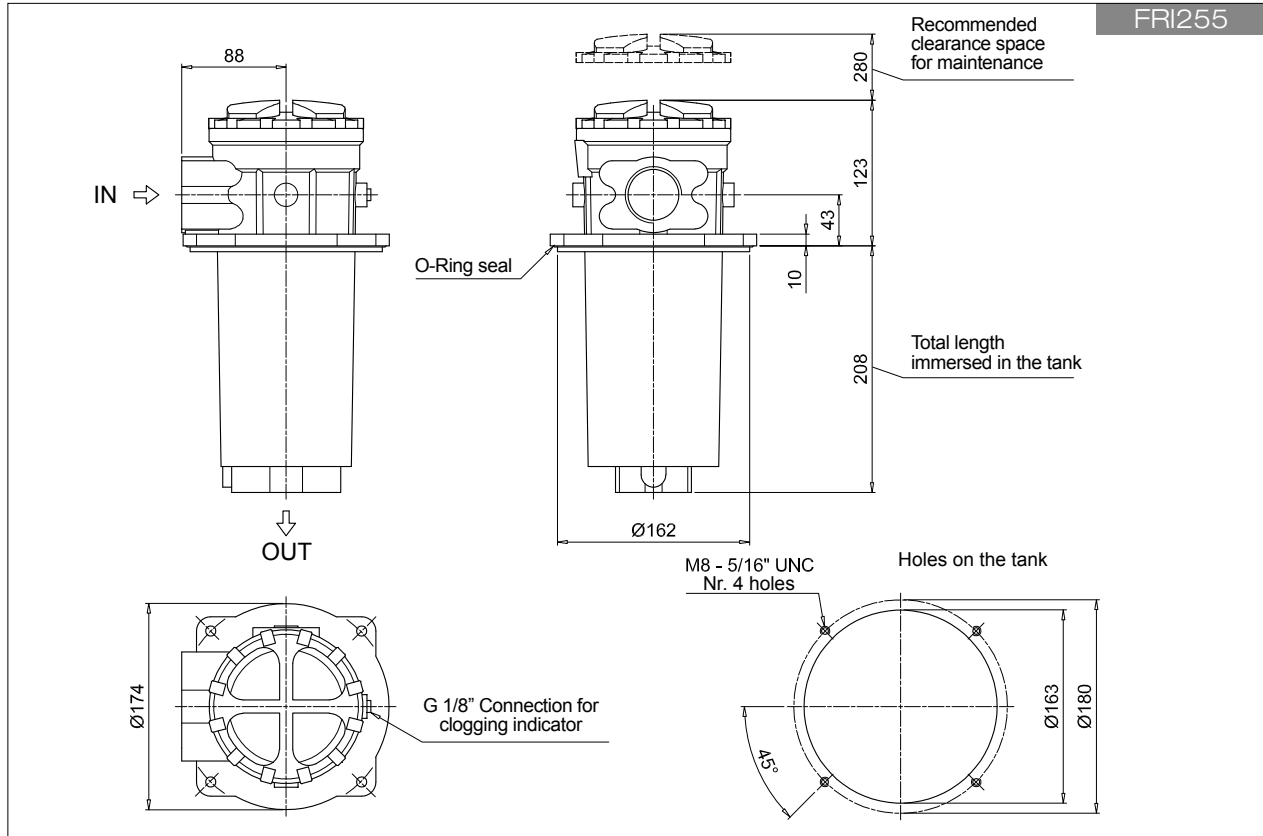
### FRI850 ACCESSORIES

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

# FRI255 - FRI850

# FRI

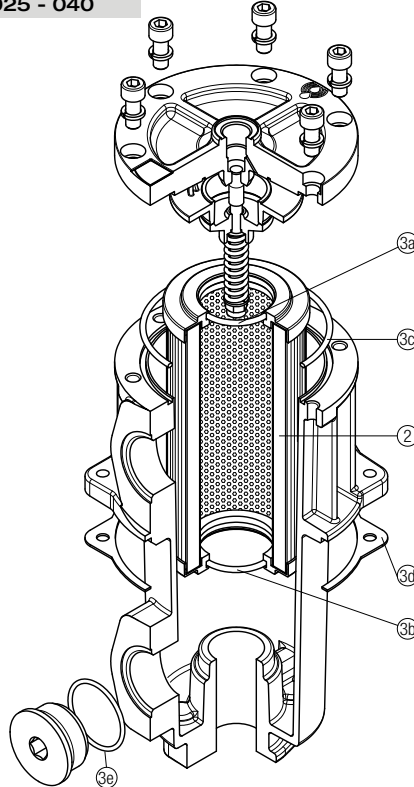
## Dimensions



# FRI SPARE PARTS

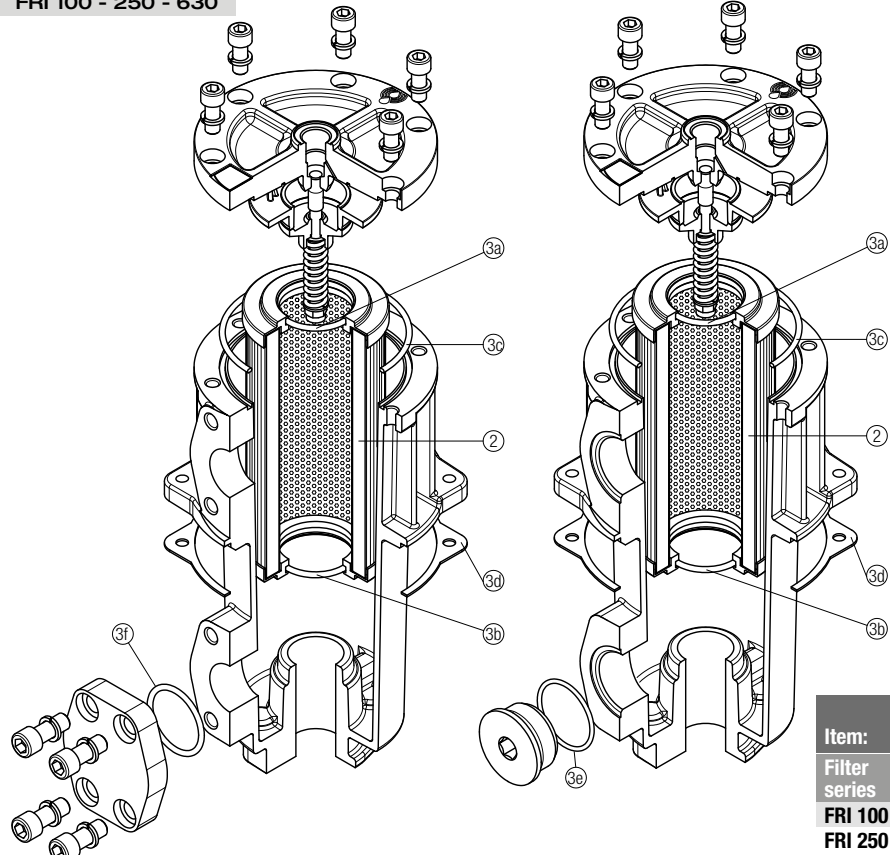
Order number for spare parts

**FRI 025 - 040**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FRI 025</b>	See order table	02050213	02050220
<b>FRI 040</b>	See order table	02050214	02050221

**FRI 100 - 250 - 630**



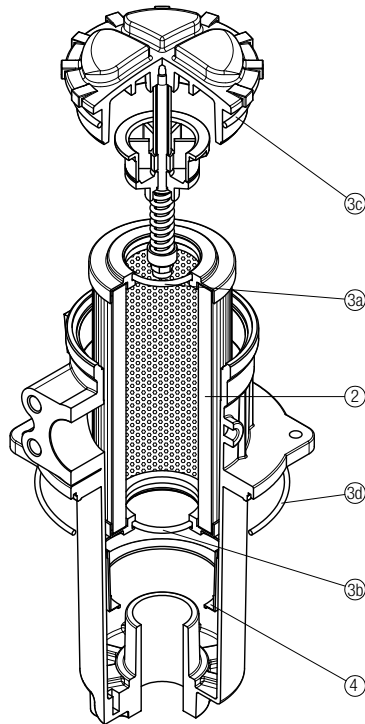
Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FRI 100</b>	See order table	02050215	02050222
<b>FRI 250</b>	See order table	02050216	02050223
<b>FRI 630</b>	See order table	02050217	02050224



# SPARE PARTS FRI

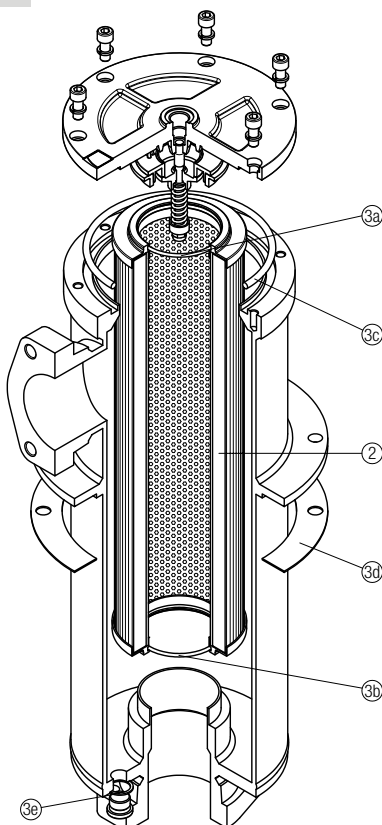
Order number for spare parts

**FRI 255**



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		Q.ty: 1 pc. 4
Filter series	Filter element	Seal Kit code number NBR	FPM	Contamination retainer binder
<b>FRI 255</b>	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	Seal Kit code number NBR	FPM
<b>FRI 850</b>	See order table	02050218	02050225





Return filters

# RF2 series

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



# RF2 GENERAL INFORMATION

## Description

### 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 350 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

## Technical data

### 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%

### $\Delta p$ element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

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



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

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	1	Length	1
<b>RF2 250</b>		2.6		2.0
<b>RF2 350</b>		2.8		2.0

# GENERAL INFORMATION RF2

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

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

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

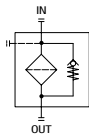
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

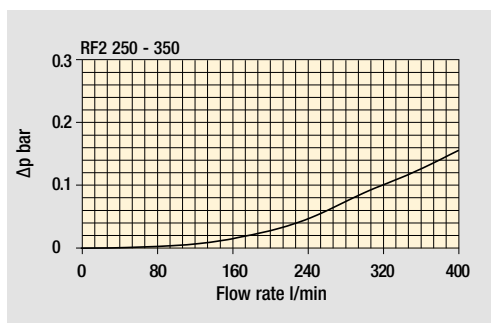
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

Filter series	Style B - E
<b>RF2 250</b>	•
<b>RF2 350</b>	•

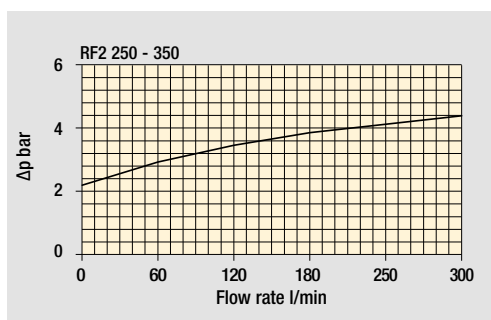
## Hydraulic symbols



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



## Bypass valve pressure drop



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

# RF2 RF2250 - RF2350

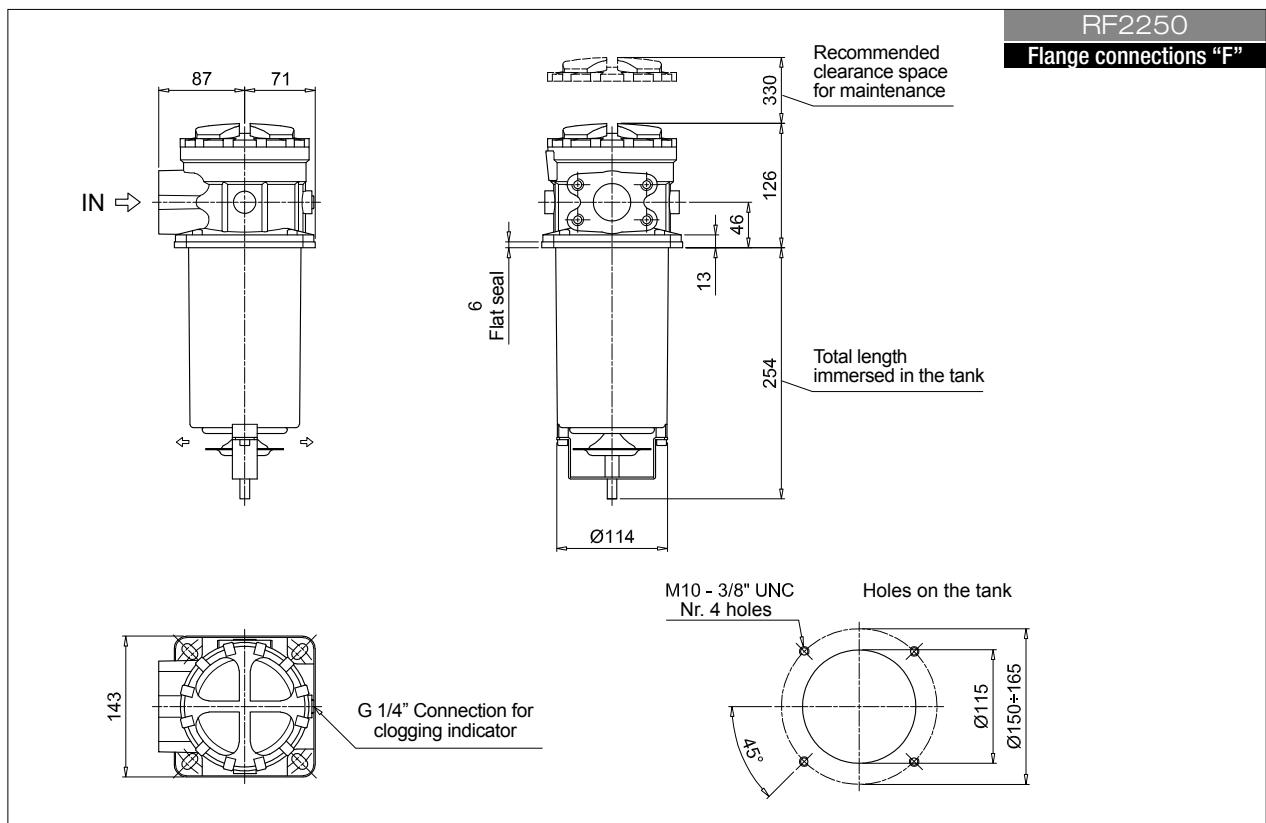
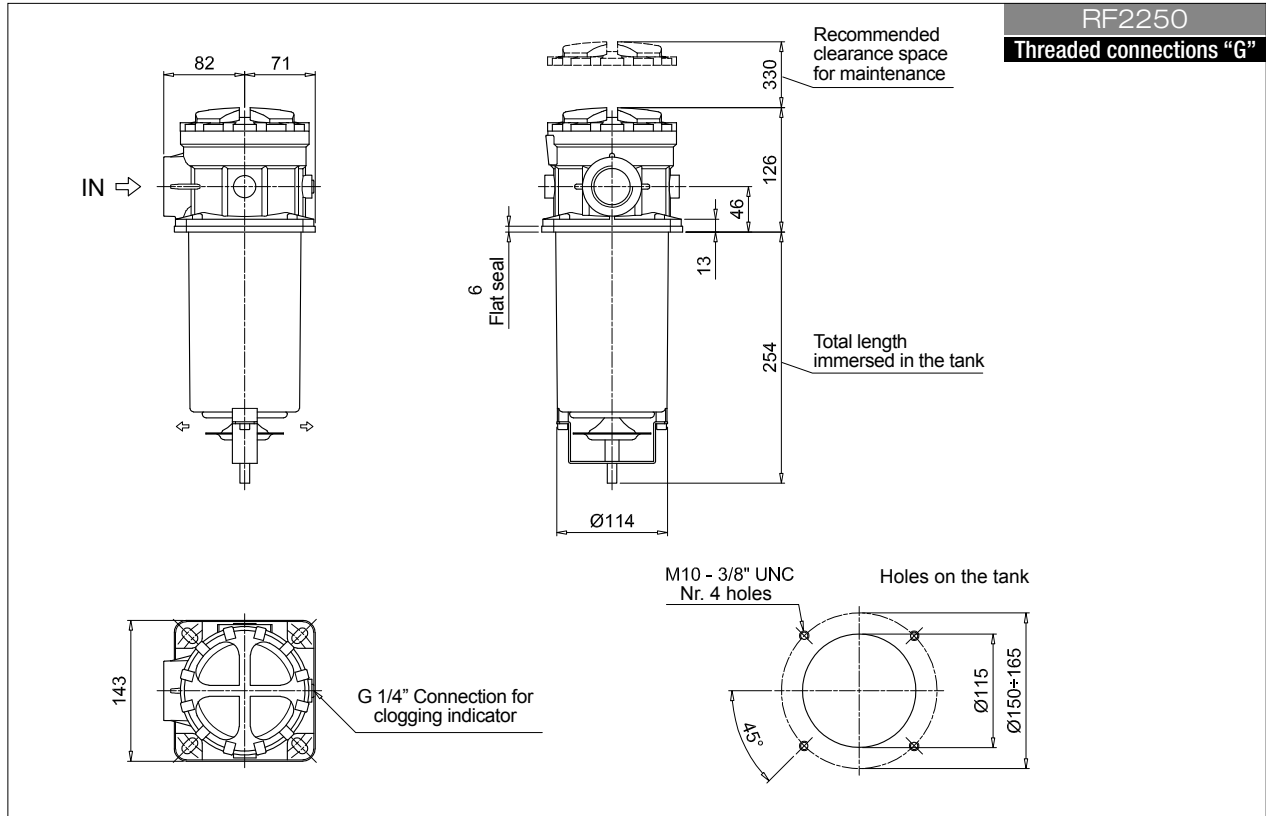
## Designation & Ordering code

COMPLETE FILTER						
<b>Series and size</b>		Configuration example 1: <b>RF2250</b> <b>W</b> <b>F2</b> <b>E</b> <b>M25</b> <b>P01</b>				
<b>RF2250</b>		Configuration example 2: <b>RF2350</b> <b>A</b> <b>G1</b> <b>B</b> <b>A25</b> <b>P01</b>				
<b>RF2350</b>						
<b>Seals and treatments</b>		Filtration rating				
		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>		
<b>A</b>	NBR	•	•	•		
<b>V</b>	FPM	•	•	•		
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC	•	•			
<b>Z</b>	FPM compatible with fluids HFA-HFB-HFC	•	•			
<b>Connections</b>		<b>Aux (only RF2350)</b>	<b>Mxx</b>	<b>Pxx</b>		
<b>G1</b>	G 1 1/2"	G 1"	•	•		
<b>G2</b>	1 1/2" NPT	-	•			
<b>G3</b>	SAE 24 - 1 7/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN	•	•		
<b>G4</b>	G 1 1/4"	-	•			
<b>G5</b>	1 1/4" NPT	-	•			
<b>G6</b>	SAE 20 - 1 5/8" - 12 UN	-	•			
<b>G7</b>	G 1"	-	•			
<b>G8</b>	1" NPT	-	•			
<b>G9</b>	SAE 16 - 1 5/16" - 12 UN	-	•			
<b>F1</b>	1 1/2" SAE 3000 psi/M	-	•			
<b>F2</b>	1 1/2" SAE 3000 psi/UNC	-	•			
<b>Bypass valve</b>						
<b>B</b>	1.75 bar					
<b>E</b>	3 bar					
<b>Filtration rating (filter media)</b>						
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm			
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm			
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm			
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>	Resin impregnated paper 10 µm			
<b>A25</b>	Inorganic microfiber 25 µm	<b>P25</b>	Resin impregnated paper 25 µm			
					<b>Execution</b>	
					<b>P01</b> MP Filtri standard	
					<b>Pxx</b> Customized	

FILTER ELEMENT						
<b>Element series and size</b>		Configuration example 1: <b>CU250</b> <b>M25</b> <b>W</b> <b>P01</b>				
<b>CU250</b>		Configuration example 2: <b>CU250</b> <b>A25</b> <b>N</b> <b>P01</b>				
<b>Filtration rating (filter media)</b>						
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm			
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm			
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm			
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>	Resin impregnated paper 10 µm			
<b>A25</b>	Inorganic microfiber 25 µm	<b>P25</b>	Resin impregnated paper 25 µm			
<b>Seals and treatments</b>		Filtration rating				
		<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>		
<b>N</b>	NBR	•	•	•		
<b>V</b>	FPM	•	•	•		
<b>W</b>	NBR head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC	
<b>Z</b>	FPM head anodized	•	•		filter element compatible with fluids HFA-HFB-HFC	
					<b>Execution</b>	
					<b>P01</b> MP Filtri standard	
					<b>Pxx</b> Customized	

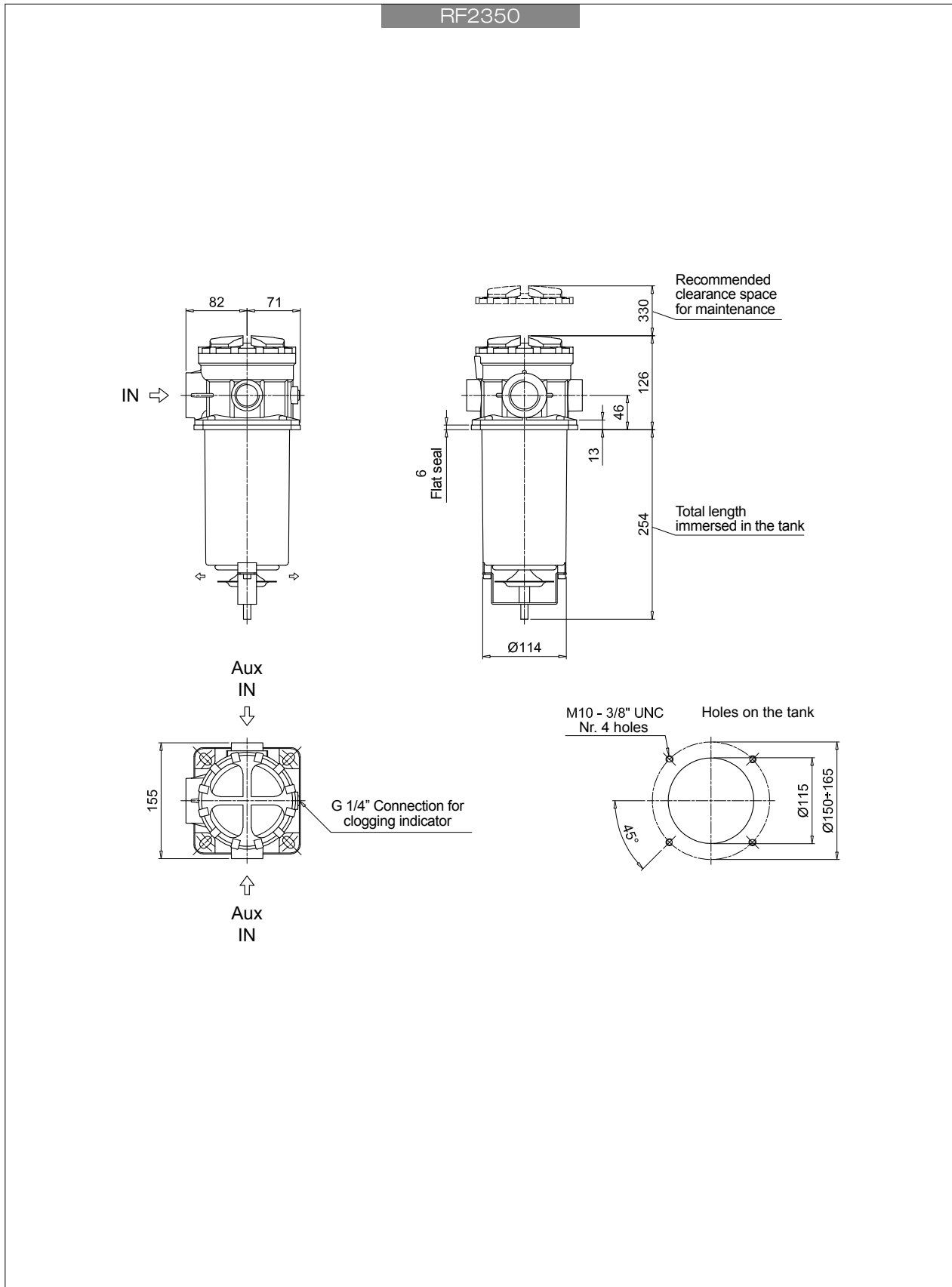
# RF2250 - RF2350 RF2

## Dimensions



# RF2 RF2250 - RF2350

## Dimensions

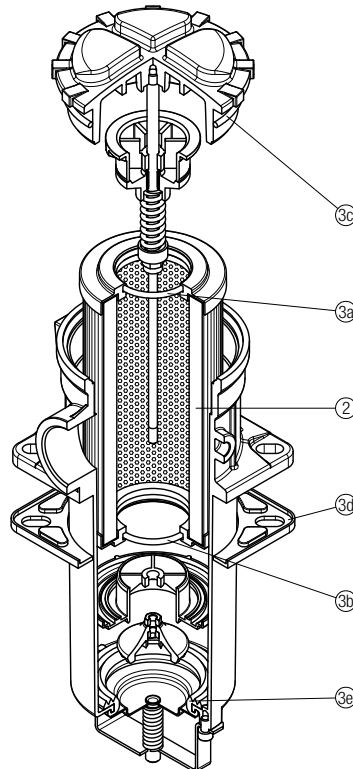




# SPARE PARTS RF2

Order number for spare parts

RF2 250 - 350



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

# Clogging indicators

**Barometric indicators**  
**Differential indicators**

## Introduction

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

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

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

MP Filtri can supply indicators of the following designs:

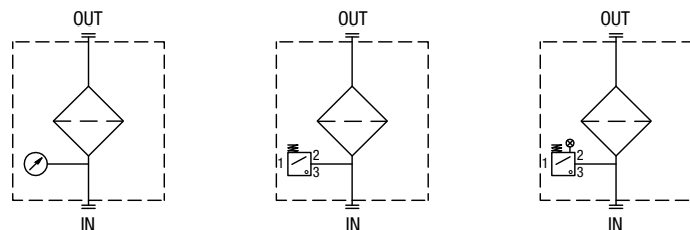
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

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

## Suitable indicator types

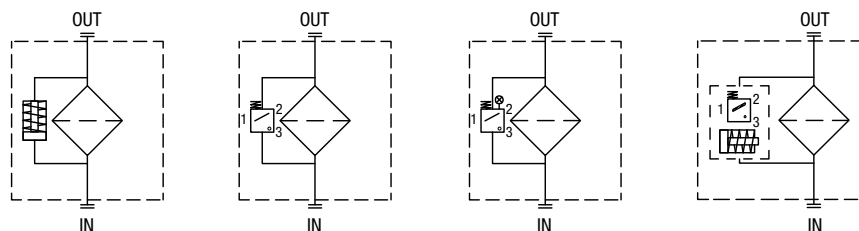
### BAROMETRIC INDICATORS

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



### DIFFERENTIAL INDICATORS

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



## Quick reference guide

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

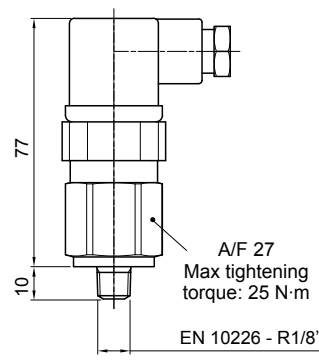
# BAROMETRIC INDICATORS

## Dimensions

**BEA\*50**

**Electrical Pressure Indicator**

Settings	Ordering code
1.5 bar $\pm 10\%$	BE A 15 H A 50 P01
2.0 bar $\pm 10\%$	BE A 20 H A 50 P01

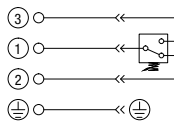


A/F 27  
Max tightening torque: 25 N·m  
EN 10226 - R1/8"

### Hydraulic symbol



### Electrical symbol




### Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

### Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

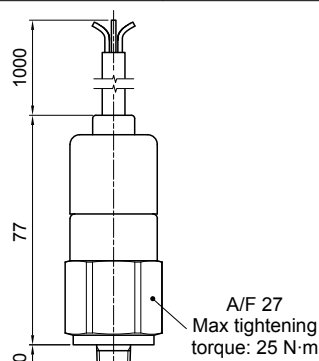
### Electrical data

- Electrical connection: EN 175301-803
- Resistive load:
  - 5 A / 14 Vdc
  - 4 A / 30 Vdc
  - 5 A / 125 Vac
  - 4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X 
- CE certification

**BEM\*41**

**Electrical Pressure Indicator**

Settings	Ordering code
1.5 bar $\pm 10\%$	BE M 15 H A 41 P01
2.0 bar $\pm 10\%$	BE M 20 H A 41 P01

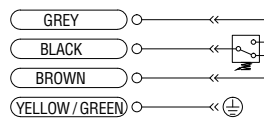


A/F 27  
Max tightening torque: 25 N·m  
EN 10226 - R1/8"

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

### Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP67 according to EN 60529

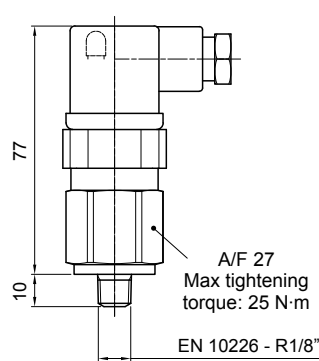
### Electrical data

- Electrical connection: Four-core cable
- Resistive load:
  - 5 A / 14 Vdc
  - 4 A / 30 Vdc
  - 5 A / 125 Vac
  - 4 A / 250 Vac
- CE certification
- On request this indicator can be provided with main connectors in use for wirings.

**BL\*51 - BL\*52 - BL\*53**

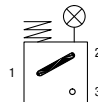
**Electrical/Visual Pressure Indicator**

Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 H A xx P01
2.0 bar $\pm 10\%$	BL A 20 H A xx P01

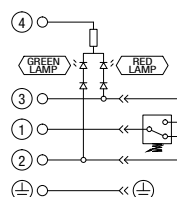


A/F 27  
Max tightening torque: 25 N·m  
EN 10226 - R1/8"

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR

### Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

### Electrical data

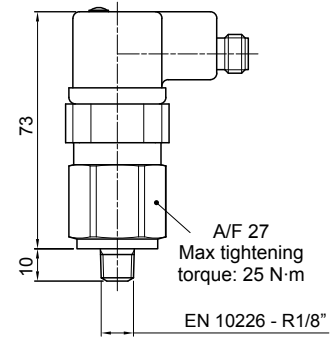
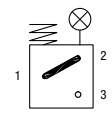
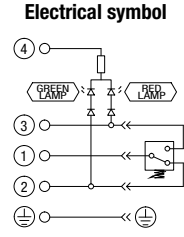
- Electrical connection: EN 175301-803
- Type:
 

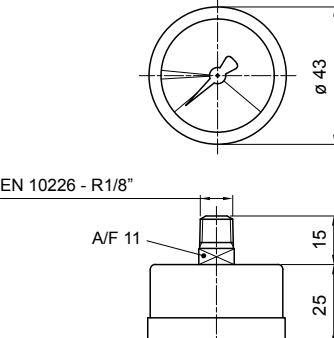

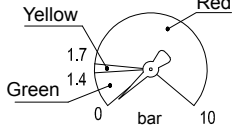
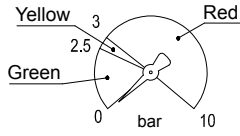
51	52	53
24 Vdc	110 Vdc	230 Vac
- Resistive load:
 

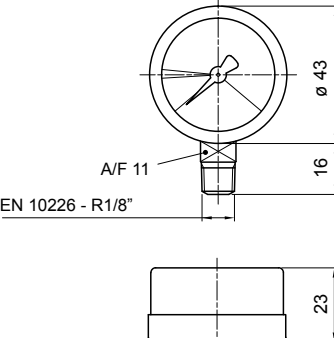

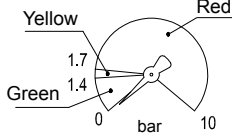
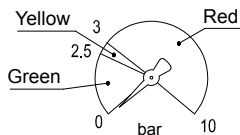
1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac
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# BAROMETRIC INDICATORS

## Dimensions

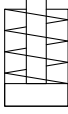
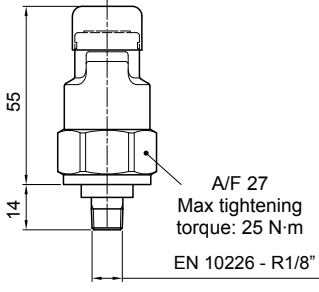
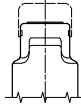
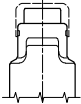
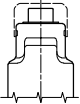
BL*71	
<b>Electrical/Visual Pressure Indicator</b>	
Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 HA 71 P01
2.0 bar $\pm 10\%$	BL A 20 HA 71 P01
	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Electrical symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> 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

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

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

# BAROMETRIC INDICATORS

## Dimensions

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

### DESIGNATION & ORDERING CODE

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

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

Pressure setting	BEA-BEM	BLA	BVA-BVR	BVP-BVQ
<b>14</b> 1.4 bar			•	
<b>15</b> 1.5 bar	•	•		
<b>20</b> 2.0 bar	•	•		•
<b>25</b> 2.5 bar			•	

Seals	BE	BLA	BVA-BVR	BVP-BVQ
<b>H</b> HNBR	•	•		•

Thermostat	BEA-BEM	BLA	BV
<b>A</b> Without	•	•	

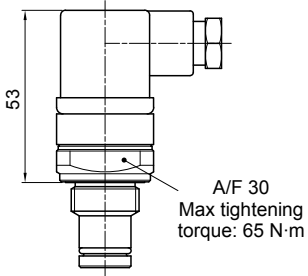

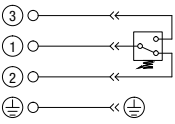
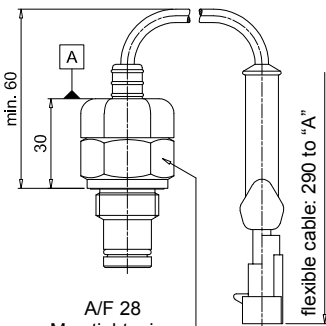

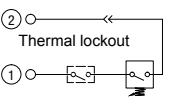
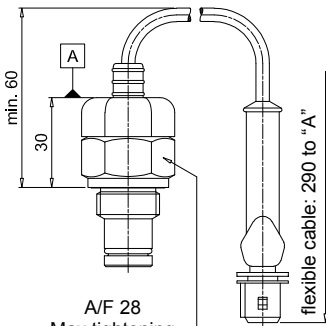

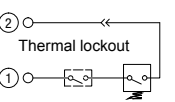
Electrical connections	BEA	BEM	BL	BV
<b>41</b> Connection via four-core cable		•		
<b>50</b> Connection EN 175301-803	•			
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			•	
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc			•	
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vdc			•	
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•	

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

# DIFFERENTIAL INDICATORS

## Dimensions

<p style="text-align: center;"><b>DEA*50</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DEA 20 x A 50 P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DEA 20 x A 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DEA 20 x A 50 P01					
<p style="text-align: center;"><b>DEM*10</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DE M 20 xx 10 P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 28 Max tightening torque: 65 N·m</p> <p style="text-align: center;">flexible cable: 290 to "A"</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DE M 20 xx 10 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: AMP Superseal series 1.5</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: Normally open contacts (NC on request)</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DE M 20 xx 10 P01					
<p style="text-align: center;"><b>DEM*20</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DEM20xx20P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 28 Max tightening torque: 65 N·m</p> <p style="text-align: center;">flexible cable: 290 to "A"</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DEM20xx20P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: AMP Time junior</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: Normally open contacts (NC on request)</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DEM20xx20P01					

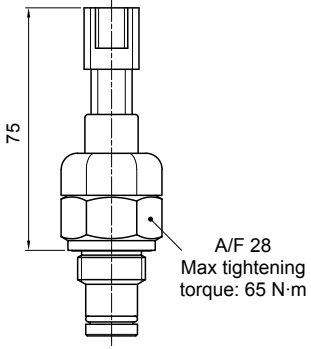
# DIFFERENTIAL INDICATORS

## Dimensions

**DEM\*30**

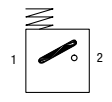
**Electrical Differential Indicator**

Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 xx 30 P01

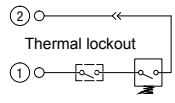


A/F 28  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

- Body: Brass
- Base: Black Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

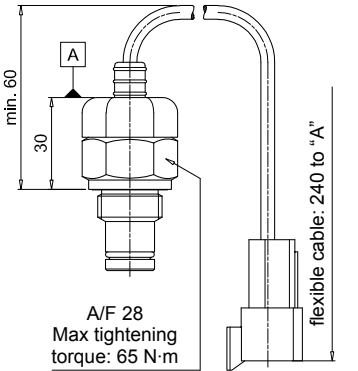
**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

**DEM\*35**

**Electrical Differential Indicator**

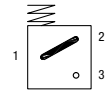
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 xx 35 P01



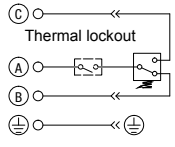
A/F 28  
Max tightening torque: 65 N·m

flexible cable: 240 to "A"

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

- Body: Brass
- Base: Black Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

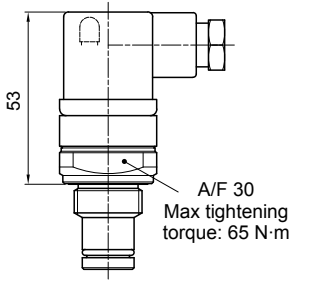
**Electrical data**

- 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")

**DLA\*51 - DLA\*52**

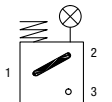
**Electrical/Visual Differential Indicator**

Settings	Ordering code
2.0 bar $\pm 10\%$	DL A 20 x A xx P01

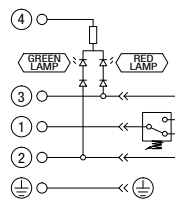


A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

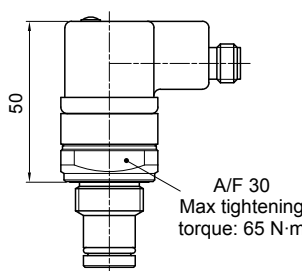
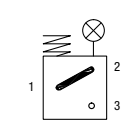
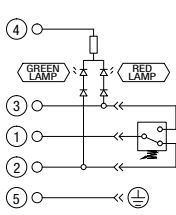
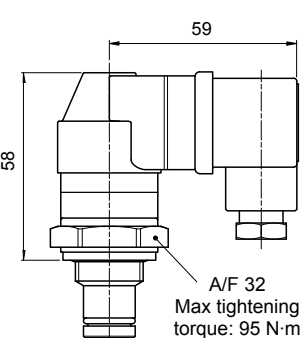
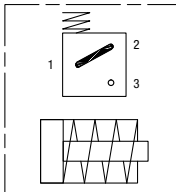
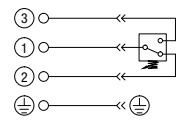
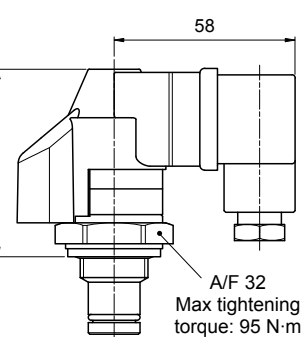
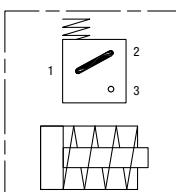
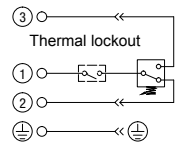
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO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

**Electrical data**

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

## DIFFERENTIAL INDICATORS

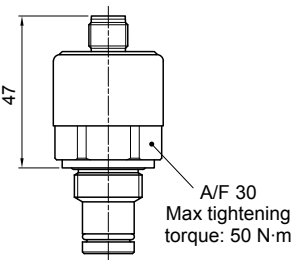
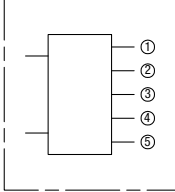
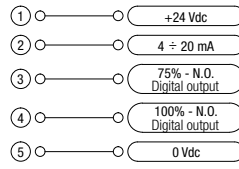
### Dimensions

<p style="text-align: center;"><b>DLA*71</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0 bar <math>\pm 10\%</math></td> <td style="text-align: center;">DL A 20 x A 71 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DL A 20 x A 71 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Lamps: 24 Vdc</li> <li>- Resistive load: 0.4 A / 24 Vdc</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DL A 20 x A 71 P01					
<p style="text-align: center;"><b>DLE*A50</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0 bar <math>\pm 10\%</math></td> <td style="text-align: center;">DL E 20 x A 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 32 Max tightening torque: 95 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DL E 20 x A 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connections: EN 175301-803</li> <li>- Resistive load: 5 A / 250 Vac</li> <li>- Available the connector with lamps</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DL E 20 x A 50 P01					
<p style="text-align: center;"><b>DLE*F50</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0 bar <math>\pm 10\%</math></td> <td style="text-align: center;">DL E 20 x F 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 32 Max tightening torque: 95 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DL E 20 x F 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connections: EN 175301-803</li> <li>- Resistive load: 5 A / 250 Vac</li> <li>- Thermal lockout setting: +30 °C</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DL E 20 x F 50 P01					

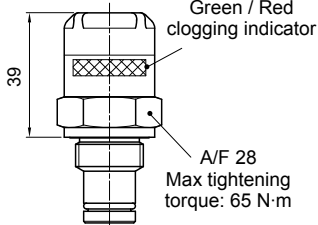
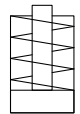


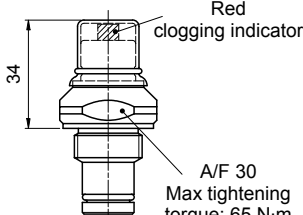
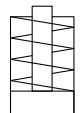
# DIFFERENTIAL INDICATORS

## Dimensions

DTA*70	
<b>Electronic Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DT A 20 x x 70 P01
 <p>47</p> <p>A/F 30 Max tightening torque: 50 N·m</p>	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Electrical symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP67 according to EN 60529</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Power supply: 24 Vdc</li> <li>- Analogue output: From 4 to 20 mA</li> <li>- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)</li> </ul>	



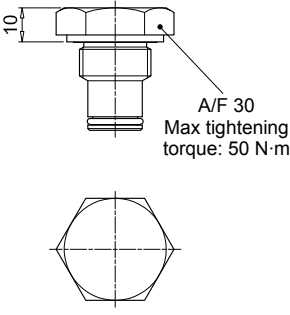
DVA	
<b>Visual Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DV A 20 x P01
 <p>39</p> <p>Green / Red clogging indicator</p> <p>A/F 28 Max tightening torque: 65 N·m</p>	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Reset: Automatic reset</li> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul>	

DVM	
<b>Visual Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DV M 20 x P01
 <p>34</p> <p>Red clogging indicator</p> <p>A/F 30 Max tightening torque: 65 N·m</p>	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Reset: Manual reset</li> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul>	

# DIFFERENTIAL INDICATORS

## Dimensions

T2	
<b>Indicator plug</b>	
Seal	Ordering code
HNBR	T2 H
FPM	T2 V



**Materials**

- Body: Phosphatized steel
- Seal: HNBR / FPM

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

<b>Series</b>	Configuration example 1:	DE	M	20	H	F	50	P01
<b>DE</b> Electrical differential indicator	Configuration example 2:	DL	E	20	V	A	71	P01
<b>DL</b> Electrical/Visual differential indicator	Configuration example 3:	DT	A	20	H	F	70	P01
<b>DT</b> Electronic differential indicator	Configuration example 4:	DV	M	20	V			P01
<b>DV</b> Visual differential indicator								
<b>Type</b>	<b>DE</b>	<b>DL</b>	<b>DT</b>	<b>DV</b>				
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset				
<b>M</b> With wired electrical connection	•			<b>M</b> With manual reset				
<b>E</b> For high power supply		•						
<b>Pressure setting</b>								
<b>20</b> 2.0 bar								
<b>Seals</b>								
<b>H</b> HNBR								
<b>V</b> FPM								
<b>Thermostat</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>		
<b>A</b> Without	•	•	•	•				
<b>F</b> With thermostat		•		•	•			
<b>Electrical connections</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>		
<b>10</b> Connection AMP Superseal series 1.5		•						
<b>20</b> Connection AMP Timer Junior		•						
<b>30</b> Connection Deutsch DT-04-2-P		•						
<b>35</b> Connection Deutsch DT-04-3-P		•						
<b>50</b> Connection EN 175301-803	•			•				
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			•					
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc			•					
<b>70</b> Connection IEC 61076-2-101 D (M12)					•			
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•					
								<b>Option</b>
								<b>P01</b> MP Filtri standard
								<b>Pxx</b> Customized

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

<b>Series</b>	Configuration example	T2	H
<b>T2</b> Indicator plug			
<b>Seals</b>			
<b>H</b> HNBR			
<b>V</b> FPM			

## DIFFERENTIAL INDICATORS

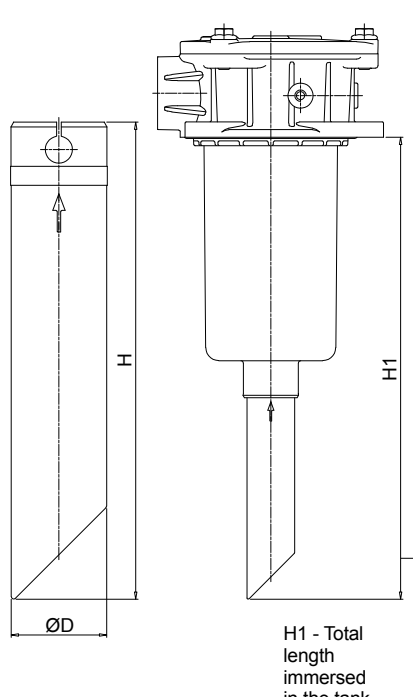
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Return filters

# Accessories

## NYLON EXTENSION TUBE



H1 - Total length immersed in the tank

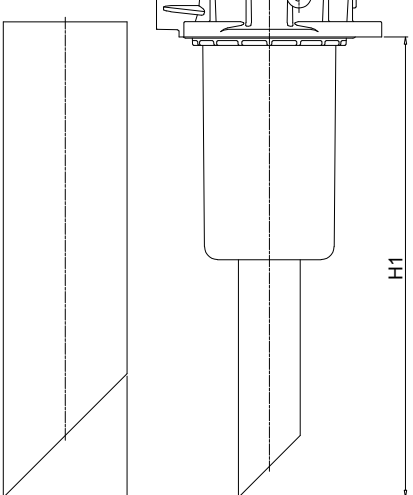
Configuration example: **TE 40 A 250**

Series	Size	Material	Length	H [mm]
<b>TE</b>			<b>200</b>	<b>200</b>
	<b>25</b>		<b>250</b>	<b>250</b>
	<b>32</b>		<b>300</b>	<b>300</b>
	<b>40</b>	<b>A</b> Nylon	<b>350</b>	<b>350</b>
			<b>400</b>	<b>400</b>
			<b>450</b>	<b>450</b>
			<b>500</b>	<b>500</b>

COMPATIBILITY TABLE																		
Filter series	Filter size			Filter length	Tube length													
					TE25	TE32	TE40	200	250	300	350	400	450	500				
					H1 [mm]													
MPF - MPFX	30			1	•				266	316	366	416	466	516	566			
MPF	100	104	110	1		•			275	325	375	425	475	525	575			
				2					322	372	422	472	522	572	622			
				3						400	450	500	550	600	650	700		
				4			•			502	552	602	652	702	752	802		
MPFX	100	104	110	1					277	327	377	427	477	527	577			
				2					322	372	422	472	522	572	622			
				3			•			400	450	500	550	600	650	700		
				4						502	552	602	652	702	752	802		
MPF MPFX	181	182	184	1					410	460	510	560	610	660	710			
				2			•			623	673	723	773	823	873	923		
MPT MPTX	025		027	1					278	328	378	428	478	528	578			
				2	•				342	392	442	492	542	592	642			
				3					380	430	480	530	580	630	680			
MPT	101	104	110	114	120	1		•										
						2					273	323	373	423	473	523	573	
						3					320	370	420	470	520	570	620	
						4			•			396	446	496	546	596	646	696
MPTX	101	104	110	114	120	1												
						2			•			273	323	373	423	473	523	573
						3					318	368	418	468	518	568	618	
						4					396	446	496	546	596	646	696	

## STEEL EXTENSION TUBE



H1 - Total length immersed in the tank

Configuration example: **MPF191 2 A F1 A10 H B S60**

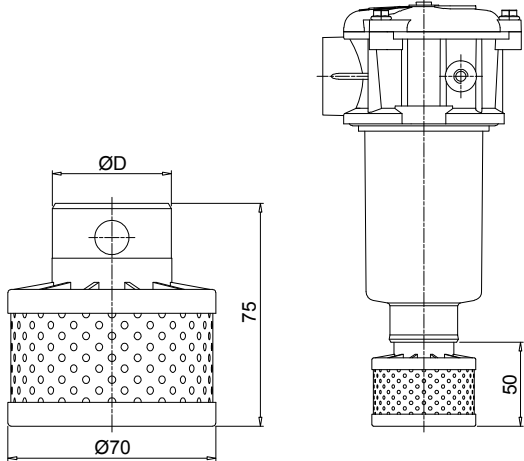
Series	Size	Material	Length	H1 [mm]
<b>MPF191</b>			<b>300</b>	<b>300</b>
	<b>2</b>		<b>350</b>	<b>350</b>
	<b>A</b>		<b>400</b>	<b>400</b>
	<b>F1</b>		<b>450</b>	<b>450</b>
	<b>A10</b>		<b>500</b>	<b>500</b>
	<b>H</b>		<b>600</b>	<b>600</b>
	<b>B</b>		<b>700</b>	<b>700</b>
	<b>S60</b>		<b>800</b>	<b>800</b>
			<b>900</b>	<b>900</b>

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

## ACCESSORIES

### DIFFUSER WITH FAST LOCK CONNECTION

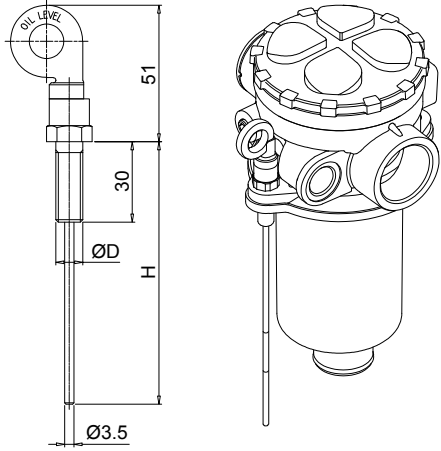


Configuration example: **DFS** **32** **A** **075**

<b>Series</b>	<b>DFS</b>		
<b>Size</b> $\phi$ D [mm]	<b>32</b>	<b>40</b>	
<b>Version</b>	<b>A</b> Standard		
<b>Length</b>	<b>075</b> Standard		

COMPATIBILITY TABLE								
Filter series	Filter size			Filter Length	DFS32	DFS40		
MPF	100	104	110	1	•			
				2				
				3				
				4		•		
MPFX	100	104	110	1				
				2		•		
				3				
				4				
MPT	101	104	110	114	120	1	•	
						2		
						3		
						4		•
MPTX	101	104	110	114	120	1		
						2		•
						3		
						4		

### DIPSTICK



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

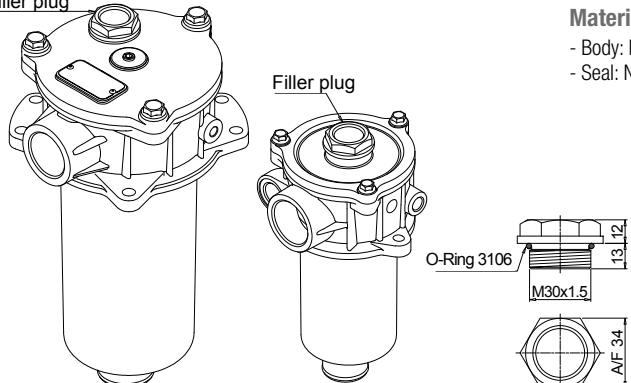
<b>Series</b>	<b>DPT</b>			
<b>Length</b> H [mm]	<b>15</b>	<b>20</b>	<b>25</b>	<b>30</b>
	134	184	234	284
	35	334		

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

**Technical data**  
Working temperature: from -25 °C to +110 °C

<b>Fastening</b>	<b>M8</b> Fastening with screws $\phi$ D = M8	<b>M10</b> Fastening with screws $\phi$ D = M10
<b>Seals</b>	<b>A</b> NBR	<b>V</b> FPM
<b>Execution</b>	<b>P01</b> MP Filtri standard	
	<b>Pxx</b> Customized	

### FILLER PLUG



**Materials**  
- Body: Nylon  
- Seal: NBR

**Technical data**  
Tightening torque: 15 N·m

O-Ring 3106  
M30x1.5  
AF 34

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

**Hydraulic combined filters for installation on the return and suction lines of hydrostatic transmissions (HSTs) for commercial vehicles, construction machinery, agricultural vehicles, and mobile work equipment with hydrostatic drive.**

**Advantage for the installation:**

- Space-saving assembly
- Reduced assembly time
- Fewer connections to the tank
- Protection from the pollution of the tank

**Advantages for the operativity:**

- Absolute filtration of the oil for the hydrostatic drive
- Fulfilment of the purity requirements according to ISO 4406, as specified by the manufacturer of the driving drives.
- Protection against damages from cavitation even under adverse conditions, i.e. cold start
- Less formation of free air in the system
- Easier maintenance operations (one spare filter element instead of two)

## FILTER SIZING

For the proper corrective factor Y see chapter at page 24



## Return / Suction filters



MRSX	page 253
LMP 124 MULTIPORT	265
INDICATORS	273



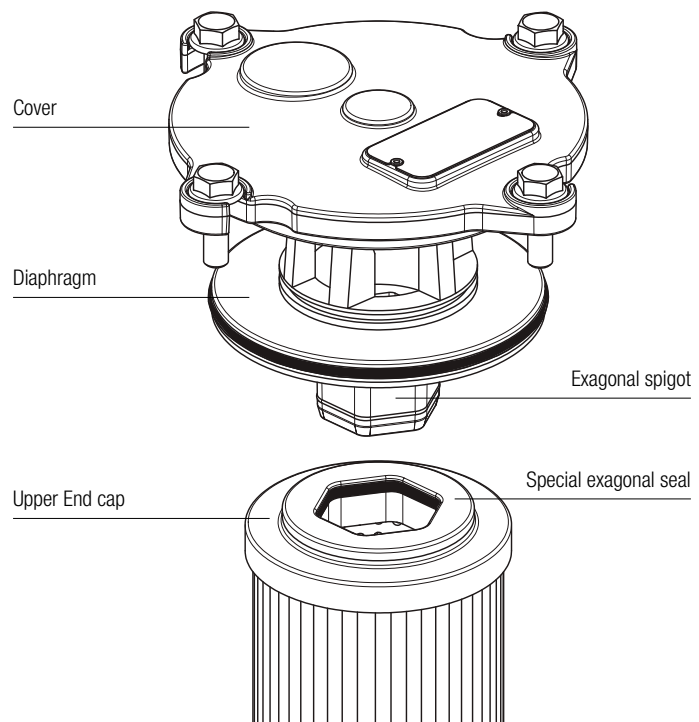
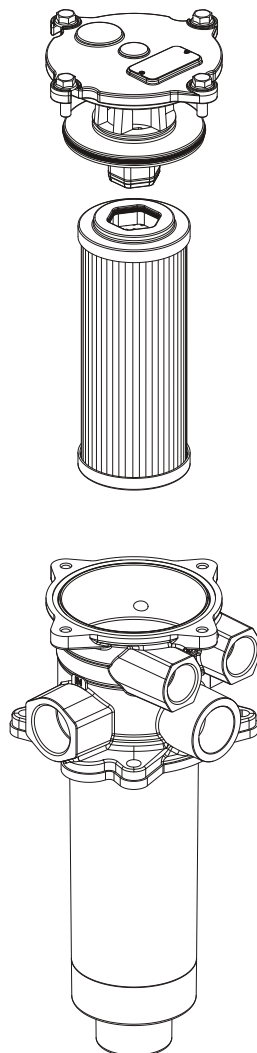
THE NEW FILTER CONCEPT

MRSX  
RSX  
series

### NEW FILTER ELEMENT WITH EXCLUSIVE INTERFACE CONNECTION

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

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



The products identified as MRSX and RSX are protected by:  
Italian Patent n° 102014902261205  
Canadian Patent n° 2,937,258

and by the following patent applications:  
European Patent n° 16181725.9  
US Patent Pending n° 15/224,337





Return / Suction filters  
Tank mounted

# MRSX series

Maximum working pressure up to 1 MPa (10 bar) - Flow rate up to 250 l/min



# MRSX GENERAL INFORMATION

## Description

## Technical data

Return / Suction filter

Tank mounted

**Maximum working pressure up to 1 MPa (10 bar)**  
**Flow rate up to 250 l/min**

MRSX is a range of suction/return filters for hydraulic systems with two or more circuits (both open and closed loops). They are able to provide pressurized oil cleaned by fine filtration to the feed pump of the hydrostatic systems.

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

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

### Available features:

- Female threaded return connections up to 1 1/4", for a maximum return flow rate of 300 l/min
- Multiple connections, to connect several return and suction lines
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve to the tank, to relieve excessive pressure drop across the filter media when the return flow is enough higher than the suction flow
- Bypass valve to the suction line with additional suction filter element, to relieve excessive pressure drop across the filter media when the return flow is not enough higher than the suction flow
- De-pressurization valve, to reduce the pressure inside the filter during the maintenance operations
- Anti-cavitation valve with additional suction filter element, to ensure fluid to the feed pump of the hydrostatic systems during cold starts or initial filling
- O-ring or Flat Seal to suit a variety of reservoir surfaces
- Reservoir side mounting, to save space in the machines
- Visual, electrical and electronic clogging indicators
- MYclean interface connection, to protect the product against non-original spare parts
- External protective wrap, to optimize the flow through the element and to save the element efficiency against non-proper handling

### Common applications:

Mobile machines with hydrostatic systems on board  
(i.e. skid steer loaders, telehandlers, dumpers, road sweepers)

### Filter housing materials

- Head: Aluminium
- Cover  
Nylon: MRSX 116  
Aluminium: MRSX 165-166
- Bowl: Nylon

### Δp element type

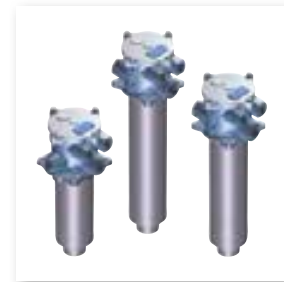
- RSX: 10 bar
- Oil flow from exterior to interior.

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C



## FILTER ASSEMBLY SIZING

Flow rates [l/min]

Filter series	Length	A10	A16	A25
MRSX 116	1	74	82	87
	2	108	113	124
MRSX 165 - 166	1	155	166	178
	2	187	196	200
	3	201	205	217

### Maximum flow rate for a complete return/suction filter with a pressure drop Δp = 1 bar.

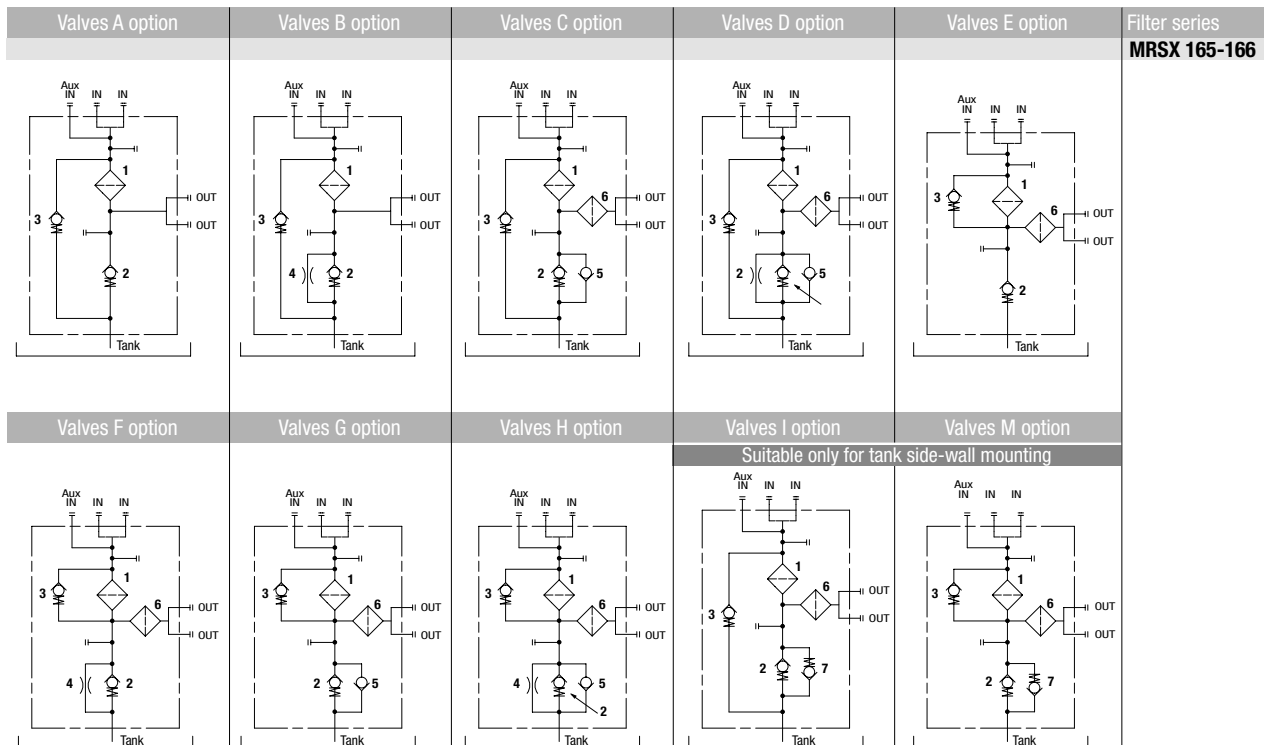
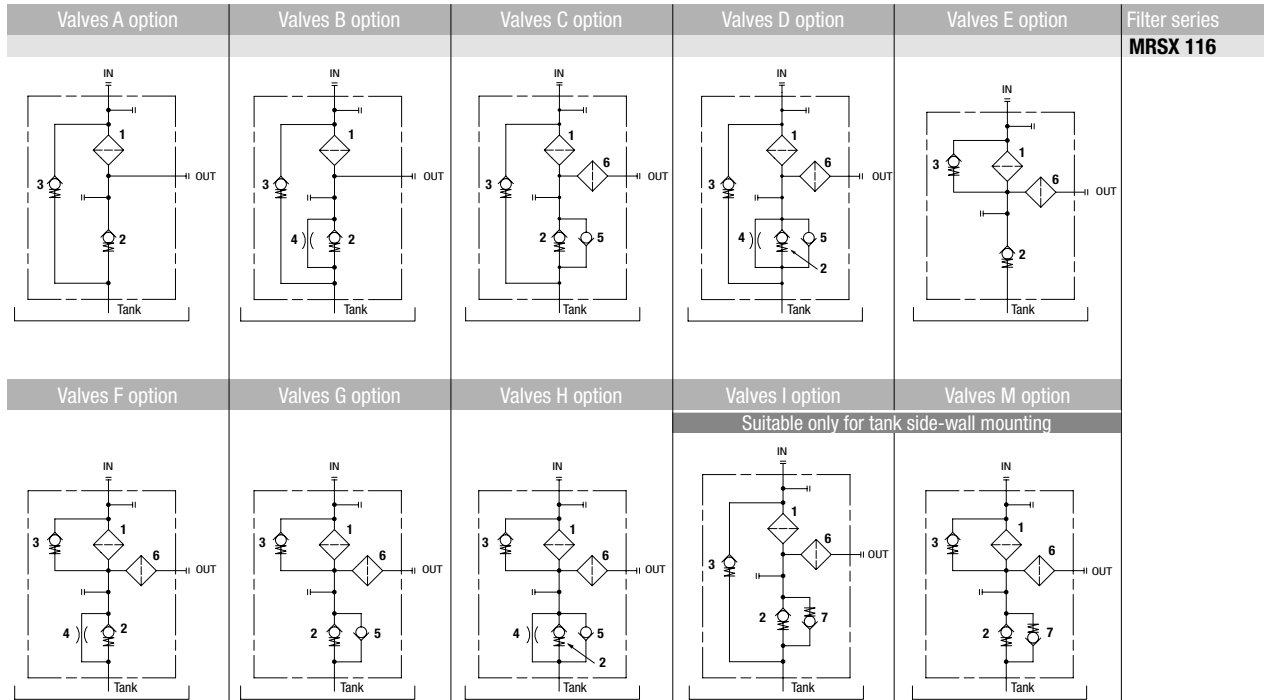
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

# GENERAL INFORMATION MRSX

## Hydraulic symbols



### LEGEND

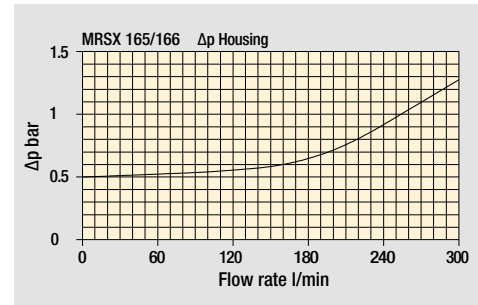
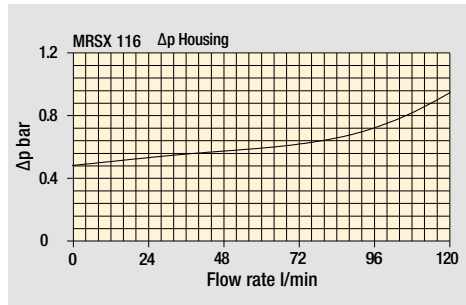
- 1 - Filter element
- 2 - Back-Pressure valve: opening pressure 0.5 bar  $\pm 10\%$
- 3 - Bypass valve: opening pressure 2.5 bar  $\pm 10\%$
- 4 - Depressurization valve

- 5 - Anti-Cavitation valve
- 6 - Safety filter element (wire mesh 60  $\mu\text{m}$ )
- 7 - Anti-Cavitation valve / Anti-Emptying valve

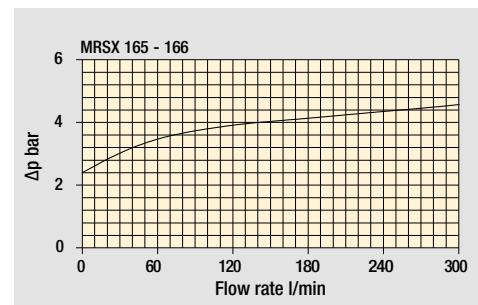
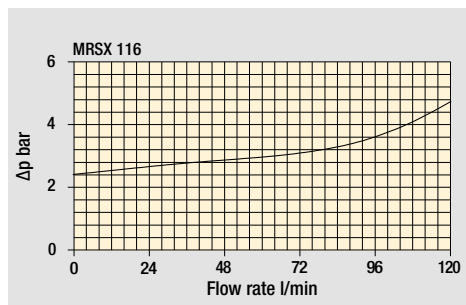
# MRSX GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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

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

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	Length	1	2	3
<b>MRSX 116</b>		1.30	1.40	-		0.80	1.00	-
<b>MRSX 165</b>		3.40	3.80	4.10		2.00	2.60	3.00
<b>MRSX 166</b>		3.40	3.80	4.10		2.00	2.60	3.00

## GENERAL INFORMATION MRSX

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# MRSX MRSX116

## Designation & Ordering code

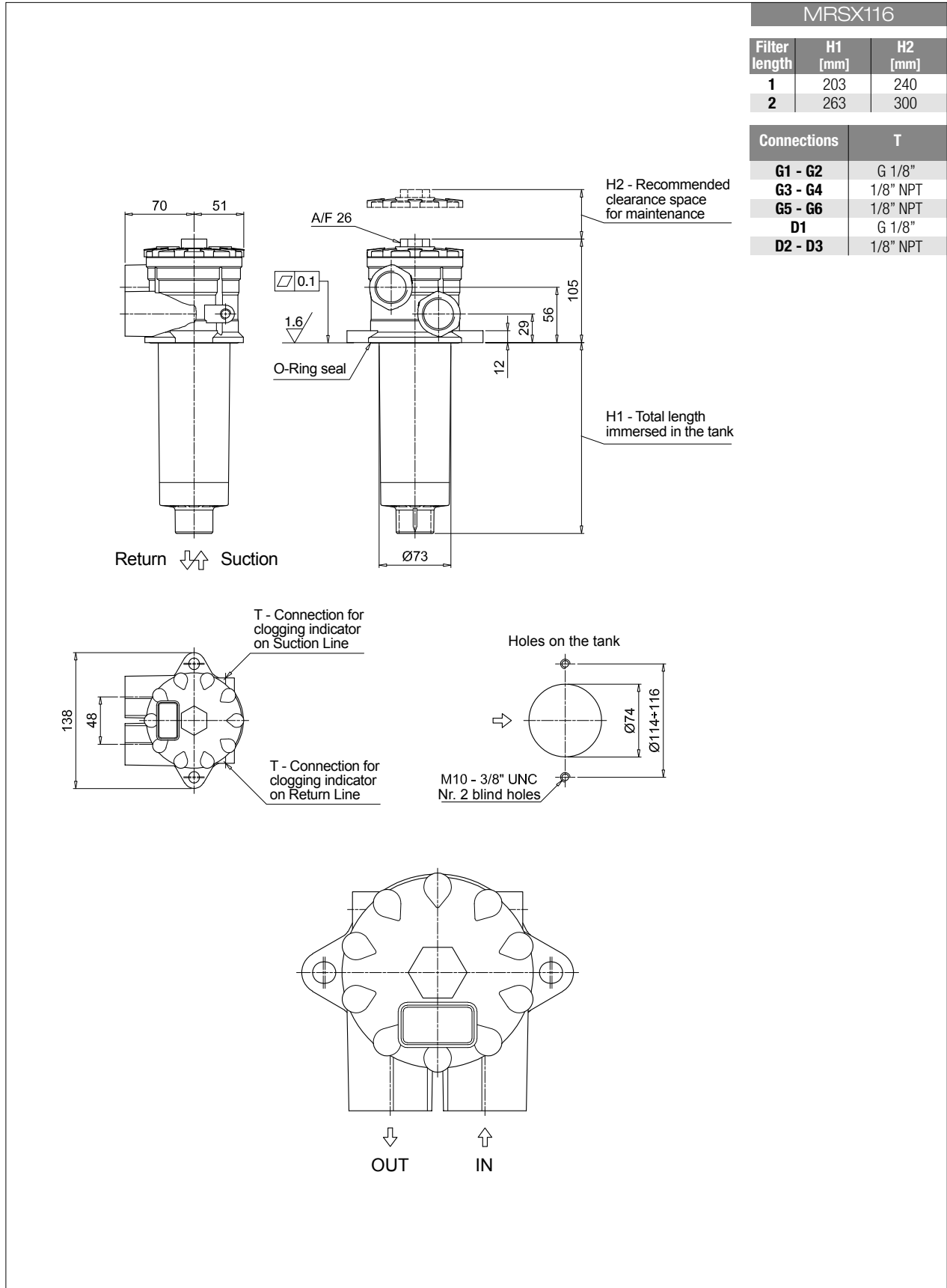
COMPLETE FILTER													
Series and size		Configuration example: <b>MRSX116</b>   <b>1</b>   <b>B</b>   <b>A</b>   <b>G1</b>   <b>0</b>   <b>A16</b>   <b>B</b>   <b>P01</b>											
<b>MRSX116</b> Filter element with private spigot													
Length													
<b>1</b>   <b>2</b>													
Hydraulic diagram configuration - see page 257													
		Bypass valve to tank					Bypass valve to OUT						
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>										
<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>										
<b>I</b>													
<b>M</b>													
Seals and treatments													
<b>A</b>	NBR, O-Ring on head			<b>B</b>	NBR, flat seal on head								
<b>V</b>	FPM, O-Ring on head			<b>D</b>	FPM, flat seal on head								
Connections IN		Connections OUT											
<b>G1</b>	G 3/4"			<b>G 3/4"</b>									
<b>G2</b>	G 1"			<b>G 1"</b>									
<b>G3</b>	3/4" NPT			<b>3/4" NPT</b>									
<b>G4</b>	1" NPT			<b>1" NPT</b>									
<b>G5</b>	SAE 12 - 1 1/16" - 12 UN			<b>SAE 12 - 1 1/16" - 12 UN</b>									
<b>G6</b>	SAE 16 - 1 5/16" - 12 UN			<b>SAE 16 - 1 5/16" - 12 UN</b>									
<b>D1</b>	G 1"			<b>G 3/4"</b>									
<b>D2</b>	1" NPT			<b>3/4" NPT</b>									
<b>D3</b>	SAE 16 - 1 5/16" - 12 UN			<b>SAE 12 - 1 1/16" - 12 UN</b>									
Aux IN connection													
<b>0</b> Without aux IN connection													
Filtration rating (filter media)													
<b>A10</b> Inorganic microfiber 10 µm													
<b>A16</b> Inorganic microfiber 16 µm													
<b>A25</b> Inorganic microfiber 25 µm													
		Valves configuration											
Mounting position		<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>M</b>		
<b>S</b> Standard		•	•	•	•	•	•	•	•	•	•		
<b>B</b> Tank side-wall mounting		•	•			•	•			•	•		
		Execution											
		<b>P01</b> MP Filtri standard											
		<b>Pxx</b> Customized											

FILTER ELEMENT											
Element series and size		Configuration example: <b>RSX116</b>   <b>1</b>   <b>A16</b>   <b>A</b>   <b>P01</b>									
<b>RSX116</b> Filter element with private spigot											
Element length											
<b>1</b>   <b>2</b>											
Filtration rating (filter media)											
<b>A10</b> Inorganic microfiber 10 µm											
<b>A16</b> Inorganic microfiber 16 µm											
<b>A25</b> Inorganic microfiber 25 µm											
		Seals					Execution				
		<b>A</b> NBR					<b>P01</b> MP Filtri standard				
		<b>V</b> FPM					<b>Pxx</b> Customized				

ACCESSORIES			
Indicators on Return Line		page	page
<b>BVA</b>	Axial pressure gauge	278	<b>BEA</b> Electrical pressure indicator 276
<b>BVR</b>	Radial pressure gauge	278	<b>BEM</b> Electrical pressure indicator 276
<b>BVP</b>	Visual pressure indicator with automatic reset	279	<b>BET</b> Electrical pressure indicator 276-277
<b>BVQ</b>	Visual pressure indicator with manual reset	279	<b>BLA</b> Electrical / visual pressure indicator 277-278
Indicators on Suction Line		page	page
<b>VVB</b>	Axial vacuum gauge	275	<b>VEB</b> Electrical vacuum indicator 274
<b>VVS</b>	Radial vacuum gauge	275	<b>VLB</b> Electrical / visual vacuum indicator 274

# MRSX116 MRSX

## Dimensions



# MRSX MRSX165 - MRSX166

## Designation & Ordering code

COMPLETE FILTER									
Series and size		Configuration example: <b>MRSX166</b>   <b>2</b>   <b>C</b>   <b>V</b>   <b>G3</b>   <b>1</b>   <b>A10</b>   <b>S</b>   <b>P01</b>							
<b>MRSX165</b>   <b>MRSX166</b> Filter element with private spigot									
Length		1   2   3							
Hydraulic diagram configuration - see page 257									
A   B   C   D		Bypass valve to tank		Bypass valve to OUT					
E   F   G   H									
I									
M									
Seals and treatments									
A NBR, O-Ring on head		B NBR, flat seal on head							
V FPM, O-Ring on head		D FPM, flat seal on head							
Connections									
IN (size 165)		IN (size 166)		Aux IN		OUT			
G1 G 1 1/4"		G 1"		G 1 1/4"		G 1"			
G2 1 1/4" NPT		1" NPT		1 1/4" NPT		1" NPT			
G3 SAE 20 - 1 5/8" - 12 UN		SAE 16 - 1 5/16" - 12 UN		SAE 20 - 1 5/8" - 12 UN		SAE 16 - 1 5/16" - 12 UN			
Aux IN connection				MRSX 165		MRSX 166			
0 Without aux IN connection				•		-			
1 With aux IN connection - see previous table				•		•			
Filtration rating (filter media)									
A10 Inorganic microfiber 10 µm									
A16 Inorganic microfiber 16 µm									
A25 Inorganic microfiber 25 µm									
Valves configuration									
Mounting position		A   B   C   D   E   F   G   H   I   M							
S Standard		• • • • • • • • • •							
B Tank side-wall mounting		• • • • • • • • • •							
								Execution	
								P01 MP Filtri standard	
								Pxx Customized	

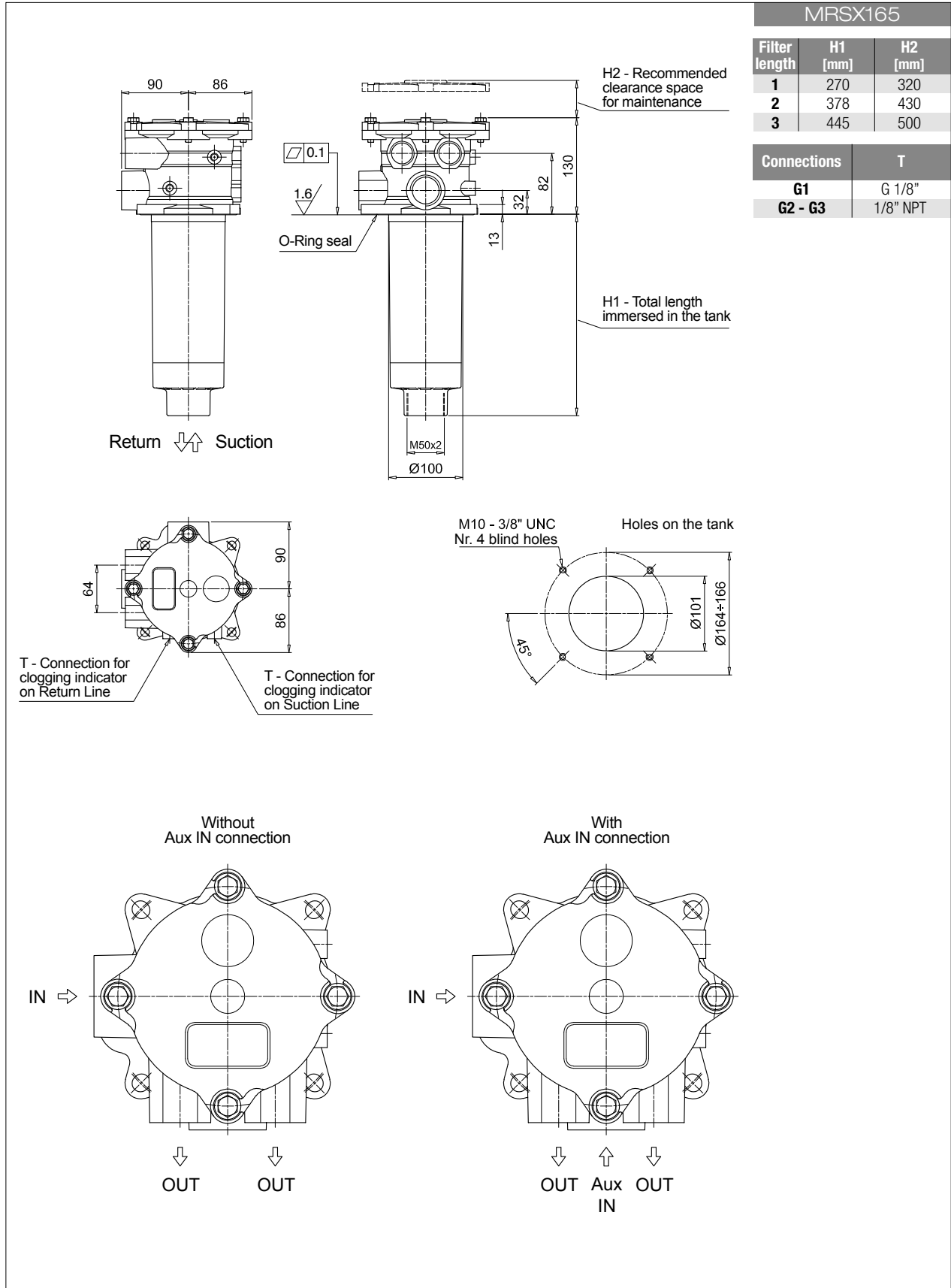
FILTER ELEMENT									
Element series and size		Configuration example: <b>RSX165</b>   <b>2</b>   <b>A10</b>   <b>V</b>   <b>P01</b>							
<b>RSX165</b> Filter element with private spigot									
Element length		1   2   3							
Filtration rating (filter media)									
A10 Inorganic microfiber 10 µm									
A16 Inorganic microfiber 16 µm									
A25 Inorganic microfiber 25 µm									
					Seals		Execution		
					A NBR		P01 MP Filtri standard		
					V FPM		Pxx Customized		

ACCESSORIES			
Indicators on Return Line		page	page
<b>BVA</b> Axial pressure gauge	278	<b>BEA</b> Electrical pressure indicator	276
<b>BVR</b> Radial pressure gauge	278	<b>BEM</b> Electrical pressure indicator	276
<b>BVP</b> Visual pressure indicator with automatic reset	279	<b>BET</b> Electrical pressure indicator	276-277
<b>BVQ</b> Visual pressure indicator with manual reset	279	<b>BLA</b> Electrical / visual pressure indicator	277-278
Indicators on Suction Line		page	page
<b>VVB</b> Axial vacuum gauge	275	<b>VEB</b> Electrical vacuum indicator	274
<b>VVS</b> Radial vacuum gauge	275	<b>VLB</b> Electrical / visual vacuum indicator	274



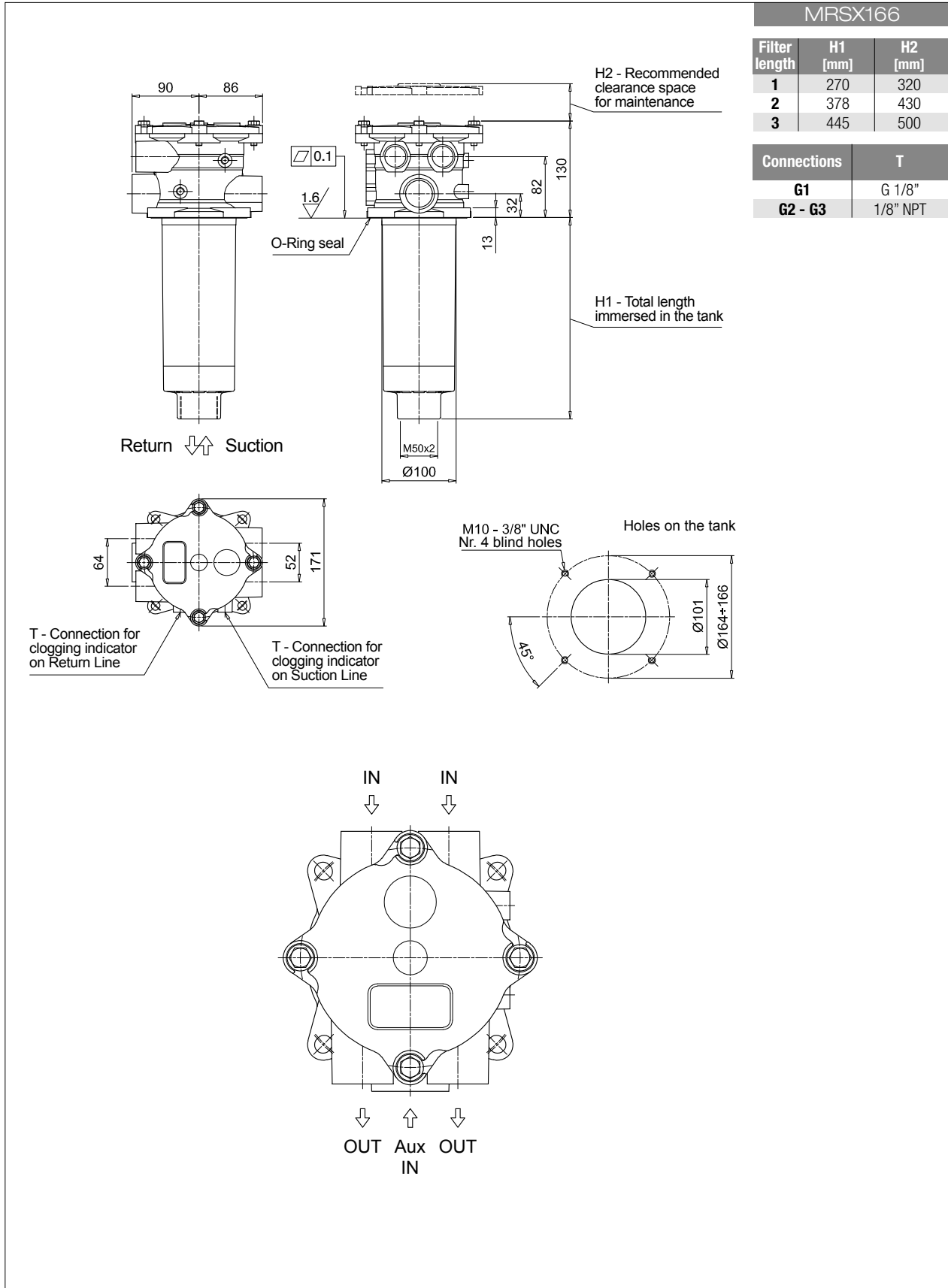
# MRSX165 - MRSX166 MRSX

## Dimensions



# MRSX MRSX165 - MRSX166

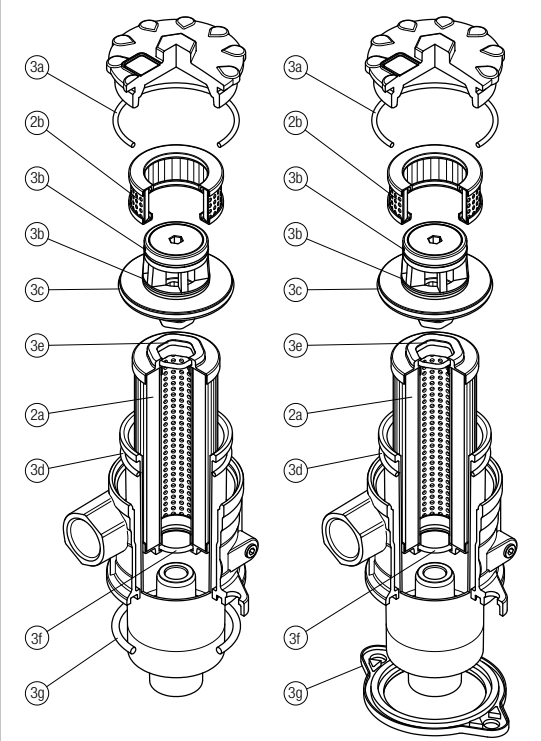
## Dimensions



# SPARE PARTS MRSX

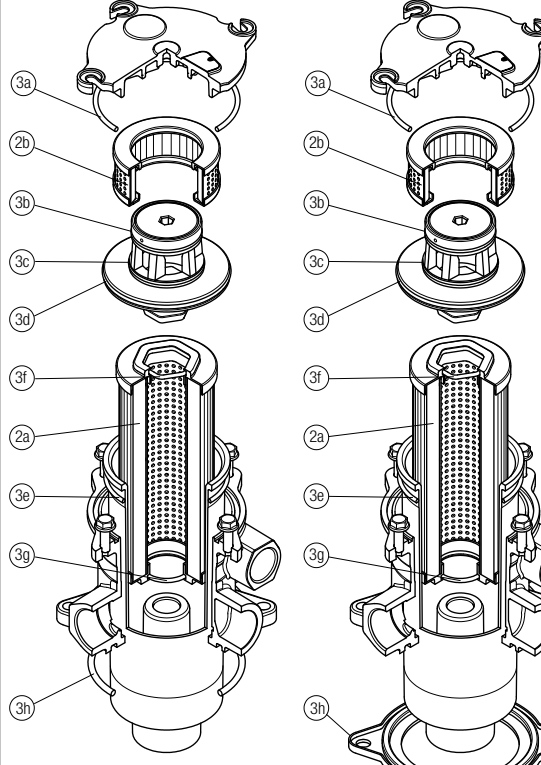
Order number for spare parts

**MRSX 116**



		Q.ty: 1 pc.		Q.ty: 1 pc.		O-RING SEAL		FLAT SEAL	
						Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:		<b>2a</b>		<b>2b</b>		<b>3</b> (3a ÷ 3g)		<b>3</b> (3a ÷ 3g)	
Filter series	Filter element	Safety filter element	Seal Kit code number NBR	Seal Kit code number FPM	Seal Kit code number NBR	Seal Kit code number FPM			
<b>MRSX 116</b>	See order table	S116M60P01	02050617	02050619	02050618	02050620			

**MRSX 165 - 166**



		Q.ty: 1 pc.		Q.ty: 1 pc.		O-RING SEAL		FLAT SEAL	
						Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:		<b>2a</b>		<b>2b</b>		<b>3</b> (3a ÷ 3h)		<b>3</b> (3a ÷ 3h)	
Filter series	Filter element	Safety filter element	Seal Kit code number NBR	Seal Kit code number FPM	Seal Kit code number NBR	Seal Kit code number FPM			
<b>MRSX 165</b>	See order table	S165M60P01	02050627	02050630	02050628	02050631			
<b>MRSX 166</b>	See order table		02050627	02050630	02050629	02050632			





Return / Suction filters  
In-line

# LMP 124 series

MULTIPOINT

Maximum working pressure up to 8 MPa (80 bar) - Flow rate up to 120 l/min



# LMP 124 GENERAL INFORMATION

MULTI-PORT

## Description

## Technical data

Return / Suction filter

In-line

**Maximum working pressure up to 8 MPa (80 bar)**  
**Flow rate up to 120 l/min**

LMP124 is a range of return/suction filters for hydraulic systems with two or more circuits (both open and closed loops). They are able to provide pressurized oil cleaned by fine filtration to the feed pump of the hydrostatic systems.

They are directly connected to the lines of the system through the hydraulic fittings.

### Available features:

- Female threaded connections up to 1", for a maximum return flow rate of 200 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve to the tank, to relieve excessive pressure drop across the filter media when the return flow is enough higher than the suction flow
- Bypass valve to the suction line with additional suction filter element, to relieve excessive pressure drop across the filter media when the return flow is not enough higher than the suction flow
- De-pressurization valve, to reduce the pressure inside the filter during the maintenance operations
- Visual, electrical and electronic differential clogging indicators

### Common applications:

Mobile machines with hydrostatic systems on board.  
(i.e. skid steer loaders, telehandlers, dumpers, road sweepers)

### Filter housing materials

- Head: Aluminium
- Housing: Cataphoresis - Painted Steel
- Bypass valve: Brass - Aluminium

### Pressure

- Test pressure: 12MPa (120 bar)
- Burst pressure: 38 MPa (380 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 80 bar (8 MPa)

### Bypass valve

- Opening pressure 250 kPa (2.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN.

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

LMP124 filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>LMP 124</b>		1.70	1.90	2.20	2.70		0.75	0.81	1.11	1.53

# GENERAL INFORMATION LMP 124

MULTIPORT

## FILTER ASSEMBLY SIZING

Flow rates [l/min]

Filter series	Length	Filter element design - N series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
<b>LMP 124</b>	<b>1</b>	39	41	58	60	69	99	84	85
	<b>2</b>	47	53	68	69	77	99	90	91
	<b>3</b>	59	61	73	77	86	99	92	93
	<b>4</b>	70	78	84	86	93	100	94	95

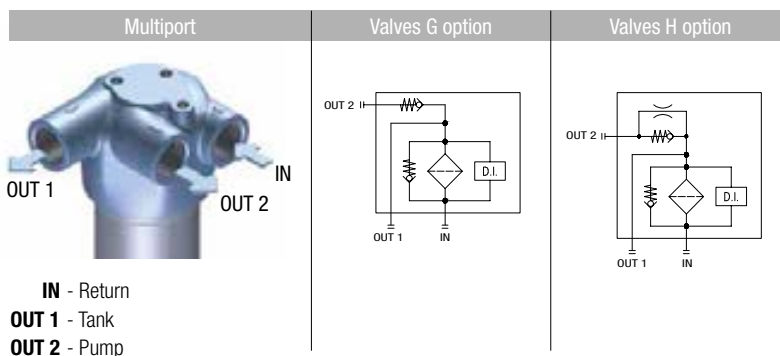
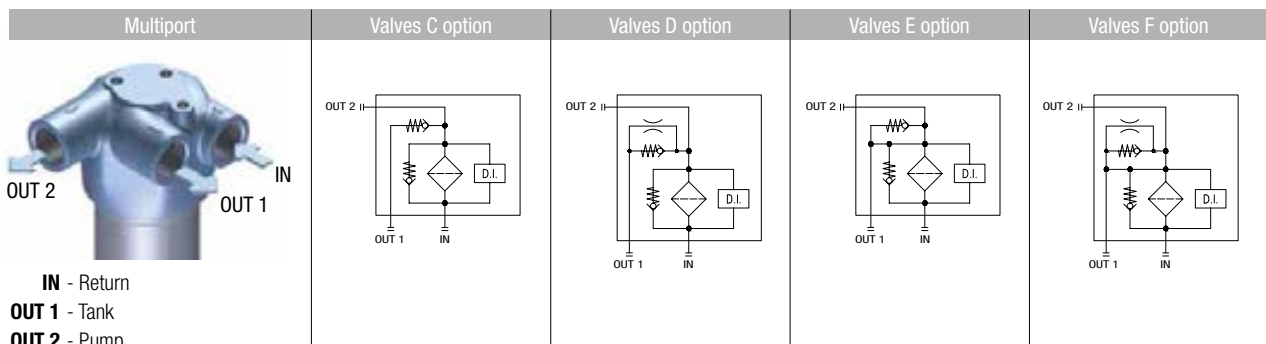
**Maximum flow rate for a complete return/suction filter with a pressure drop  $\Delta p = 1.2$  bar.**

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

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

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

### Hydraulic symbols - Multiport styles

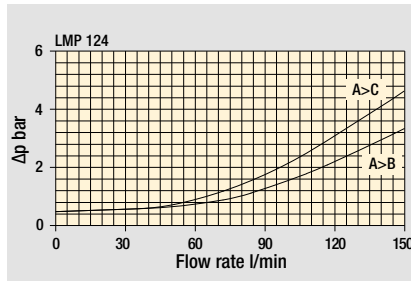


# LMP 124

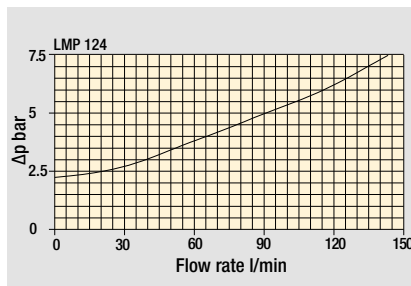
MULTIPOINT

## Pressure drop

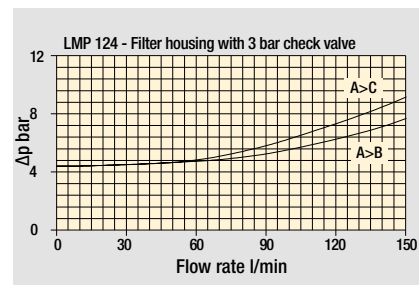
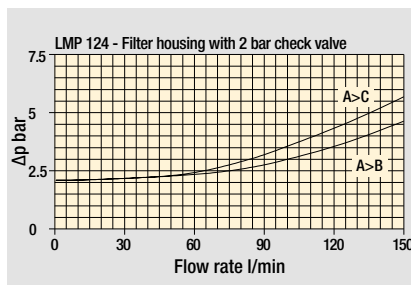
Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop

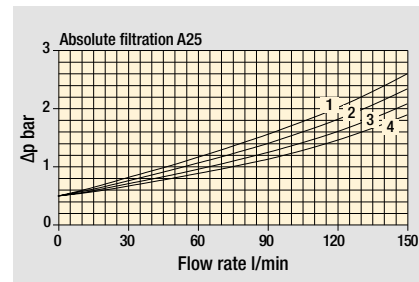
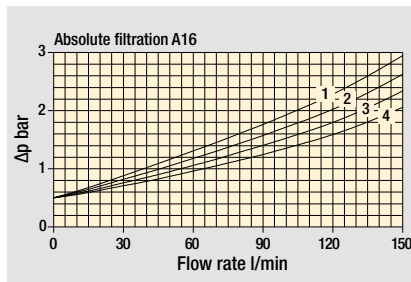
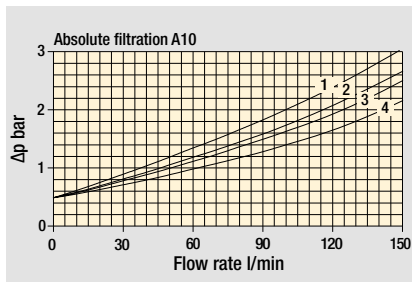


Valves

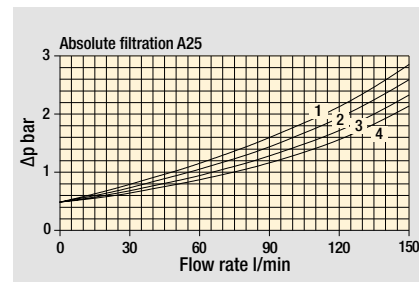
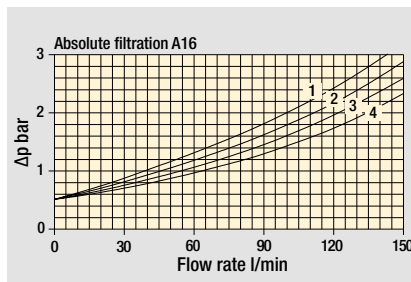
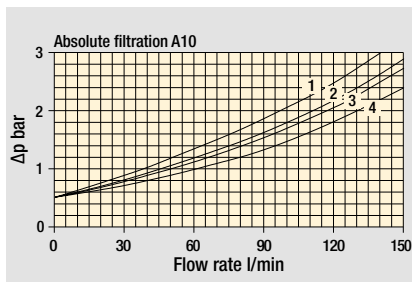


Filter length: 1 - 2 - 3 - 4

STYLE C - D - E - F



STYLE G - H



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



# LMP 124

MULTIPORT

# LMP 124

MULTI-PORT

## Designation & Ordering code

COMPLETE FILTER									
Series and size	Configuration example: <b>LMP124</b>   <b>4</b>   <b>C</b>   <b>A</b>   <b>F</b>   <b>1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>								
<b>LMP124</b>									
Filter length	1   2   3   4								
Hydraulic diagram configuration - see page 268	C   D   E   F   G   H								
Seals and treatments	Filtration rating								
	Axx	Mxx	Pxx						
<b>A</b> NBR	•	•	•						
<b>V</b> FPM	•	•	•						
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•							
Connections									
<b>B</b> G 1"									
<b>F</b> SAE 16 - 1 5/16" - 12 UN									
Connection for indicator									
<b>1</b> Without									
<b>2</b> With connection G 1/8" for clogging indicator									
<b>3</b> With connection G 1/4" for clogging indicator									
<b>4</b> With connection for differential indicator									
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm									
<b>A06</b> Inorganic microfiber 6 µm									
<b>A10</b> Inorganic microfiber 10 µm									
<b>A16</b> Inorganic microfiber 16 µm									
<b>A25</b> Inorganic microfiber 25 µm									
<b>M25</b> Wire mesh 25 µm									
<b>M60</b> Wire mesh 60 µm									
<b>M90</b> Wire mesh 90 µm									
<b>P10</b> Resin impregnated paper 10 µm									
<b>P25</b> Resin impregnated paper 25 µm									
Element Δp	Execution								
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard								
	<b>Pxx</b> Customized								

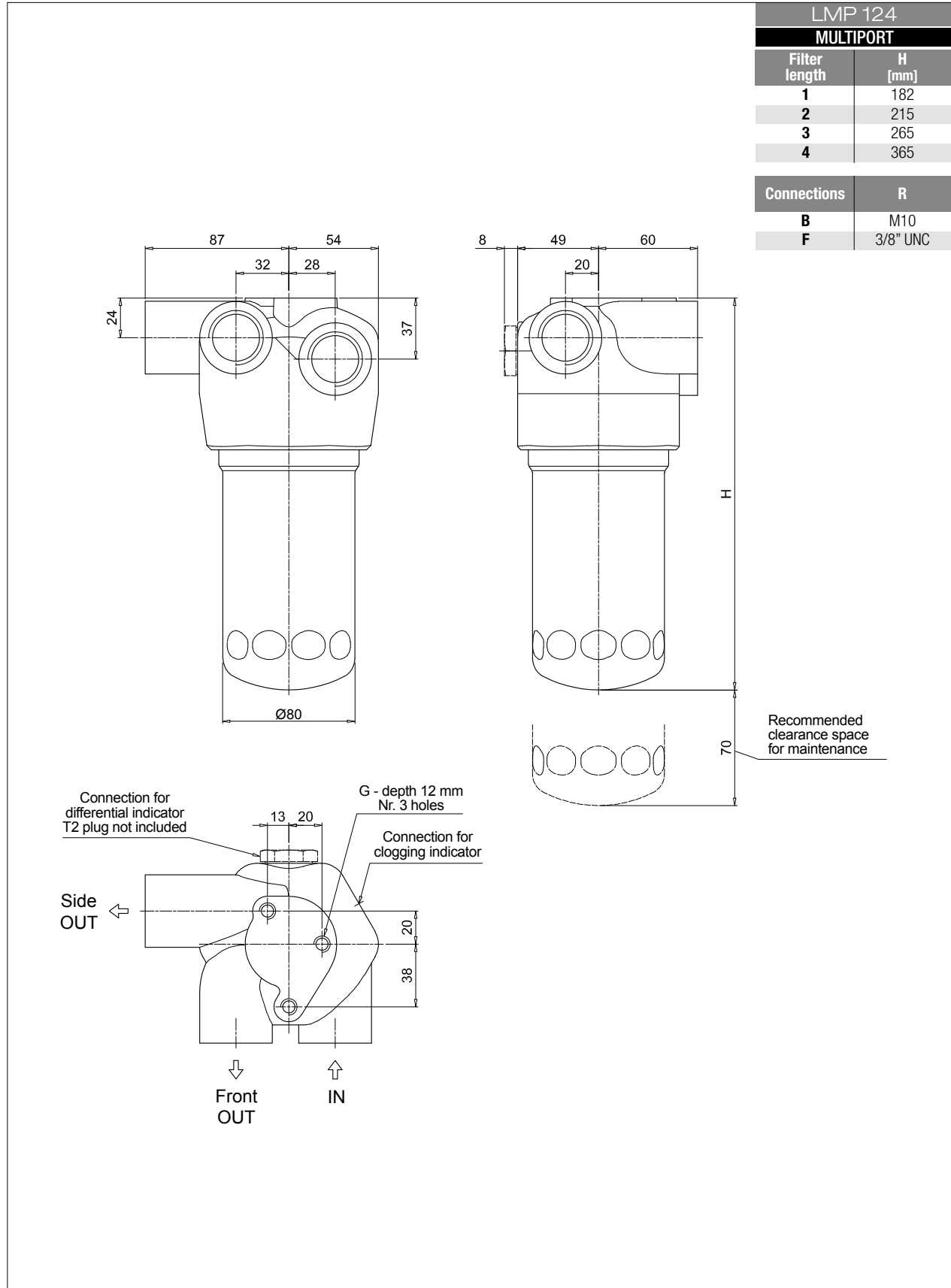
FILTER ELEMENT									
Element series and size	Configuration example: <b>CU110</b>   <b>4</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>								
<b>CU110</b>									
Element length	1   2   3   4								
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm									
<b>A06</b> Inorganic microfiber 6 µm									
<b>A10</b> Inorganic microfiber 10 µm									
<b>A16</b> Inorganic microfiber 16 µm									
<b>A25</b> Inorganic microfiber 25 µm									
<b>M25</b> Wire mesh 25 µm									
<b>M60</b> Wire mesh 60 µm									
<b>M90</b> Wire mesh 90 µm									
<b>P10</b> Resin impregnated paper 10 µm									
<b>P25</b> Resin impregnated paper 25 µm									
Seals	Filtration rating								
	Axx	Mxx	Pxx						
<b>A</b> NBR	•	•	•						
<b>V</b> FPM	•	•	•						
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•							
Element Δp	Execution								
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard								
	<b>Pxx</b> Customized								

ACCESSORIES			
<b>Indicators on Return Line</b>		page	
<b>BVA</b> Axial pressure gauge		278	<b>BEA</b> Electrical pressure indicator 276
<b>BVR</b> Radial pressure gauge		278	<b>BEM</b> Electrical pressure indicator 276
<b>BVP</b> Visual pressure indicator with automatic reset		279	<b>BET</b> Electrical pressure indicator 276-277
<b>BVQ</b> Visual pressure indicator with manual reset		279	<b>BLA</b> Electrical / visual pressure indicator 277-278
<b>Differential indicators</b>		page	
<b>DEA</b> Electrical differential indicator		280	<b>DTA</b> Electronic differential indicator 283
<b>DEM</b> Electrical differential indicator		280-281	<b>DVA</b> Visual differential indicator 283
<b>DLA</b> Electrical / visual differential indicator		281-282	<b>DVM</b> Visual differential indicator 283
<b>DLE</b> Electrical / visual differential indicator		282	
<b>Additional features</b>		page	
<b>T2</b> Plug		284	

# LMP 124

MULTIPORT

## Dimensions



LMP 124

MULTIPORT

Filter length	H [mm]
1	182
2	215
3	265
4	365

Connections	R
B	M10
F	3/8" UNC

Recommended clearance space for maintenance

Connection for differential indicator  
T2 plug not included

G - depth 12 mm  
Nr. 3 holes

Connection for clogging indicator

Side  
OUT

Front  
OUT

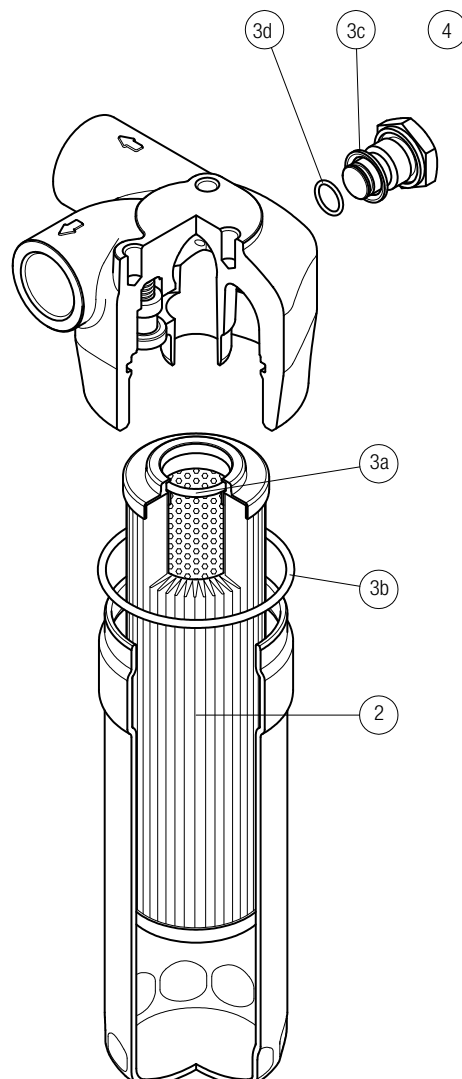
IN

# LMP 124 SPARE PARTS

MULTIPOINT

Order number for spare parts

**LMP 124 MULTIPOINT**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
	See order table	NBR	FPM	NBR	FPM
<b>LMP 124 MULTIPOINT</b>		02050478	02050479	T2H	T2V

# Clogging indicators

## Introduction

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

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

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

MP Filtri can supply indicators of the following designs:

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

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

**Vacuum indicators**  
**Barometric indicators**  
**Differential indicators**

## Suitable indicator types

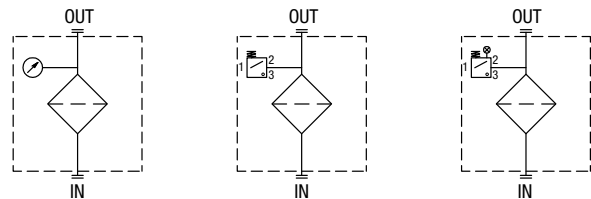
### VACUUM INDICATORS

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

They measure the pressure downstream of the filter element.

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

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

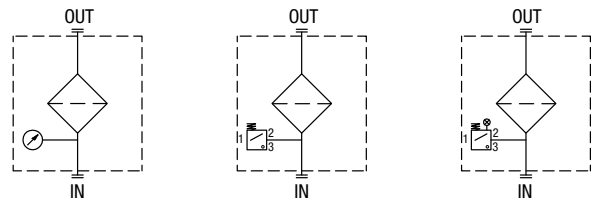


### BAROMETRIC INDICATORS

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

They measure the pressure upstream of the filter element.

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



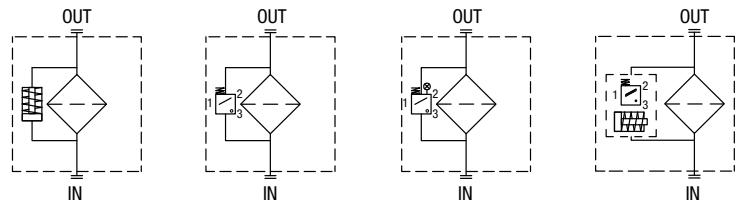
### DIFFERENTIAL INDICATORS

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

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

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

Also available in Stainless Steel models.

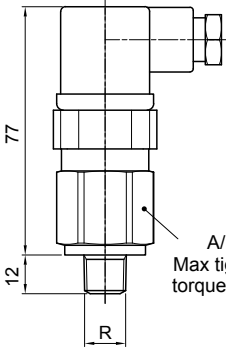

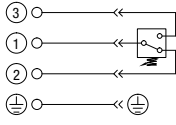

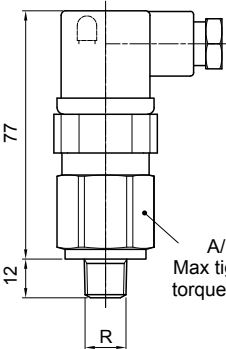

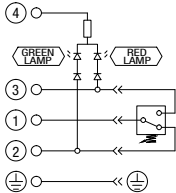
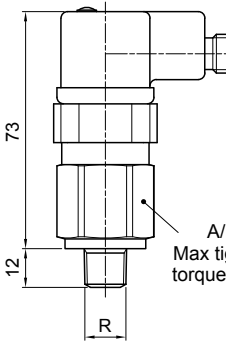

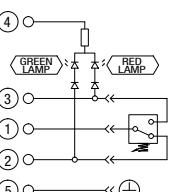


## Quick reference guide

	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator
Suction line	MRSX 116 - 165 - 166	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
Return line	MRSX 116 - 165 - 166 LMP 124 MULTIPORT	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01

# VACUUM INDICATORS

## Dimensions

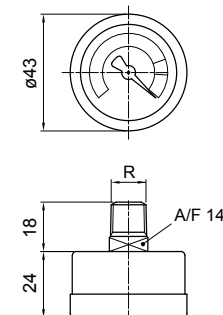
<p style="text-align: center;"><b>VE*50</b></p> <p style="text-align: center;"><b>Electrical Vacuum Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>R</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/4"</td> <td>VE A 21 AA 50 P01</td> </tr> <tr> <td>EN 10226 - R1/8"</td> <td>VE B 21 AA 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N-m</p>	R	Ordering code	EN 10226 - R1/4"	VE A 21 AA 50 P01	EN 10226 - R1/8"	VE B 21 AA 50 P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac</li> <li>- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X </li> <li>- CE certification</li> </ul>
R	Ordering code							
EN 10226 - R1/4"	VE A 21 AA 50 P01							
EN 10226 - R1/8"	VE B 21 AA 50 P01							
<p style="text-align: center;"><b>VL*51 - VL*52 - VL*53</b></p> <p style="text-align: center;"><b>Electrical/Visual Vacuum Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>R</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/4"</td> <td>VL A 21 AA xx P01</td> </tr> <tr> <td>EN 10226 - R1/8"</td> <td>VL B 21 AA xx P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N-m</p>	R	Ordering code	EN 10226 - R1/4"	VL A 21 AA xx P01	EN 10226 - R1/8"	VL B 21 AA xx P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent Nylon</li> <li>- Contacts: Brass - Nylon</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Type: 51                      52                      53</li> <li>- Lamps: 24 Vdc              110 Vdc              230 Vac</li> <li>- Resistive load: 1 A / 24 Vdc    1 A / 110 Vdc    1 A / 230 Vac</li> </ul>
R	Ordering code							
EN 10226 - R1/4"	VL A 21 AA xx P01							
EN 10226 - R1/8"	VL B 21 AA xx P01							
<p style="text-align: center;"><b>VL*71</b></p> <p style="text-align: center;"><b>Electrical/Visual Vacuum Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Connections</th> <th>Indicator code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/4"</td> <td>VL A 21 AA 71 P01</td> </tr> <tr> <td>EN 10226 - R1/8"</td> <td>VL B 21 AA 71 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N-m</p>	Connections	Indicator code	EN 10226 - R1/4"	VL A 21 AA 71 P01	EN 10226 - R1/8"	VL B 21 AA 71 P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Lamps: 24 Vdc</li> <li>- Resistive load: 0.4 A / 24 Vdc</li> </ul>
Connections	Indicator code							
EN 10226 - R1/4"	VL A 21 AA 71 P01							
EN 10226 - R1/8"	VL B 21 AA 71 P01							

# VACUUM INDICATORS


## Dimensions

**VVA - VVB**  
**Axial Vacuum Gauge**

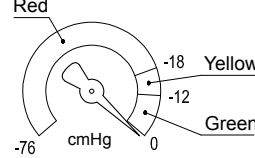
R	Ordering code
EN 10226 - R1/4"	VV A 16 P01
EN 10226 - R1/8"	VV B 16 P01



**Hydraulic symbol**



**Dial scale**



**Conversion to SI units**

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

**Materials**

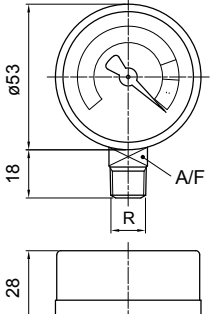
- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

**Technical data**


- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

**VVR - VVS**  
**Radial Vacuum Gauge**

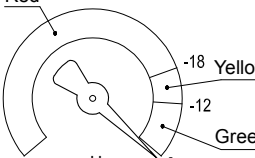
R	A/F	Ordering code
EN 10226 - R1/4"	14	VV R 16 P01
EN 10226 - R1/8"	11	VV S 16 P01



**Hydraulic symbol**



**Dial scale**



**Conversion to SI units**

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

**Materials**

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

**Technical data**

- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

### DESIGNATION & ORDERING CODE

Series	Configuration example 1:	VE	A	21	A	A	50	P01
<b>VE</b> Electrical vacuum indicator	Configuration example 2:	VL	B	21	A	A	71	P01
<b>VL</b> Electrical/Visual vacuum indicator	Configuration example 3:	VV	R	16				P01
<b>VV</b> Vacuum gauge								

Type VE - VL	Type VV
<b>A</b> Connection EN 10226 - R1/4"	<b>A</b> Axial connection EN 10226 - R1/4"
<b>B</b> Connection EN 10226 - R1/8"	<b>B</b> Axial connection EN 10226 - R1/8"
	<b>R</b> Radial connection EN 10226 - R1/4"
	<b>S</b> Radial connection EN 10226 - R1/8"

Vacuum setting	VE	VL	VV
<b>16</b> -0.16 bar			•
<b>21</b> -0.21 bar	•	•	

Seals	VE	VL	VV
<b>A</b> NBR	•	•	

Thermostat	VE	VL	VV
<b>A</b> Without	•	•	

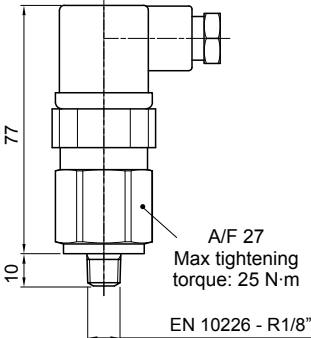

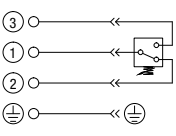

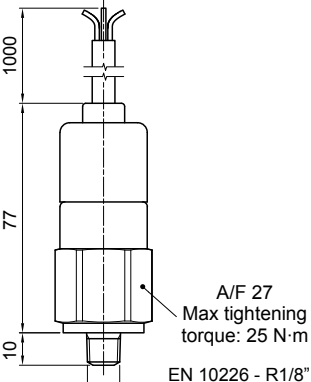

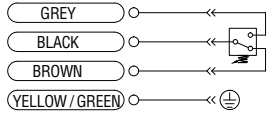
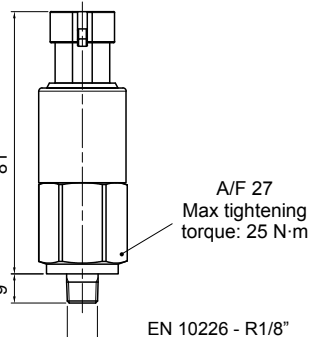

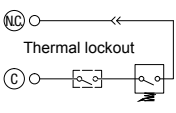
Electrical connections	VE	VL	VV
<b>50</b> Connection EN 175301-803	•		
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc		•	
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc		•	
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vdc		•	
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		•	

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

# BAROMETRIC INDICATORS

## Dimensions

<p style="text-align: center;"><b>BEA*50</b></p> <p style="text-align: center;"><b>Electrical Pressure Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.5 bar <math>\pm 10\%</math></td> <td>BE A 15 H A 50 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>BE A 20 H A 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N-m EN 10226 - R1/8"</p>	Settings	Ordering code	1.5 bar $\pm 10\%$	BE A 15 H A 50 P01	2.0 bar $\pm 10\%$	BE A 20 H A 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 40 bar</li> <li>- Proof pressure: 60 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac</li> </ul> <p>- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X </p> <p>- CE certification</p>
Settings	Ordering code							
1.5 bar $\pm 10\%$	BE A 15 H A 50 P01							
2.0 bar $\pm 10\%$	BE A 20 H A 50 P01							
<p style="text-align: center;"><b>BEM*41</b></p> <p style="text-align: center;"><b>Electrical Pressure Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.5 bar <math>\pm 10\%</math></td> <td>BE M 15 H A 41 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>BE M 20 H A 41 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N-m EN 10226 - R1/8"</p>	Settings	Ordering code	1.5 bar $\pm 10\%$	BE M 15 H A 41 P01	2.0 bar $\pm 10\%$	BE M 20 H A 41 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 40 bar</li> <li>- Proof pressure: 60 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP67 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: Four-core cable</li> <li>- Resistive load: 5 A / 14 Vdc 4 A / 30 Vdc 5 A / 125 Vac 4 A / 250 Vac</li> </ul> <p>- CE certification On request this indicator can be provided with main connectors in use for wirings.</p>
Settings	Ordering code							
1.5 bar $\pm 10\%$	BE M 15 H A 41 P01							
2.0 bar $\pm 10\%$	BE M 20 H A 41 P01							
<p style="text-align: center;"><b>BET*10</b></p> <p style="text-align: center;"><b>Electrical Pressure Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>BET 20 H F 10 P01</td> </tr> <tr> <td>2.5 bar <math>\pm 10\%</math></td> <td>BET 25 H F 10 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N-m EN 10226 - R1/8"</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	BET 20 H F 10 P01	2.5 bar $\pm 10\%$	BET 25 H F 10 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +100 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: AMP Superseal series 1.5</li> <li>- Resistive load: 0.5 A / 48 Vdc</li> <li>- Thermostat condition: Open up to 30 °C</li> </ul> <p>- CE certification</p>
Settings	Ordering code							
2.0 bar $\pm 10\%$	BET 20 H F 10 P01							
2.5 bar $\pm 10\%$	BET 25 H F 10 P01							



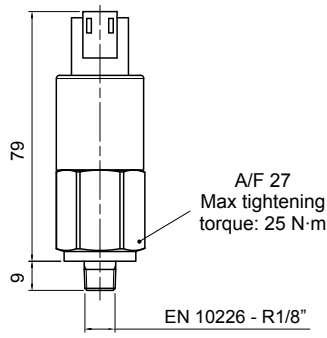
# BAROMETRIC INDICATORS

## Dimensions

**BET\*30**

**Electrical Pressure Indicator**

Settings	Ordering code
2.0 bar $\pm 10\%$	BET 20 H F 30 P01
2.5 bar $\pm 10\%$	BET 25 H F 30 P01



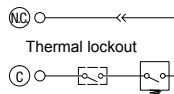
A/F 27  
Max tightening torque: 25 N·m

EN 10226 - R1/8"

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

### Technical data

- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

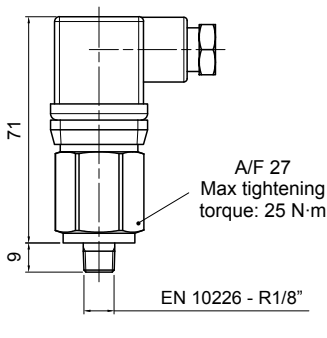
### Electrical data

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

**BET\*50**

**Electrical Pressure Indicator**

Settings	Ordering code
2.0 bar $\pm 10\%$	BET 20 H F 50 P01
2.5 bar $\pm 10\%$	BET 25 H F 50 P01



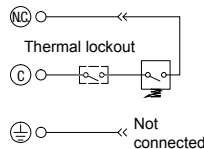
A/F 27  
Max tightening torque: 25 N·m

EN 10226 - R1/8"

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

### Technical data

- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

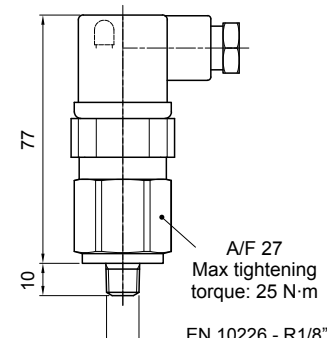
### Electrical data

- Electrical connection: EN 175301-803
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

**BL\*51 - BL\*52 - BL\*53**

**Electrical/Visual Pressure Indicator**

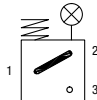
Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 H A xx P01
2.0 bar $\pm 10\%$	BL A 20 H A xx P01



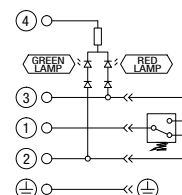
A/F 27  
Max tightening torque: 25 N·m

EN 10226 - R1/8"

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR

### Technical data

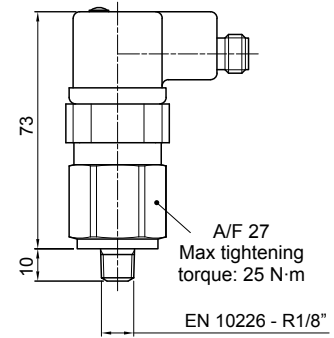
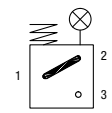
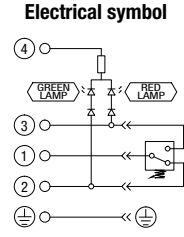
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

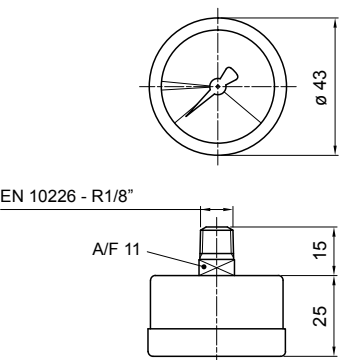

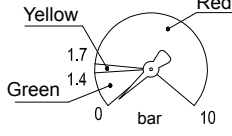
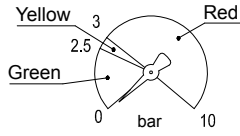
### Electrical data

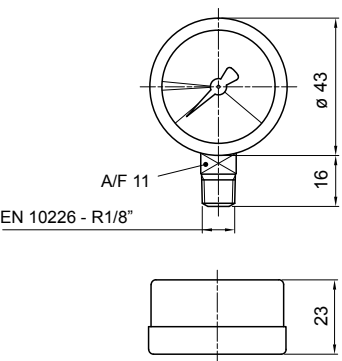

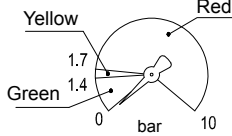
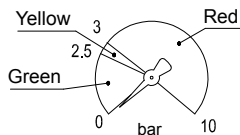
- Electrical connection: EN 175301-803
- Type: 51      52      53
- Lamps: 24 Vdc    110 Vdc    230 Vac
- Resistive load: 1 A / 24 Vdc    1 A / 110 Vdc    1 A / 230 Vac

# BAROMETRIC INDICATORS

## Dimensions

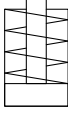
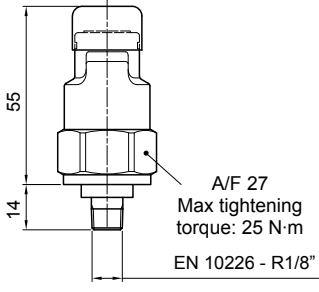
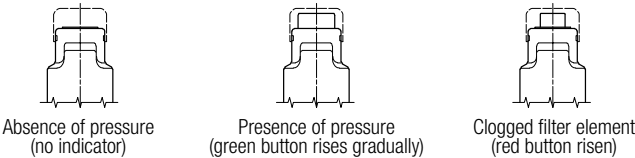
BL*71	
<b>Electrical/Visual Pressure Indicator</b>	
Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 HA 71 P01
2.0 bar $\pm 10\%$	BL A 20 HA 71 P01
	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Electrical symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> 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

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

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

# BAROMETRIC INDICATORS

## Dimensions

BVP - BVQ		Hydraulic symbol	Materials
Visual Pressure Indicator			
Setting	Ordering code		- Body: Brass - Cover / internal parts: Nylon - Caps: VMQ - Seal: HNBR
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		
		<b>Technical data</b> - Reset: BVP - Automatic reset BVQ - Manual reset - Max working pressure: 10 bar - Proof pressure: 15 bar - Working temperature: From -25 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree of protection: IP45 according to EN 60529	
		<b>Signals</b>	

### DESIGNATION & ORDERING CODE

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

Type	BE	BL	BV	
<b>A</b> Standard type	•	•	<b>A</b> Axial connection pressure gauge	
<b>M</b> With wired electrical connection	•		<b>R</b> Radial connection pressure gauge	
<b>T</b> With thermal switch	•		<b>P</b> Visual indicator with automatic reset	
			<b>Q</b> Visual indicator with manual reset	

Pressure setting	BEA-BEM	BET	BLA	BVA-BVR	BVP-BVQ
<b>14</b> 1.4 bar				•	
<b>15</b> 1.5 bar	•		•		
<b>20</b> 2.0 bar	•	•	•		•
<b>25</b> 2.5 bar		•		•	

Seals	BE	BLA	BVA-BVR	BVP-BVQ
<b>H</b> HNBR	•	•		•

Thermostat	BEA-BEM	BET	BLA	BV
<b>A</b> Without	•		•	
<b>F</b> With		•		

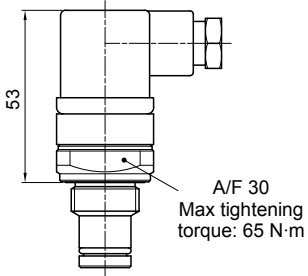

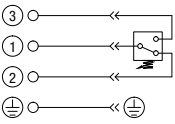
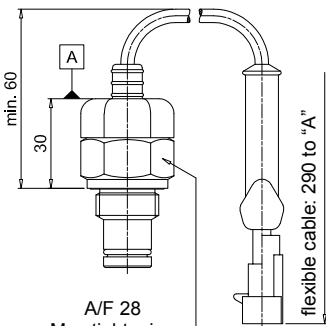

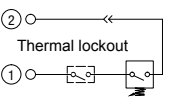
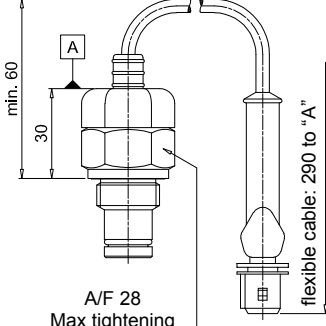

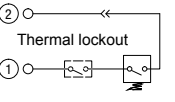
Electrical connections	BEA	BEM	BET	BL	BV
<b>10</b> Connection AMP Superseal series 1.5			•		
<b>30</b> Connection Deutsch DT-04-2-P			•		
<b>41</b> Connection via four-core cable		•			
<b>50</b> Connection EN 175301-803	•		•		
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			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

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

# DIFFERENTIAL INDICATORS

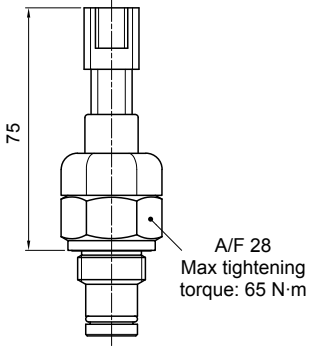
## Dimensions

<p style="text-align: center;"><b>DEA*50</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DE A 20 x A 50 P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DE A 20 x A 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DE A 20 x A 50 P01					
<p style="text-align: center;"><b>DEM*10</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DE M 20 xx 10 P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 28 Max tightening torque: 65 N·m</p> <p style="text-align: center;">flexible cable: 290 to "A"</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DE M 20 xx 10 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p>  <p style="text-align: center;">Thermal lockout</p>	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: AMP Superseal series 1.5</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: Normally open contacts (NC on request)</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DE M 20 xx 10 P01					
<p style="text-align: center;"><b>DEM*20</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DEM20xx20P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 28 Max tightening torque: 65 N·m</p> <p style="text-align: center;">flexible cable: 290 to "A"</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DEM20xx20P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p>  <p style="text-align: center;">Thermal lockout</p>	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: AMP Time junior</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: Normally open contacts (NC on request)</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DEM20xx20P01					

# DIFFERENTIAL INDICATORS


## Dimensions

DEM*30	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 xx 30 P01

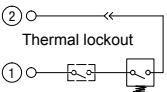


A/F 28  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

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

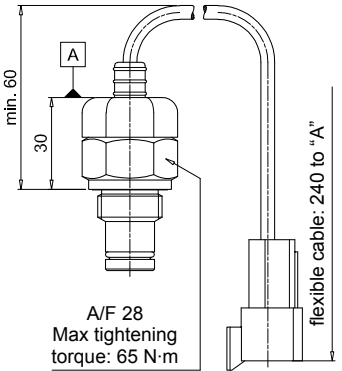
**Technical data**

- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

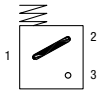
DEM*35	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 xx 35 P01



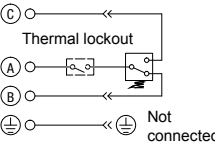
A/F 28  
Max tightening torque: 65 N·m

flexible cable: 240 to "A"

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

Not connected

**Materials**

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

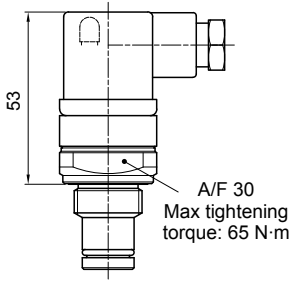
**Technical data**

- 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  
HFA, HFB, 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")

DLA*51 - DLA*52	
<b>Electrical/Visual Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DL A 20 x A xx P01

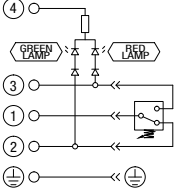


A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

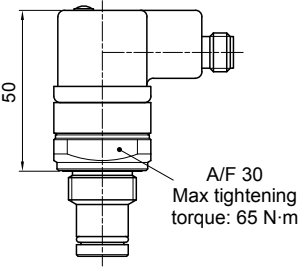
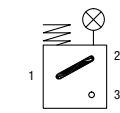
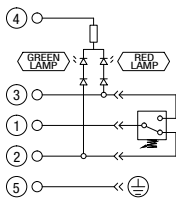
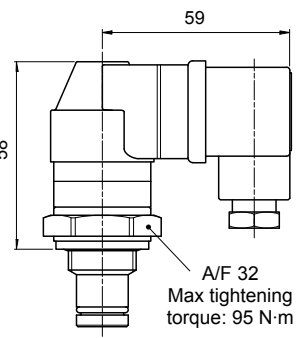
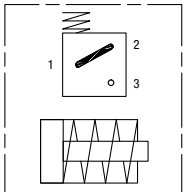
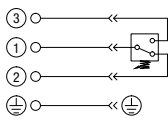
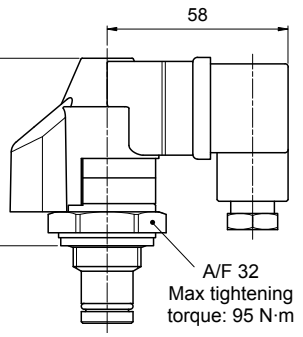
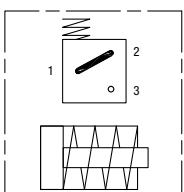
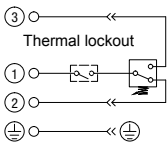
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO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

**Electrical data**

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

# DIFFERENTIAL INDICATORS

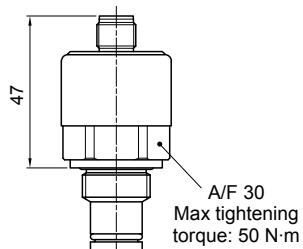
## Dimensions

<p style="text-align: center;"><b>DLA*71</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0 bar <math>\pm 10\%</math></td> <td style="text-align: center;">DL A 20 x A 71 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DL A 20 x A 71 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Lamps: 24 Vdc</li> <li>- Resistive load: 0.4 A / 24 Vdc</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DL A 20 x A 71 P01					
<p style="text-align: center;"><b>DLE*A50</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0 bar <math>\pm 10\%</math></td> <td style="text-align: center;">DL E 20 x A 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 32 Max tightening torque: 95 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DL E 20 x A 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connections: EN 175301-803</li> <li>- Resistive load: 5 A / 250 Vac</li> <li>- Available the connector with lamps</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DL E 20 x A 50 P01					
<p style="text-align: center;"><b>DLE*F50</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Settings</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2.0 bar <math>\pm 10\%</math></td> <td style="text-align: center;">DL E 20 x F 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 32 Max tightening torque: 95 N·m</p>	Settings	Ordering code	2.0 bar $\pm 10\%$	DL E 20 x F 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connections: EN 175301-803</li> <li>- Resistive load: 5 A / 250 Vac</li> <li>- Thermal lockout setting: +30 °C</li> </ul>
Settings	Ordering code					
2.0 bar $\pm 10\%$	DL E 20 x F 50 P01					

# DIFFERENTIAL INDICATORS

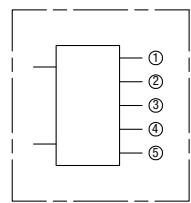
## Dimensions

DTA*70	
<b>Electronic Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DT A 20 x x 70 P01



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

**Hydraulic symbol**




**Electrical symbol**

①	+24 Vdc
②	4 $\div$ 20 mA
③	75% - N.O. Digital output
④	100% - N.O. Digital output
⑤	0 Vdc

**Materials**

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM



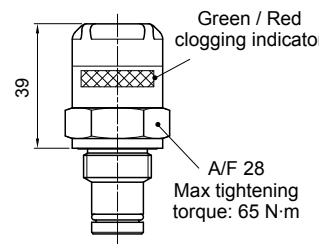
**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

**Electrical data**

- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

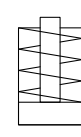
DVA	
<b>Visual Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DV A 20 x P01



Green / Red clogging indicator

A/F 28  
Max tightening torque: 65 N·m

**Hydraulic symbol**



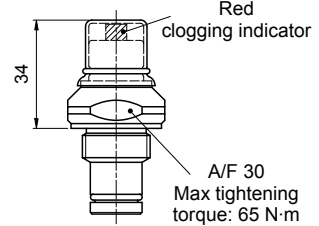
**Materials**

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

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

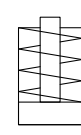
DVM	
<b>Visual Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DV M 20 x P01



Red clogging indicator

A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Materials**

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

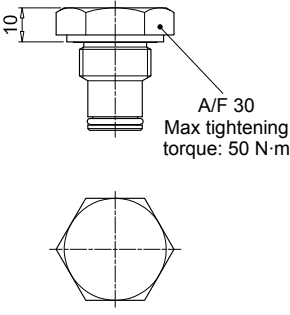
**Technical data**

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

# DIFFERENTIAL INDICATORS

## Dimensions

T2	
<b>Indicator plug</b>	
Seal	Ordering code
HNBR	T2 H
FPM	T2 V



**Materials**

- Body: Phosphatized steel
- Seal: HNBR / FPM

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

<b>Series</b>	Configuration example 1:	DE	M	20	H	F	50	P01
<b>DE</b> Electrical differential indicator	Configuration example 2:	DL	E	20	V	A	71	P01
<b>DL</b> Electrical/Visual differential indicator	Configuration example 3:	DT	A	20	H	F	70	P01
<b>DT</b> Electronic differential indicator	Configuration example 4:	DV	M	20	V			P01
<b>DV</b> Visual differential indicator								
<b>Type</b>	<b>DE</b>	<b>DL</b>	<b>DT</b>	<b>DV</b>				
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset				
<b>M</b> With wired electrical connection	•			<b>M</b> With manual reset				
<b>E</b> For high power supply		•						
<b>Pressure setting</b>								
<b>20</b> 2.0 bar								
<b>Seals</b>								
<b>H</b> HNBR								
<b>V</b> FPM								
<b>Thermostat</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>		
<b>A</b> Without	•	•	•	•				
<b>F</b> With thermostat		•		•	•			
<b>Electrical connections</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>		
<b>10</b> Connection AMP Superseal series 1.5		•						
<b>20</b> Connection AMP Timer Junior		•						
<b>30</b> Connection Deutsch DT-04-2-P		•						
<b>35</b> Connection Deutsch DT-04-3-P		•						
<b>50</b> Connection EN 175301-803	•			•				
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			•					
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc			•					
<b>70</b> Connection IEC 61076-2-101 D (M12)					•			
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•					
								<b>Option</b>
								<b>P01</b> MP Filtri standard
								<b>Pxx</b> Customized

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

<b>Series</b>	Configuration example	T2	H
<b>T2</b> Indicator plug			
<b>Seals</b>			
<b>H</b> HNBR			
<b>V</b> FPM			



## DIFFERENTIAL INDICATORS

---

**Spin-On filters are used as process and safety filters to protect individual pumps, valves or the entire hydraulic circuit from contamination as per ISO 4406.**

**In-line Spin-On filters can be used for the following purposes:**

- Suction filters
- On the return circuit, for mounting on the line or on the tank cover
- In-line for low and medium pressure applications

**Spin-On filters are available in 4 configurations:**

- Single cartridge in-line
- In-line with two parallel cartridges on the same axis
- In-line with two parallel cartridges mounted side by side

**All versions may be equipped with visual and/or electrical blockage indicators.**



# Spin-on filters



MPS	page 289
MSH	305
INDICATORS	311





Spin-on filters

# MPS series

Maximum working pressure up to 1.2 MPa (12 bar) - Flow rate up to 365 l/min



# MPS GENERAL INFORMATION

## Description

### Spin-on filters

**Maximum working pressure up to 1.2 MPa (12 bar)**  
**Flow rate up to 365 l/min**

MPS is a range of spin-on filters suitable to be used in suction, return and low pressure lines.

They offer a good balance between performances, dimensions and prices. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 365 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Water removal elements (CW), to remove the free water from the hydraulic fluid
- Double connection for the cans, to fit both European and American standard elements
- Double cans fitting, to increase the life time of the filter
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic clogging indicators for suction and return applications
- Visual, electrical and electronic differential clogging indicators for low pressure applications

#### Common applications:

- Suction lines, Return lines, Delivery lines, in economic industrial equipment or mobile machines.
- Off-line filtration tank in economic industrial equipment or mobile machines

## Technical data

### Filter housing materials

- Head: Aluminium
- Bypass valve: Nylon - Steel
- Element: Zinc-Plated Steel - Painted Steel

### Bypass valve

- Return filter opening pressure: 175 kPa (1.75 bar)  $\pm 10\%$
- Suction filter opening pressure: 30 kPa (0.3 bar)  $\pm 10\%$

### $\Delta p$ element type

- $\Delta p$ : 5 bar
- Fluid flow through the filter element from OUT to IN

### Seals

Standard NBR - series A

### Temperature

From -20 °C to +110 °C

### Note

MPS filters are provided for vertical mounting

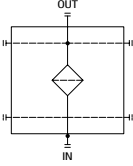
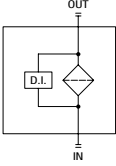
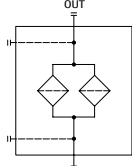
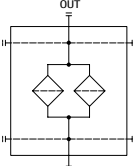
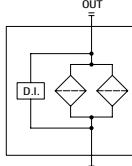
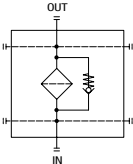
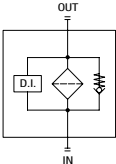
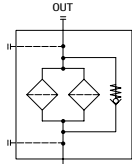
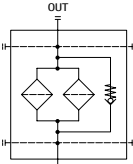
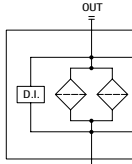


## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
MPS 050	1.00	0.70
MPS 051	1.05	0.70
MPS 070	1.20	0.95
MPS 071	1.25	0.95
MPS 100	2.10	1.65
MPS 101	2.20	1.65
MPS 150	2.40	2.00
MPS 151	2.50	2.00
MPS 200	3.90	3.00
MPS 250	4.60	3.70
MPS 300-301	5.30	3.40
MPS 350-351	6.00	4.10

# GENERAL INFORMATION MPS

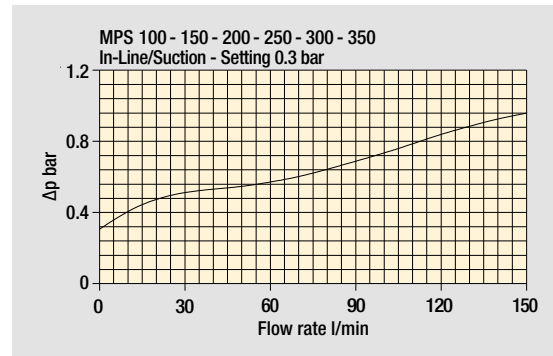
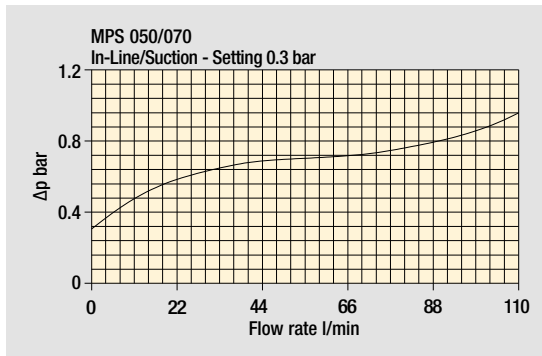
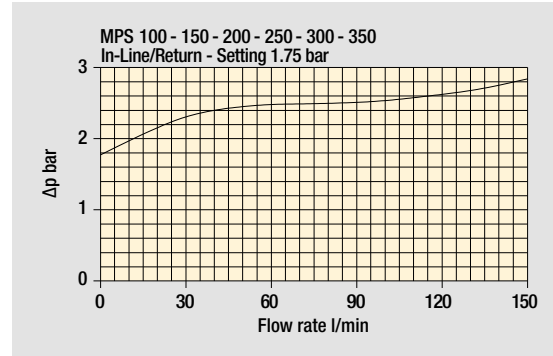
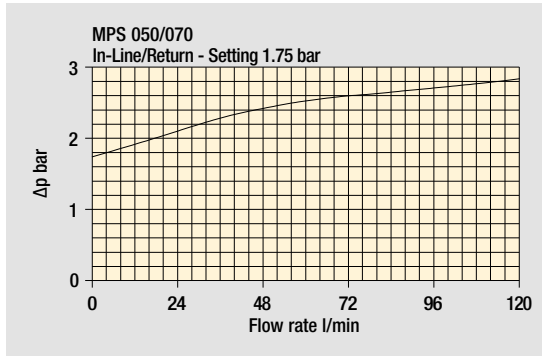
## Hydraulic symbols

Filter series					
MPS 050	•				
MPS 051		•			
MPS 070	•				
MPS 071		•			
MPS 100	•				
MPS 101		•			
MPS 150	•				
MPS 151		•			
MPS 200			•		
MPS 250			•		
MPS 300				•	
MPS 301					•
MPS 350				•	
MPS 351					•
	Style U/P	Style U/P	Style U	Style U/P	Style U/P
					
	Style R/S	Style R/S	Style R/S	Style R/S	Style R/S
					

# MPS GENERAL INFORMATION

## Pressure drop

Bypass valve  
pressure drop



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



# GENERAL INFORMATION MPS

## Cartridge

**CS** 050 - 070 - 100 - 150  
**CG - CW** 050 - 070



**CG - CW** 100 - 150



**CW**

This series of cartridge removes water from oil while filtering the oil at the same time.

Water absorbent polymers up to 800 times their own weight provide this major feature.

Water holding capacities:

CW 050= 240 ml

Ordering code: **CW050P10AP01**

CW 150= 788 ml

Ordering code: **CW150P10AP01**

### Thread connections

Element	Connection
CS 050 - 070	G 3/4"
CS 100 - 150	G 1 1/4"
CG / CW 050 - 070	1" - 12 UNF
CG / CW 100 - 150	1 1/2" - 16 UN

### Water holding capacities CW

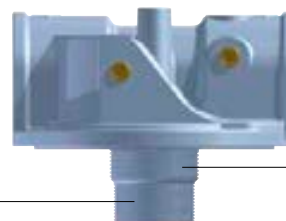
	good	poor
Viscosity	30/46 mm <sup>2</sup> /s (cSt)	> 46 mm <sup>2</sup> /s (cSt)
H <sub>2</sub> O p.p.m.	600/800 p.p.m.	> 800 p.p.m.
Flow rate	CW050 7/15 l/min CW150 20/40 l/min	CW050 > 20 l/min CW150 > 50 l/min
Temperature	40/60 °C	< 30 °C

## Heads

**CG / CW** 1" - 12 UNF **CS** G 3/4"



**CG / CW** 1 1/2" - 16 UN



**CS** G 1 1/4"

# MPS MPS050 - MPS070 MPS051 - MPS071

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example: <b>MPS050</b> <b>R</b> <b>G1</b> <b>A10</b> <b>A</b> <b>P01</b>					
<b>MPS050   MPS070</b> With connections for clogging indicators							
<b>MPS051   MPS071</b> With connections for differential indicators							
<b>Bypass valve</b>		<b>MPS 050 - 070</b>	<b>MPS 051 - 071</b>				
<b>R</b>	Return: 1.75 bar	•	•				
<b>S</b>	Suction: 30 kPa	•					
<b>U</b>	Without bypass	•					
<b>P</b>	Without bypass		•				
<b>Connections</b>							
<b>G1</b>	G 3/4"						
<b>G2</b>	3/4" NPT						
<b>G3</b>	SAE 12 - 1 1/16" - 12 UN						
<b>Filtration rating (filter media)</b>							
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm				
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm				
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm				
<b>A25</b>	Inorganic microfiber 25 µm	<b>P10</b>	Resin impregnated paper 10 µm				
		<b>P25</b>	Resin impregnated paper 25 µm				
		<b>Seal</b>		<b>Execution</b>			
		<b>A</b> NBR		<b>P01</b> MP Filtri standard			

### CARTRIDGE

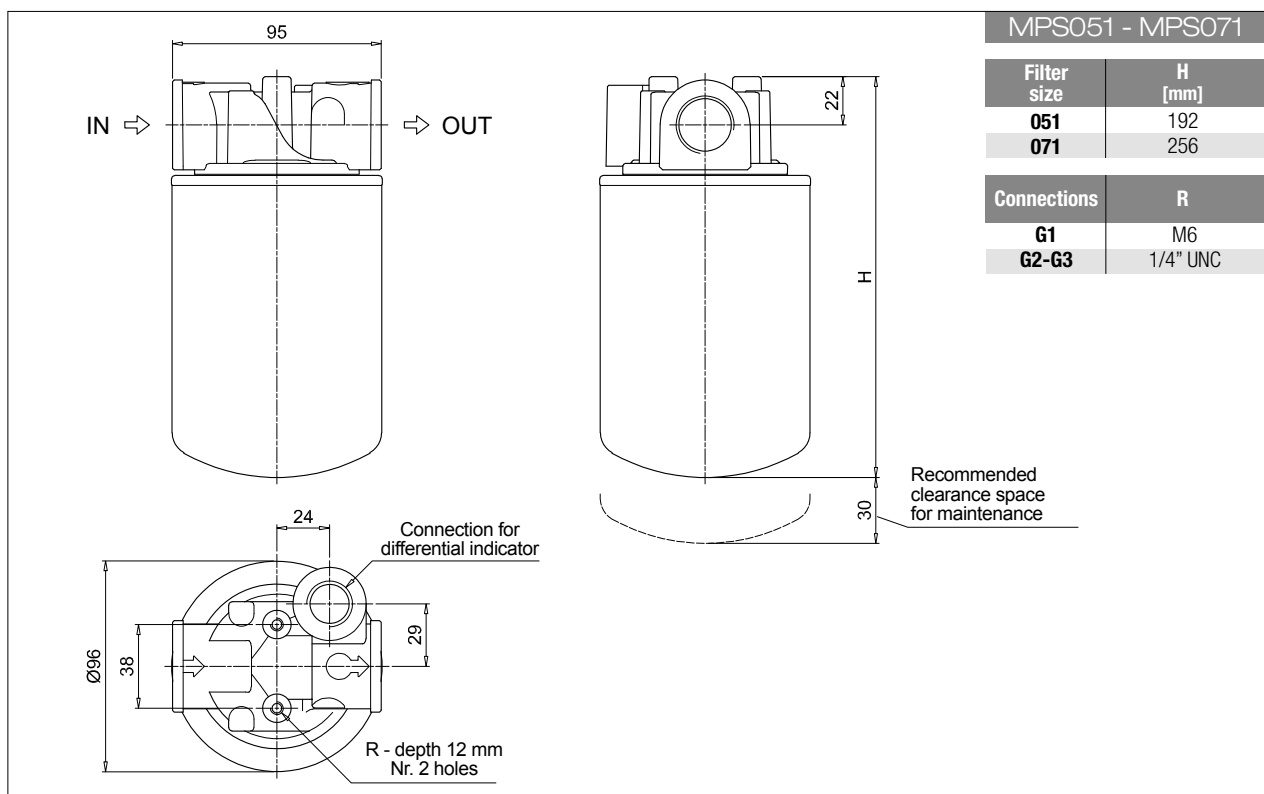
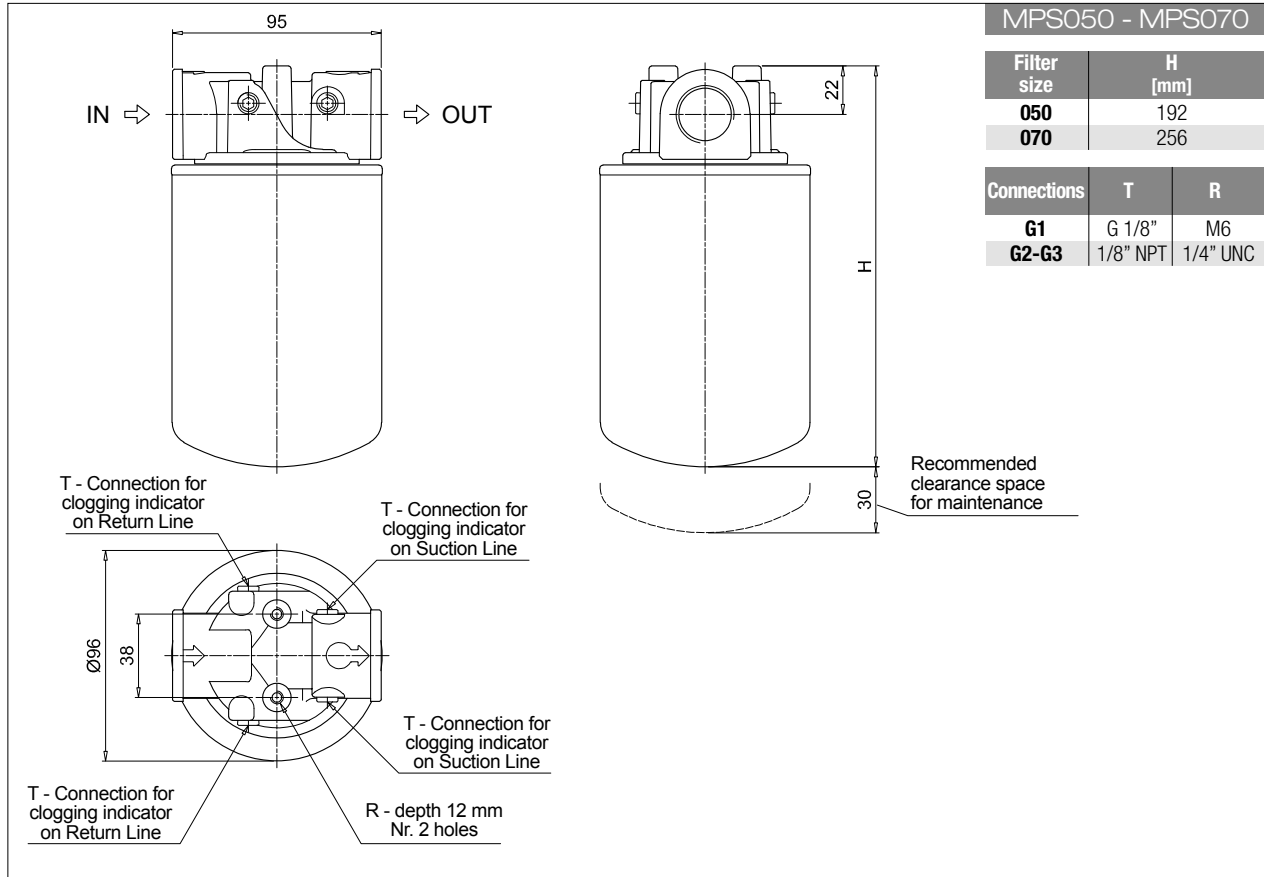
<b>Cartridge series and size</b>		Configuration example: <b>CS050</b> <b>A10</b> <b>A</b> <b>P01</b>			
<b>CS050   CS070</b>					
<b>Filtration rating (filter media)</b>					
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm		
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm		
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm		
<b>A25</b>	Inorganic microfiber 25 µm	<b>P10</b>	Resin impregnated paper 10 µm		
		<b>P25</b>	Resin impregnated paper 25 µm		
		<b>Seals</b>		<b>Execution</b>	
		<b>A</b> NBR		<b>P01</b> MP Filtri standard	
				<b>Pxx</b> Customized	

### ACCESSORIES

<b>Clogging indicators on RETURN line</b>		page			page
<b>BVA</b>	Axial pressure gauge	315	<b>BEA</b>	Electrical pressure indicator	314
<b>BVR</b>	Radial pressure gauge	315	<b>BEM</b>	Electrical pressure indicator	314
<b>BVP</b>	Visual pressure indicator with automatic reset	316	<b>BLA</b>	Electrical / visual pressure indicator	314-315
<b>BVQ</b>	Visual pressure indicator with manual reset	316			
<b>Clogging indicators on SUCTION line</b>		page			page
<b>VVB</b>	Axial pressure gauge	313	<b>VEB</b>	Electrical vacuum indicator	312
<b>VVS</b>	Radial pressure gauge	313	<b>VLB</b>	Electrical/visual vacuum indicator	312
<b>Differential indicators</b>		page			page
<b>DEA</b>	Electrical differential indicator	317	<b>DTA</b>	Electronic differential indicator	320
<b>DEM</b>	Electrical differential indicator	317-318	<b>DVA</b>	Visual differential indicator	320
<b>DLA</b>	Electrical / visual differential indicator	318-319	<b>DVM</b>	Visual differential indicator	320
<b>DLE</b>	Electrical / visual differential indicator	319			

# MPS050 - MPS070    MPS051 - MPS071    MPS

## Dimensions



# MPS MPS100 - MPS150 MPS101 - MPS151

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>MPS100</b> <b>R</b> <b>G1</b> <b>A10</b> <b>A</b> <b>P01</b>					
<b>MPS100</b>   <b>MPS150</b> With connections for clogging indicators							
<b>MPS101</b>   <b>MPS151</b> With connections for differential indicators							
Bypass valve		MPS 100 - 150	MPS 101 - 151				
<b>R</b>	Return: 1.75 bar	•	•				
<b>S</b>	Suction: 30 kPa	•					
<b>U</b>	Without bypass	•					
<b>P</b>	Without bypass		•				
Connections							
<b>G1</b>	G 1 1/4"						
<b>G2</b>	1 1/4" NPT						
<b>G3</b>	SAE 20 - 1 5/8" - 12 UN						
Filtration rating (filter media)							
<b>A03</b>	Inorganic microfiber 3 µm						
<b>A06</b>	Inorganic microfiber 6 µm						
<b>A10</b>	Inorganic microfiber 10 µm						
<b>A25</b>	Inorganic microfiber 25 µm						
<b>M25</b>	Wire mesh 25 µm						
<b>M60</b>	Wire mesh 60 µm						
<b>M90</b>	Wire mesh 90 µm						
<b>P10</b>	Resin impregnated paper 10 µm						
<b>P25</b>	Resin impregnated paper 25 µm						
				<b>Seal</b>		<b>Execution</b>	
				<b>A</b>	NBR	<b>P01</b>	MP Filtri standard

### CARTRIDGE

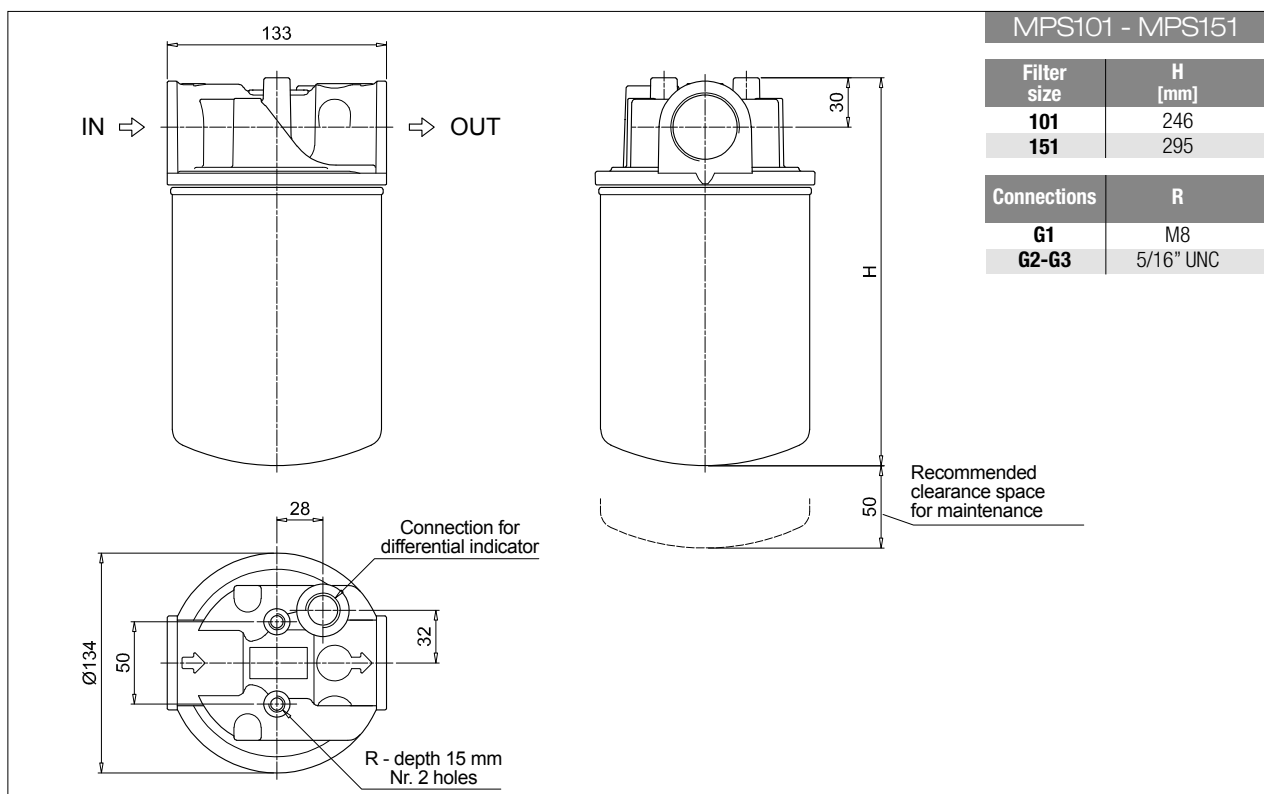
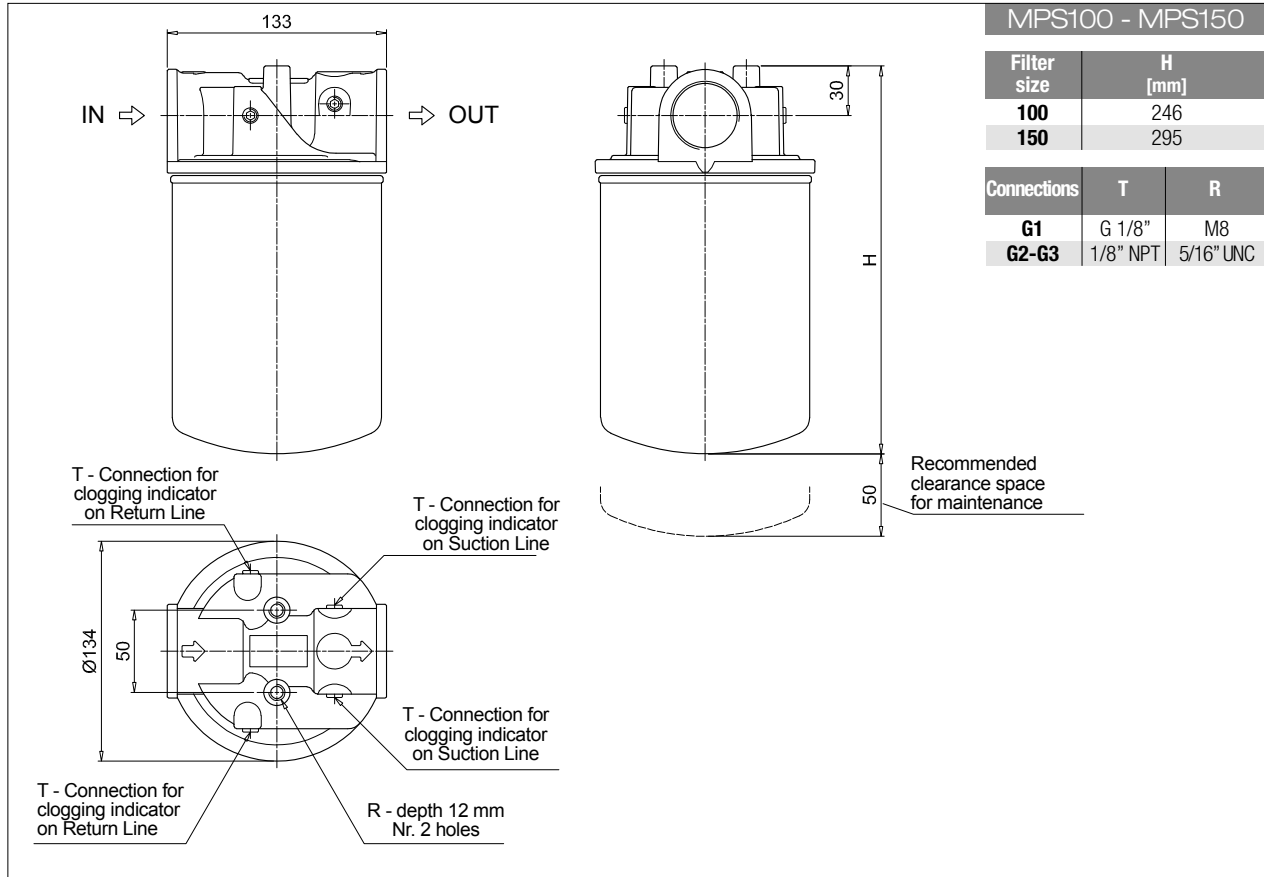
Cartridge series and size		Configuration example: <b>CS100</b> <b>A10</b> <b>A</b> <b>P01</b>			
<b>CS100</b>   <b>CS150</b>					
Filtration rating (filter media)					
<b>A03</b>	Inorganic microfiber 3 µm				
<b>A06</b>	Inorganic microfiber 6 µm				
<b>A10</b>	Inorganic microfiber 10 µm				
<b>A25</b>	Inorganic microfiber 25 µm				
<b>M25</b>	Wire mesh 25 µm				
<b>M60</b>	Wire mesh 60 µm				
<b>M90</b>	Wire mesh 90 µm				
<b>P10</b>	Resin impregnated paper 10 µm				
<b>P25</b>	Resin impregnated paper 25 µm				
				<b>Seals</b>	
				<b>A</b>	NBR
				<b>Execution</b>	
				<b>P01</b>	MP Filtri standard
				<b>Pxx</b>	Customized

### ACCESSORIES

Clogging indicators on RETURN line		page			page
<b>BVA</b>	Axial pressure gauge	315	<b>BEA</b>	Electrical pressure indicator	314
<b>BVR</b>	Radial pressure gauge	315	<b>BEM</b>	Electrical pressure indicator	314
<b>BVP</b>	Visual pressure indicator with automatic reset	316	<b>BLA</b>	Electrical / visual pressure indicator	314-315
<b>BVQ</b>	Visual pressure indicator with manual reset	316			
Clogging indicators on SUCTION line		page			page
<b>VVB</b>	Axial pressure gauge	313	<b>VEB</b>	Electrical vacuum indicator	312
<b>VVS</b>	Radial pressure gauge	313	<b>VLB</b>	Electrical/visual vacuum indicator	312
Differential indicators		page			page
<b>DEA</b>	Electrical differential indicator	317	<b>DTA</b>	Electronic differential indicator	320
<b>DEM</b>	Electrical differential indicator	317-318	<b>DVA</b>	Visual differential indicator	320
<b>DLA</b>	Electrical / visual differential indicator	318-319	<b>DVM</b>	Visual differential indicator	320
<b>DLE</b>	Electrical / visual differential indicator	319			

# MPS100 - MPS150 MPS101 - MPS151 MPS

## Dimensions



# MPS MPS200 - MPS250

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> MPS200   MPS250	Configuration example: <b>MPS200</b>   <b>R</b>   <b>G1</b>   <b>A10</b>   <b>A</b>   <b>P01</b>					
<b>Bypass valve</b>						
<b>R</b> Return: 1.75 bar						
<b>S</b> Suction: 30 kPa						
<b>U</b> Without bypass						
<b>Connections</b>						
<b>G1</b> G 1 1/2"						
<b>G2</b> 1 1/2" NPT						
<b>G3</b> SAE 24 - 1 7/8" - 12 UN						
<b>Filtration rating (filter media)</b>						
<b>A03</b> Inorganic microfiber 3 µm						
<b>A06</b> Inorganic microfiber 6 µm						
<b>A10</b> Inorganic microfiber 10 µm						
<b>A25</b> Inorganic microfiber 25 µm						
<b>M25</b> Wire mesh 25 µm						
<b>M60</b> Wire mesh 60 µm						
<b>M90</b> Wire mesh 90 µm						
<b>P10</b> Resin impregnated paper 10 µm						
<b>P25</b> Resin impregnated paper 25 µm						
	<b>Seal</b>		<b>Execution</b>			
	<b>A</b> NBR		<b>P01</b> MP Filtri standard			

### CARTRIDGE

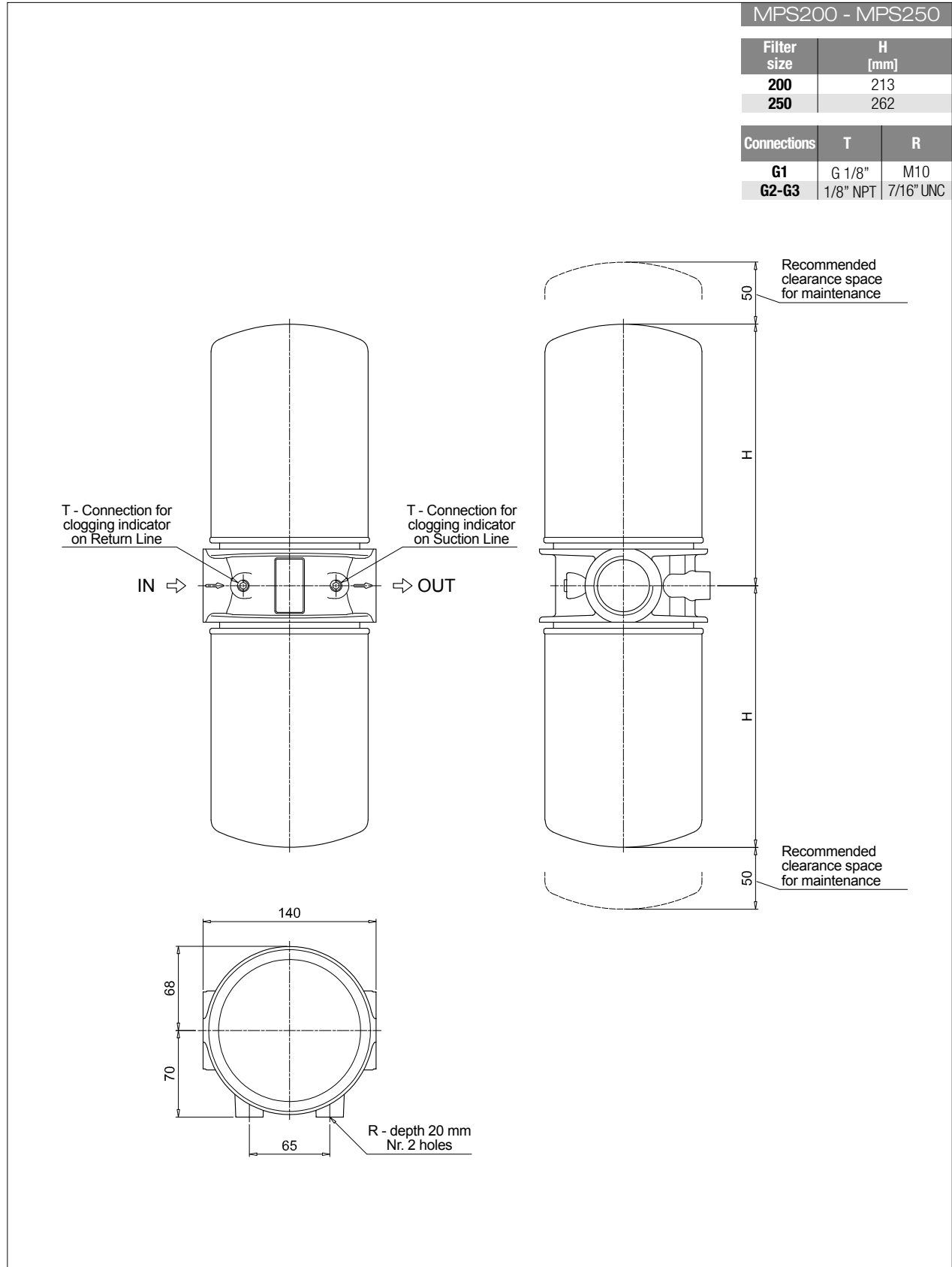
<b>Cartridge series and size</b> CS100   CS150	Configuration example: <b>CS100</b>   <b>A10</b>   <b>A</b>   <b>P01</b>			
<b>Filtration rating (filter media)</b>				
<b>A03</b> Inorganic microfiber 3 µm				
<b>A06</b> Inorganic microfiber 6 µm				
<b>A10</b> Inorganic microfiber 10 µm				
<b>A25</b> Inorganic microfiber 25 µm				
<b>M25</b> Wire mesh 25 µm				
<b>M60</b> Wire mesh 60 µm				
<b>M90</b> Wire mesh 90 µm				
<b>P10</b> Resin impregnated paper 10 µm				
<b>P25</b> Resin impregnated paper 25 µm				
	<b>Seals</b>		<b>Execution</b>	
	<b>A</b> NBR		<b>P01</b> MP Filtri standard <b>Pxx</b> Customized	

### ACCESSORIES

Clogging indicators on RETURN line		page			page
<b>BVA</b> Axial pressure gauge		315	<b>BEA</b> Electrical pressure indicator		314
<b>BVR</b> Radial pressure gauge		315	<b>BEM</b> Electrical pressure indicator		314
<b>BVP</b> Visual pressure indicator with automatic reset		316	<b>BLA</b> Electrical / visual pressure indicator		314-315
<b>BVQ</b> Visual pressure indicator with manual reset		316			
Clogging indicators on SUCTION line		page			page
<b>VVB</b> Axial pressure gauge		313	<b>VEB</b> Electrical vacuum indicator		312
<b>VVS</b> Radial pressure gauge		313	<b>VLB</b> Electrical/visual vacuum indicator		312

# MPS200 - MPS250 MPS

## Dimensions



# MPS MPS300 - MPS350 MPS301 - MPS351

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example : MPS300 R F1 A10 A P01					
<b>MPS300   MPS350</b> With connections for clogging indicators							
<b>MPS301   MPS351</b> With connections for differential indicators							
Bypass valve		MPS 300 - 350	MPS 301 - 351				
<b>R</b>	Return: 1.75 bar	•	•				
<b>S</b>	Suction: 30 kPa	•					
<b>U</b>	Without bypass	•					
<b>P</b>	Without bypass		•				
Connections							
<b>G1</b>	G 1 1/2"						
<b>G2</b>	1 1/2" NPT						
<b>G3</b>	SAE 24 - 1 7/8" - 12 UN						
<b>F1</b>	1 1/2" SAE 3000 psi/M						
<b>F2</b>	1 1/2" SAE 3000 psi/UNC						
Filtration rating (filter media)							
<b>A03</b>	Inorganic microfiber 3 µm						
<b>A06</b>	Inorganic microfiber 6 µm						
<b>A10</b>	Inorganic microfiber 10 µm						
<b>A25</b>	Inorganic microfiber 25 µm						
		<b>M25</b>	Wire mesh 25 µm				
		<b>M60</b>	Wire mesh 60 µm				
		<b>M90</b>	Wire mesh 90 µm				
		<b>P10</b>	Resin impregnated paper 10 µm				
		<b>P25</b>	Resin impregnated paper 25 µm				
				<b>Seal</b>		<b>Execution</b>	
				<b>A</b>	NBR	<b>P01</b>	MP Filtri standard

### CARTRIDGE

Cartridge series and size		Configuration example: CS100 A10 A P01			
<b>CS100   CS150</b>					
Filtration rating (filter media)					
<b>A03</b>	Inorganic microfiber 3 µm				
<b>A06</b>	Inorganic microfiber 6 µm				
<b>A10</b>	Inorganic microfiber 10 µm				
<b>A25</b>	Inorganic microfiber 25 µm				
		<b>M25</b>	Wire mesh 25 µm		
		<b>M60</b>	Wire mesh 60 µm		
		<b>M90</b>	Wire mesh 90 µm		
		<b>P10</b>	Resin impregnated paper 10 µm		
		<b>P25</b>	Resin impregnated paper 25 µm		
				<b>Seals</b>	
				<b>A</b>	NBR
				<b>Execution</b>	
				<b>P01</b>	MP Filtri standard
				<b>Pxx</b>	Customized

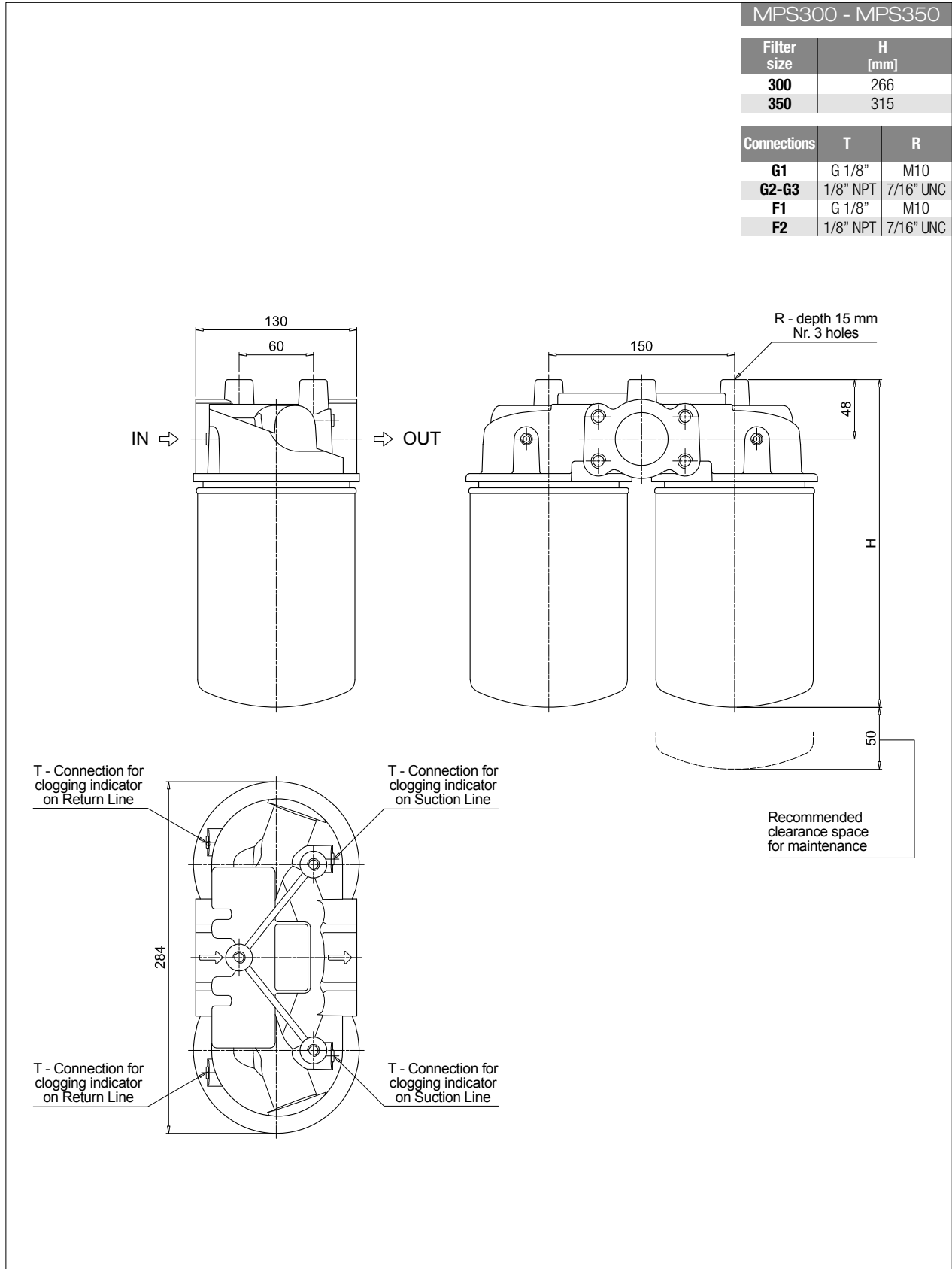
### ACCESSORIES

Clogging indicators on RETURN line		page			page
<b>BVA</b>	Axial pressure gauge	315	<b>BEA</b>	Electrical pressure indicator	314
<b>BVR</b>	Radial pressure gauge	315	<b>BEM</b>	Electrical pressure indicator	314
<b>BVP</b>	Visual pressure indicator with automatic reset	316	<b>BLA</b>	Electrical / visual pressure indicator	314-315
<b>BVQ</b>	Visual pressure indicator with manual reset	316			
Clogging indicators on SUCTION line		page			page
<b>VVB</b>	Axial pressure gauge	313	<b>VEB</b>	Electrical vacuum indicator	312
<b>VVS</b>	Radial pressure gauge	313	<b>VLB</b>	Electrical/visual vacuum indicator	312
Differential indicators		page			page
<b>DEA</b>	Electrical differential indicator	317	<b>DTA</b>	Electronic differential indicator	320
<b>DEM</b>	Electrical differential indicator	317-318	<b>DVA</b>	Visual differential indicator	320
<b>DLA</b>	Electrical / visual differential indicator	318-319	<b>DVM</b>	Visual differential indicator	320
<b>DLE</b>	Electrical / visual differential indicator	319			



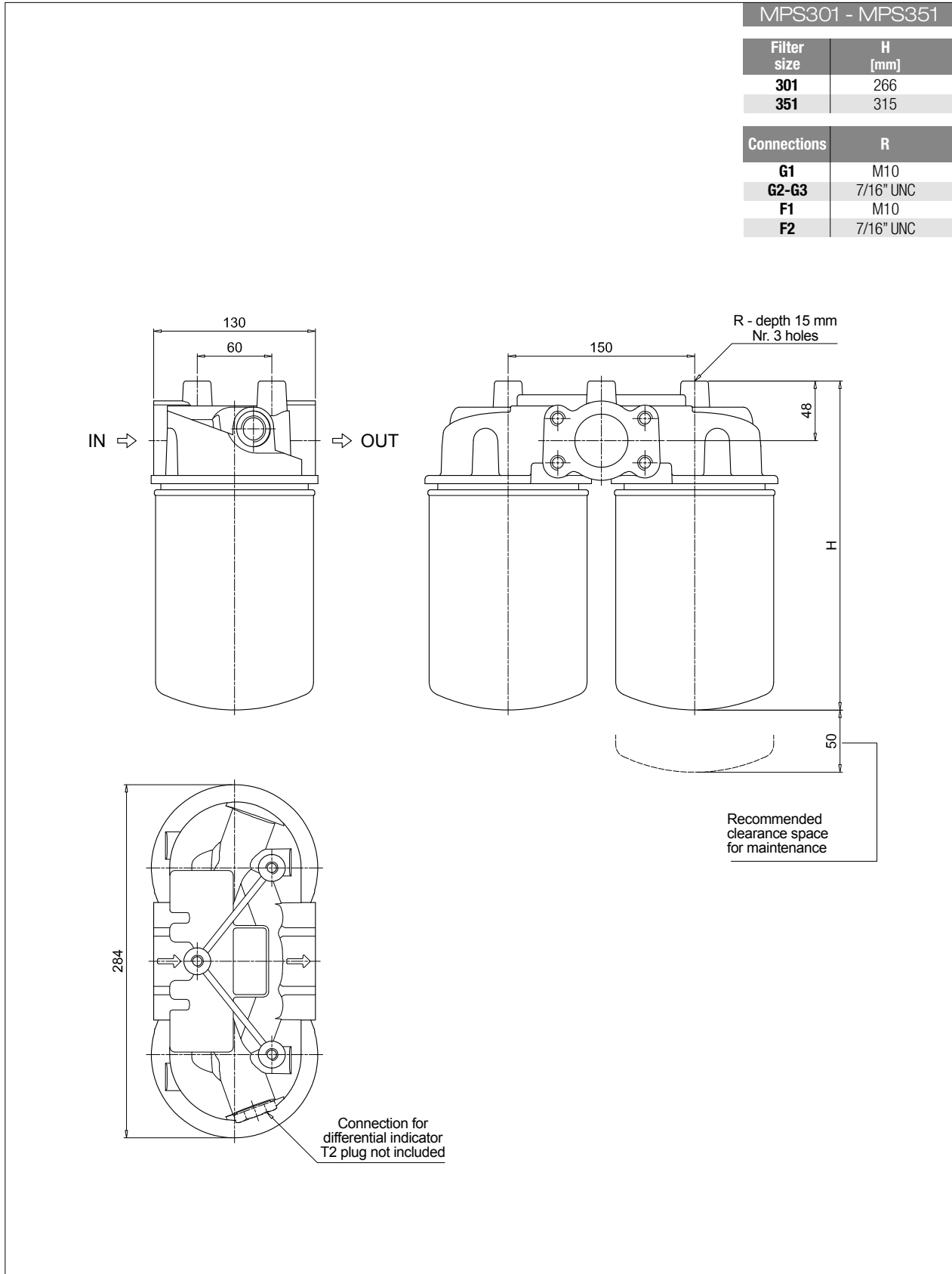
# MPS300 - MPS350 MPS301 - MPS351 MPS

## Dimensions



# MPS MPS300 - MPS350 MPS301 - MPS351

## Dimensions



# MPS

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Spin-on filters

# MSH series

Maximum working pressure up to 3.5 MPa (35 bar) - Flow rate up to 195 l/min



# MSH GENERAL INFORMATION

## Description

### Spin-on filters

**Maximum working pressure up to 3.5 MPa (35 bar)**  
**Flow rate up to 195 l/min**

MSH is a range of spin-on filters suitable to be used in low pressure lines. They offer a good balance between performances, dimensions and prices. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 195 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Strong sealing between the housing and cans, to be used in heavy applications
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators for low pressure applications

#### Common applications:

- Delivery lines, in economic industrial equipment or mobile machines

## Technical data

### Filter housing materials

- Head: Anodized Aluminium
- Bypass valve: Nylon - Steel
- Element: Aluminium - Painted Steel

### Bypass valve

Opening pressure: 250 kPa (2.5 bar)  $\pm 10\%$

### $\Delta p$ element type

- $\Delta p$ : 5 bar
- Oil flow from OUT to IN

### Seals

- Standard NBR - series A
- Optional FPM - series V

### Temperature

From -20 °C to +110 °C

### Note

MSH filters are provided for vertical mounting




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

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>MSH 050</b>	1.50	0.65
<b>MSH 070</b>	1.90	0.95
<b>MSH 100</b>	3.30	1.80
<b>MSH 150</b>	3.80	2.20

## Cartridge

**CH**

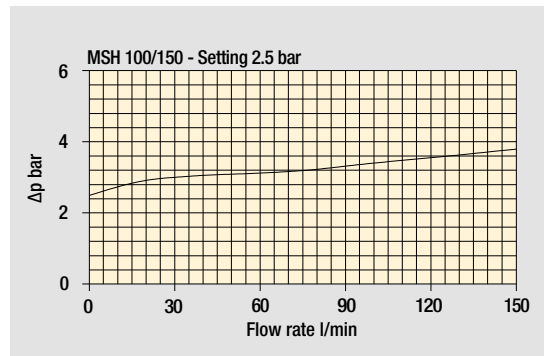
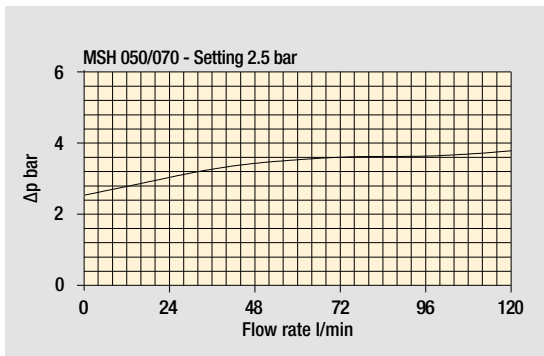
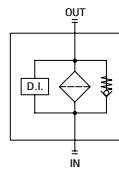
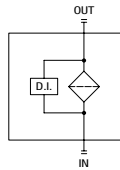


Thread connections	
Type	Connection
<b>CH 050 - 070</b>	M32 x 2
<b>CH 100 - 150</b>	M45 x 2

# GENERAL INFORMATION MSH

## Hydraulic symbols

Filter series	Style S	Style B
<b>MSH 050</b>	•	•
<b>MSH 070</b>	•	•
<b>MSH 100</b>	•	•
<b>MSH 150</b>	•	•



Pressure drop  
Bypass valve  
pressure drop

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

# MSH MSH050 - MSH070 MSH100 - MSH150

## Designation & Ordering code

COMPLETE FILTER			
<b>Series and size</b>		Configuration example: <b>MSH050</b> <b>B</b> <b>A</b> <b>G1</b> <b>A10</b> <b>P01</b>	
<b>MSH050</b>   <b>MSH070</b>   <b>MSH100</b>   <b>MSH150</b>			
<b>Bypass valve</b>			
<b>S</b> Without bypass			
<b>B</b> 2.5 bar			
<b>Seal</b>			
<b>A</b> NBR			
<b>Connections</b>	<b>MSH 050 - 070</b>	<b>MSH 100 - 150</b>	
<b>G1</b>	G 1"	G 1 1/2"	
<b>G2</b>	G 3/4"	G 1 1/4"	
<b>G3</b>	1" NPT	1 1/2" NPT	
<b>G4</b>	3/4" NPT	1 1/4" NPT	
<b>G5</b>	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN	
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN	
<b>Filtration rating (filter media)</b>			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P10</b> Resin impregnated paper 10 µm		
	<b>P25</b> Resin impregnated paper 25 µm		
			<b>Execution</b>
			<b>P01</b> MP Filtri standard

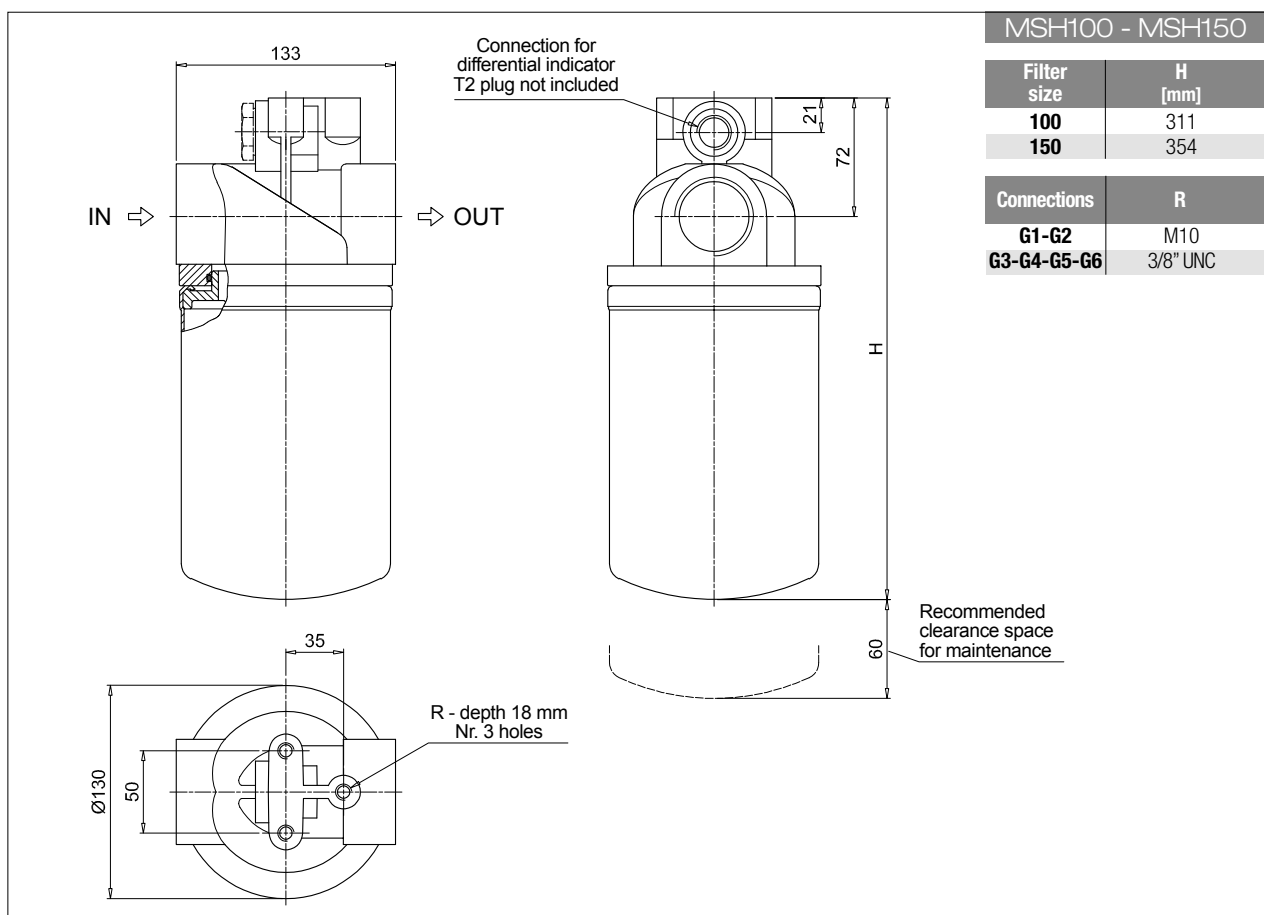
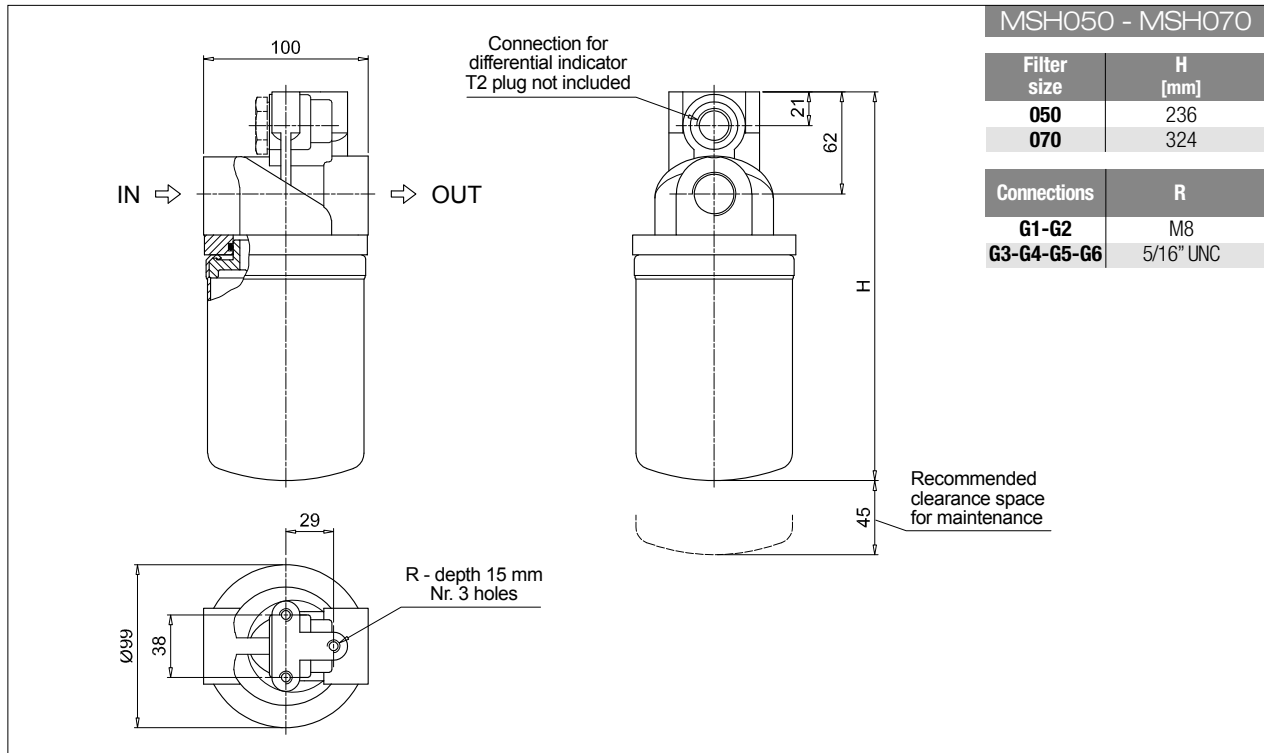
CARTRIDGE			
<b>Cartridge series and size</b>		Configuration example: <b>CH050</b> <b>A10</b> <b>A</b> <b>P01</b>	
<b>CH050</b>   <b>CH070</b>   <b>CH100</b>   <b>CH150</b>			
<b>Filtration rating (filter media)</b>			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P10</b> Resin impregnated paper 10 µm		
	<b>P25</b> Resin impregnated paper 25 µm		
		<b>Seal</b>	<b>Execution</b>
		<b>A</b> NBR	<b>P01</b> MP Filtri standard
			<b>Pxx</b> Customized

ACCESSORIES			
<b>Differential indicators</b>		page	page
<b>DEA</b> Electrical differential indicator		317	<b>DTA</b> Electronic differential indicator 320
<b>DEM</b> Electrical differential indicator		317-318	<b>DVA</b> Visual differential indicator 320
<b>DLA</b> Electrical / visual differential indicator		318-319	<b>DVM</b> Visual differential indicator 320
<b>DLE</b> Electrical / visual differential indicator		319	
<b>Additional features</b>		page	
<b>T2</b> Plug		321	



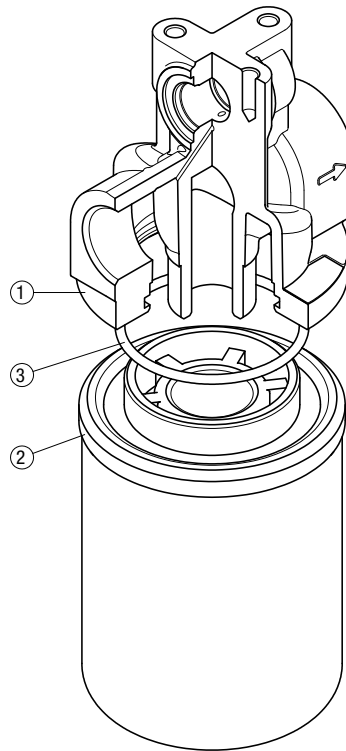
# MSH050 - MSH070 MSH100 - MSH150 MSH

## Dimensions



# MSH SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
	1	2	3
Filter series	Filter assembly	Cartridge	Seal code number
<b>MSH 050-070</b>	See order table	See order table	0-R 167 (ø 63.50 x 3.53)
<b>MSH 100-150</b>			0-R 4362 (ø 91.67 x 3.53)



Spin-on filters

# Clogging indicators

## Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators. These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element. The indicator is set to alarm before the element becomes fully clogged. MP Filtri can supply indicators of the following designs:

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

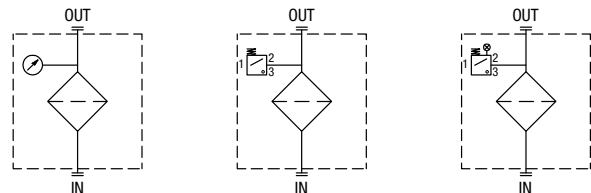
These type of devices can be provided with a visual, electrical or both signals.

**Barometric indicators**  
**Vacuum indicators**  
**Differential indicators**

## Suitable indicator types

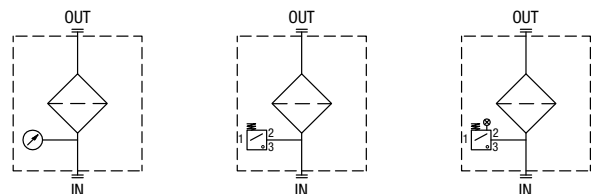
### VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficiency of the filter element. They measure the pressure downstream of the filter element. Standard items are produced with R 1/4" EN 10226 connection. Available products with R 1/8" EN 10226 to be fitted on MPS series.



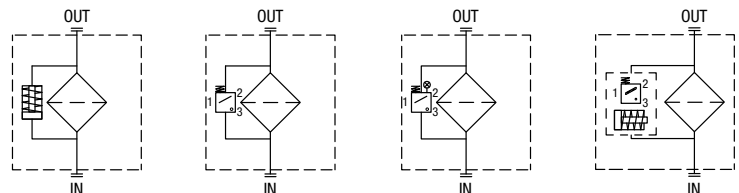
### BAROMETRIC INDICATORS

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



### DIFFERENTIAL INDICATORS

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

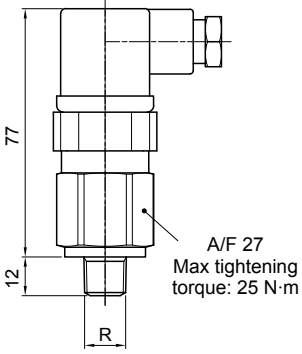

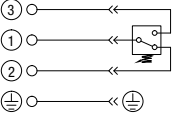

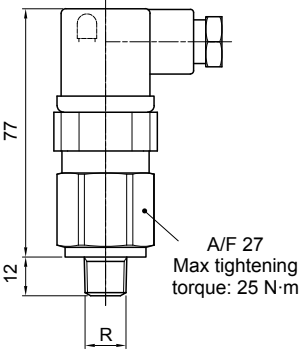

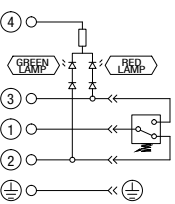
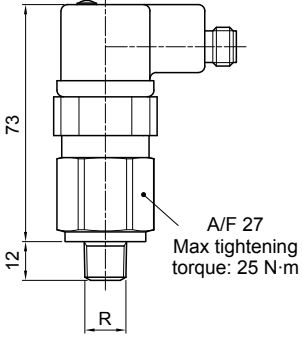

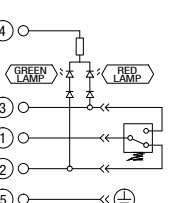


## Quick reference guide

Filter series		Visual indicator	Electrical indicator	Electrical / Visual indicator
Suction line	MPS 050 - 070 - 100 - 150	VVB16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
	MPS 200 - 250 - 300 - 350	VVS16P01		
Return line	MPS 050 - 070 - 100 - 150	BVA14P01	BEA15HA50P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
	MPS 200 - 250 - 300 - 350	BVR14P01 BVP20HP01 BVQ20HP01		
In-line	MPS 051 - 071 - 101 - 151	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01
	MPS 301 - 351			
	MSH 050 - 070 - 100 - 150			

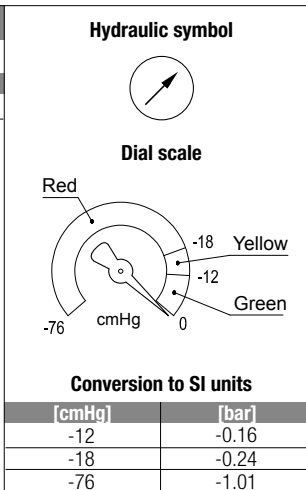
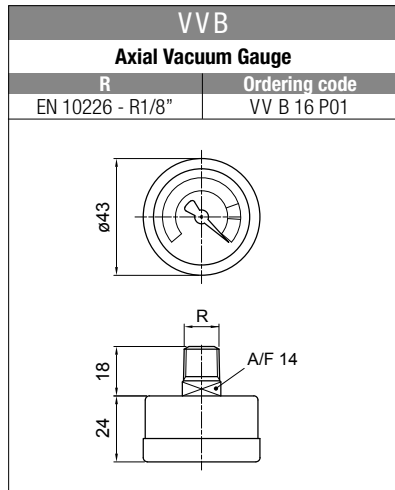
# VACUUM INDICATORS

## Dimensions

<p style="text-align: center;"><b>VE*50</b></p> <p style="text-align: center;"><b>Electrical Vacuum Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">R</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/8"</td> <td>VE B 21 AA 50 P01</td> </tr> </tbody> </table> 	R	Ordering code	EN 10226 - R1/8"	VE B 21 AA 50 P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: <ul style="list-style-type: none"> <li>5 A / 14 Vdc</li> <li>4 A / 30 Vdc</li> <li>5 A / 125 Vac</li> <li>4 A / 250 Vac</li> </ul> </li> <li>- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X </li> <li>- CE certification</li> </ul>																
R	Ordering code																					
EN 10226 - R1/8"	VE B 21 AA 50 P01																					
<p style="text-align: center;"><b>VL*51 - VL*52 - VL*53</b></p> <p style="text-align: center;"><b>Electrical/Visual Vacuum Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">R</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/8"</td> <td>VL B 21 AA xx P01</td> </tr> </tbody> </table> 	R	Ordering code	EN 10226 - R1/8"	VL B 21 AA xx P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent Nylon</li> <li>- Contacts: Brass - Nylon</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">- Electrical connection:</td> <td colspan="3">EN 175301-803</td> </tr> <tr> <td>- Type</td> <td>51</td> <td>52</td> <td>53</td> </tr> <tr> <td>- Lamps</td> <td>24 Vdc</td> <td>110 Vdc</td> <td>230 Vac</td> </tr> <tr> <td>- Resistive load:</td> <td>1 A / 24 Vdc</td> <td>1 A / 110 Vdc</td> <td>1 A / 230 Vac</td> </tr> </table>	- 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 - R1/8"	VL B 21 AA xx P01																					
- 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																			
<p style="text-align: center;"><b>VL*71</b></p> <p style="text-align: center;"><b>Electrical/Visual Vacuum Indicator</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Connections</th> <th style="width: 50%;">Ordering code</th> </tr> </thead> <tbody> <tr> <td>EN 10226 - R1/8"</td> <td>VL B 21 AA 71 P01</td> </tr> </tbody> </table> 	Connections	Ordering code	EN 10226 - R1/8"	VL B 21 AA 71 P01	<p><b>Hydraulic symbol</b></p>  <p><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: NBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Vacuum setting: -0.21 bar ±10%</li> <li>- Max working pressure: 10 bar</li> <li>- Proof pressure: 15 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Lamps: 24 Vdc</li> <li>- Resistive load: 0.4 A / 24 Vdc</li> </ul>																
Connections	Ordering code																					
EN 10226 - R1/8"	VL B 21 AA 71 P01																					

# VACUUM INDICATORS

## Dimensions

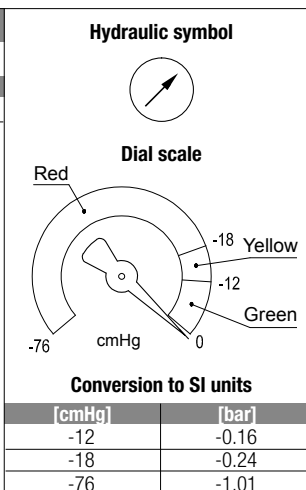
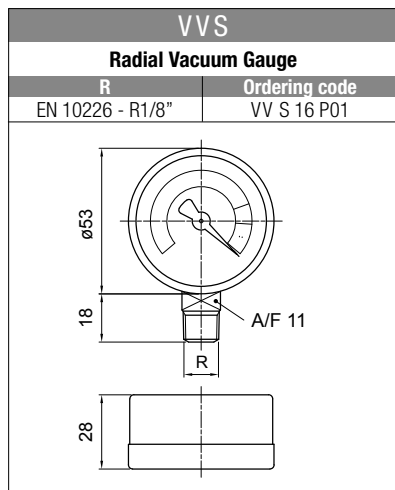


**Materials**

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

**Technical data**

- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529



**Materials**

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

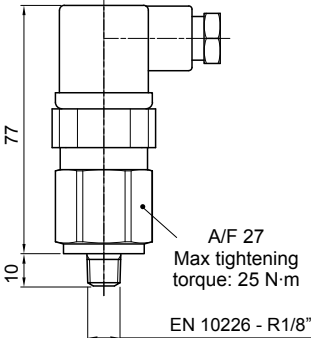

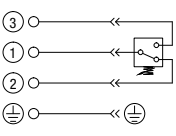

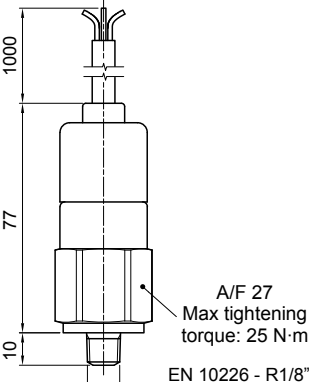

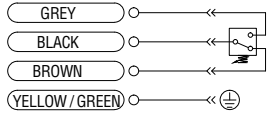
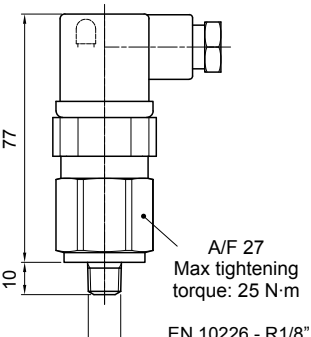

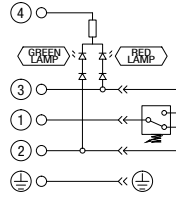
**Technical data**

- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

DESIGNATION & ORDERING CODE							
<b>Series</b>	Configuration example 1: <b>VE</b> <b>B</b> <b>21</b> <b>A</b> <b>A</b> <b>50</b> <b>P01</b>						
<b>VE</b> Electrical vacuum indicator	Configuration example 2: <b>VL</b> <b>B</b> <b>21</b> <b>A</b> <b>A</b> <b>71</b> <b>P01</b>						
<b>VL</b> Electrical/Visual vacuum indicator	Configuration example 3: <b>VV</b> <b>S</b> <b>16</b> <b></b> <b></b> <b></b> <b>P01</b>						
<b>VV</b> Vacuum gauge							
<b>Type VE - VL</b>	<b>Type VV</b>						
<b>B</b> Connection EN 10226 - R1/8"	<b>B</b> Axial connection EN 10226 - R1/8"						
	<b>S</b> Radial connection EN 10226 - R1/8"						
<b>Vacuum setting</b>	<b>VE</b>	<b>VL</b>	<b>VV</b>				
<b>16</b> -0.16 bar			•				
<b>21</b> -0.21 bar	•	•					
<b>Seals</b>	<b>VE</b>	<b>VL</b>	<b>VV</b>				
<b>A</b> NBR	•	•					
<b>Thermostat</b>	<b>VE</b>	<b>VL</b>	<b>VV</b>				
<b>A</b> Without	•	•					
<b>Electrical connections</b>	<b>VE</b>	<b>VL</b>	<b>VV</b>				
<b>50</b> Connection EN 175301-803	•						
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc		•					
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc		•					
<b>53</b> Connection EN 175301-803, transparent base with lamps 230 Vdc		•					
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		•					
	<b>Option</b>						
	<b>P01</b> MP Filtri standard						
	<b>Pxx</b> Customized						

# BAROMETRIC INDICATORS

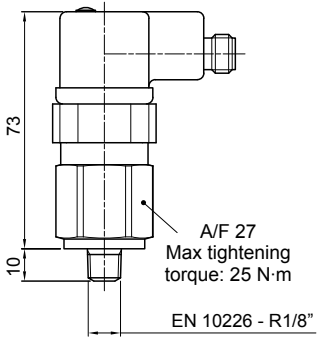
## Dimensions

<p style="text-align: center;"><b>BEA*50</b></p> <p style="text-align: center;"><b>Electrical Pressure Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.5 bar <math>\pm 10\%</math></td> <td>BE A 15 H A 50 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>BE A 20 H A 50 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N·m EN 10226 - R1/8"</p>	Settings	Ordering code	1.5 bar $\pm 10\%$	BE A 15 H A 50 P01	2.0 bar $\pm 10\%$	BE A 20 H A 50 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 40 bar</li> <li>- Proof pressure: 60 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Resistive load: <ul style="list-style-type: none"> <li>5 A / 14 Vdc</li> <li>4 A / 30 Vdc</li> <li>5 A / 125 Vac</li> <li>4 A / 250 Vac</li> </ul> </li> </ul> <p>- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx °C X </p> <p>- CE certification</p>												
Settings	Ordering code																			
1.5 bar $\pm 10\%$	BE A 15 H A 50 P01																			
2.0 bar $\pm 10\%$	BE A 20 H A 50 P01																			
<p style="text-align: center;"><b>BEM*41</b></p> <p style="text-align: center;"><b>Electrical Pressure Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.5 bar <math>\pm 10\%</math></td> <td>BE M 15 H A 41 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>BE M 20 H A 41 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N·m EN 10226 - R1/8"</p>	Settings	Ordering code	1.5 bar $\pm 10\%$	BE M 15 H A 41 P01	2.0 bar $\pm 10\%$	BE M 20 H A 41 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 40 bar</li> <li>- Proof pressure: 60 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP67 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: Four-core cable</li> <li>- Resistive load: <ul style="list-style-type: none"> <li>5 A / 14 Vdc</li> <li>4 A / 30 Vdc</li> <li>5 A / 125 Vac</li> <li>4 A / 250 Vac</li> </ul> </li> </ul> <p>- CE certification On request this indicator can be provided with main connectors in use for wirings.</p>												
Settings	Ordering code																			
1.5 bar $\pm 10\%$	BE M 15 H A 41 P01																			
2.0 bar $\pm 10\%$	BE M 20 H A 41 P01																			
<p style="text-align: center;"><b>BL*51 - BL*52 - BL*53</b></p> <p style="text-align: center;"><b>Electrical/Visual Pressure Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.5 bar <math>\pm 10\%</math></td> <td>BL A 15 H A xx P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>BL A 20 H A xx P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 27 Max tightening torque: 25 N·m EN 10226 - R1/8"</p>	Settings	Ordering code	1.5 bar $\pm 10\%$	BL A 15 H A xx P01	2.0 bar $\pm 10\%$	BL A 20 H A xx P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 40 bar</li> <li>- Proof pressure: 60 bar</li> <li>- Working temperature: From -25 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree of protection: IP65 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Type: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>51</td> <td>52</td> <td>53</td> </tr> <tr> <td>24 Vdc</td> <td>110 Vdc</td> <td>230 Vac</td> </tr> </table> </li> <li>- Lamps: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>1 A / 24 Vdc</td> <td>1 A / 110 Vdc</td> <td>1 A / 230 Vac</td> </tr> </table> </li> <li>- Resistive load: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>1 A / 24 Vdc</td> <td>1 A / 110 Vdc</td> <td>1 A / 230 Vac</td> </tr> </table> </li> </ul>	51	52	53	24 Vdc	110 Vdc	230 Vac	1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac	1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac
Settings	Ordering code																			
1.5 bar $\pm 10\%$	BL A 15 H A xx P01																			
2.0 bar $\pm 10\%$	BL A 20 H A xx P01																			
51	52	53																		
24 Vdc	110 Vdc	230 Vac																		
1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac																		
1 A / 24 Vdc	1 A / 110 Vdc	1 A / 230 Vac																		

# BAROMETRIC INDICATORS

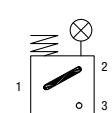
## Dimensions

BL*71	
<b>Electrical/Visual Pressure Indicator</b>	
Settings	Ordering code
1.5 bar $\pm 10\%$	BL A 15 H A 71 P01
2.0 bar $\pm 10\%$	BL A 20 H A 71 P01

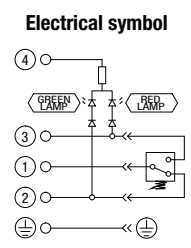


A/F 27  
Max tightening torque: 25 N·m  
EN 10226 - R1/8"

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

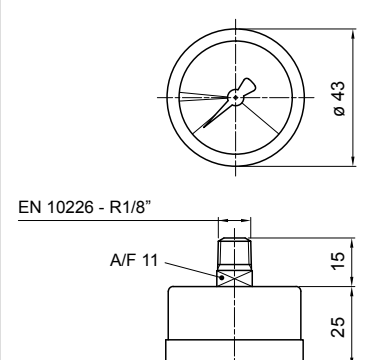
**Technical data**

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

**Electrical data**


- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

BVA	
<b>Axial Pressure Gauge</b>	
Settings	Ordering code
1.4 bar $\pm 10\%$	BV A 14 P01
2.5 bar $\pm 10\%$	BV A 25 P01



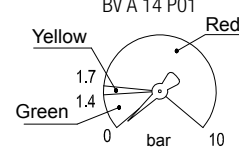
EN 10226 - R1/8"  
A/F 11

**Hydraulic symbol**

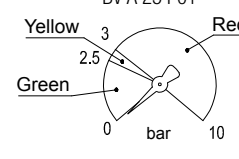


**Dial scale**

BV A 14 P01



BV A 25 P01



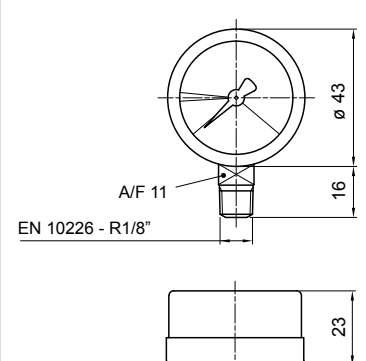
**Materials**

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

**Technical data**


- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

BVR	
<b>Radial Pressure Gauge</b>	
Settings	Ordering code
1.4 bar $\pm 10\%$	BV R 14 P01
2.5 bar $\pm 10\%$	BV R 25 P01



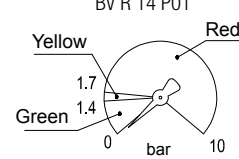
EN 10226 - R1/8"  
A/F 11

**Hydraulic symbol**

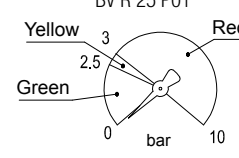


**Dial scale**

BV R 14 P01



BV R 25 P01



**Materials**

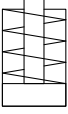
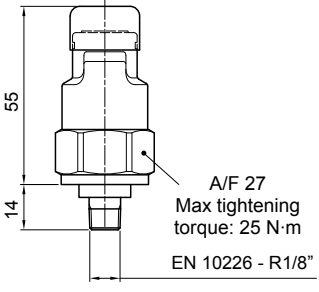
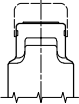
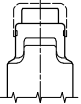
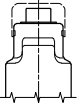
- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

**Technical data**

- Max working pressure: Static: 7 bar  
Fluctuating: 6 bar  
Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

# BAROMETRIC INDICATORS

## Dimensions

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

## DESIGNATION & ORDERING CODE

Series
<b>BE</b> Electrical pressure indicator
<b>BL</b> Electrical/Visual pressure indicator
<b>BV</b> Visual pressure indicator

Configuration example 1:	BE	M	15	H	A	41	P01
Configuration example 2:	BL	A	20	H	A	71	P01
Configuration example 3:	BV	R	14				P01
Configuration example 4:	BV	P	20	H			P01

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

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

Seals	BE	BLA	BVA-BVR	BVP-BVQ
<b>H</b> HNBR	•	•		•

Thermostat	BEA-BEM	BLA	BV
<b>A</b> Without	•	•	

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

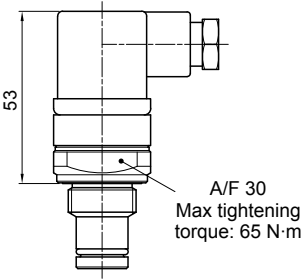
Option
<b>P01</b> MP Filtri standard
<b>Pxx</b> Customized



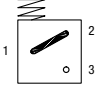
# DIFFERENTIAL INDICATORS

## Dimensions

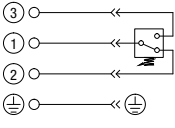
DEA*50	
Electrical Differential Indicator	
Settings	Ordering code
1.2 bar $\pm 10\%$	DE A 12 x A 50 P01
2.0 bar $\pm 10\%$	DE A 20 x A 50 P01



**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

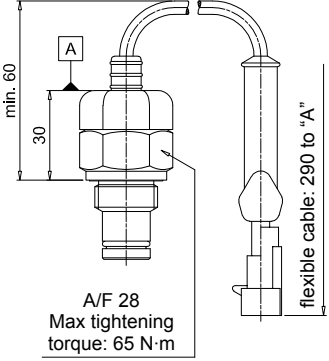
**Technical data**

- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

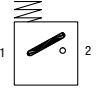
**Electrical data**

- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

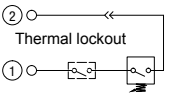
DEM*10	
Electrical Differential Indicator	
Settings	Ordering code
1.2 bar $\pm 10\%$	DE M 12 x x 10 P01
2.0 bar $\pm 10\%$	DE M 20 x x 10 P01



**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

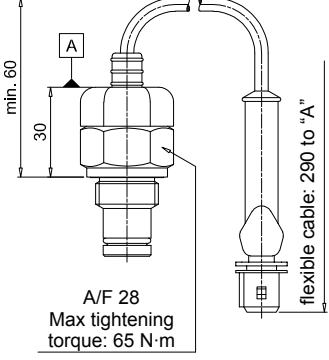
**Technical data**

- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

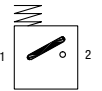
**Electrical data**

- 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")

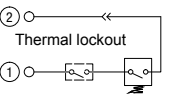
DEM*20	
Electrical Differential Indicator	
Settings	Ordering code
1.2 bar $\pm 10\%$	DE M 12 x x 20 P01
2.0 bar $\pm 10\%$	DE M 20 x x 20 P01



**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

**Technical data**

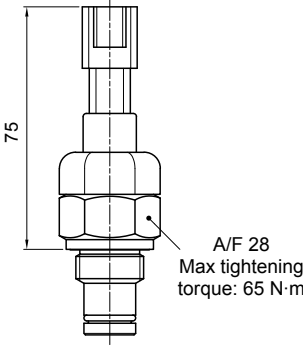
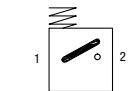
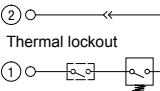
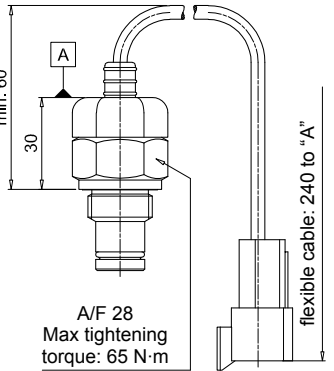
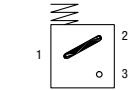
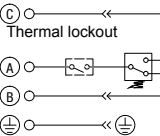
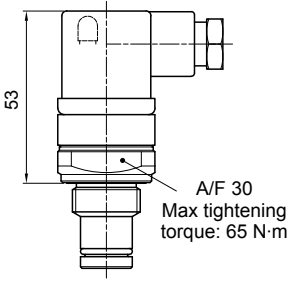
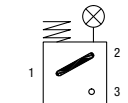
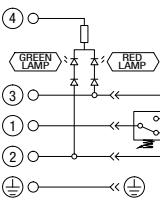
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

**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 INDICATORS

## Dimensions

<p style="text-align: center;"><b>DEM*30</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.2 bar <math>\pm 10\%</math></td> <td>DE M 12 x x 30 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DE M 20 x x 30 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 28 Max tightening torque: 65 N·m</p>	Settings	Ordering code	1.2 bar $\pm 10\%$	DE M 12 x x 30 P01	2.0 bar $\pm 10\%$	DE M 20 x x 30 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p>  <p style="text-align: center;">Thermal lockout</p>	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: Deutsch DT-04-2-P</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: Normally open contacts (NC on request)</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>
Settings	Ordering code							
1.2 bar $\pm 10\%$	DE M 12 x x 30 P01							
2.0 bar $\pm 10\%$	DE M 20 x x 30 P01							
<p style="text-align: center;"><b>DEM*35</b></p> <p style="text-align: center;"><b>Electrical Differential Indicator</b></p> <table border="1"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.2 bar <math>\pm 10\%</math></td> <td>DE M 12 x x 35 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DE M 20 x x 35 P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 28 Max tightening torque: 65 N·m</p> <p style="text-align: right;">flexible cable: 240 to "A"</p>	Settings	Ordering code	1.2 bar $\pm 10\%$	DE M 12 x x 35 P01	2.0 bar $\pm 10\%$	DE M 20 x x 35 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p>  <p style="text-align: center;">Thermal lockout</p>	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: Deutsch DT-04-3-P</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: SPDT contact</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>
Settings	Ordering code							
1.2 bar $\pm 10\%$	DE M 12 x x 35 P01							
2.0 bar $\pm 10\%$	DE M 20 x x 35 P01							
<p style="text-align: center;"><b>DLA*51 - DLA*52</b></p> <p style="text-align: center;"><b>Electrical/Visual Differential Indicator</b></p> <table border="1"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.2 bar <math>\pm 10\%</math></td> <td>DL A 12 x A xx P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DL A 20 x A xx P01</td> </tr> </tbody> </table>  <p style="text-align: right;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	1.2 bar $\pm 10\%$	DL A 12 x A xx P01	2.0 bar $\pm 10\%$	DL A 20 x A xx P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Type: 51                      52</li> <li>- Lamps: 24 Vdc              110 Vdc</li> <li>- Resistive load: 1 A / 24 Vdc      1 A / 110 Vdc</li> </ul>
Settings	Ordering code							
1.2 bar $\pm 10\%$	DL A 12 x A xx P01							
2.0 bar $\pm 10\%$	DL A 20 x A xx P01							

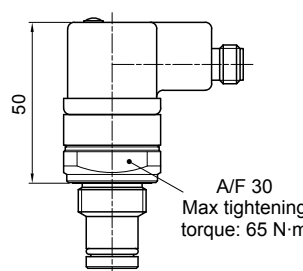
# DIFFERENTIAL INDICATORS

## Dimensions

**DLA\*71**

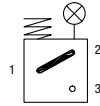
**Electrical/Visual Differential Indicator**

Settings	Ordering code
1.2 bar $\pm 10\%$	DL A 12 x A 71 P01
2.0 bar $\pm 10\%$	DL A 20 x A 71 P01

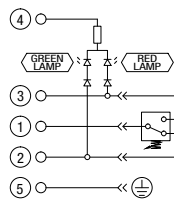


A/F 30  
Max tightening torque: 65 N·m

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529  
IP69K according to ISO 20653

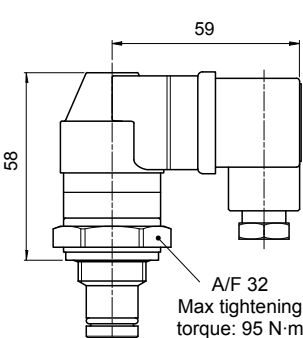
### Electrical data

- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

**DLE\*A50**

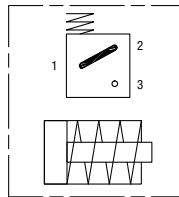
**Electrical/Visual Differential Indicator**

Settings	Ordering code
1.2 bar $\pm 10\%$	DL E 12 x A 50 P01
2.0 bar $\pm 10\%$	DL E 20 x A 50 P01

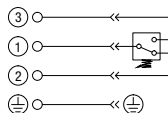


A/F 32  
Max tightening torque: 95 N·m

### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

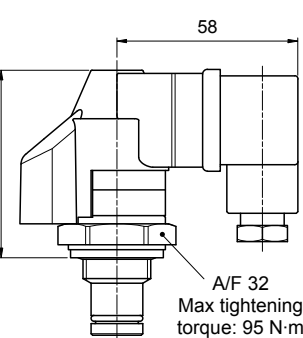
### Electrical data

- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

**DLE\*F50**

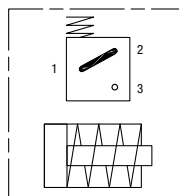
**Electrical/Visual Differential Indicator**

Settings	Ordering code
1.2 bar $\pm 10\%$	DL E 12 x F 50 P01
2.0 bar $\pm 10\%$	DL E 20 x F 50 P01

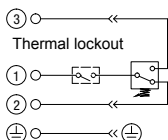


A/F 32  
Max tightening torque: 95 N·m

### Hydraulic symbol



### Electrical symbol



### Materials

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

### Technical data

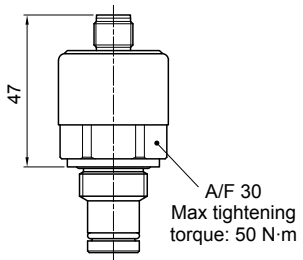
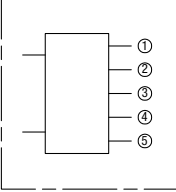

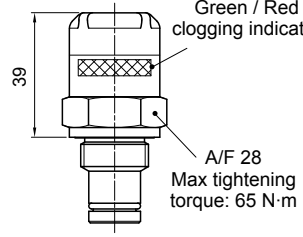
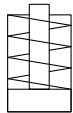
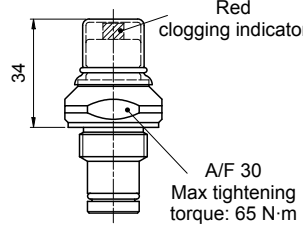
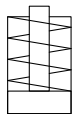
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

### Electrical data

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

# DIFFERENTIAL INDICATORS

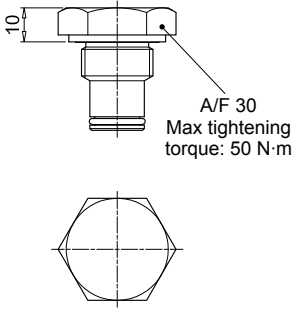
## Dimensions

<p style="text-align: center;"><b>DTA*70</b></p> <p style="text-align: center;"><b>Electronic Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>1.2 bar <math>\pm 10\%</math></td> <td>DT A 12 x x 70 P01</td> </tr> <tr> <td>2.0 bar <math>\pm 10\%</math></td> <td>DT A 20 x x 70 P01</td> </tr> </tbody> </table>  <p style="text-align: center;">47</p> <p style="text-align: center;">A/F 30 Max tightening torque: 50 N·m</p>	Settings	Ordering code	1.2 bar $\pm 10\%$	DT A 12 x x 70 P01	2.0 bar $\pm 10\%$	DT A 20 x x 70 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> <table border="1" style="width: 100%;"> <tbody> <tr> <td>①</td> <td>○</td> <td>○</td> <td>+24 Vdc</td> </tr> <tr> <td>②</td> <td>○</td> <td>○</td> <td>4 <math>\pm</math> 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> </tbody> </table>	①	○	○	+24 Vdc	②	○	○	4 $\pm$ 20 mA	③	○	○	75% - N.O. Digital output	④	○	○	100% - N.O. Digital output	⑤	○	○	0 Vdc	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>  <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP67 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Power supply: 24 Vdc</li> <li>- Analogue output: From 4 to 20 mA</li> <li>- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)</li> </ul>
Settings	Ordering code																											
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# DIFFERENTIAL INDICATORS

## Dimensions

T2	
<b>Indicator plug</b>	
Seal	Ordering code
HNBR	T2 H
FPM	T2 V



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

**Materials**

- Body: Phosphatized steel
- Seal: HNBR / FPM

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

<b>Series</b>	Configuration example 1: <input type="text" value="DE"/> <input type="text" value="M"/> <input type="text" value="12"/> <input type="text" value="H"/> <input type="text" value="F"/> <input type="text" value="50"/> <input type="text" value="P01"/>						
<b>DE</b> Electrical differential indicator	Configuration example 2: <input type="text" value="DL"/> <input type="text" value="E"/> <input type="text" value="20"/> <input type="text" value="V"/> <input type="text" value="A"/> <input type="text" value="71"/> <input type="text" value="P01"/>						
<b>DL</b> Electrical/Visual differential indicator	Configuration example 3: <input type="text" value="DT"/> <input type="text" value="A"/> <input type="text" value="12"/> <input type="text" value="H"/> <input type="text" value="F"/> <input type="text" value="70"/> <input type="text" value="P01"/>						
<b>DT</b> Electronic differential indicator	Configuration example 4: <input type="text" value="DV"/> <input type="text" value="M"/> <input type="text" value="20"/> <input type="text" value="V"/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value="P01"/>						
<b>DV</b> Visual differential indicator							
<b>Type</b>	<b>DE</b>	<b>DL</b>	<b>DT</b>	<b>DV</b>			
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset			
<b>M</b> With wired electrical connection	•			<b>M</b> With manual reset			
<b>E</b> For high power supply		•					
<b>Pressure setting</b>							
<b>12</b> 1.2 bar							
<b>20</b> 2.0 bar							
<b>Seals</b>							
<b>H</b> HNBR							
<b>V</b> FPM							
<b>Thermostat</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>	
<b>A</b> Without	•	•	•	•			
<b>F</b> With thermostat		•		•	•		
<b>Electrical connections</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>	
<b>10</b> Connection AMP Superseal series 1.5		•					
<b>20</b> Connection AMP Timer Junior		•					
<b>30</b> Connection Deutsch DT-04-2-P		•					
<b>35</b> Connection Deutsch DT-04-3-P		•					
<b>50</b> Connection EN 175301-803	•			•			
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			•				
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc			•				
<b>70</b> Connection IEC 61076-2-101 D (M12)					•		
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•				
<b>Option</b>							
<b>P01</b> MP Filtri standard							
<b>Pxx</b> Customized							

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

<b>Series</b>	Configuration example <input type="text" value="T2"/> <input type="text" value="H"/>	
<b>T2</b> Indicator plug		
<b>Seals</b>		
<b>H</b> HNBR		
<b>V</b> FPM		

**LMP - low and medium pressure filters are used as process filters to protect pumps, pressure reducers and hydraulic circuits from damage due to oil contamination as per ISO 4406.**

**LMP series is available in 5 different sizes: 100, 200, 400, 900 and 950 and a wide range of versions.**

**LMP filters are available with several working pressures suitable for all hydraulic circuits as:**

- **return filters in external tank mounting construction for medium and high flow rates in single and duplex versions**
- **in-line filters for low and medium pressures for off-line applications**
- **in-line process filters for medium pressures, for example, for forced lubrication applications, in single or duplex versions**
- **in-line filters for medium pressures for filtering hydraulic boost circuits**
- **in-line filters as high holding capacity filters on test beds**

**LMP filters are thus specifically designed to be suitable for a wide range of application: from steel plants to mobile equipments, from test benches to naval application, providing the right solution for filtering requirements in all sectors.**

**LMP filters are available in single, manifold and duplex versions (LMD series).**

## FILTER SIZING

**For the proper corrective factor Y see chapter at page 24**



# Low & Medium Pressure filters



LMP 110 - 120 - 123 MULTIPORT	page 325
LMP 210 - 211	341
LMP 400 - 401 & 430 - 431	351
LMP 950 - 951	363
LMP 952 - 953 - 954	371
LMD 211	383
LMD 400 - 401 & 431	391
LMD 951	407

Filter element according to DIN 24550	page 415
LDP - LDD	417
LMP 900 - 901	427
LMP 902 - 903	435

INDICATORS	page 444
ACCESSORIES	page 450









Low & Medium Pressure filters

# LMP 110-120-123 series

MULTIPOINT

Maximum working pressure up to 8 MPa (80 bar) - Flow rate up to 175 l/min



# LMP 110-120-123

MULTIPORT

## GENERAL INFORMATION

### Description

### Technical data

#### Low & Medium Pressure filters

**Maximum working pressure up to 8 MPa (80 bar)**  
**Flow rate up to 175 l/min**

LMP110 is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1", for a maximum return flow rate of 200 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators
- Multiport and multifunction schemes, to meet any type of application.
- LMP112: 3/4" additional input port
- LMP116: 3/4" additional output port
- LMP118: 3/4" bypass port, to send the bypass flow to the reservoir instead of the system
- LMP119: 3/4" relief port, to relief the input pressure in the filter, protecting the components downstream the filter against back pressure caused by the pressure drop (cold starts)
- LMP120: connections placed in the same side
- LMP122: connections placed in the same side and 1" additional output port
- LMP123: 2 and 3 bar integrated relief valve

#### Common applications:

Delivery lines, in any low pressure industrial equipment or mobile machines

#### Filter housing materials

- Head: Aluminium
- Housing: Cataphoresis - Painted Steel
- Bypass valve: Brass - Aluminium

#### Pressure

- Test pressure: 12 MPa (120 bar)
- Burst pressure:
  - LMP 110: 29 MPa (290 bar)
  - LMP 120/130: 38 MPa (380 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 8 MPa (80 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N - W: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

LMP MULTIPORT filters are provided for vertical mounting



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

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>LMP 110-112-116-118-119</b>		1.60	1.80	2.10	2.60		0.75	0.81	1.11	1.53
<b>LMP 120-122</b>		1.90	2.10	2.40	2.90		0.75	0.81	1.11	1.53
<b>LMP 123</b>		1.70	1.90	2.20	2.70		0.75	0.81	1.11	1.53

## GENERAL INFORMATION

## LMP 110-120-123 MULTIPORT

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

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90 M250	P10	P25
LMP 110	1	40	42	65	69	85	163	117	120
	2	49	57	83	83	101	163	136	138
	3	66	70	92	102	124	164	142	144
	4	86	102	118	124	144	165	148	149
LMP 112	1	36	38	55	57	67	105	84	86
	2	44	49	66	66	76	105	93	94
	3	56	58	71	77	87	106	96	97
	4	67	77	85	88	97	106	99	99
LMP 116	1	36	38	54	56	64	96	79	80
	2	43	49	63	64	72	96	86	87
	3	54	57	68	73	82	96	88	89
	4	65	73	79	82	89	96	91	91
LMP 118	1	40	42	65	69	85	163	117	120
	2	49	57	83	83	101	163	136	138
	3	66	70	92	102	124	164	142	144
	4	86	102	118	124	144	165	148	149
LMP 120	1	40	43	66	70	87	172	121	125
	2	50	58	85	85	104	172	142	144
	3	67	71	94	105	129	173	149	151
	4	88	106	122	129	151	174	155	157
LMP 122	1	39	42	64	67	81	146	109	111
	2	49	56	80	80	96	146	124	126
	3	65	68	88	96	114	146	129	130
	4	82	97	110	115	131	147	134	135

#### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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

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

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

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90	P10	P25
LMP 123	1	35	37	50	52	59	83	70	71
	2	41	46	58	58	65	83	76	76
	3	51	53	62	65	72	83	77	78
	4	59	65	70	72	78	83	79	79

#### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 2.7$ bar.

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

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

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

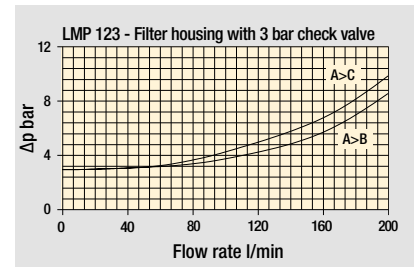
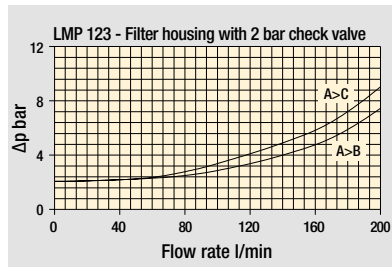
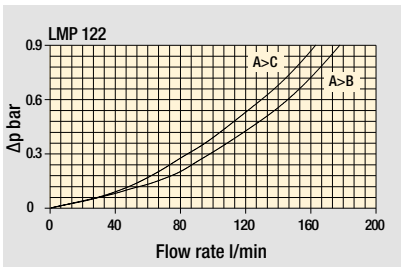
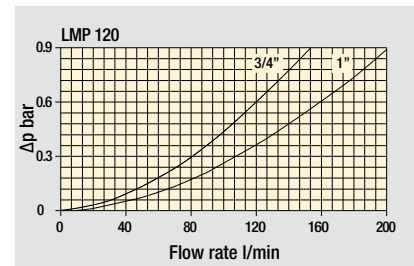
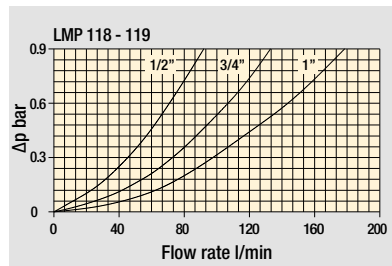
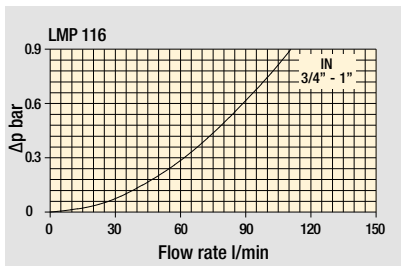
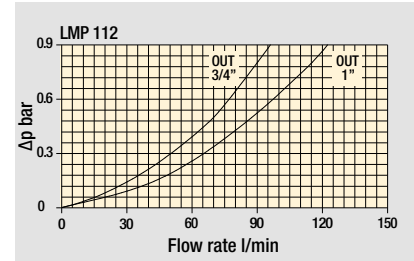
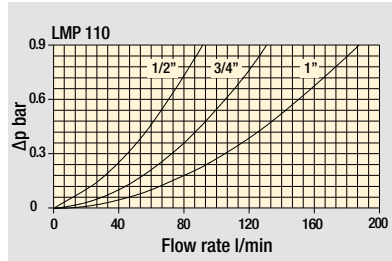
# LMP 110-120-123

MULTIPORT

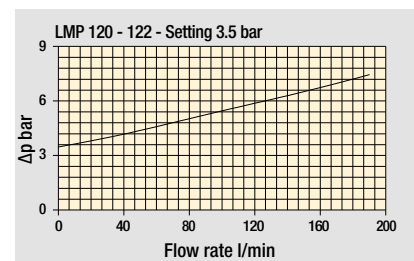
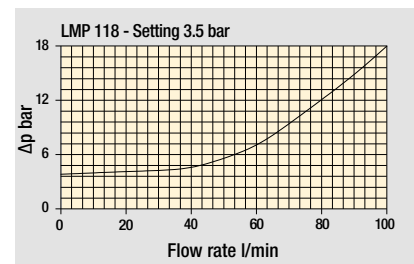
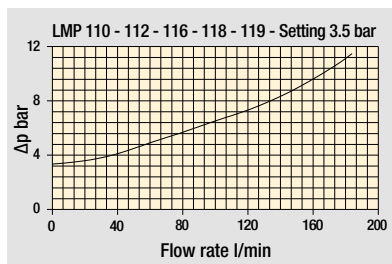
# GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop




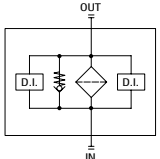
The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

# GENERAL INFORMATION


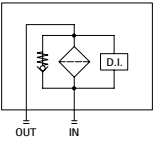
# LMP 110-120-123 MULTI-PORT

## Hydraulic symbols - Multiport styles


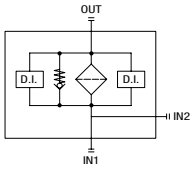
**LMP 110** In-Line filter


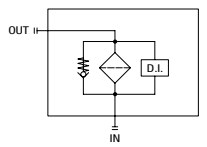
**LMP 120** Port IN-OUT on the same side


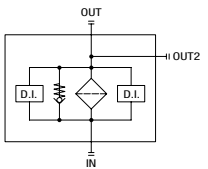
**LMP 112** Double IN port


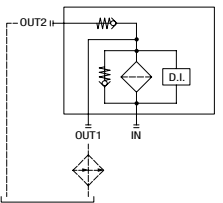
**LMP 122** Lateral OUT port high flow


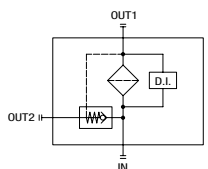
**LMP 116** Double OUT port


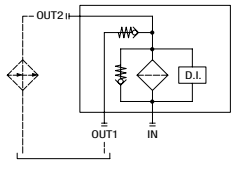
**LMP 123** Bypass valve for heat exchanger high flow  
Type 1


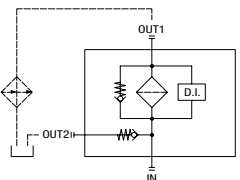
**LMP 118** Bypass lateral  
Always cleaning fluid in OUT port

**LMP 123** Bypass valve for heat exchanger high flow  
Type 2

**LMP 119** Safety valve 6 bar for heat exchanger

# LMP MULTI-PORT LMP110 - LMP112 - LMP116

## Designation & Ordering code

COMPLETE FILTER	
Series and size <b>LMP110</b>   <b>LMP112</b>   <b>LMP116</b>	Configuration example: <b>LMP112</b>   <b>4</b>   <b>B</b>   <b>A</b>   <b>D</b>   <b>1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>
Length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>	
Bypass valve <b>S</b> Without bypass   <b>B</b> 3.5 bar	
Seals and treatments	Filtration rating
<b>A</b> NBR	Axx Mxx Pxx
<b>V</b> FPM	• • •
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	• • •
Connections	
	Aux (only LMP 112 - 116)
<b>A</b> G 3/4"	G 3/4"
<b>B</b> G 1"	G 3/4"
<b>C</b> 3/4" NPT	3/4" NPT
<b>D</b> 1" NPT	3/4" NPT
<b>E</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
<b>F</b> SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
Connection for differential indicator	
<b>1</b> Without	
<b>2</b> With standard connection	
<b>3</b> With connection on the opposite side	
<b>6</b> With two connections on both sides	
Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
	Element Δp <b>N</b> 20 bar
	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

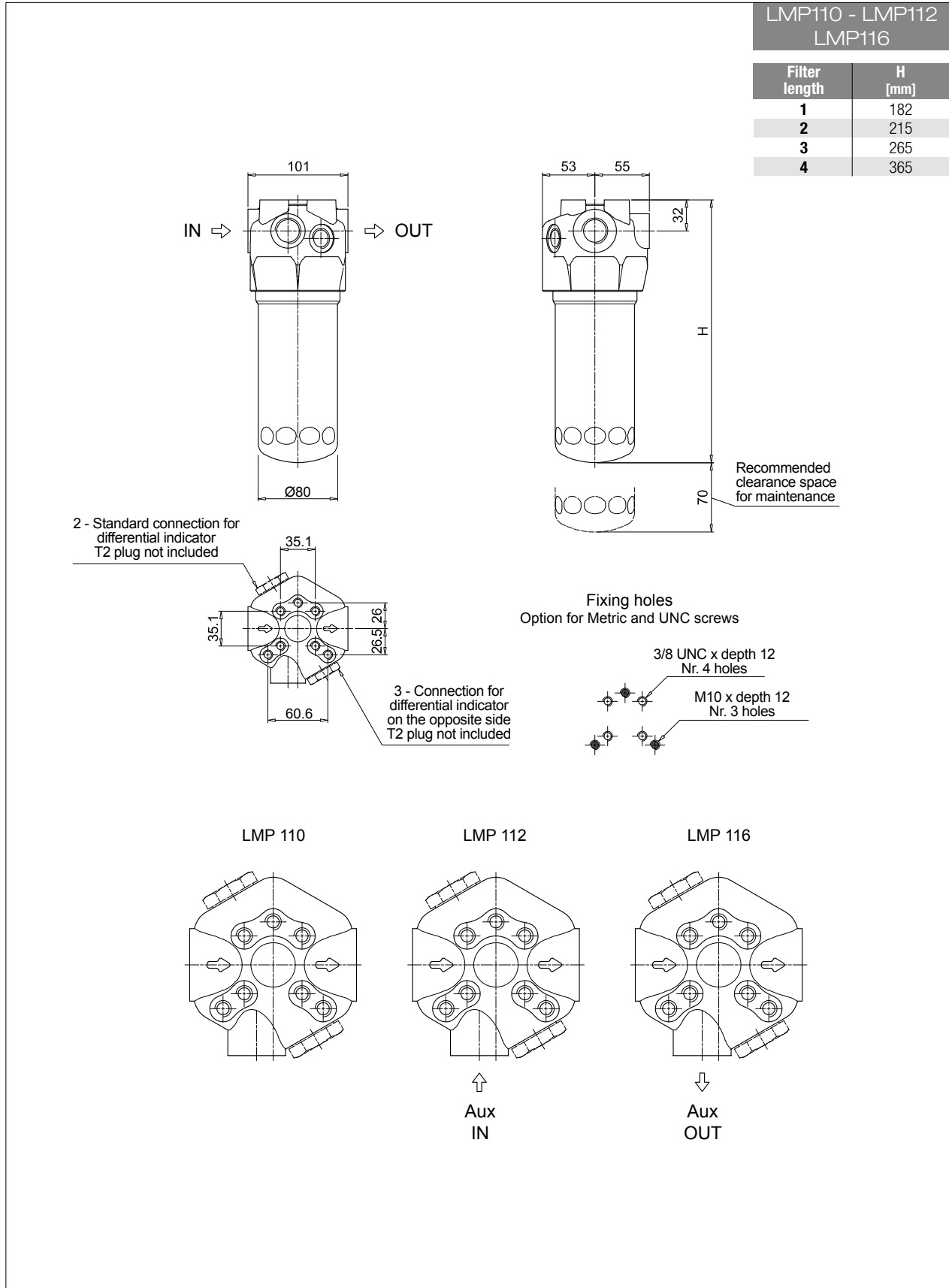
FILTER ELEMENT	
Element series and size <b>CU110</b>	Configuration example: <b>CU110</b>   <b>4</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>
Element length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>	
Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
Seals	Filtration rating
<b>A</b> NBR	Axx Mxx Pxx
<b>V</b> FPM	• • •
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	• • •
	Element Δp <b>N</b> 20 bar
	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
<b>Differential indicators</b>	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		

# LMP110 - LMP112 - LMP116

## LMP MULTI-PORT

### Dimensions



# LMP MULTIPOINT LMP118 - LMP119

## Designation & Ordering code

COMPLETE FILTER	
Series and size <b>LMP118   LMP119</b>	Configuration example: <b>LMP118</b>   <b>4</b>   <b>B</b>   <b>A</b>   <b>D</b>   <b>1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>
Length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>	
Bypass valve <b>B</b> 3.5 bar	
Seals and treatments	Filtration rating
<b>A</b> NBR	Axx Mxx Pxx
<b>V</b> FPM	• • •
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	• • •
Connections	
	Aux OUT
<b>A</b> G 3/4"	G 3/4"
<b>B</b> G 1"	G 3/4"
<b>C</b> 3/4" NPT	3/4" NPT
<b>D</b> 1" NPT	3/4" NPT
<b>E</b> SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
<b>F</b> SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
Connection for differential indicator <b>1</b> Without <b>2</b> With standard connection	
Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
	Element Δp <b>N</b> 20 bar
	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

FILTER ELEMENT	
Element series and size <b>CU110</b>	Configuration example: <b>CU110</b>   <b>4</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>
Element length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>	
Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
Seals	Filtration rating
<b>A</b> NBR	Axx Mxx Pxx
<b>V</b> FPM	• • •
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	• • •
	Element Δp <b>N</b> 20 bar
	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
<b>Differential indicators</b>	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		



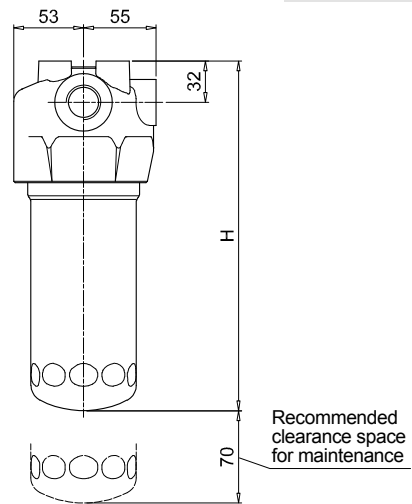
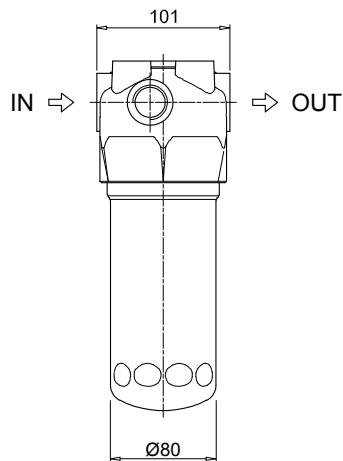
# LMP118 - LMP119

## LMP MULTIPORT

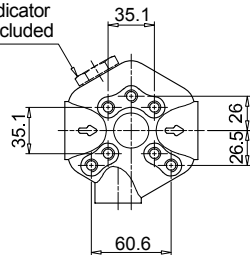
### Dimensions

#### LMP118 - LMP119

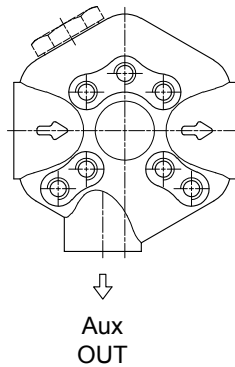
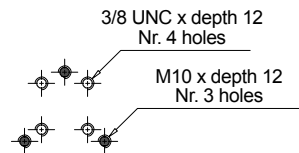
Filter length	H [mm]
1	182
2	215
3	265
4	365



Connection for differential indicator  
T2 plug not included



Fixing holes  
Option for Metric and UNC screws



# LMP MULTIPORT LMP120 - LMP122

## Designation & Ordering code

COMPLETE FILTER			
Series and size <b>LMP120</b>   <b>LMP122</b>	Configuration example: <b>LMP120</b> <b>4</b> <b>B</b> <b>A</b> <b>D</b> <b>1</b> <b>A10</b> <b>N</b> <b>P01</b>		
Length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>			
Bypass valve <b>S</b> Without bypass	<b>B</b> 3.5 bar		
Seals and treatments	Filtration rating		
<b>A</b> NBR	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>
<b>V</b> FPM			
<b>W</b> NBR compatible with fluids HFA-HFB-HFC			
Connections	LMP120	LMP122	
<b>A</b> G 3/4"			
<b>B</b> G 1"			
<b>C</b> 3/4" NPT			
<b>D</b> 1" NPT			
<b>E</b> SAE 12 - 1 1/16" - 12 UN			
<b>F</b> SAE 16 - 1 5/16" - 12 UN			
Connection for differential indicator <b>1</b> Without <b>2</b> With standard connection			
Filtration rating (filter media)			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm		
Element $\Delta p$ <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized		

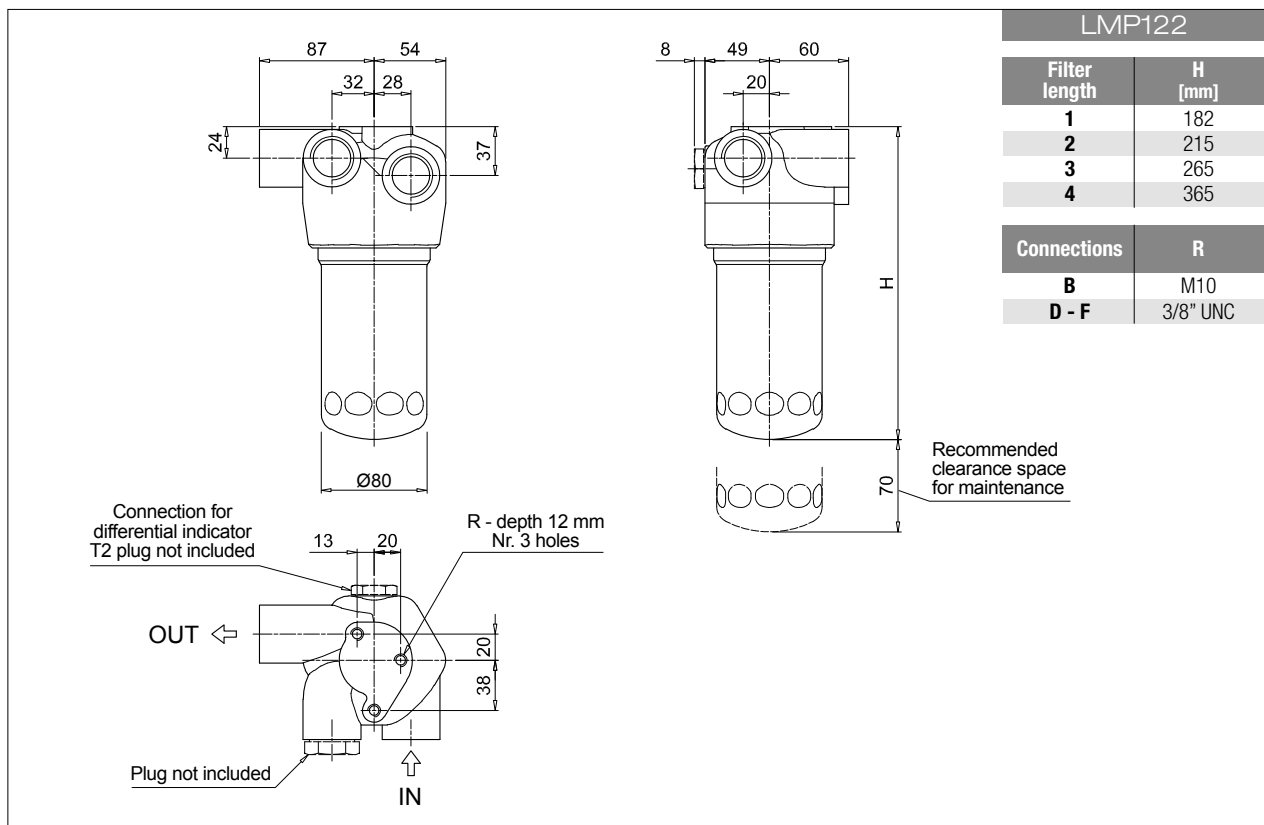
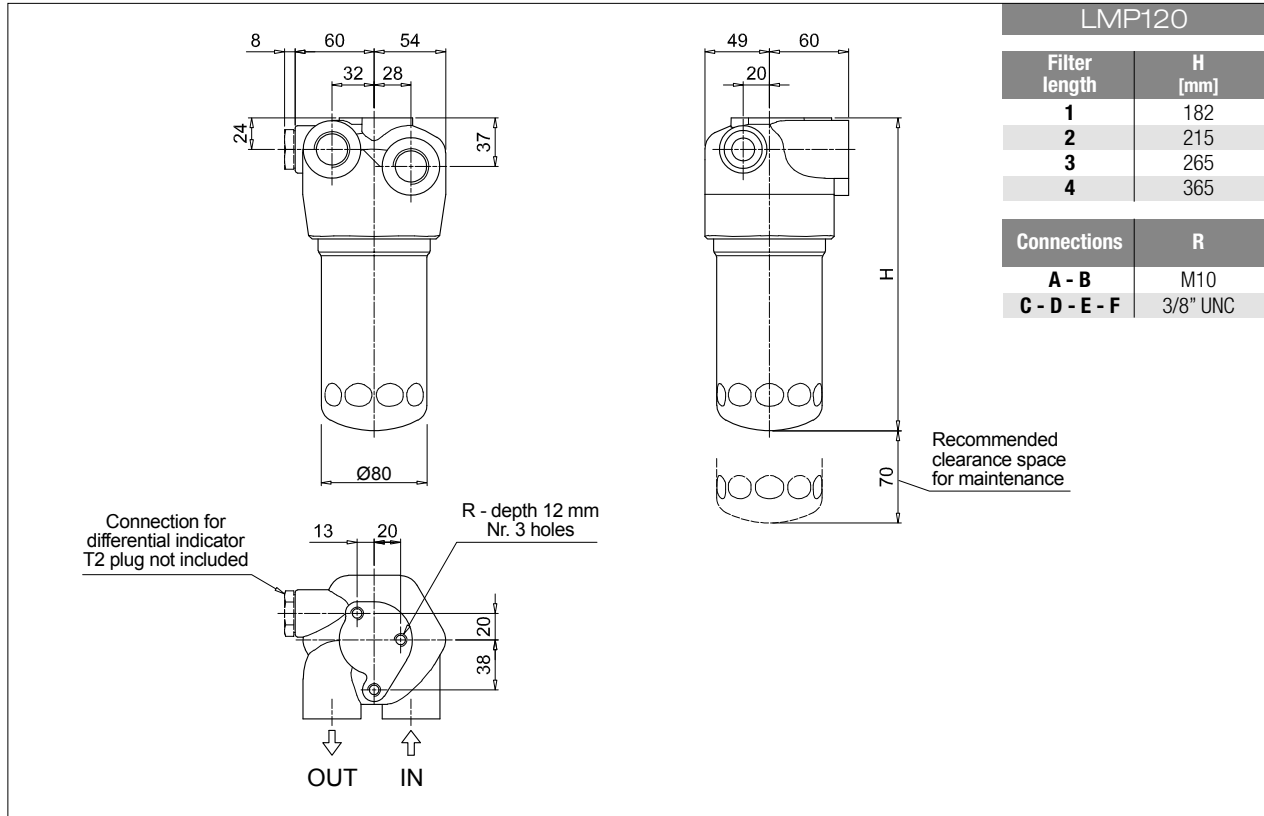
FILTER ELEMENT			
Element series and size <b>CU110</b>	Configuration example: <b>CU110</b> <b>4</b> <b>A10</b> <b>A</b> <b>N</b> <b>P01</b>		
Element length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>			
Filtration rating (filter media)			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm		
Seals	Filtration rating		
<b>A</b> NBR	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>
<b>V</b> FPM			
<b>W</b> NBR compatible with fluids HFA-HFB-HFC			
Element $\Delta p$ <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized		

ACCESSORIES			
Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
Additional features	page		
<b>T2</b> Plug	449		

# LMP120 - LMP122

## LMP MULTI-PORT

### Dimensions



# LMP MULTI-PORT LMP123

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>		Configuration example: <b>LMP123</b>   <b>4</b>   <b>R</b>   <b>A</b>   <b>F</b>   <b>1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>									
<b>LMP123</b>											
<b>Length</b>		1   2   3   4									
<b>Valves</b>	<b>Bypass</b>	<b>OUT to cooler</b>	<b>Check valve</b>								
<b>C</b>	without	front	2 bar								
<b>D</b>			3 bar								
<b>G</b>		side	2 bar								
<b>H</b>			3 bar								
<b>M</b>	3.5 bar	front	2 bar								
<b>N</b>			3 bar								
<b>Q</b>		side	2 bar								
<b>R</b>			3 bar								
<b>Seals and treatments</b>		<b>Filtration rating</b>									
<b>A</b>	NBR	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>							
<b>V</b>	FPM	•	•	•							
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC	•	•								
<b>Connections</b>											
<b>B</b>	G 1"										
<b>F</b>	SAE 16 - 1 5/16" - 12 UN										
<b>Connection for differential indicator</b>											
<b>1</b>	Without										
<b>2</b>	With standard connection										
<b>Filtration rating (filter media)</b>											
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm								
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm								
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm								
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>	Resin impregnated paper 10 µm								
<b>A25</b>	Inorganic microfiber 25 µm	<b>P25</b>	Resin impregnated paper 25 µm								
<b>Element Δp</b>		<b>Execution</b>									
<b>N</b> 20 bar		<b>P01</b> MP Filtri standard									
		<b>Pxx</b> Customized									

### FILTER ELEMENT

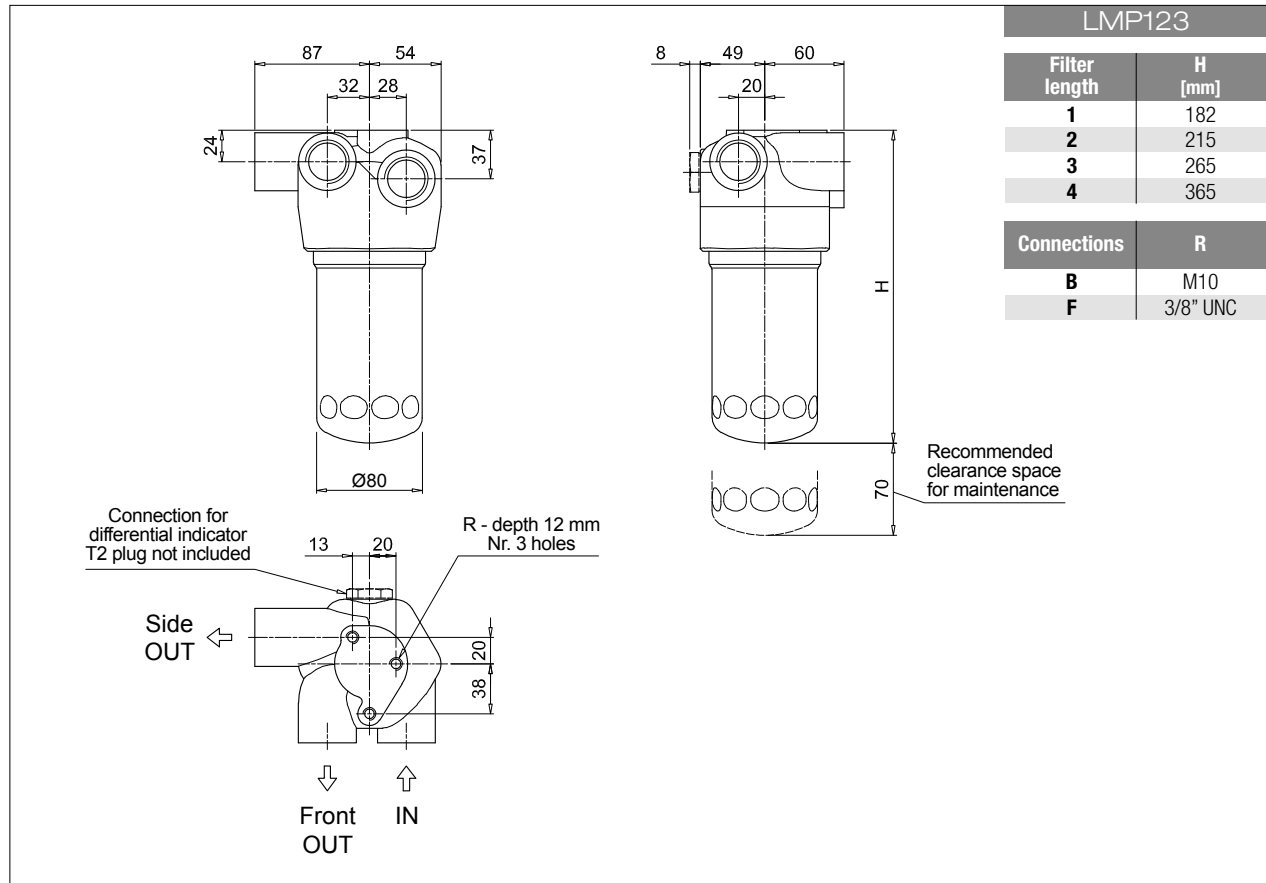
<b>Element series and size</b>		Configuration example: <b>CU110</b>   <b>4</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>									
<b>CU110</b>											
<b>Element length</b>		1   2   3   4									
<b>Filtration rating (filter media)</b>											
<b>A03</b>	Inorganic microfiber 3 µm	<b>M25</b>	Wire mesh 25 µm								
<b>A06</b>	Inorganic microfiber 6 µm	<b>M60</b>	Wire mesh 60 µm								
<b>A10</b>	Inorganic microfiber 10 µm	<b>M90</b>	Wire mesh 90 µm								
<b>A16</b>	Inorganic microfiber 16 µm	<b>P10</b>	Resin impregnated paper 10 µm								
<b>A25</b>	Inorganic microfiber 25 µm	<b>P25</b>	Resin impregnated paper 25 µm								
<b>Seals</b>		<b>Filtration rating</b>									
<b>A</b>	NBR	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>							
<b>V</b>	FPM	•	•	•							
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC	•	•								
<b>Element Δp</b>		<b>Execution</b>									
<b>N</b> 20 bar		<b>P01</b> MP Filtri standard									
		<b>Pxx</b> Customized									

### ACCESSORIES

<b>Differential indicators</b>		page			page
<b>DEA</b>	Electrical differential indicator	445	<b>DTA</b>	Electronic differential indicator	448
<b>DEM</b>	Electrical differential indicator	445-446	<b>DVA</b>	Visual differential indicator	448
<b>DLA</b>	Electrical / visual differential indicator	446-447	<b>DVM</b>	Visual differential indicator	448
<b>DLE</b>	Electrical / visual differential indicator	447			
<b>Additional features</b>		page			
<b>T2</b>	Plug	449			

# LMP123 LMP MULTIPORT

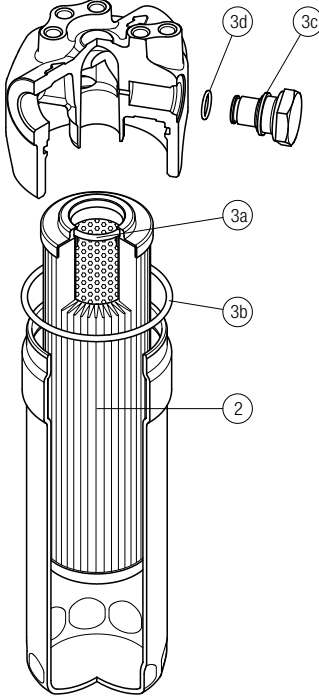
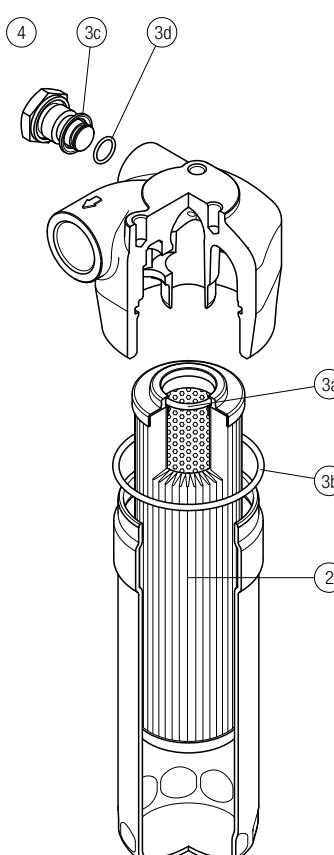
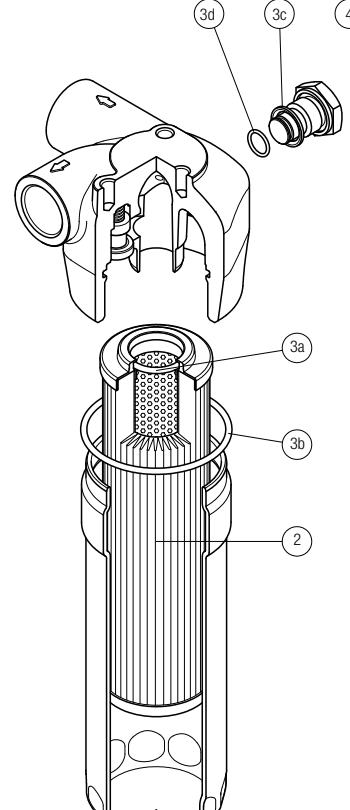
## Dimensions



# LMP 110-120 SPARE PARTS

MULTIPOINT

Order number for spare parts

	LMP 110 - 112 - 116 - 118 - 119	LMP 120	LMP 122 - 123
			
Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)	Q.ty: 1 pc. <b>4</b>
Filter series	Filter element	Seal Kit code number NBR      FPM	Indicator connection plug NBR      FPM
LMP 110-112-116 -118-119	See order table	02050478    02050479	T2H      T2V
LMP 120			
LMP 122-123			

# LMP 110-120

MULTIPORT

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Low & Medium Pressure filters

# LMP 210-211

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 365 l/min



# LMP 210-211 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 6 MPa (60 bar)**  
**Flow rate up to 365 l/min**

LMP210 is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools. They are also suitable for the off-line filtration of small reservoirs. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 1 1/2", for a maximum flow rate of 330 l/min (LMP210)
- Female threaded connections up to 1 1/2", for a maximum return flow rate of 330 l/min (LMP211)
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any low pressure industrial equipment or mobile machines

### Filter housing materials

- Head: Aluminium
- Bowl: Cathophoretic Painted Steel
- Bypass valve: AISI 304 - Nylon

### Pressure

- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

Inlet/Outlet In-Line

### Note

LMP 210 - 211 filters are provided for vertical mounting



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

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]			
	Length	1	2	3	Length	1	2	3
<b>LMP 210-211</b>		3.10	4.80	6.40		1.60	2.10	2.80

# GENERAL INFORMATION LMP 210-211

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

Filter series	Length	Filter element design - N Series										
		A03	A06	A10	A16	A25	M25	M60	M90	M250	P10	P25
LMP 210	1	106	130	190	200	221	286	287	287	288	261	265
	2	153	175	220	237	249	288	289	290	290	265	269
	3	204	214	248	260	265	289	290	291	291	277	281
LMP 211	1	118	149	227	240	269	358	359	360	361	324	330
	2	178	207	268	292	307	361	362	363	364	329	335
	3	247	260	306	323	329	362	363	364	365	345	351

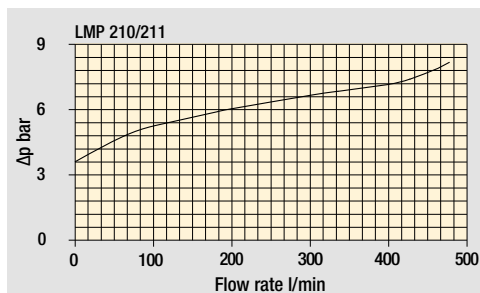
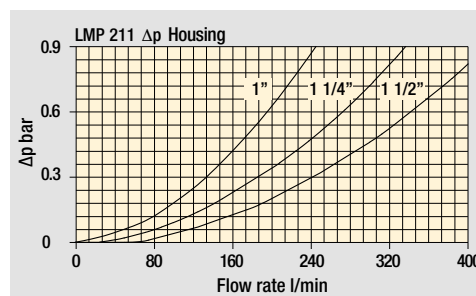
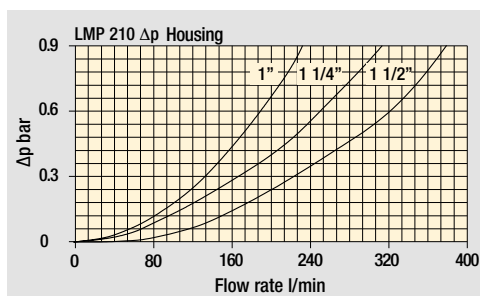
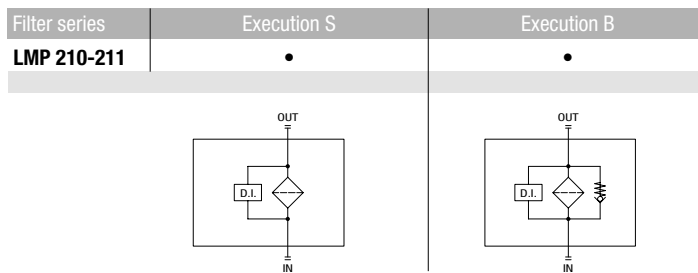
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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

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

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

## Hydraulic symbols



## Pressure drop

Filter housings  
 $\Delta p$  pressure drop

Bypass valve  
pressure drop

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

# LMP 210

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>LMP210</b>	Configuration example: <b>LMP210</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>F1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>							
<b>Length</b> <b>1</b>   <b>2</b>   <b>3</b>								
<b>Bypass valve</b> <b>S</b> Without bypass   <b>B</b> 3.5 bar								
<b>Seals and treatments</b>	Filtration rating							
<b>A</b> NBR	<b>Axx</b>	<b>Mxx</b>	<b>Pxx</b>					
<b>V</b> FPM	•	•	•					
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•						
<b>Connections</b>								
<b>F1</b> 1" SAE 3000 psi/M								
<b>F2</b> 1 1/4" SAE 3000 psi/M								
<b>F3</b> 1 1/2" SAE 3000 psi/M								
<b>F4</b> 1" SAE 3000 psi/UNC								
<b>F5</b> 1 1/4" SAE 3000 psi/UNC								
<b>F6</b> 1 1/2" SAE 3000 psi/UNC								
<b>Filtration rating (filter media)</b>								
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm							
<b>WA025</b> Water absorber inorganic microfiber 25 µm								
	<b>Element Δp</b>			<b>Execution</b>				
	<b>N</b> 20 bar			<b>P01</b> MP Filtri standard				
				<b>Pxx</b> Customized				

### FILTER ELEMENT

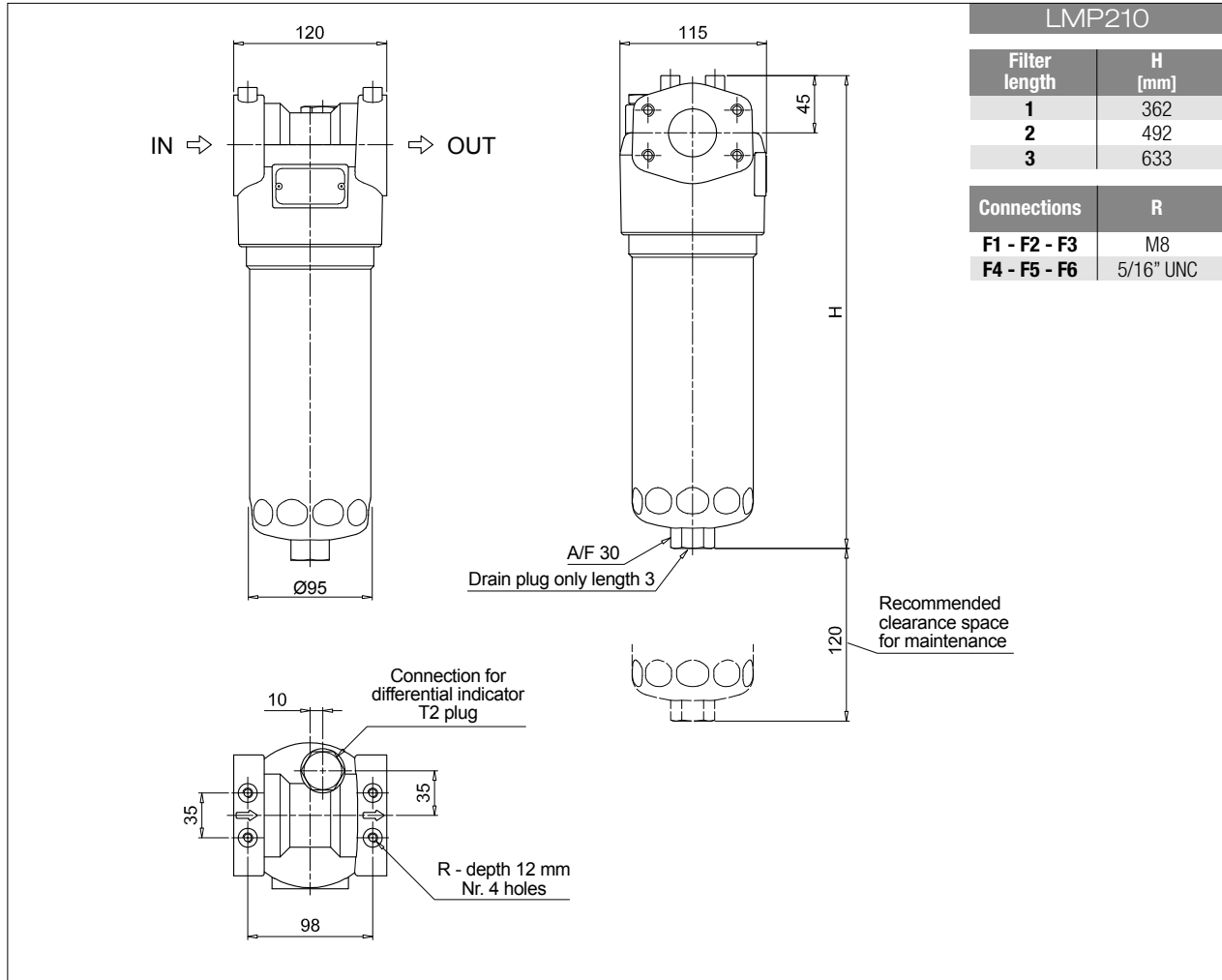
<b>Element series and size</b> <b>CU210</b>	Configuration example: <b>CU210</b>   <b>3</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>							
<b>Element length</b> <b>1</b>   <b>2</b>   <b>3</b>								
<b>Filtration rating (filter media)</b>								
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm							
<b>WA025</b> Water absorber inorganic microfiber 25 µm								
	<b>Element Δp</b>			<b>Execution</b>				
	<b>N</b> 20 bar			<b>P01</b> MP Filtri standard				
				<b>Pxx</b> Customized				

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		

# LMP 210

## Dimensions



# LMP 211

## Designation & Ordering code

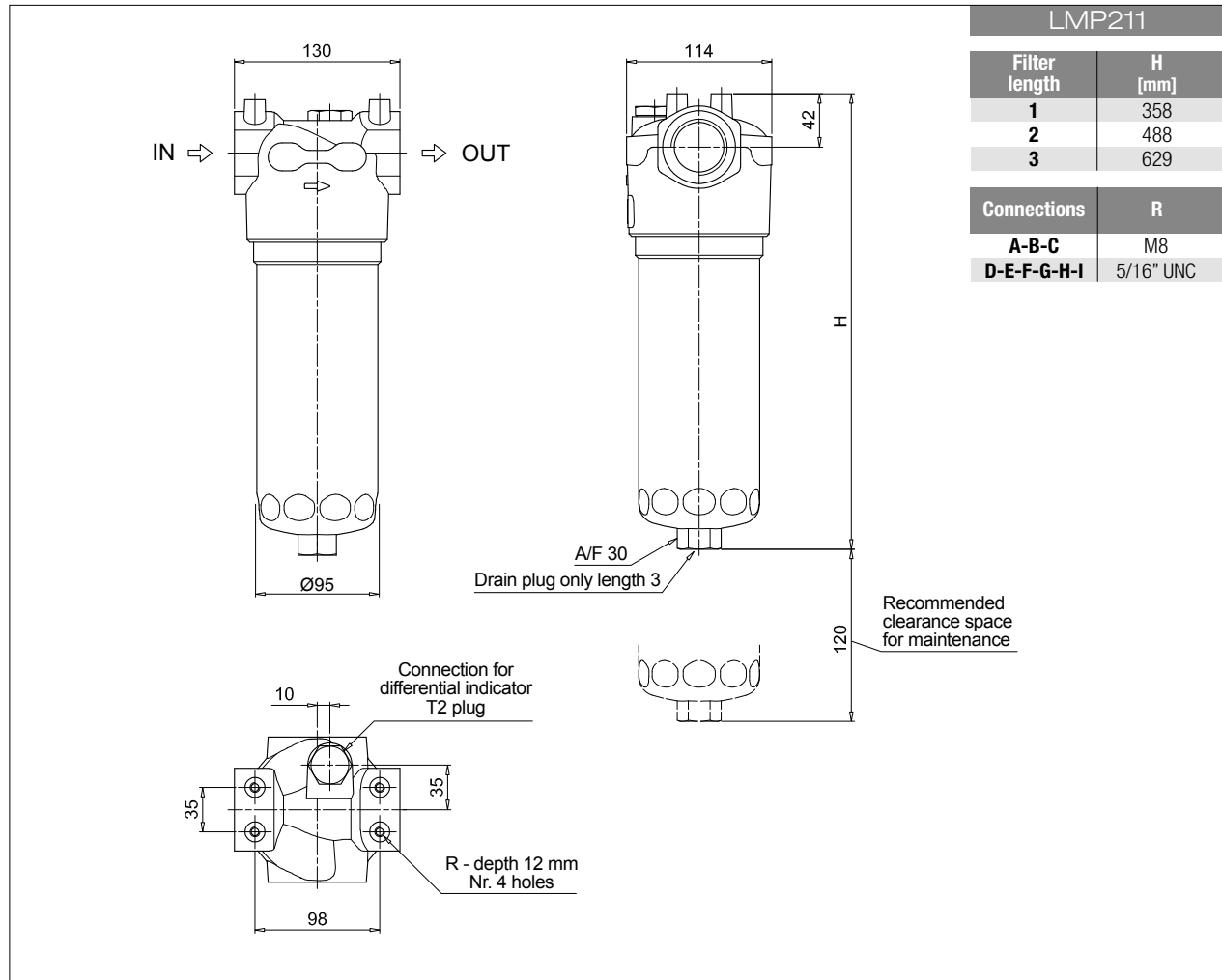
COMPLETE FILTER	
Series and size <b>LMP211</b>	Configuration example: <b>LMP211</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>D</b>   <b>6</b>   <b>A10</b>   <b>N</b>   <b>P01</b>
Length <b>1</b>   <b>2</b>   <b>3</b>	
Bypass valve <b>S</b> Without bypass   <b>B</b> 3.5 bar	
Seals and treatments	Filtration rating
<b>A</b> NBR	Axx Mxx Pxx
<b>V</b> FPM	• • •
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	• •
Connections	
<b>A</b> G 1"	
<b>B</b> G 1 1/4"	
<b>C</b> G 1 1/2"	
<b>D</b> 1" NPT	
<b>E</b> 1 1/4" NPT	
<b>F</b> 1 1/2" NPT	
<b>G</b> SAE 16 - 1 5/16" - 12 UN	
<b>H</b> SAE 20 - 1 5/8" - 12 UN	
<b>I</b> SAE 24 - 1 7/8" - 12 UN	
Connection for differential indicator <b>6</b> With plugged connection	
Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>WA025</b> Water absorber inorganic microfiber 25 µm	
Element Δp <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

FILTER ELEMENT	
Element series and size <b>CU210</b>	Configuration example: <b>CU210</b>   <b>3</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>
Element length <b>1</b>   <b>2</b>   <b>3</b>	
Filtration rating (filter media)	
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>WA025</b> Water absorber inorganic microfiber 25 µm	
Seals	Filtration rating
<b>A</b> NBR	Axx Mxx Pxx
<b>V</b> FPM	• • •
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	• •
Element Δp <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
<b>Differential indicators</b>	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		

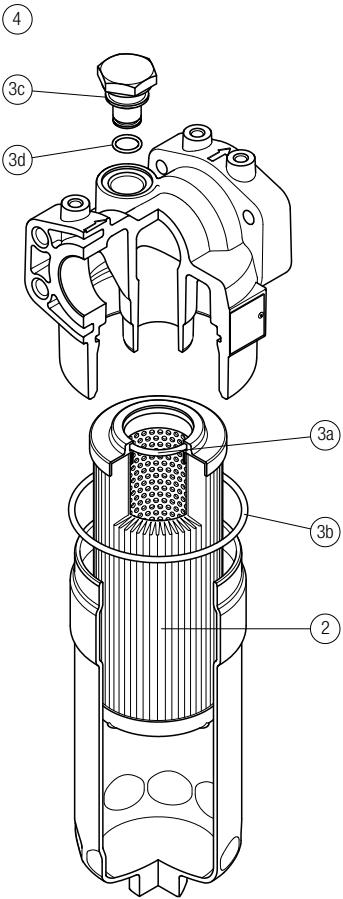
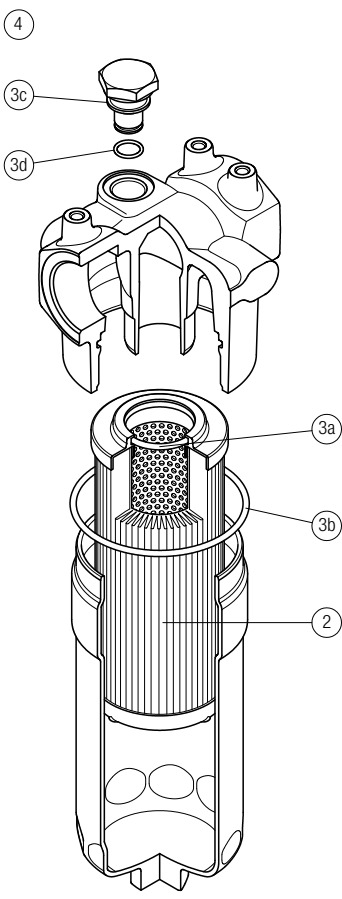
# LMP 211

## Dimensions



# LMP 210-211 SPARE PARTS

Order number for spare parts

LMP 210		LMP 211	
			
Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3d)	Q.ty: 1 pc. <b>4</b>
Filter series	Filter element	Seal Kit code number NBR	Indicator connection plug NBR
	See order table	FPM	FPM
<b>LMP 210-211</b>		02050435	T2H
		02050436	T2V



# LMP 210-211

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Low & Medium Pressure filters

# LMP 400-401 & 430-431 series

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 780 l/min



# LMP 400-401 & 430-431

## GENERAL INFORMATION

### Description

### Technical data

#### Low & Medium Pressure filters

**Maximum working pressure up to 6 MPa (60 bar)**  
**Flow rate up to 780 l/min**

LMP400 is a range of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.  
They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 2" and flanged connections up to 2 1/2", for a maximum flow rate of 740 l/min
- In line or 90° connections, to meet any type of application
- Base-mounting design also available, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Bypass valve: Steel

#### Pressure LMP 400 length 2 - 3 - 4

- Working pressure: 6 MPa (60 bar)
- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

#### Pressure LMP 400 length 5 - 6

- Working pressure: 5 MPa (50 bar)
- Test pressure: 7.5 MPa (75 bar)
- Burst pressure: 15 MPa (150 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 5 MPa (50 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

LMP 400 - 430: In-line Inlet/Outlet  
LMP 401 - 431: 90° Inlet/Outlet

#### Note

LMP 400 filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	2	3	4	5	6	Length	2	3	4	5	6
<b>LMP 400-401 &amp; 430-431</b>		7.20	8.10	8.80	11.90	14.40		3.50	5.00	6.50	9.50	13.50

GENERAL INFORMATION

LMP 400-401 & 430-431

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90 M250	P10	P25
LMP 400	2	205	244	370	411	515	720	524	556
	3	280	333	474	515	602	760	637	660
	4	347	400	535	564	637	769	660	688
	5	459	501	610	660	717	781	700	721
	6	504	575	676	689	728	783	708	727
LMP 401	2	200	236	347	382	468	628	475	501
	3	268	315	434	468	537	659	565	582
	4	328	373	484	507	565	665	582	603
	5	423	456	544	582	626	674	613	629
	6	459	516	594	604	634	676	619	633
LMP 430	5	459	501	610	660	717	781	700	721
	6	504	575	676	689	728	783	708	727
LMP 431	5	423	456	544	582	626	674	613	629
	6	459	516	594	604	634	676	619	633

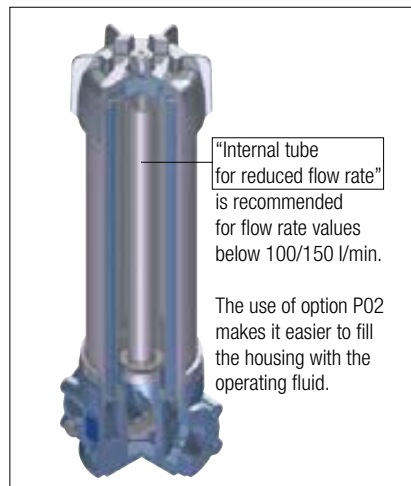
Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.

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

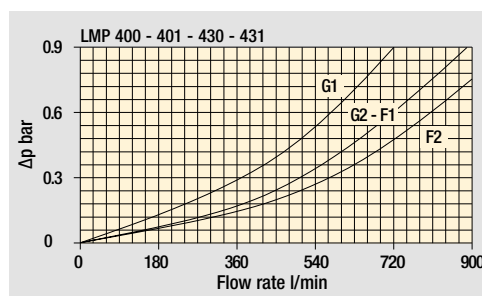
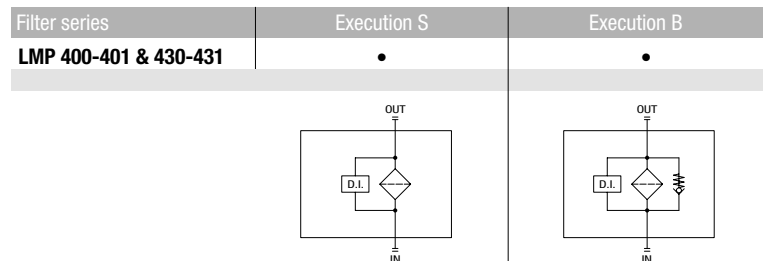
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

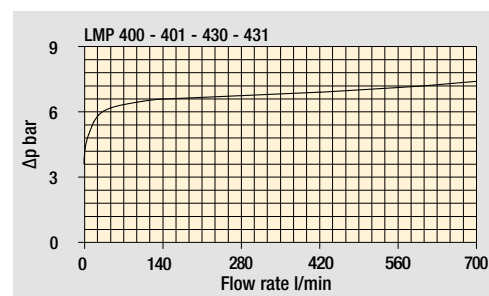
LMP 430-431: execution P02



Hydraulic symbols



Filter housings  
 $\Delta p$  pressure drop



Pressure drop  
Bypass valve  
pressure drop

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

# LMP 400-401

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>LMP401</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>G1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>							
<b>LMP400</b>   <b>LMP401</b>									
Length									
2   3   4   5   6									
Bypass valve									
<b>S</b> Without bypass		<b>B</b> 3.5 bar							
Seals and treatments		Filtration rating							
		Axx   Mxx   Pxx							
<b>A</b> NBR		• • •							
<b>V</b> FPM		• • •							
<b>W</b> NBR compatible with fluids HFA-HFB-HFC		• •							
Connections									
<b>G1</b> G 1 1/2"		<b>F1</b> 2" SAE 3000 psi/M							
<b>G2</b> G 2"		<b>F2</b> 2 1/2" SAE 3000 psi/M							
<b>G3</b> 1 1/2" NPT		<b>F3</b> 2" SAE 3000 psi/UNC							
<b>G4</b> 2" NPT		<b>F4</b> 2 1/2" SAE 3000 psi/UNC							
<b>G5</b> SAE 24 - 1 7/8" - 12 UN									
<b>G6</b> SAE 32 - 2 1/2" - 12 UN									
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>WA025</b> Water absorber inorganic microfiber 25 µm									
Element Δp		Execution							
<b>N</b> 20 bar		Filter length							
		2   3   4   5   6							
		<b>P01</b> MP Filtri standard • • • • •							
		<b>P02</b> Maintenance from the bottom of the housing • •							
		<b>Pxx</b> Customized							

### FILTER ELEMENT

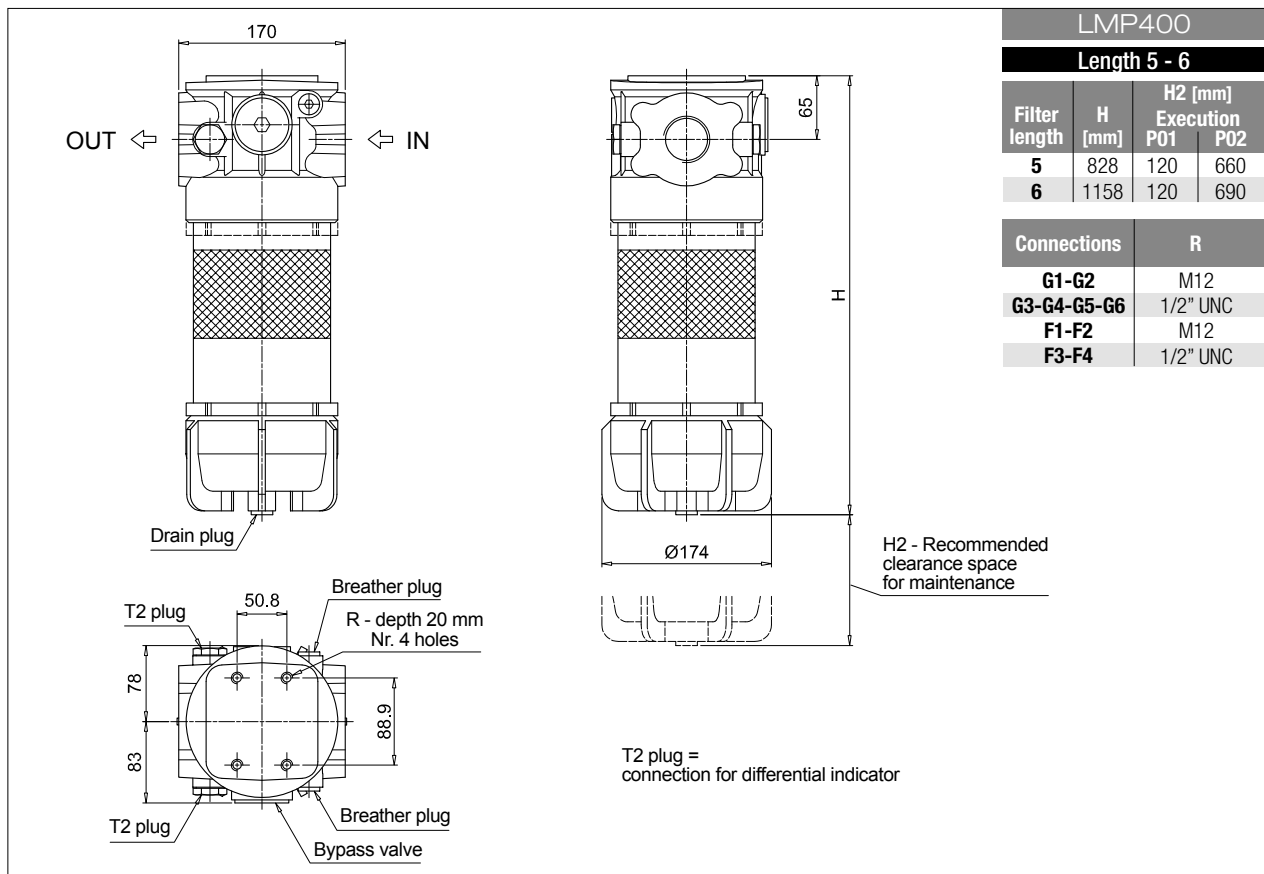
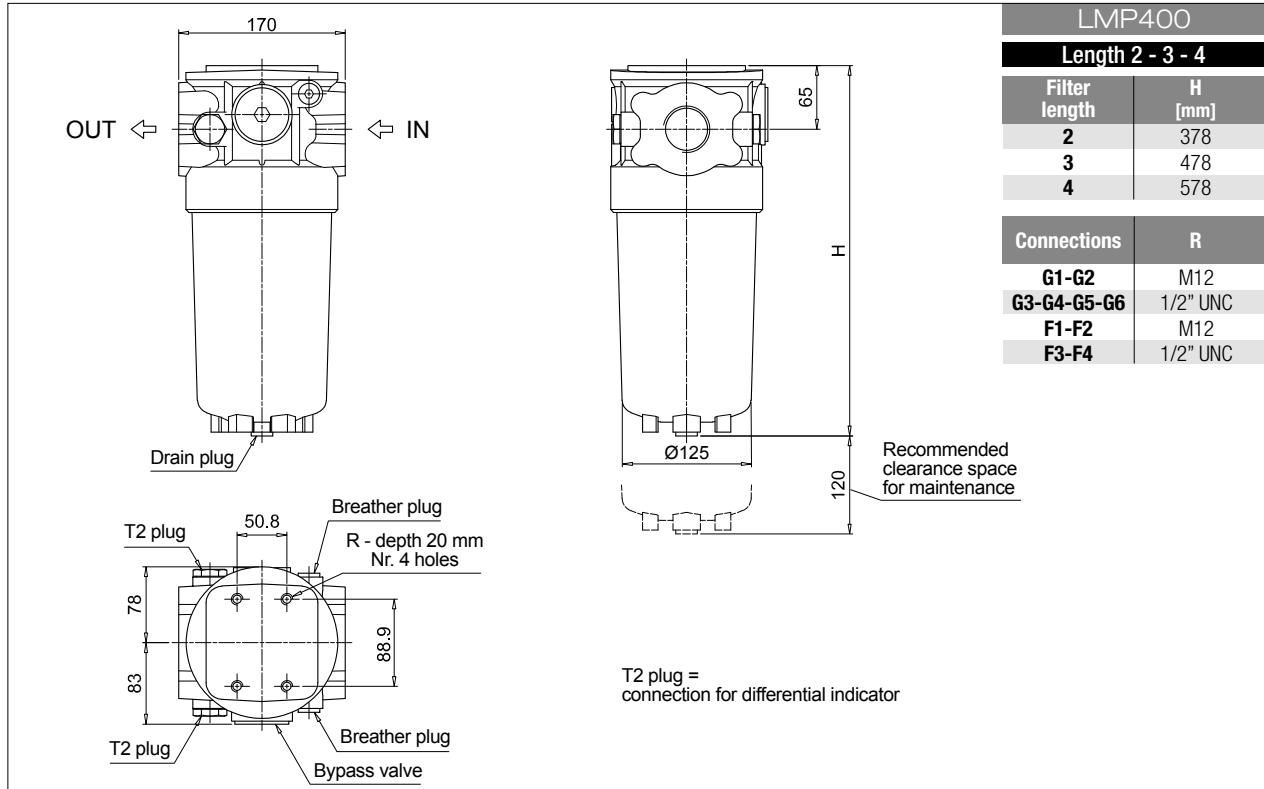
Element series and size		Configuration example: <b>CU400</b>   <b>3</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>					
<b>CU400</b>							
Element length							
2   3   4   5   6							
Filtration rating (filter media)							
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm					
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm					
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm					
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm					
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm					
<b>WA025</b> Water absorber inorganic microfiber 25 µm							
Seals		Filtration rating					
		Axx   Mxx   Pxx					
<b>A</b> NBR		• • •					
<b>V</b> FPM		• • •					
<b>W</b> NBR compatible with fluids HFA-HFB-HFC		• •					
Element Δp		Execution					
<b>N</b> 20 bar		<b>P01</b> MP Filtri standard					
		<b>Pxx</b> Customized					

### ACCESSORIES

Differential indicators		page			page
<b>DEA</b> Electrical differential indicator		445	<b>DTA</b> Electronic differential indicator		448
<b>DEM</b> Electrical differential indicator		445-446	<b>DVA</b> Visual differential indicator		448
<b>DLA</b> Electrical / visual differential indicator		446-447	<b>DVM</b> Visual differential indicator		448
<b>DLE</b> Electrical / visual differential indicator		447			
Additional features		page			
<b>T2</b> Plug		449			

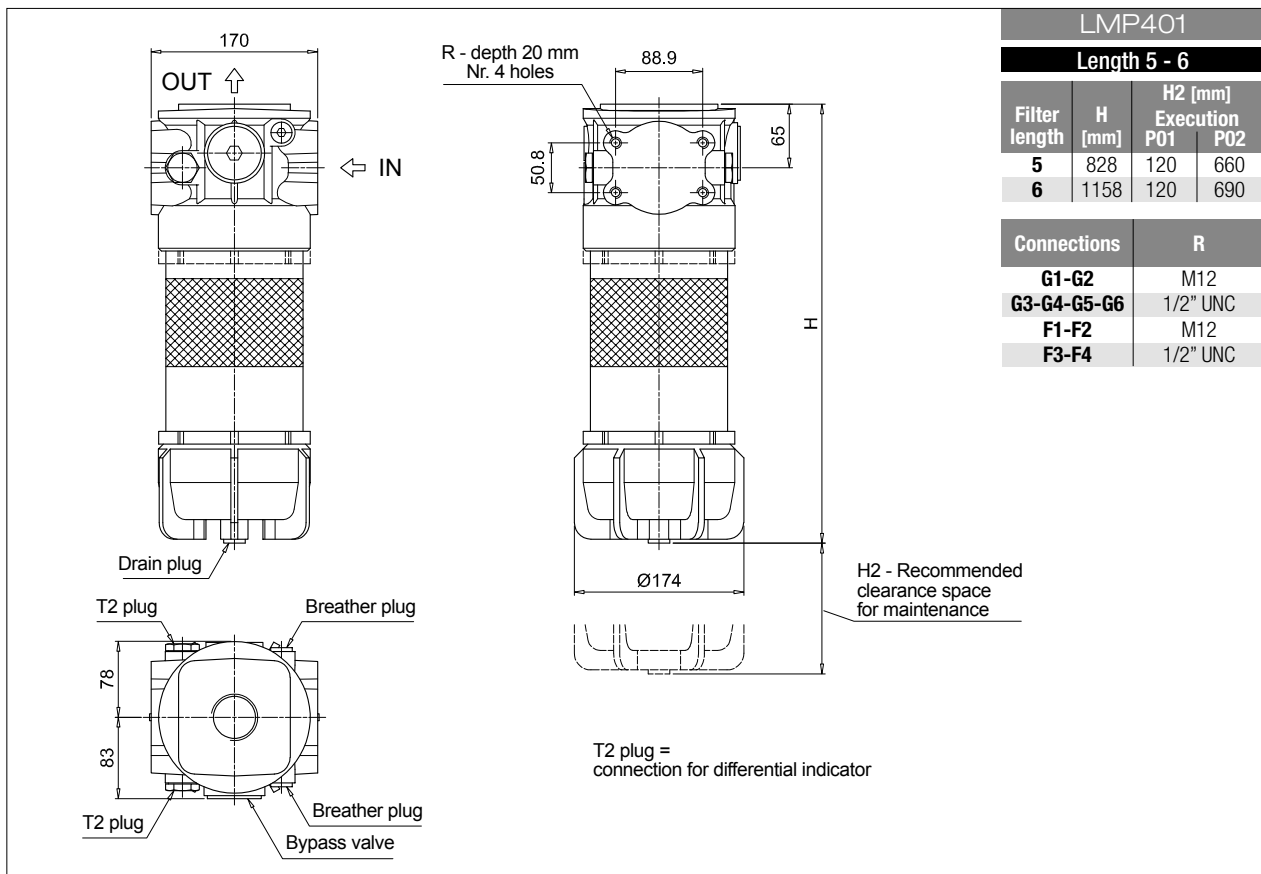
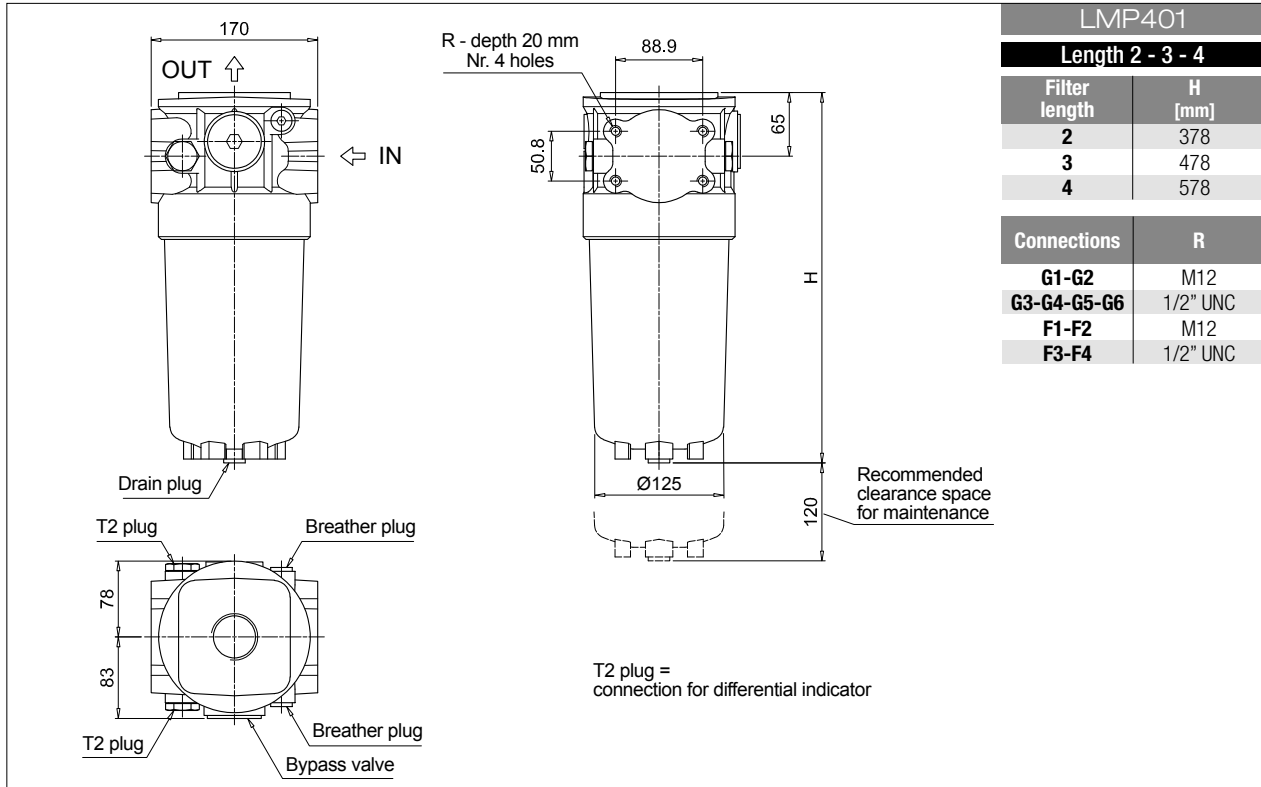
# LMP 400-401

## Dimensions



# LMP 400-401

## Dimensions





# LMP 400-401

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# LMP 430-431

## Designation & Ordering code

### COMPLETE FILTER

Series and size		Configuration example: <b>LMP431</b>   <b>5</b>   <b>B</b>   <b>A</b>   <b>G1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>							
<b>LMP430</b>   <b>LMP431</b>									
Length									
<b>5</b>   <b>6</b>									
Bypass valve									
<b>S</b> Without bypass		<b>B</b> 3.5 bar							
Seals and treatments		Filtration rating							
		Axx		Mxx		Pxx			
<b>A</b> NBR		•		•		•			
<b>V</b> FPM		•		•		•			
<b>W</b> NBR compatible with fluids HFA-HFB-HFC		•		•					
Connections									
<b>G1</b> G 1 1/2"		<b>F1</b> 2" SAE 3000 psi/M							
<b>G2</b> G 2"		<b>F2</b> 2 1/2" SAE 3000 psi/M							
<b>G3</b> 1 1/2" NPT		<b>F3</b> 2" SAE 3000 psi/UNC							
<b>G4</b> 2" NPT		<b>F4</b> 2 1/2" SAE 3000 psi/UNC							
<b>G5</b> SAE 24 - 1 7/8" - 12 UN									
<b>G6</b> SAE 32 - 2 1/2" - 12 UN									
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>WA025</b> Water absorber inorganic microfiber 25 µm									
Element Δp		Execution							
<b>N</b> 20 bar		<b>P01</b> MP Filtri standard							
		<b>P02</b> With internal tube for reduced flow rate							
		<b>Pxx</b> Customized							

### FILTER ELEMENT

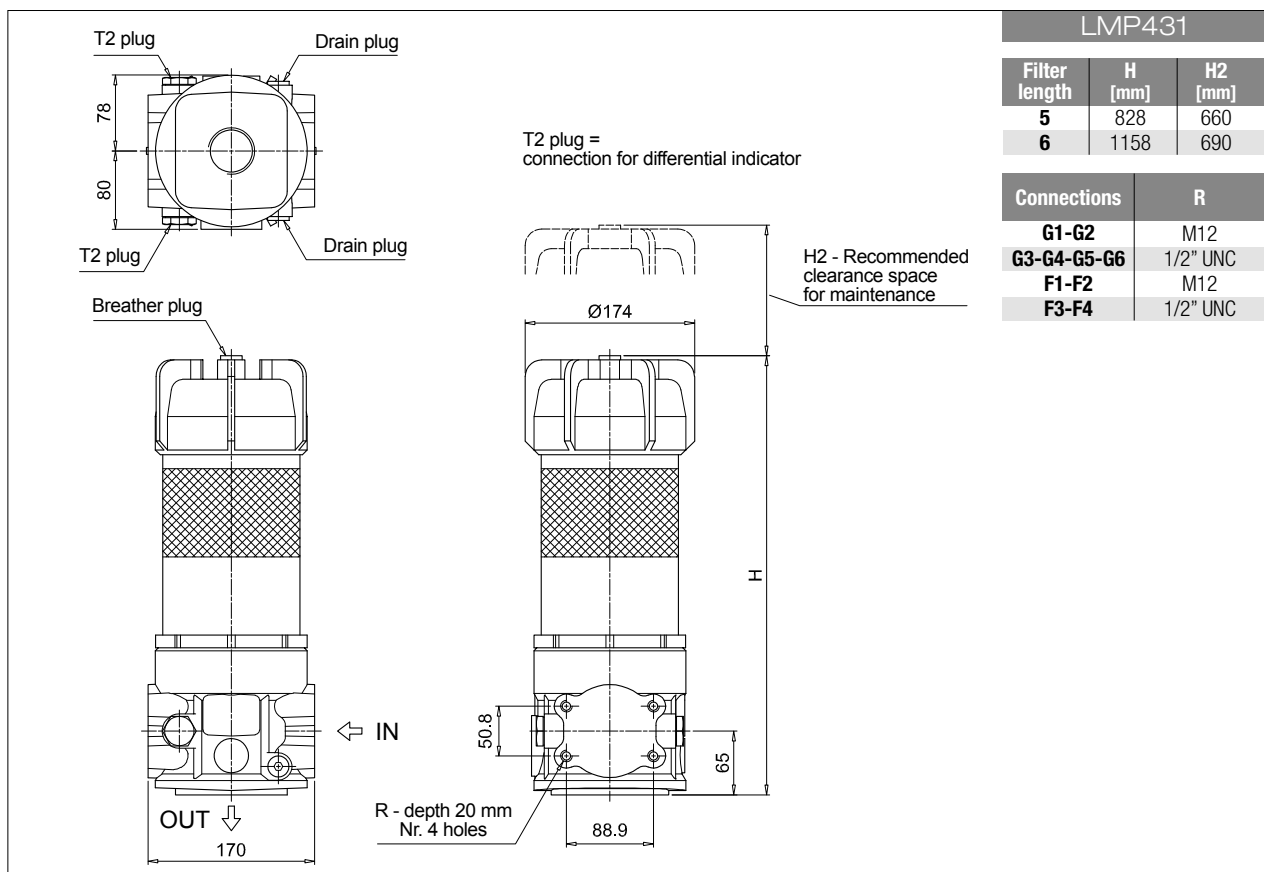
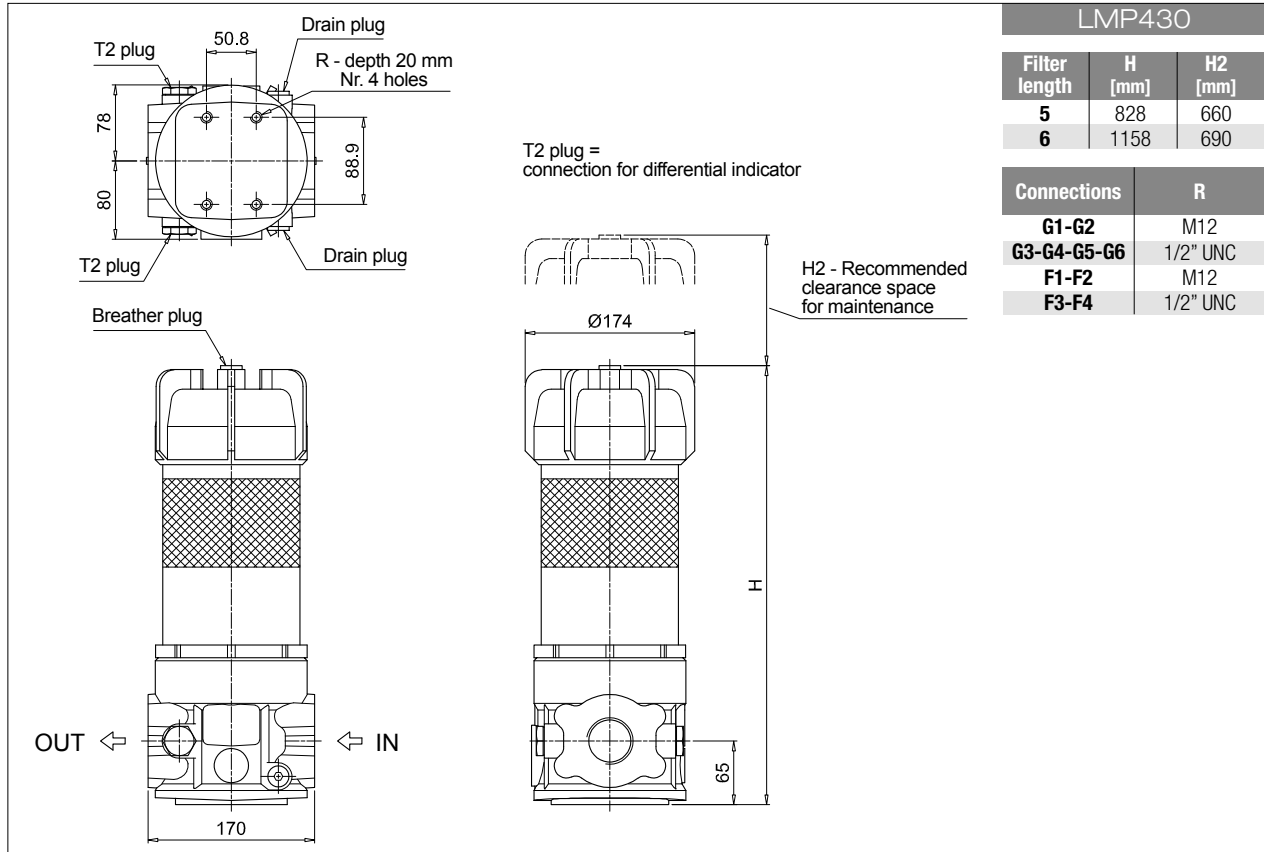
Element series and size		Configuration example: <b>CU400</b>   <b>5</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>					
<b>CU400</b>							
Element length							
<b>5</b>   <b>6</b>							
Filtration rating (filter media)							
<b>A03</b> Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm					
<b>A06</b> Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm					
<b>A10</b> Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm					
<b>A16</b> Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm					
<b>A25</b> Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm					
<b>WA025</b> Water absorber inorganic microfiber 25 µm							
Seals		Filtration rating					
		Axx		Mxx		Pxx	
<b>A</b> NBR		•		•		•	
<b>V</b> FPM		•		•		•	
<b>W</b> NBR compatible with fluids HFA-HFB-HFC		•		•			
Element Δp		Execution					
<b>N</b> 20 bar		<b>P01</b> MP Filtri standard					
		<b>Pxx</b> Customized					

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
Additional features		page	
<b>T2</b> Plug	449		

# LMP 430-431

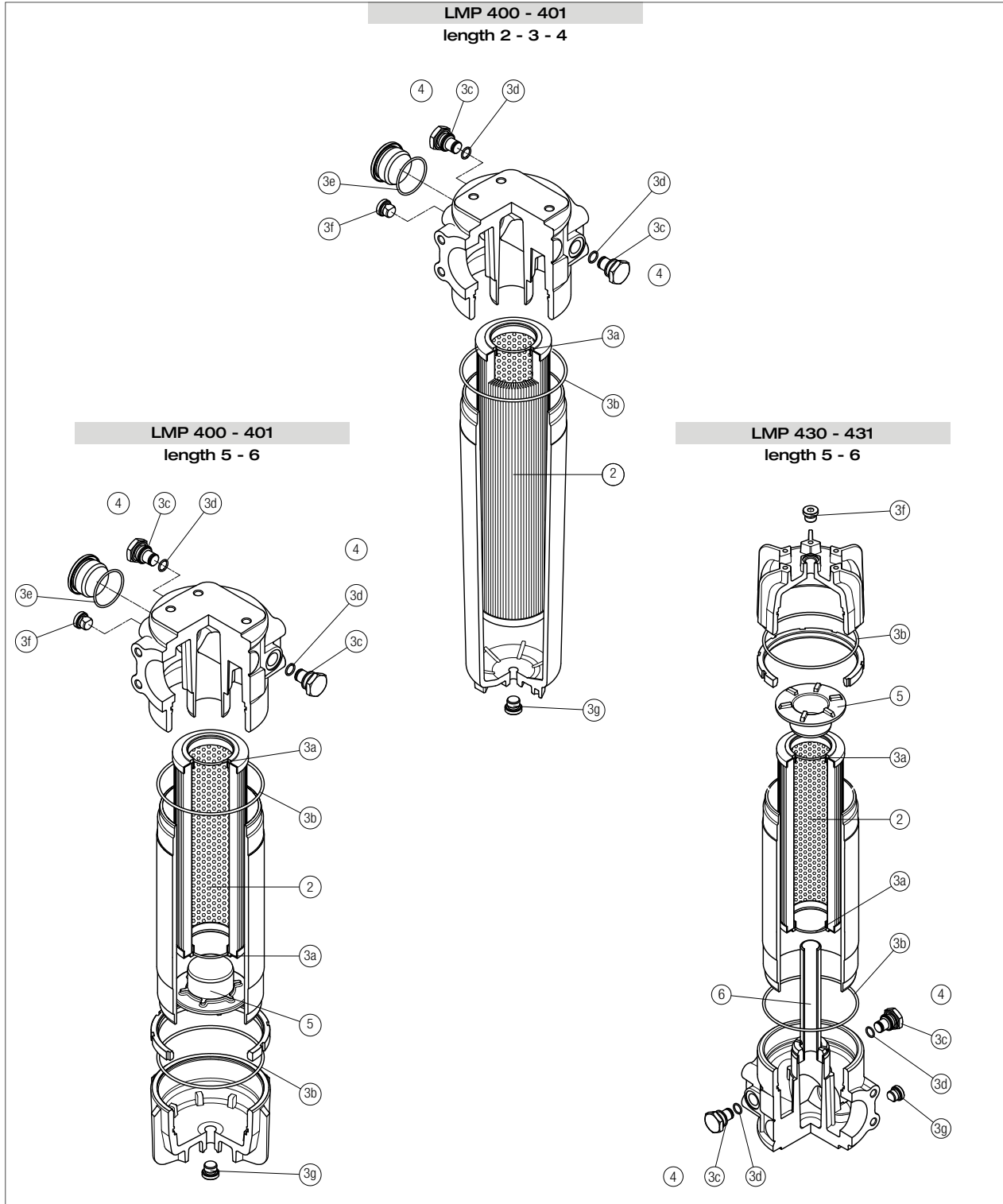
## Dimensions



# LMP 400-401 & 430-431

# SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pcs.	Q.ty: 2 pcs.	Q.ty: 1 pc.
Filter series	Filter element	Seal Kit code number NBR FPM	Indicator connection plug NBR FPM	Housing spigot no bypass with bypass	Tube assembly
LMP 400-401 length 2-3-4	See order table	02050391 02050392	T2H T2V	01044108	
LMP 400-401 length 5-6		02050393 02050394		01044108	
LMP 430-431 length 5-6		02050393 02050394		02001414	Length 5: 02025041   Length 6: 02025042

# LMP 400-401 & 430-431

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Low & Medium Pressure filters

# LMP 950-951 series

Maximum working pressure up to 3 MPa (30 bar) - Flow rate up to 2400 l/min



# LMP 950-951 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 3 MPa (30 bar)**  
**Flow rate up to 2400 l/min**

LMP950 is a range of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.  
They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 2400 l/min
- In line or 90° connections, to meet any type of application
- Base-mounting design, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems
- Lubrication systems

### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Bypass valve: Anodized Aluminium

### Pressure

- Test pressure: 4,5 MPa (45 bar)
- Burst pressure: 12 MPa (120 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 3 MPa (30 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

LMP 950: In-line Inlet/Outlet  
LMP 951: 90° Inlet/Outlet

### Note

LMP 950 - 951 filters are provided for vertical mounting



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

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]	
	Length	2	3	Length	3
<b>LMP 950-951</b>		25.1	33.5	15	28



# GENERAL INFORMATION LMP 950-951

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90 M250
<b>LMP 950</b>	<b>2</b>	613	756	953	1219	1515	2170
	<b>3</b>	1148	1219	1502	1713	1808	2293
<b>LMP 951</b>	<b>2</b>	635	789	1007	1308	1649	2420
	<b>3</b>	1226	1308	1634	1881	1993	2566

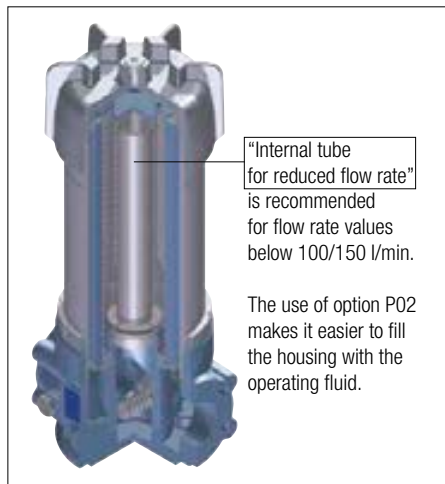
**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

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

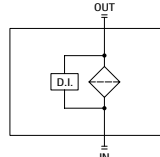
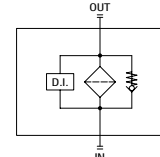
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

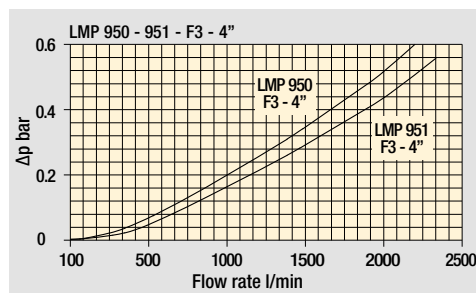
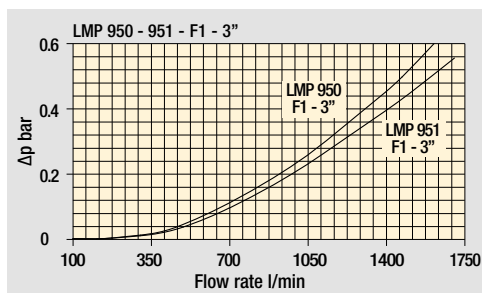
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Execution P02

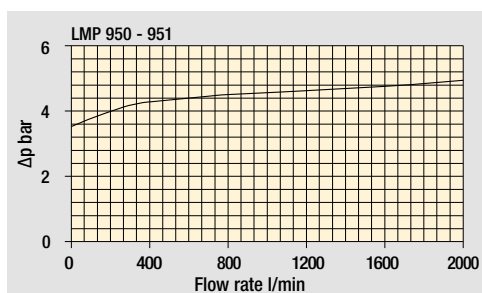


## Hydraulic symbols

Filter series	Execution S	Execution B
<b>LMP 950-951</b>	•	•
		



Pressure drop  
Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop

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

# LMP 950-951

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> LMP950   LMP951	Configuration example: LMP951 2 B A F2 A10 N P01							
<b>Length</b> 2   3								
<b>Bypass valve</b> S Without bypass B 3.5 bar								
<b>Seals and treatments</b> A NBR V FPM								
<b>Connections</b> F1 3" SAE 3000 psi/M F2 3" SAE 3000 psi/UNC F3 4" SAE 3000 psi/M F4 4" SAE 3000 psi/UNC								
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm M25 Wire mesh 25 µm M60 Wire mesh 60 µm M90 Wire mesh 90 µm WA025 Water absorber inorganic microfiber 25 µm								
<b>Element Δp</b> N 20 bar	<b>Execution</b> P01 MP Filtri standard P02 With internal tube for reduced flow rate Pxx Customized							

### FILTER ELEMENT

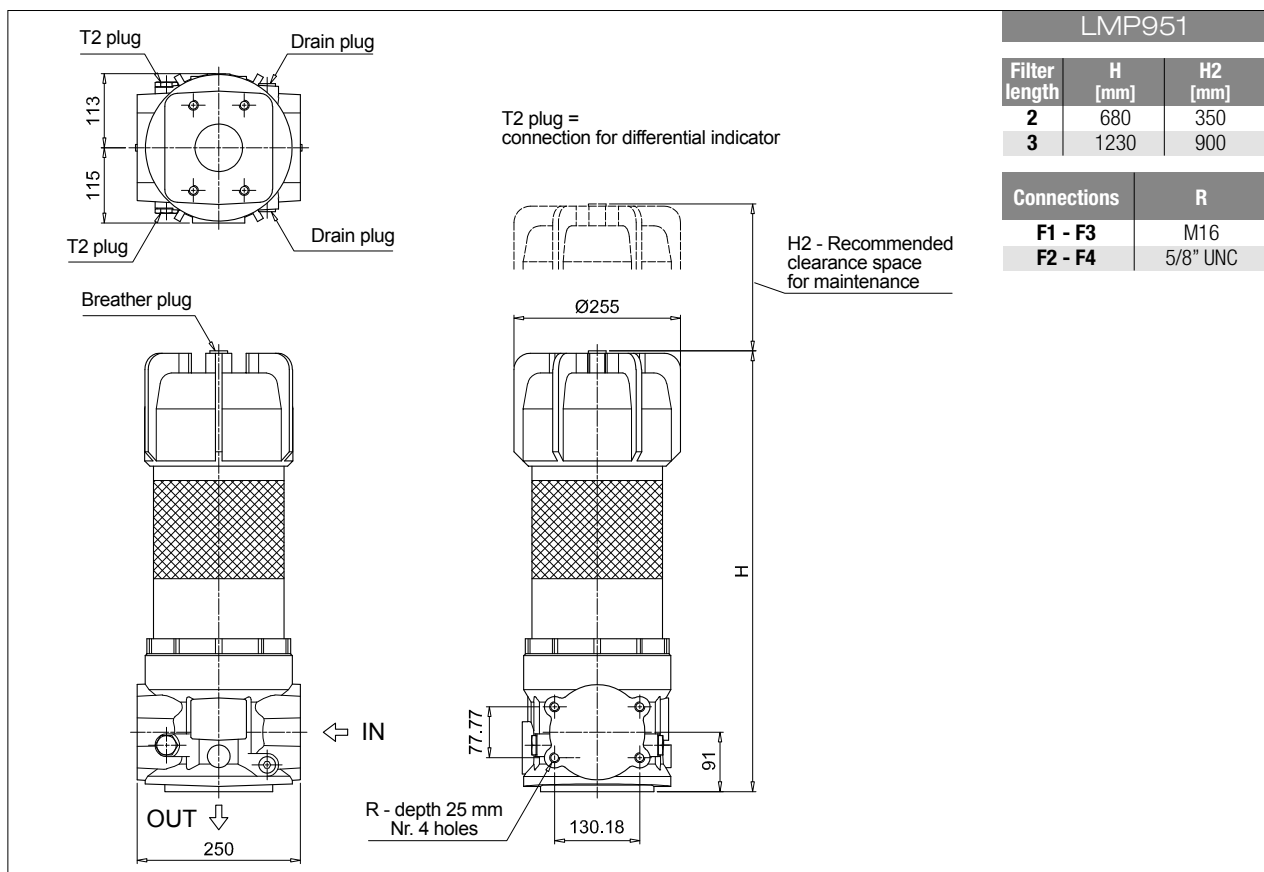
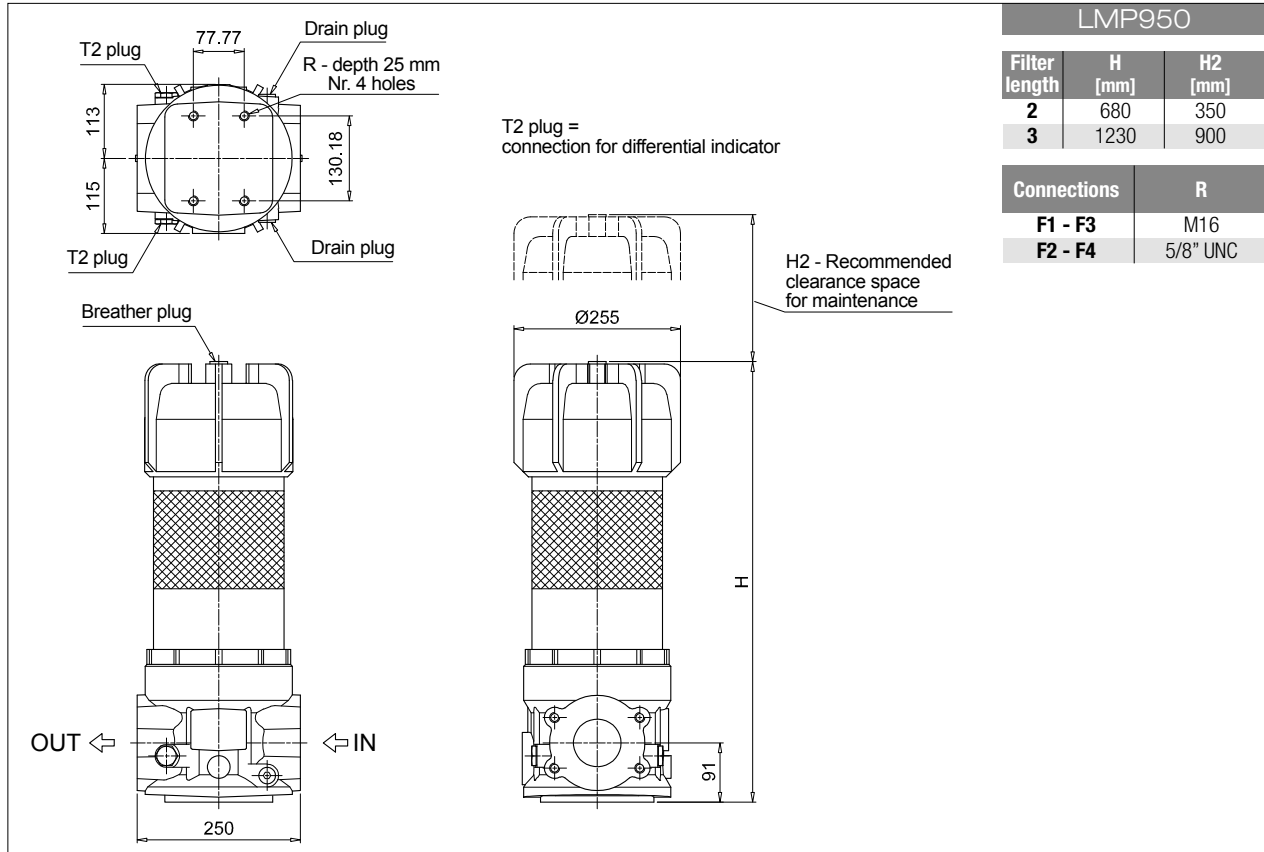
<b>Element series and size</b> CU950	Configuration example: CU950 2 A10 A N P01							
<b>Element length</b> 2   3								
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm M25 Wire mesh 25 µm M60 Wire mesh 60 µm M90 Wire mesh 90 µm WA025 Water absorber inorganic microfiber 25 µm								
<b>Seals</b> A NBR V FPM	<b>Element Δp</b> N 20 bar							<b>Execution</b> P01 MP Filtri standard Pxx Customized

### ACCESSORIES

<b>Differential indicators</b>	page		page
DEA Electrical differential indicator	445	DTA Electronic differential indicator	448
DEM Electrical differential indicator	445-446	DVA Visual differential indicator	448
DLA Electrical / visual differential indicator	446-447	DVM Visual differential indicator	448
DLE Electrical / visual differential indicator	447		
<b>Additional features</b>	page		page
T2 Plug	449	CFA Retaining clamp	450

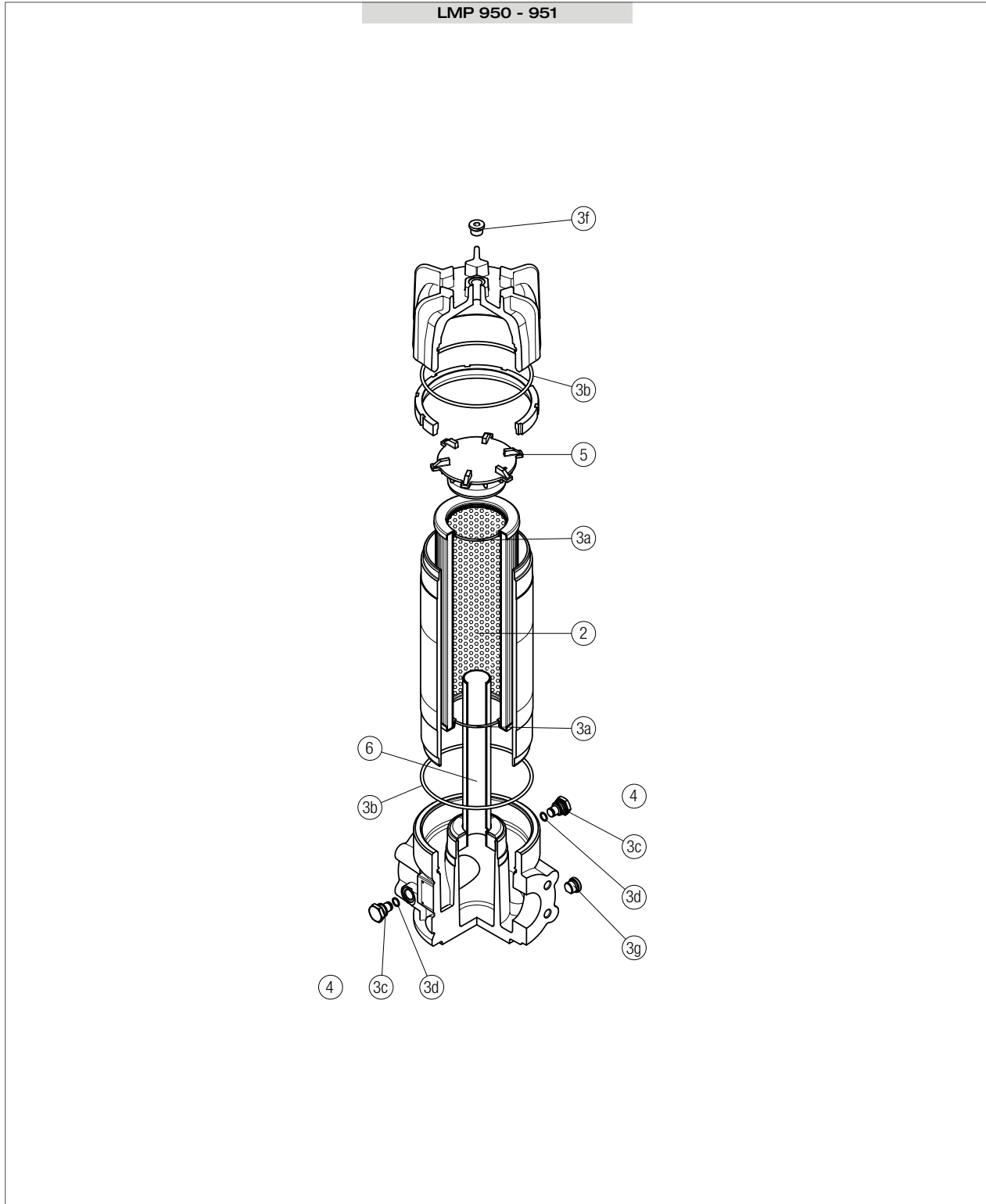
# LMP 950-951

## Dimensions



# LMP 950-951 SPARE PARTS

Order number for spare parts



Item:	Q.ty: 2 pcs.	Q.ty: 1 pc.		Q.ty: 2 pcs.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Housing spigot		Tube assembly	
	See order table	NBR	FPM	NBR	FPM	no bypass	with bypass	length 2	length 3
<b>LMP 950-951 length 2-3</b>		02050367	02050368	T2H	T2V	01044106	02001379	02025032	02025033

# LMP 950-951

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Low & Medium Pressure filters

# LMP 952-953-954 series

Maximum working pressure up to 2.5 MPa (25 bar) - Flow rate up to 4500 l/min



# LMP 952-953-954 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

**Maximum working pressure up to 2.5 MPa (25 bar)**  
**Flow rate up to 4500 l/min**

LMP952, LMP953 and LMP954 are ranges of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

Multiple LMP950 filters are connected to a manifold to reduce the pressure drop caused by the filter media and to increase the life time of the filter element.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 4" flanged connections, for a maximum flow rate of 3000 l/min
- Base-mounting design, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid.
- For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems

### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Phosphatized Steel
- Bypass valve: Anodized Aluminium

### Pressure

Test pressure: 3.5 MPa (35 bar)

### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm$ 10%
- Other opening pressures on request.

### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Number of filter elements

- LMP 952: 2 filter elements CU950-3
- LMP 953: 3 filter elements CU950-3
- LMP 954: 4 filter elements CU950-3

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

LMP 952-953-954:  
In-line Inlet/Outlet

### Note

LMP 952 - 953 - 954 filters  
are provided for vertical mounting



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

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	3	Length	3
<b>LMP 952</b>		96		66
<b>LMP 953</b>		138		99
<b>LMP 954</b>		192		132



# GENERAL INFORMATION LMP 952-953-954

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series						
		A03	A06	A10	A16	A25	M25 M60 M90 M250	
<b>LMP 952</b>	<b>3</b>	2172	2294	2766	3106	3256	3998	
<b>LMP 953</b>	<b>3</b>	2842	2964	3403	3696	3820	4395	
<b>LMP 954</b>	<b>3</b>	3259	3372	3770	4026	4133	4618	

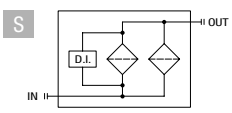
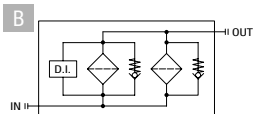
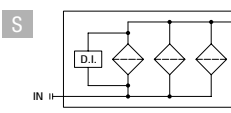
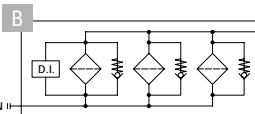
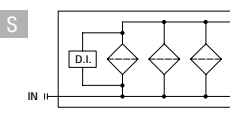
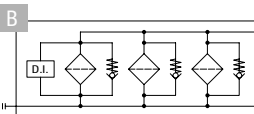
**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

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

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

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

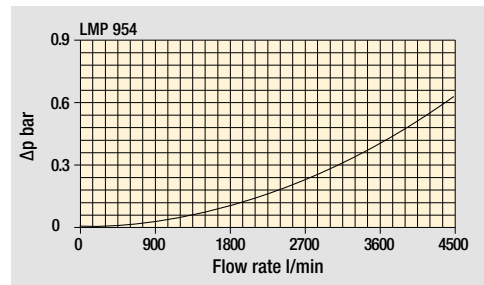
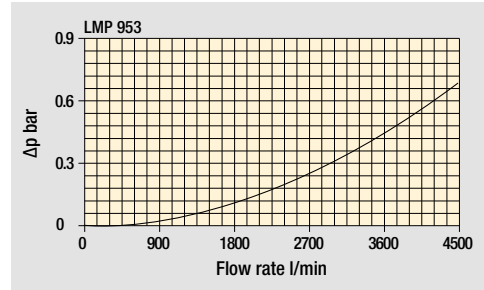
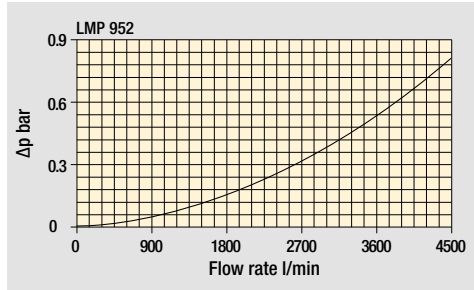
## Hydraulic symbols

Filter series	Execution S - Execution B	Execution S - Execution B	Execution S - Execution B
<b>LMP 952</b>	•		
<b>LMP 953</b>		•	
<b>LMP 954</b>			•
	 	 	 

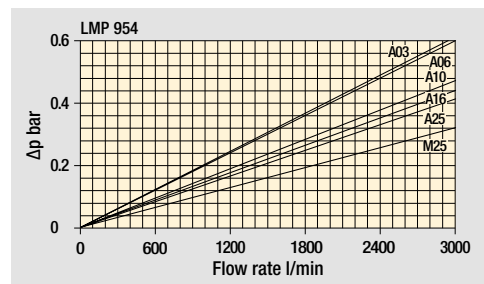
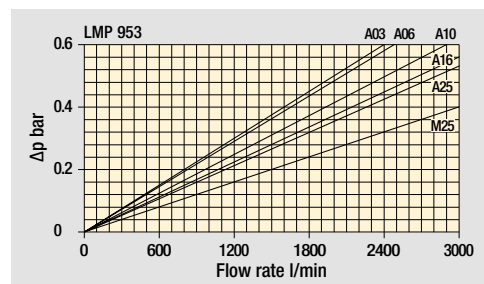
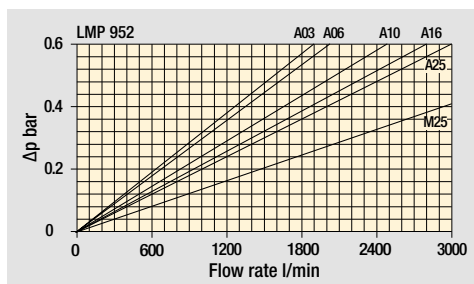
# LMP 952-953-954 GENERAL INFORMATION

## Pressure drop

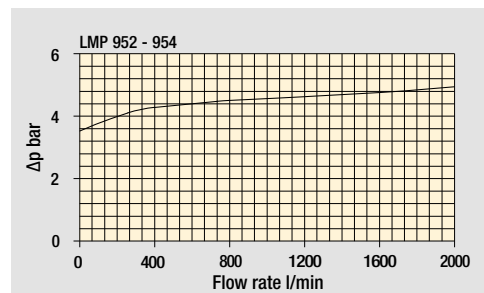
### Filter housings $\Delta p$ pressure drop



### Pressure drop of filter complete with cartridge, oil viscosity 30 mm<sup>2</sup>/s (cSt)



### Bypass valve pressure drop

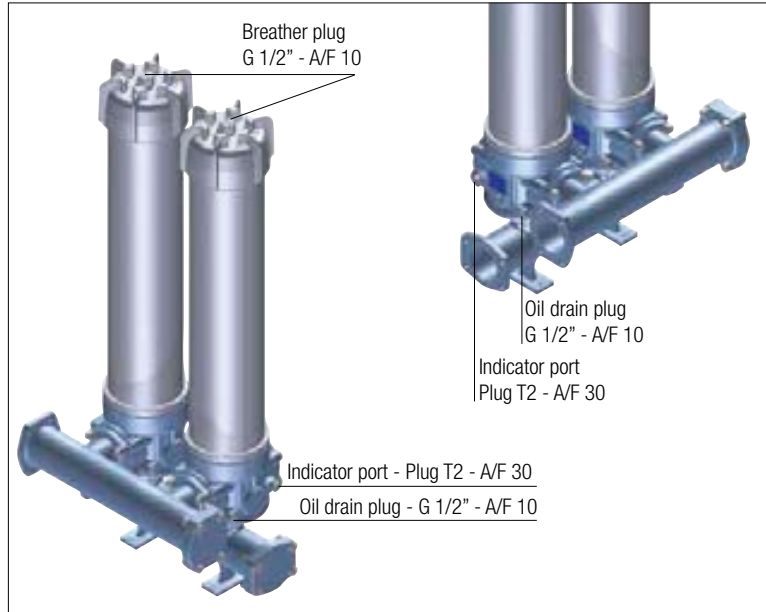
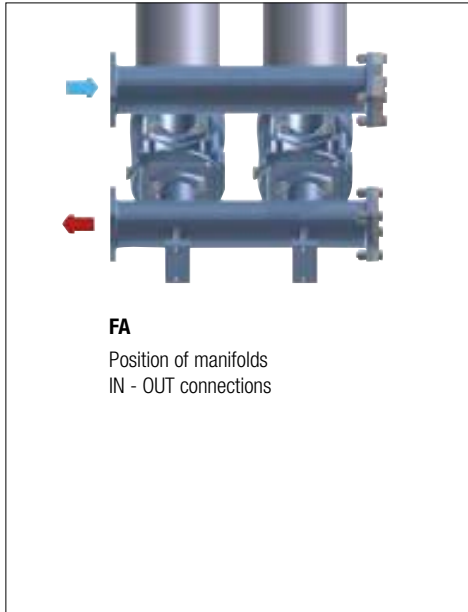


The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

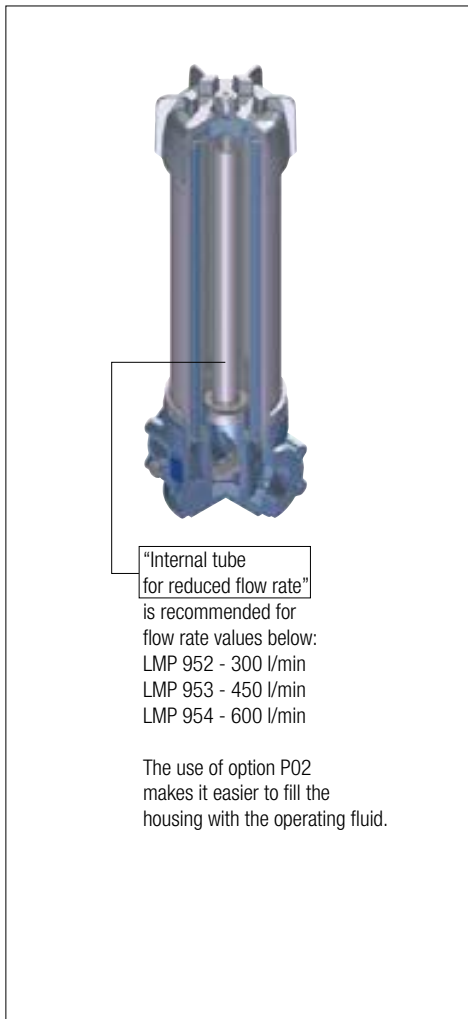
# GENERAL INFORMATION LMP 952-953-954

Manifolds

Focus on

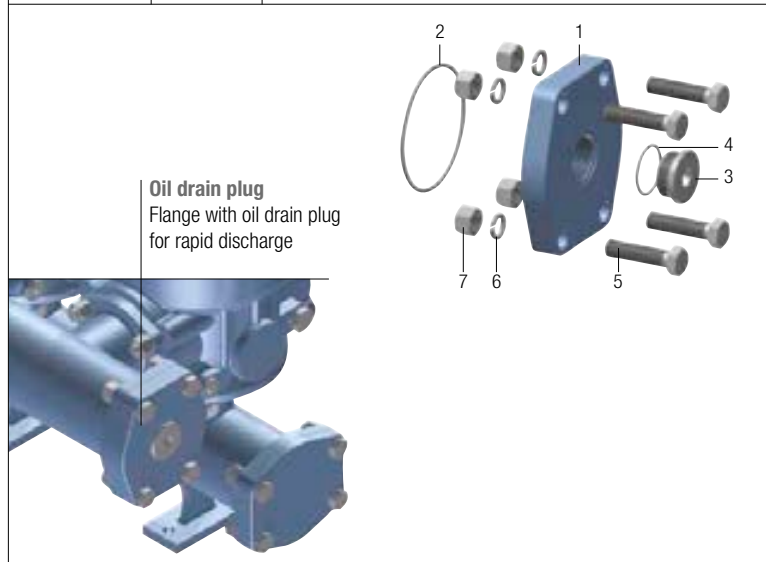


Execution P02



CMV4 & CUV4 Flange options

Code	Thread	Materials
<b>CMV4</b>	<b>G 1 1/4"</b>	1 - 4" SAE flange 2 - O-R 4437 (FPM) for flange 3 - Plug G 1-1/4" 4 - O-R 3168 for plug (FPM) 5 - No. 4 Hex bolt screws UNI-EN 24017 M16 x 65-10.9 6 - No. 4 Spring washers UNI 1751-B 16 7 - No. 4 Nuts UNI 5587 - M16
<b>CUV4</b>	<b>SAE 20</b>	1 - 4" SAE flange 2 - O-R 4437 (FPM) for flange 3 - Plug SAE 20 1 5/8" - 12 UN 4 - 1147 O-R for plug (FPM) 5 - No. 4 Hex bolt screws 5/8" UNC x 2 1/2" 6 - No. 4 Spring washers UNI 1751-B 16 7 - No. 4 Nuts 5/8" UNC



# LMP 952-953-954

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> LMP952   LMP953   LMP954	Configuration example: LMP952	3	B	A	FA	A10	N	P01
<b>Length</b> 3								
<b>Bypass valve</b> S Without bypass		B 3.5 bar						
<b>Seals and treatments</b> A NBR V FPM								
<b>Connections</b> FA 4" SAE 3000 psi								
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm WA025 Water absorber inorganic microfiber 25 µm		M25 Wire mesh 25 µm M60 Wire mesh 60 µm M90 Wire mesh 90 µm						
	<b>Element Δp</b> N 20 bar							
		<b>Execution</b> P01 MP Filtri standard P02 With internal tube for reduced flow rate Pxx Customized						

### FILTER ELEMENT

<b>Element series and size</b> CU950	Configuration example: CU950	3	A10	A	N	P01
<b>Element length</b> 3						
<b>Filter series and size</b> LMP952 Nr. 2 filter elements LMP953 Nr. 3 filter elements LMP954 Nr. 4 filter elements						
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm WA025 Water absorber inorganic microfiber 25 µm		M25 Wire mesh 25 µm M60 Wire mesh 60 µm M90 Wire mesh 90 µm				
	<b>Element Δp</b> N 20 bar					
		<b>Execution</b> P01 MP Filtri standard Pxx Customized				

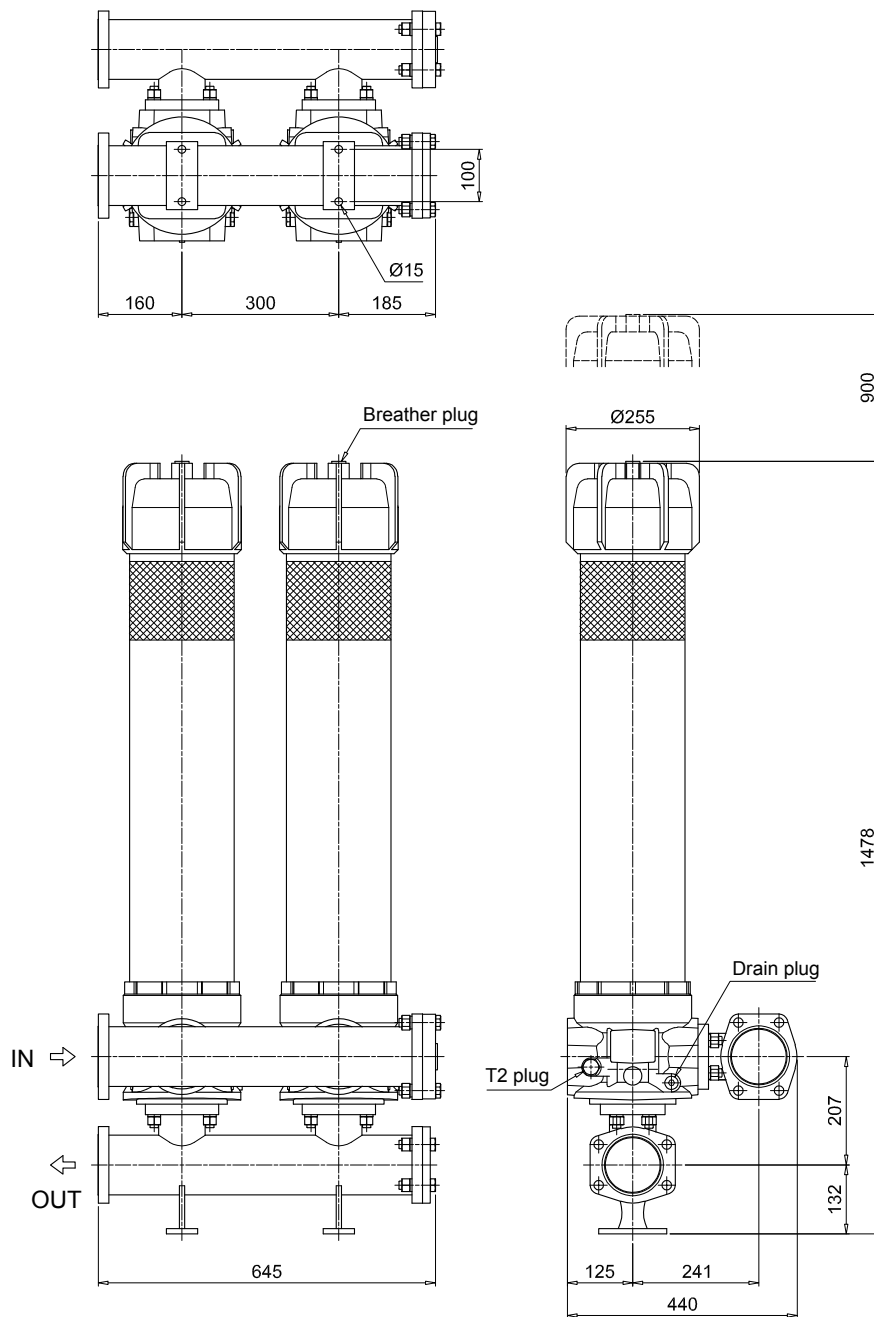
### ACCESSORIES

Differential indicators	page		page
DEA Electrical differential indicator	445	DTA Electronic differential indicator	448
DEM Electrical differential indicator	445-446	DVA Visual differential indicator	448
DLA Electrical / visual differential indicator	446-447	DVM Visual differential indicator	448
DLE Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
T2 Plug	449		

# LMP 952-953-954

Dimensions

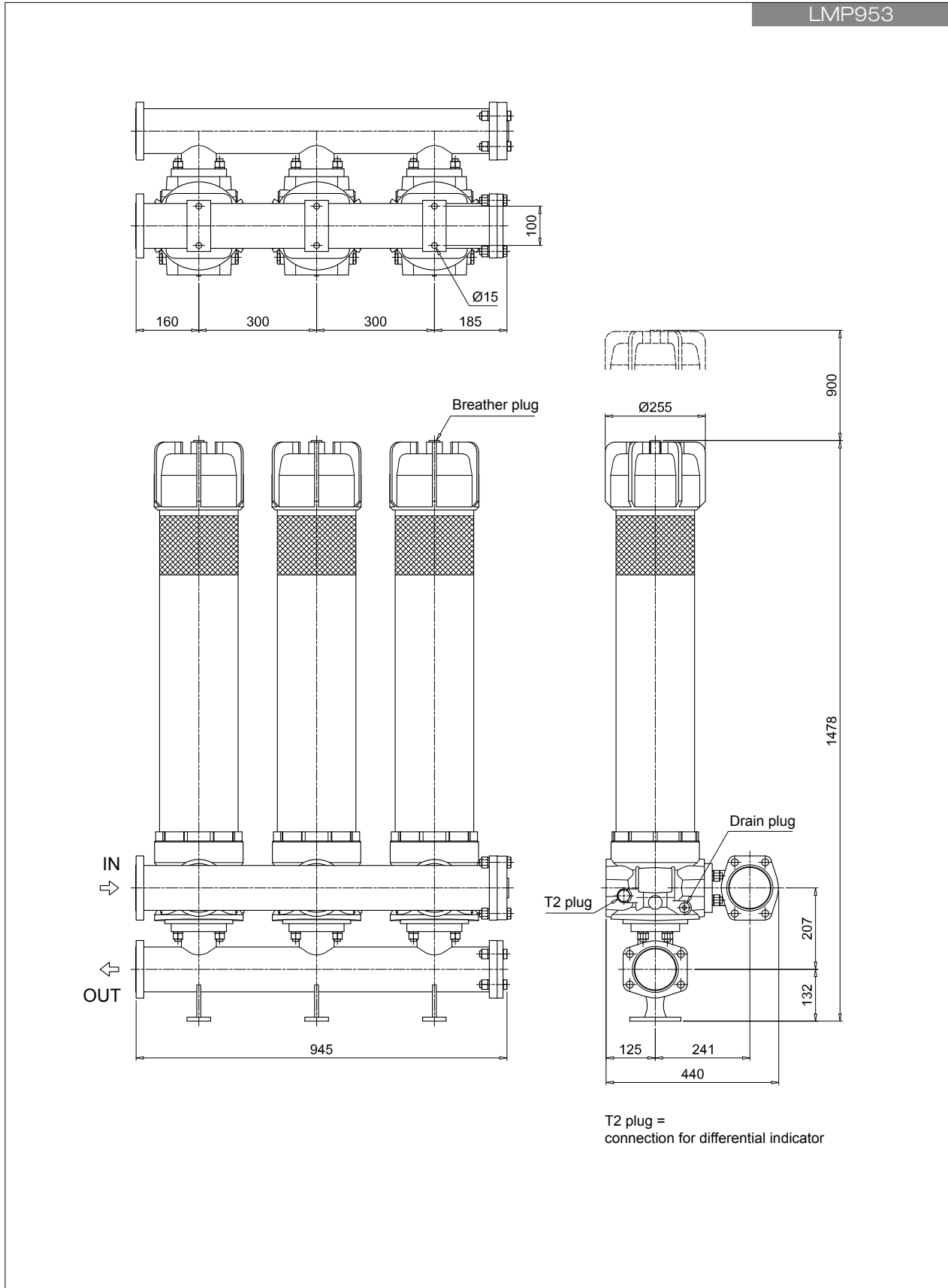
LMP952



T2 plug =  
connection for differential indicator

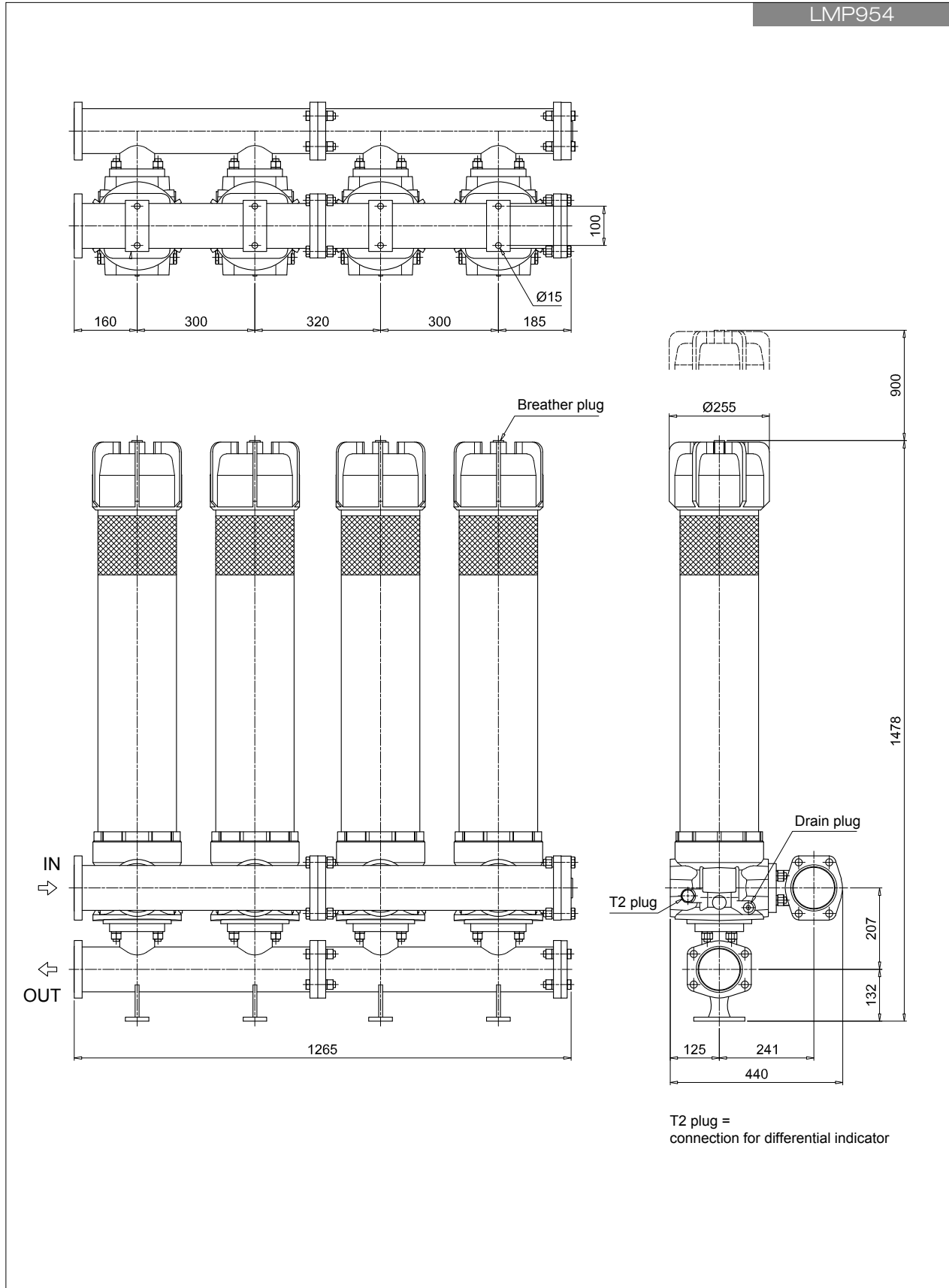
# LMP 952-953-954

## Dimensions



# LMP 952-953-954

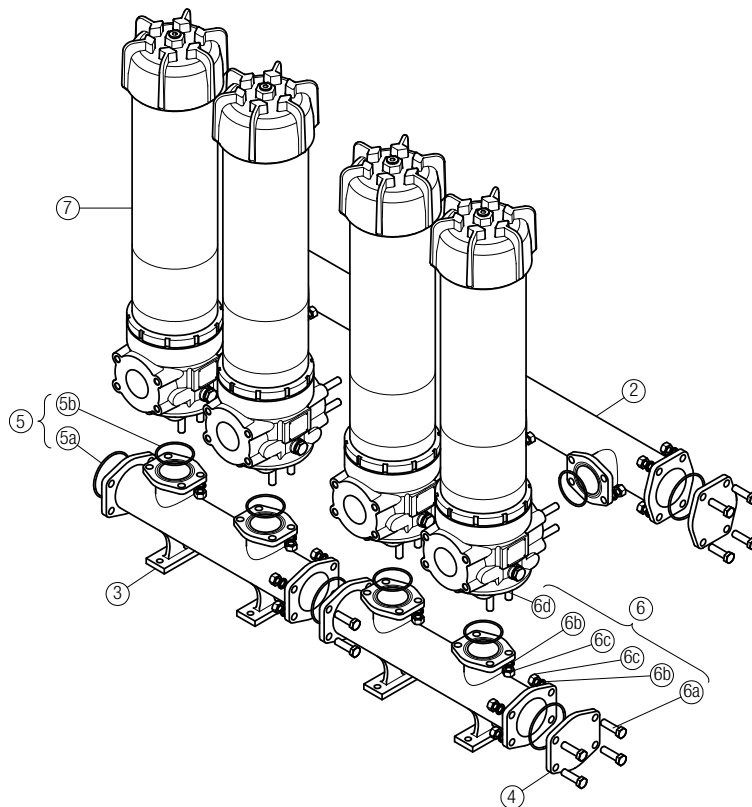
Dimensions



# LMP 952-953-954 SPARE PARTS

Order number for spare parts

LMP 952 - 953 - 954



Item 7:  
for complete filter code and  
spare parts, see  
LMP 950 - 951 series chapter

Quantity:  
- filter spare parts:  
LMP 952 - 2 pcs.  
LMP 953 - 3 pcs.  
LMP 954 - 4 pcs.

- filter seal kit:  
LMP 952 - 2 pcs.  
LMP 953 - 3 pcs.  
LMP 954 - 4 pcs.

Item:	2		3		4		5 (5a-5b)		6 (6a - 6d)		7	
Filter series	Q.ty	Manifold IN	OUT	Q.ty	4" SAE 3000 psi plugged flange	Q.ty	NBR	FPM	Q.ty	Threaded fasteners kit	Q.ty	Filter
LMP 952	1 pc.	01039270	01039271	2 pcs.	01042012	1 pc.	02050404	02050405	1 pc.	02049051	2 pcs.	LMP9513xxF1xxxNP0x
LMP 953	1 pc.	01039337	01039338	2 pcs.		1 pc.	02050404	02050405	1 pc.	02049052	3 pcs.	
LMP 954	2 pcs.	01039270	01039271	2 pcs.		1 pc.	02050406	02050407	1 pc.	02049053	4 pcs.	



# LMP 952-953-954

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Low & Medium Pressure filters

# LMD 211 series

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 200 l/min



# LMD 211 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

#### Duplex

**Maximum working pressure up to 6 MPa (60 bar)**

**Flow rate up to 200 l/min**

LMD211 is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 330 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve integrated in the changeover lever, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Optional sampling ports, to get samples of fluid or to connect additional instrument to the system
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

#### Filter housing materials

- Head: Aluminium
- Bowl: Cathophoretic Painted Steel
- Bypass valve: AISI 304 - Nylon

#### Pressure

- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

Inlet/Outlet In-Line

#### Note

LMD 211 filters are provided for vertical mounting



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

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	Length	1	2	3
<b>LMD 211</b>		9.5	11.2	12.8		4.1	4.6	5.3

# GENERAL INFORMATION LMD 211

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

Filter series	Length	Filter element design - N Series										
		A03	A06	A10	A16	A25	M25	M60	M90	M250	P10	P25
<b>LMD 211</b>	<b>1</b>	90	95	140	147	156	191	192	192	193	177	181
	<b>2</b>	113	121	158	162	173	192	192	193	193	181	183
	<b>3</b>	131	146	166	169	177	193	194	194	194	184	187

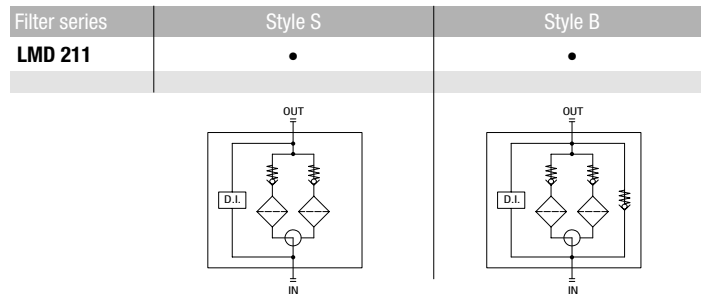
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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

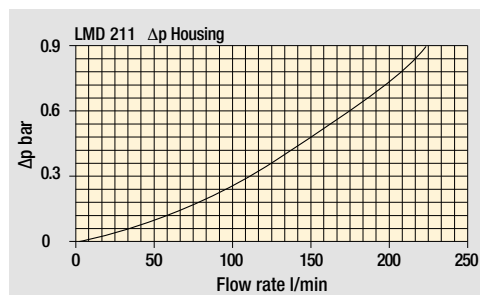
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

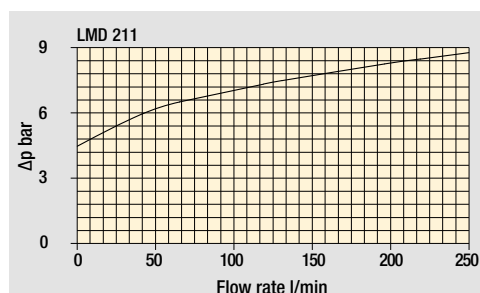
## Hydraulic symbols



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



## Bypass valve pressure drop



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

# LMD 211

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>LMD211</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>C</b>   <b>6</b>   <b>A10</b>   <b>N</b>   <b>P01</b>																			
<b>LMD211</b>																				
<b>Length</b>	1   2   3																			
<b>Bypass valve</b>	S Without bypass   B 3.5 bar																			
<b>Seals and treatments</b>	Filtration rating																			
	Axx	Mxx	Pxx																	
<b>A</b> NBR	•	•	•																	
<b>V</b> FPM	•	•	•																	
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•																		
<b>Connections</b>	C G 1 1/2" F 1 1/2" NPT I SAE 24 - 1 7/8" - 12 UN L 1 1/2" SAE 3000 psi/M + G 1 1/4" M 1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT N 1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" UN																			
<b>Connection for differential indicator</b>	6 With plugged connection																			
<b>Filtration rating (filter media)</b>	<table border="0"> <tr> <td><b>A03</b> Inorganic microfiber 3 µm</td> <td><b>M25</b> Wire mesh 25 µm</td> </tr> <tr> <td><b>A06</b> Inorganic microfiber 6 µm</td> <td><b>M60</b> Wire mesh 60 µm</td> </tr> <tr> <td><b>A10</b> Inorganic microfiber 10 µm</td> <td><b>M90</b> Wire mesh 90 µm</td> </tr> <tr> <td><b>A16</b> Inorganic microfiber 16 µm</td> <td><b>P10</b> Resin impregnated paper 10 µm</td> </tr> <tr> <td><b>A25</b> Inorganic microfiber 25 µm</td> <td><b>P25</b> Resin impregnated paper 25 µm</td> </tr> </table>										<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm																			
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm																			
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm																			
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm																			
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm																			
<b>WA025</b> Water absorber inorganic microfiber 25 µm																				
	<b>Element Δp</b>				<b>Execution</b>															
	N 20 bar				P01 MP Filtri standard Pxx Customized															

### FILTER ELEMENT

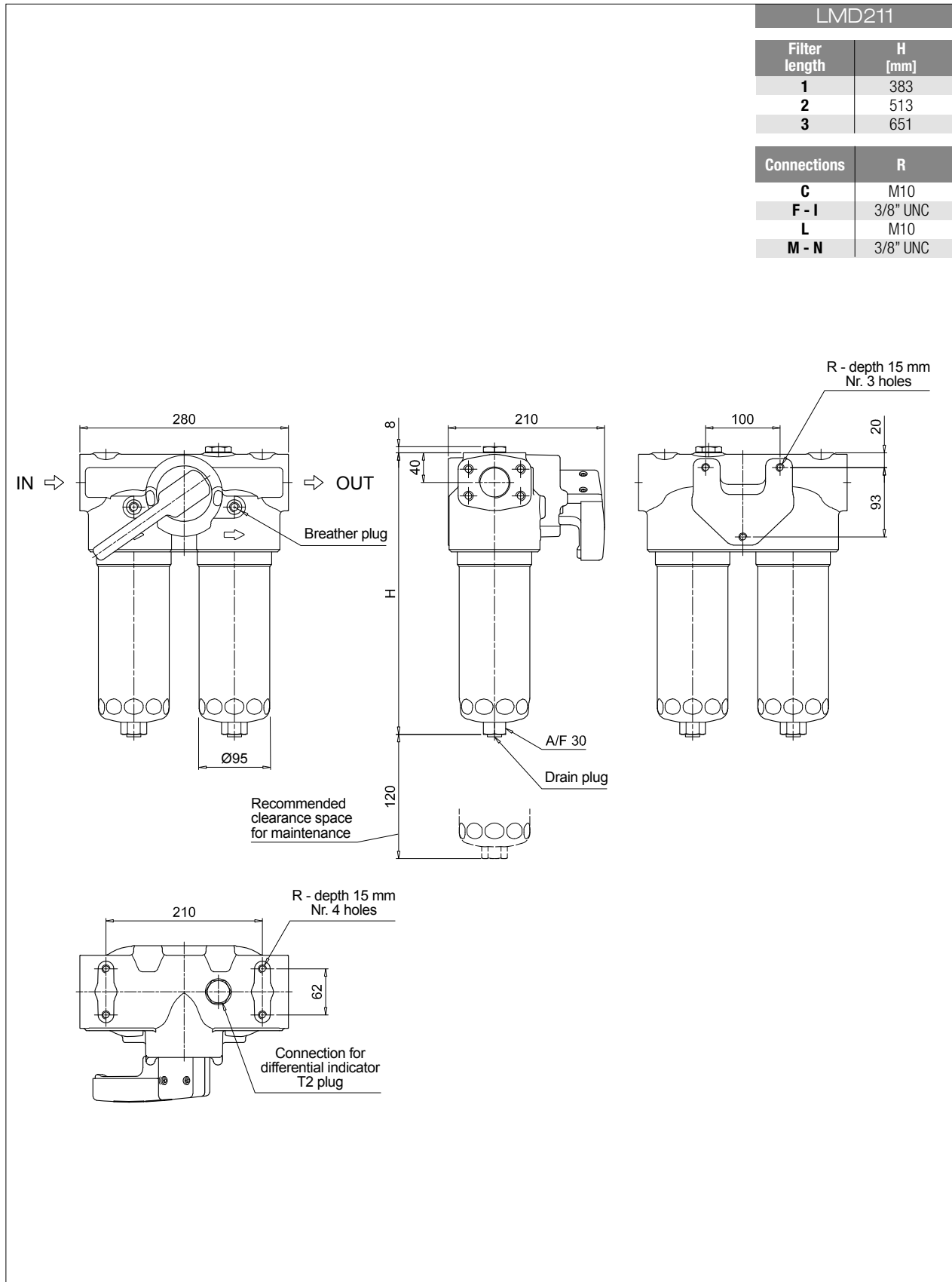
<b>Element series and size</b>	Configuration example: <b>CU210</b>   <b>3</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>																	
<b>CU210</b>																		
<b>Element length</b>	1   2   3																	
<b>Filtration rating (filter media)</b>	<table border="0"> <tr> <td><b>A03</b> Inorganic microfiber 3 µm</td> <td><b>M25</b> Wire mesh 25 µm</td> </tr> <tr> <td><b>A06</b> Inorganic microfiber 6 µm</td> <td><b>M60</b> Wire mesh 60 µm</td> </tr> <tr> <td><b>A10</b> Inorganic microfiber 10 µm</td> <td><b>M90</b> Wire mesh 90 µm</td> </tr> <tr> <td><b>A16</b> Inorganic microfiber 16 µm</td> <td><b>P10</b> Resin impregnated paper 10 µm</td> </tr> <tr> <td><b>A25</b> Inorganic microfiber 25 µm</td> <td><b>P25</b> Resin impregnated paper 25 µm</td> </tr> </table>								<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm	<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm	<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm	<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm	<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm																	
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm																	
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<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm																	
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm																	
<b>WA025</b> Water absorber inorganic microfiber 25 µm																		
	<b>Seals</b>			<b>Filtration rating</b>														
	Axx	Mxx	Pxx															
<b>A</b> NBR	•	•	•															
<b>V</b> FPM	•	•	•															
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•																
	<b>Element Δp</b>			<b>Execution</b>														
	N 20 bar			P01 MP Filtri standard Pxx Customized														

### ACCESSORIES

Differential indicators		page			page
<b>DEA</b>	Electrical differential indicator	445	<b>DTA</b>	Electronic differential indicator	448
<b>DEM</b>	Electrical differential indicator	445-446	<b>DVA</b>	Visual differential indicator	448
<b>DLA</b>	Electrical / visual differential indicator	446-447	<b>DVM</b>	Visual differential indicator	448
<b>DLE</b>	Electrical / visual differential indicator	447			
Additional features		page			
<b>T2</b>	Plug	449			

# LMD 211

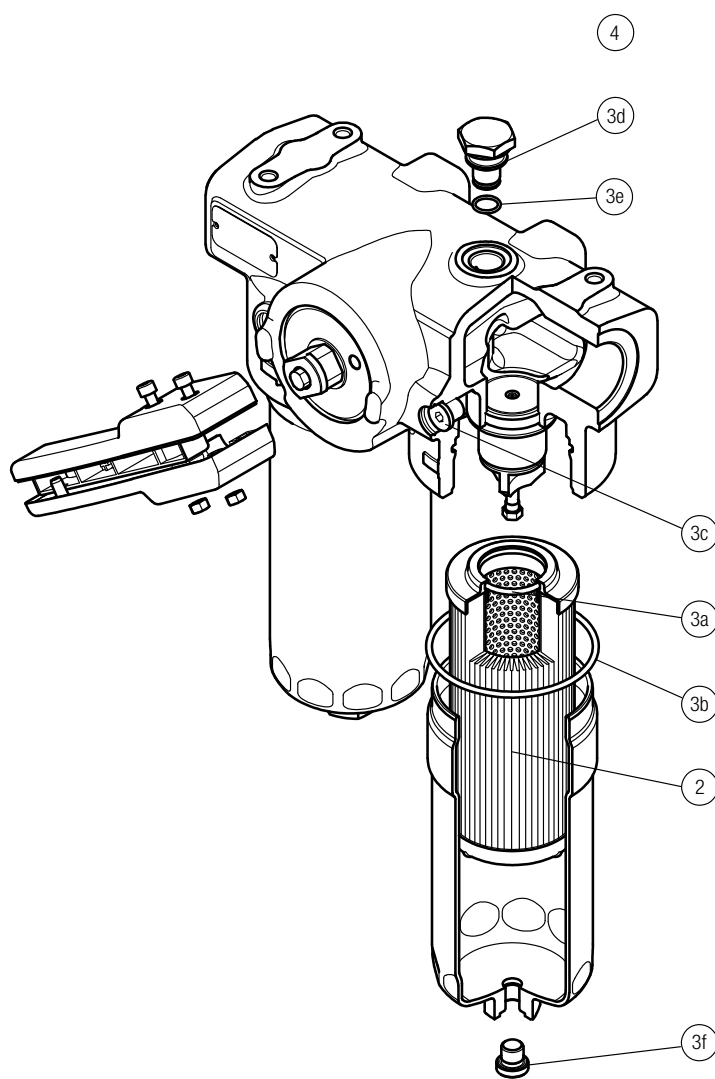
## Dimensions



# LMD 211 SPARE PARTS

Order number for spare parts

**LMD 211**



	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pcs.
Item:	2	3 (3a ÷ 3f)	4
Filter series	Filter element	Seal Kit code number NBR	Indicator connection plug NBR
LDD	See order table	02050671	T2H
		FPM	FPM
		02050672	T2V



# LMD 211

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Low & Medium Pressure filters

# LMD 400-401 & 431 series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 600 l/min



# LMD 400-401 & 431

# GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

#### Duplex

**Maximum working pressure up to 1.6 MPa (16 bar)**

**Flow rate up to 600 l/min**

LMD400 is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 2 1/2" flanged connections, for a maximum flow rate of 590 l/min
- LMD400: In-line connections
- LMD401: In-line connections with compact design
- LMD431: In-line connections with compact design and base mounting
- Base-mounting design also available, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid.
- For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Steel - Painted black
- Bypass valve: Steel
- 3-way ball valve: Steel housings - Stainless Steel ball
- Valve: Phosphatized Steel - Stainless Steel

#### Pressure

Test pressure: 2.5 MPa (25 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

- LMD 400-401: In-line Inlet/Outlet
- LMD 401: Same side
- LMD 400-401-431: In-Line

#### Note

LMP 400 - 401 - 431 filters are provided for vertical mounting



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

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]			
	Length	4	5	6	Length	4	5	6
<b>LMD 400 - 401</b>		60	65	72		20	28	33
<b>LMD 431</b>		-	68	78		-	28	33

## GENERAL INFORMATION

## LMD 400-401 & 431

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

Filter series	Length	Filter element design - N Series							
		A03	A06	A10	A16	A25	M25 M60 M90 M250	P10	P25
<b>LMD 400 - 401</b>	<b>4</b>	308	349	453	474	530	628	547	567
	<b>5</b>	395	427	509	547	589	637	577	592
	<b>6</b>	429	483	558	568	597	639	583	597
<b>LMD 431</b>	<b>5</b>	395	427	509	547	589	637	577	592
	<b>6</b>	429	483	558	568	597	639	583	597

**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

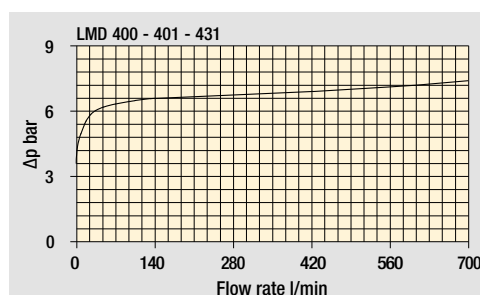
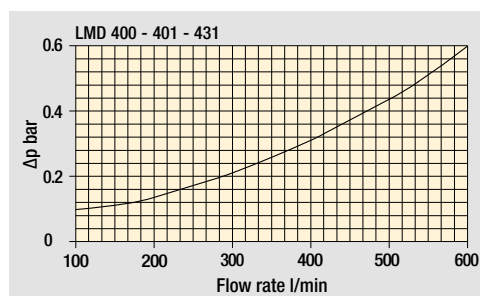
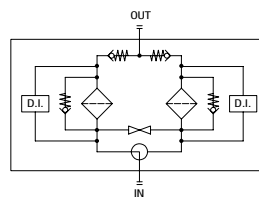
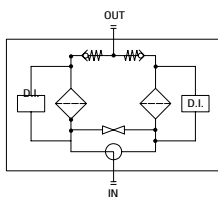
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

### Hydraulic symbols

Filter series	Execution S	Execution B
<b>LMD 400 - 401</b>	•	•
<b>LMD 431</b>	•	•



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

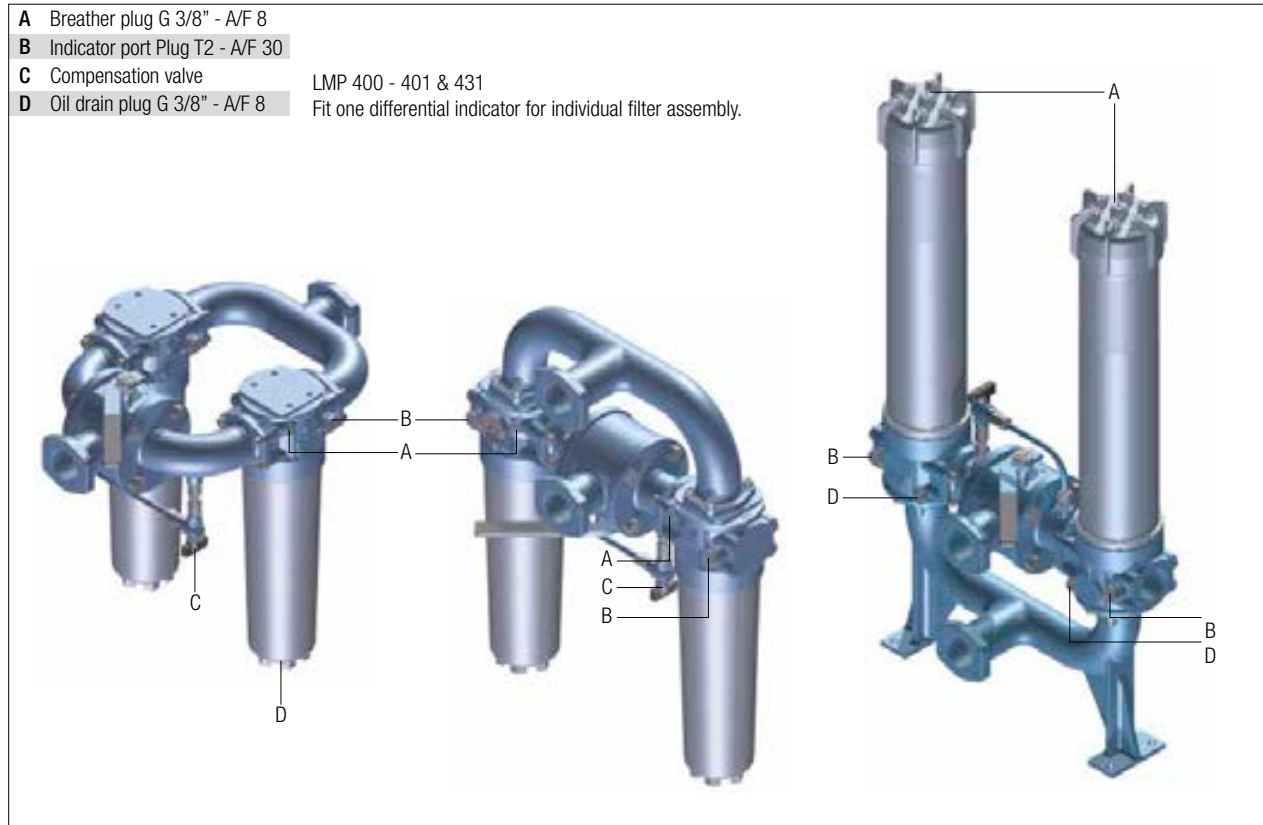
### Bypass valve pressure drop

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

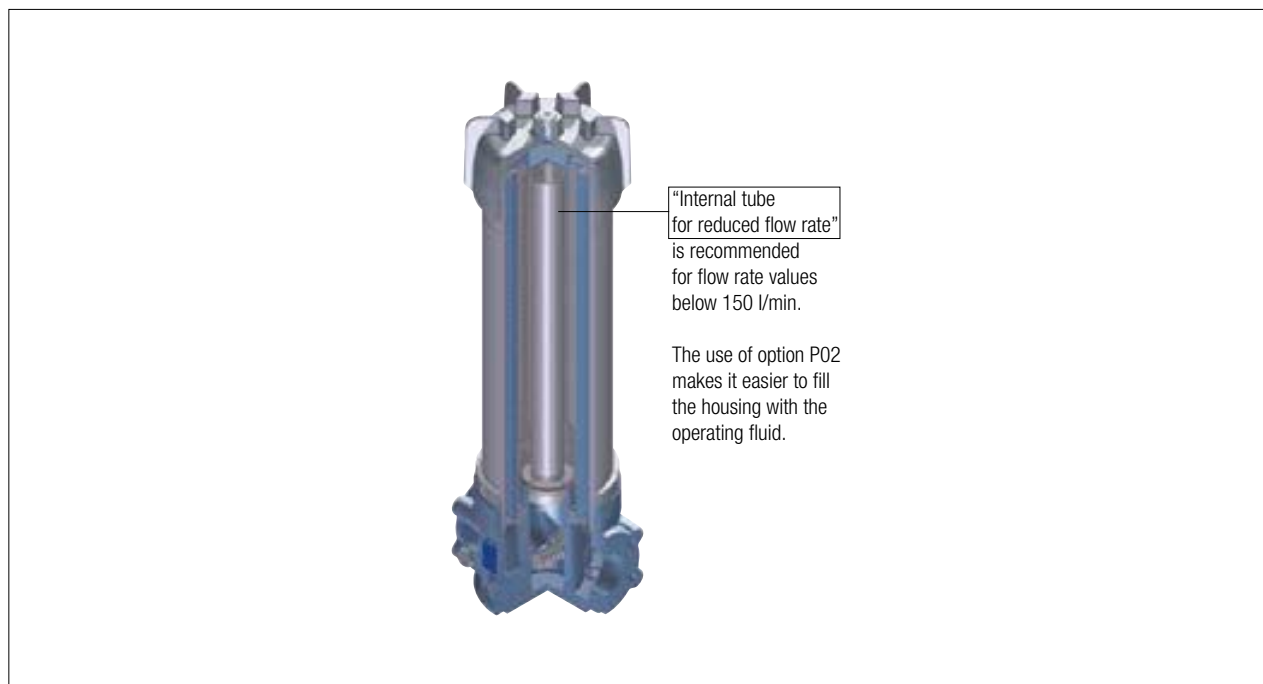
# LMD 400-401 & 431

# GENERAL INFORMATION

Focus on



## LMD 431: Execution P02



# LMD 400-401 & 431

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# LMD 400-401

## Designation & Ordering code

COMPLETE FILTER	
Series and size <b>LMD400   LMD401</b>	Configuration example: <b>LMD401</b>   <b>4</b>   <b>B</b>   <b>V</b>   <b>F1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>
Length <b>4   5   6</b>	
Bypass valve <b>S</b> Without bypass   <b>B</b> 3.5 bar	
Seals and treatments <b>V</b> FPM	Filtration rating Axx Mxx Pxx • • •
Connections <b>F1</b> 2 1/2" SAE 3000 psi/M <b>F2</b> 2 1/2" SAE 3000 psi/UNC <b>F3</b> 2 1/2" SAE 3000 psi/M, In-line connections <b>F4</b> 2 1/2" SAE 3000 psi/UNC, In-line connections	LMD400   LMD401 • • • • • •
Filtration rating (filter media) <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>M25</b> Wire mesh 25 µm <b>M60</b> Wire mesh 60 µm <b>M90</b> Wire mesh 90 µm <b>P10</b> Resin impregnated paper 10 µm <b>P25</b> Resin impregnated paper 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm	
Element Δp <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>P02</b> Maintenance from the bottom of the housing <b>Pxx</b> Customized
	Filter length 4 5 6 • • • • •

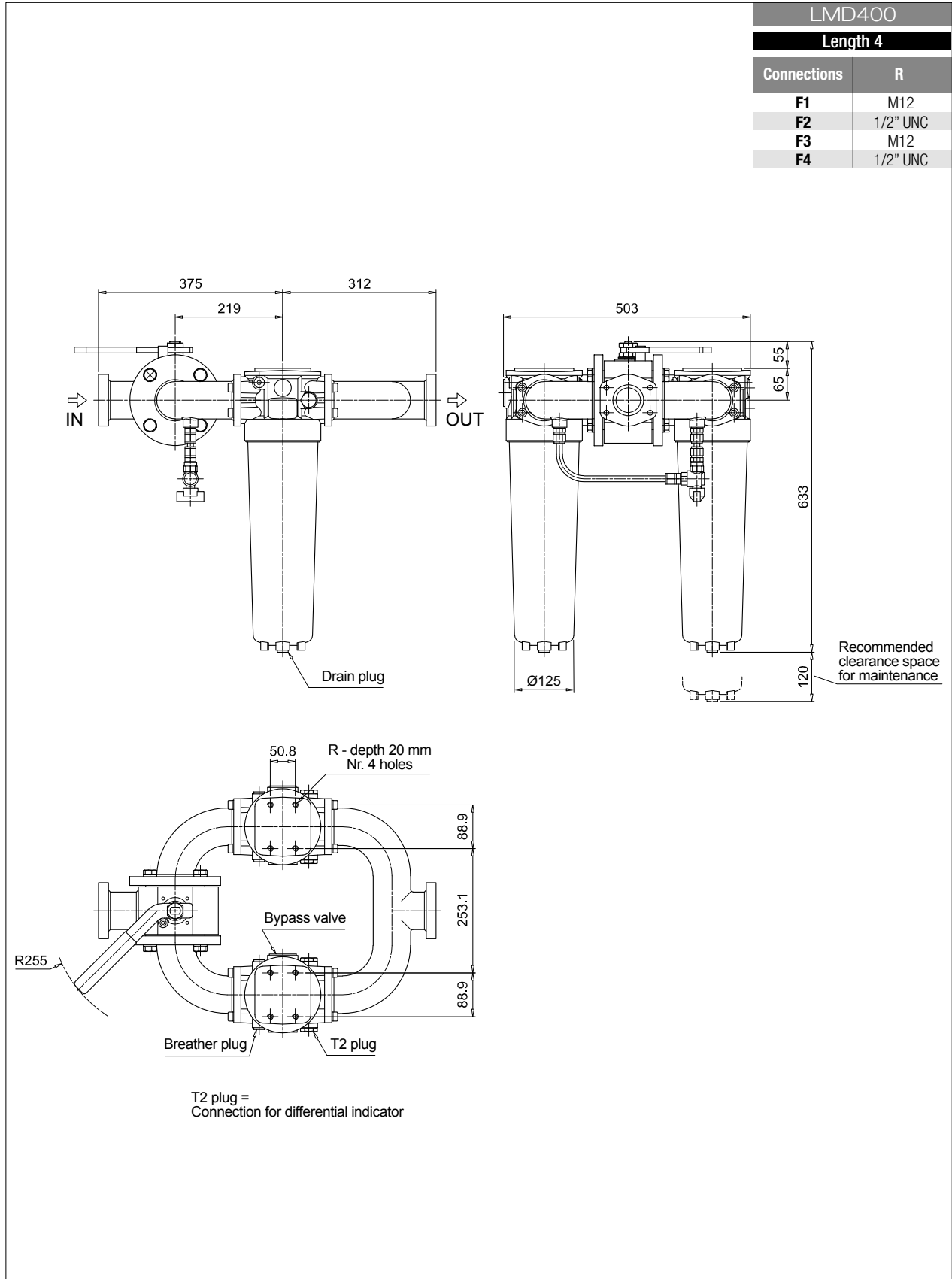
FILTER ELEMENT	
Element series and size <b>CU400</b>	Configuration example: <b>CU400</b>   <b>4</b>   <b>A10</b>   <b>V</b>   <b>N</b>   <b>P01</b>
Element length <b>4   5   6</b>	
Filtration rating (filter media) <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>M25</b> Wire mesh 25 µm <b>M60</b> Wire mesh 60 µm <b>M90</b> Wire mesh 90 µm <b>P10</b> Resin impregnated paper 10 µm <b>P25</b> Resin impregnated paper 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm	
Seals <b>V</b> FPM	Filtration rating Axx Mxx Pxx • • •
Element Δp <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
<b>Differential indicators</b>	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		



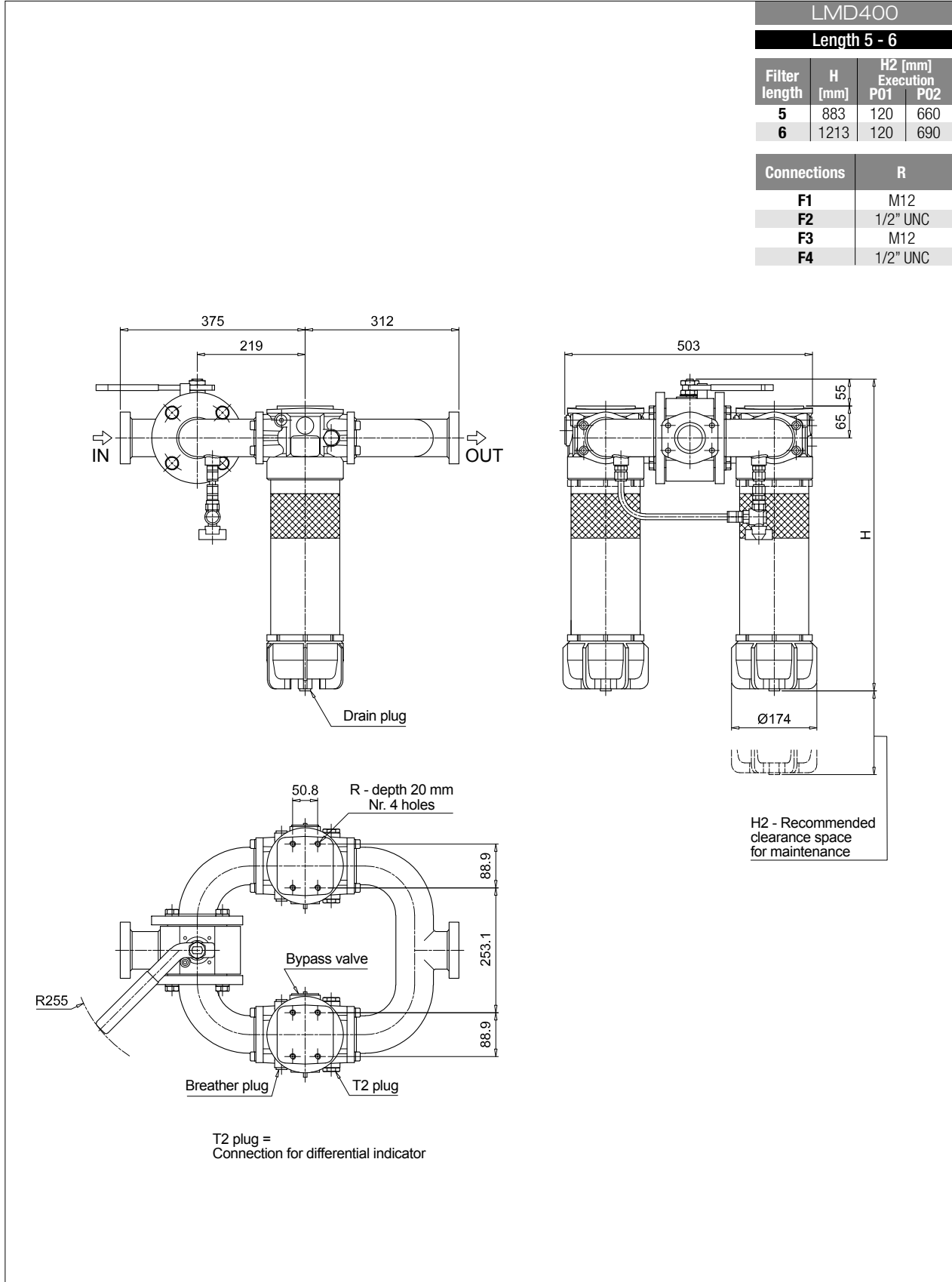
# LMD 400-401

## Dimensions



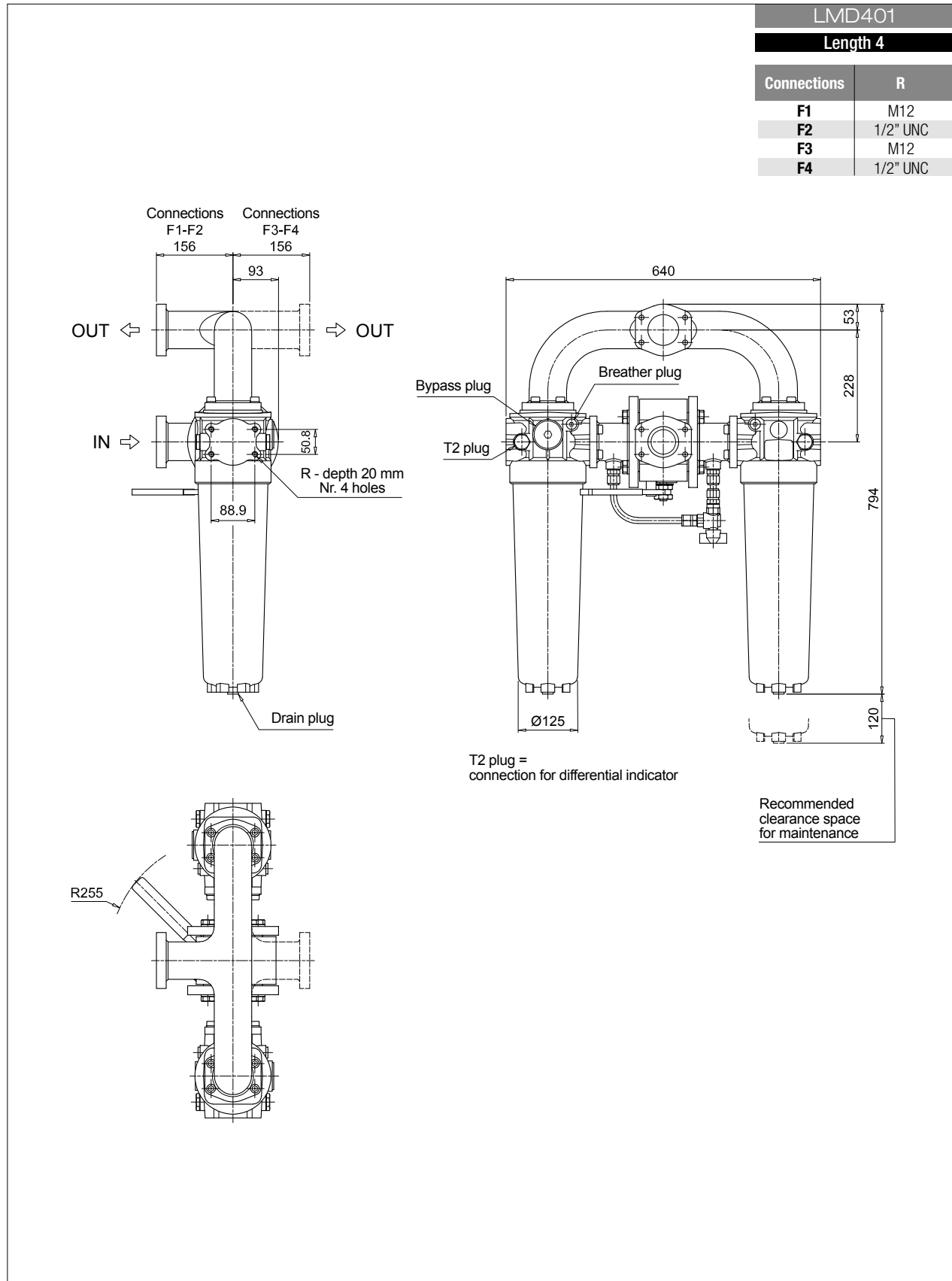
# LMD 400-401

## Dimensions



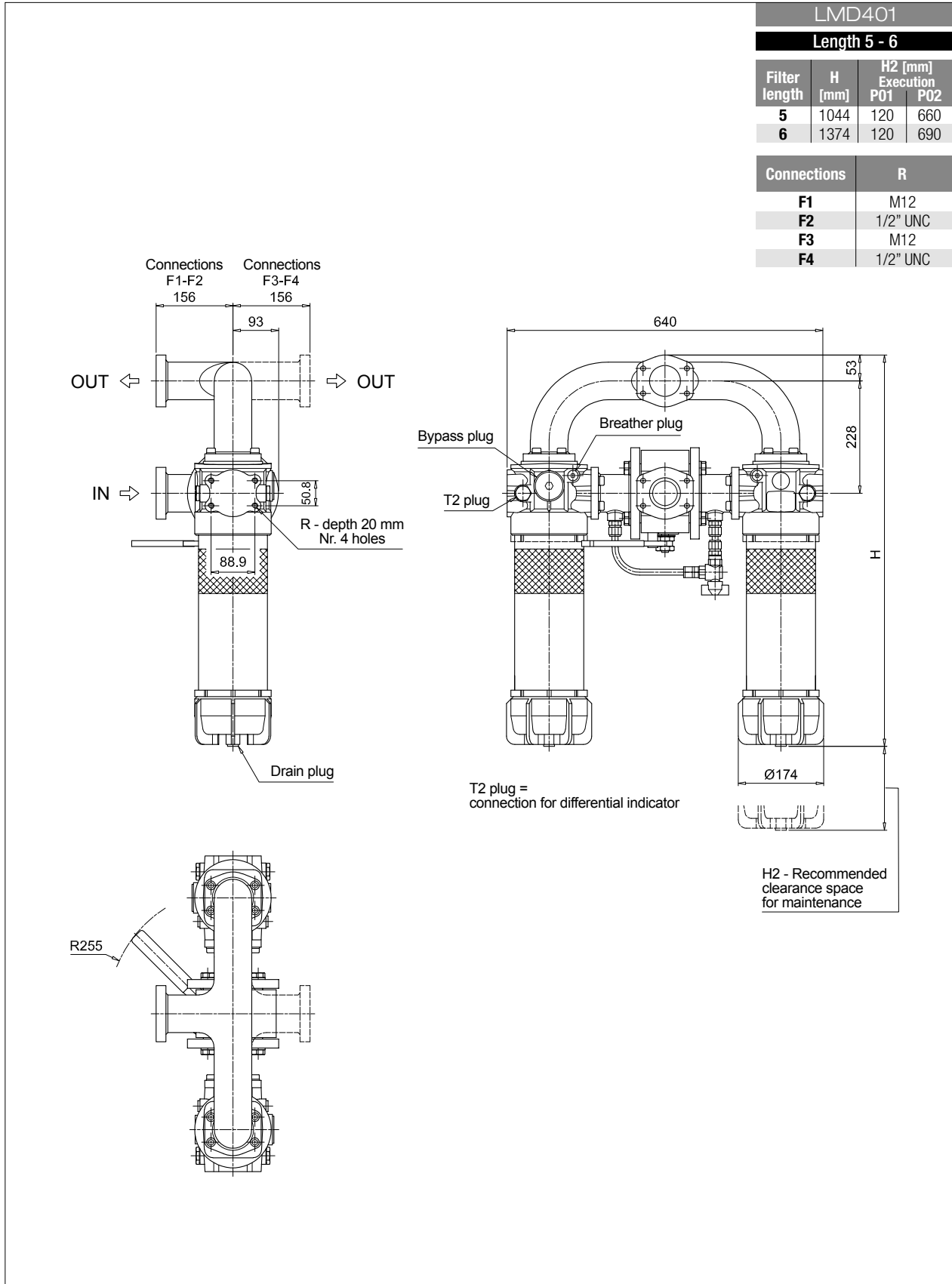
# LMD 400-401

## Dimensions



# LMD 400-401

## Dimensions



# LMD 400-401

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# LMD 431

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>LMD431</b>	Configuration example: <b>LMD431</b>   <b>5</b>   <b>B</b>   <b>V</b>   <b>F1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>									
<b>Length</b> <b>5</b>   <b>6</b>										
<b>Bypass valve</b> <b>S</b> Without bypass   <b>B</b> 3.5 bar										
<b>Seals and treatments</b> <b>V</b> FPM	Filtration rating Axx   Mxx   Pxx • • •									
<b>Connections</b> <b>F1</b> 2 1/2" SAE 3000 psi/M <b>F2</b> 2 1/2" SAE 3000 psi/UNC <b>F3</b> 2 1/2" SAE 3000 psi/M, In-line connections <b>F4</b> 2 1/2" SAE 3000 psi/UNC, In-line connections										
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm   <b>P10</b> Resin impregnated paper 10 µm <b>A25</b> Inorganic microfiber 25 µm   <b>P25</b> Resin impregnated paper 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm										
	<b>Element Δp</b> <b>N</b> 20 bar		<b>Execution</b> <b>P01</b> MP Filtri standard <b>P02</b> With internal tube for reduced flow rate <b>Pxx</b> Customized							

### FILTER ELEMENT

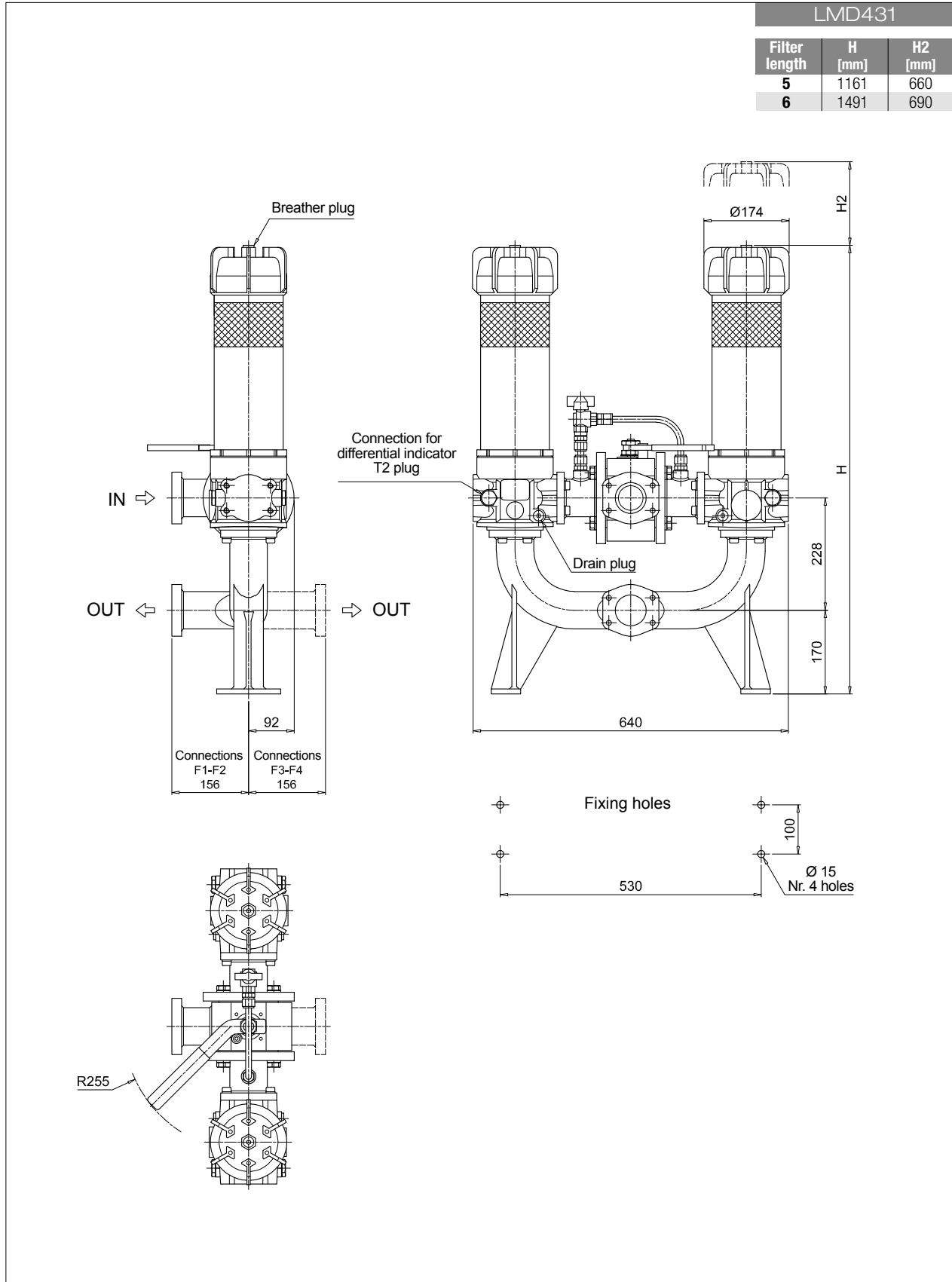
<b>Element series and size</b> <b>CU400</b>	Configuration example: <b>CU400</b>   <b>5</b>   <b>A10</b>   <b>V</b>   <b>N</b>   <b>P01</b>						
<b>Element length</b> <b>5</b>   <b>6</b>							
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm   <b>P10</b> Resin impregnated paper 10 µm <b>A25</b> Inorganic microfiber 25 µm   <b>P25</b> Resin impregnated paper 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm							
	<b>Element Δp</b> <b>N</b> 20 bar		<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized				

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		

# LMD 431

## Dimensions

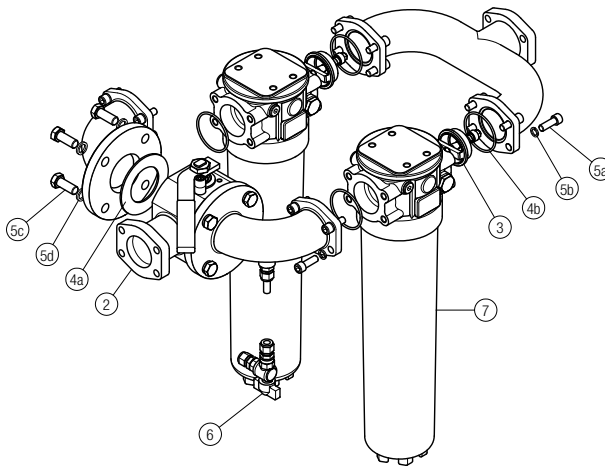


# LMD 400-401 & 431

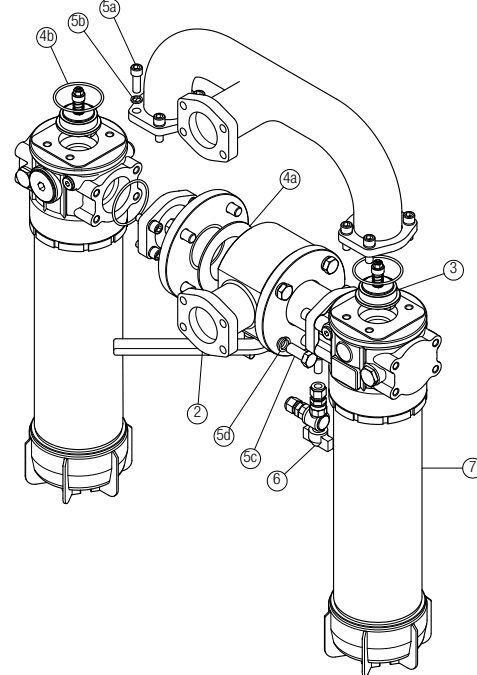
## SPARE PARTS

Order number for spare parts

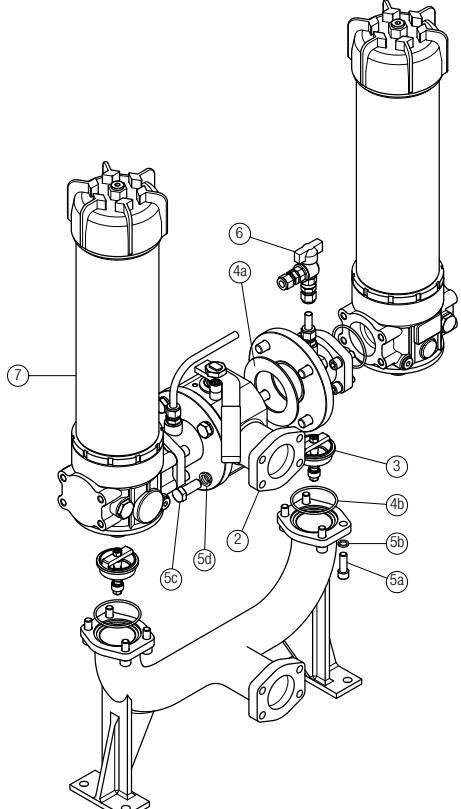
**LMD 400**



**LMD 401**



**LMD 431**



Item:	Q.ty: 1 pc. <b>2</b>	Q.ty: 2 pcs. <b>3</b>	Q.ty: 1 pc. <b>4</b> (4a ÷ 4b)	Q.ty: 1 pc. <b>5</b> (5a ÷ 5d)	Q.ty: 1 pc. <b>6</b>	Q.ty: 2 pcs. <b>7</b>
<b>Filter series</b>	<b>3-way ball valve PN 16</b> 2 1/2" SAE 3000 psi/M 2 1/2" SAE 3000 psi/UNC		<b>One-way valve</b>	<b>Seal Kit</b>	<b>Threaded fasteners kit</b>	<b>Kit ball valve with hose fitting</b> See order table
<b>LMD 400-401-431</b>	02001440	02001441	02001429	02050399	02049062	02025043
						LMP400xF2.....



# LMD 400-401 & 431

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Low & Medium Pressure filters

# LMD 951 series

Maximum working pressure up to 1.6 MPa (16 bar) - Flow rate up to 1200 l/min



# LMD 951 GENERAL INFORMATION

## Description

## Technical data

### Low & Medium Pressure filters

#### Duplex

**Maximum working pressure up to 1.6 MPa (16 bar)**

**Flow rate up to 1200 l/min**

LMD950 is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 1200 l/min
- Base-mounting design, for ease of the replacement of the filter element
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid.
- For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Painted black
- Bypass valve: Steel
- 3-way ball valve: Steel body - Stainless Steel ball
- Check valve: Cast Iron body - AISI 304 leaf

#### Pressure

- SAE + DIN Flange
- Test pressure: 2.5 MPa (25 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### Number of filter elements

LMD 951: 2 filter elements CU950-3

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

- LMD 951: In-line Inlet/Outlet
- Same side

#### Note

LMD 951 filters are provided for vertical mounting



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

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	DN 80	DN 100	DN 80	DN 100
<b>LMD 951</b>	102	130	62	66

# GENERAL INFORMATION LMD 951

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

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90 M250
<b>LMD 951</b>	<b>3</b>	853	884	995	1066	1096	1233

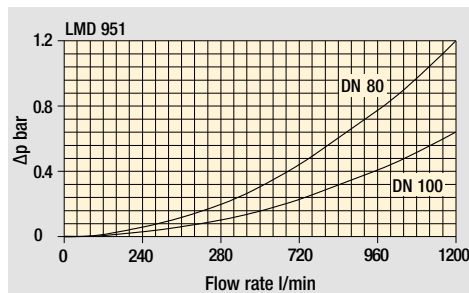
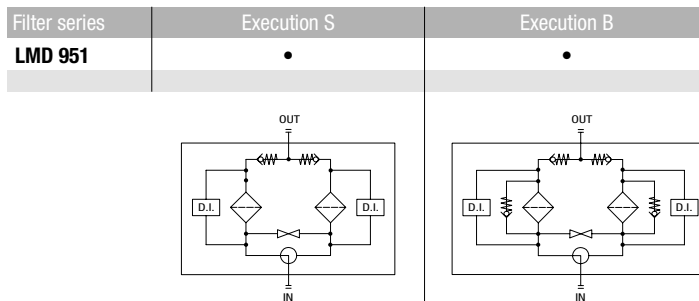
### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

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

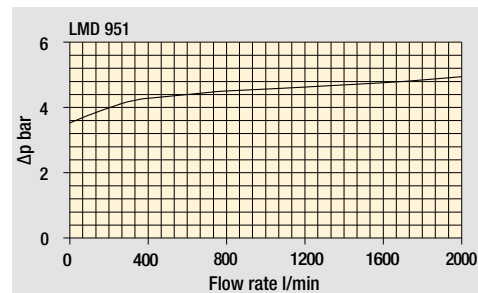
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

### Hydraulic symbols



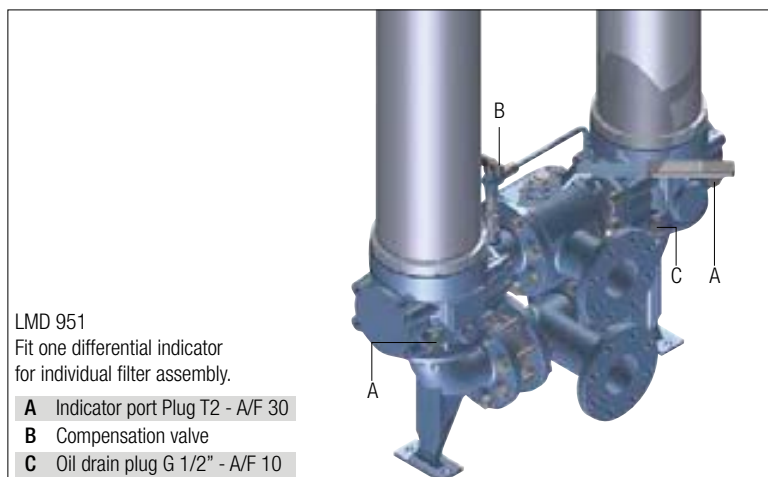
Filter housings  
 $\Delta p$  pressure drop



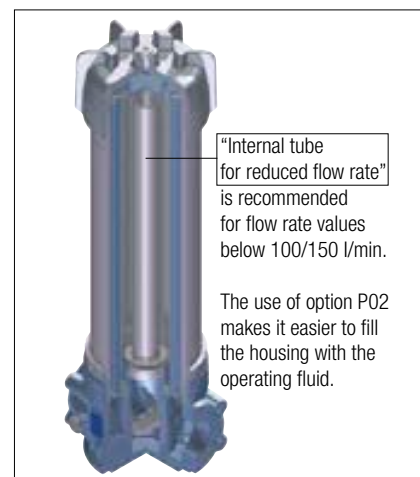
Bypass valve  
pressure drop

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

### Focus on



### Execution P02



# LMD 951

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b>	Configuration example: <b>LMD951</b>   <b>3</b>   <b>B</b>   <b>V</b>   <b>F1</b>   <b>A10</b>   <b>N</b>   <b>P01</b>							
<b>LMD951</b>								
<b>Length</b>	<b>3</b>							
<b>Bypass valve</b>	<b>S</b> Without bypass   <b>B</b> 3.5 bar							
<b>Seals and treatments</b>	<b>V</b> FPM							
<b>Connections</b>	<b>F1</b> 3" SAE 3000 psi/M <b>F2</b> 3" SAE 3000 psi/UNC <b>F3</b> 4" SAE 3000 psi/M <b>F4</b> 4" SAE 3000 psi/UNC <b>F5</b> 3" SAE 3000 psi/M, In-line connections <b>F6</b> 3" SAE 3000 psi/UNC, In-line connections <b>F7</b> 4" SAE 3000 psi/M, In-line connections <b>F8</b> 4" SAE 3000 psi/UNC, In-line connections							
<b>Filtration rating (filter media)</b>	<b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm							
	<b>Element Δp</b>				<b>Execution</b>			
	<b>N</b> 20 bar				<b>P01</b> MP Filtri standard <b>P02</b> With internal tube for reduced flow rate <b>Pxx</b> Customized			

### FILTER ELEMENT

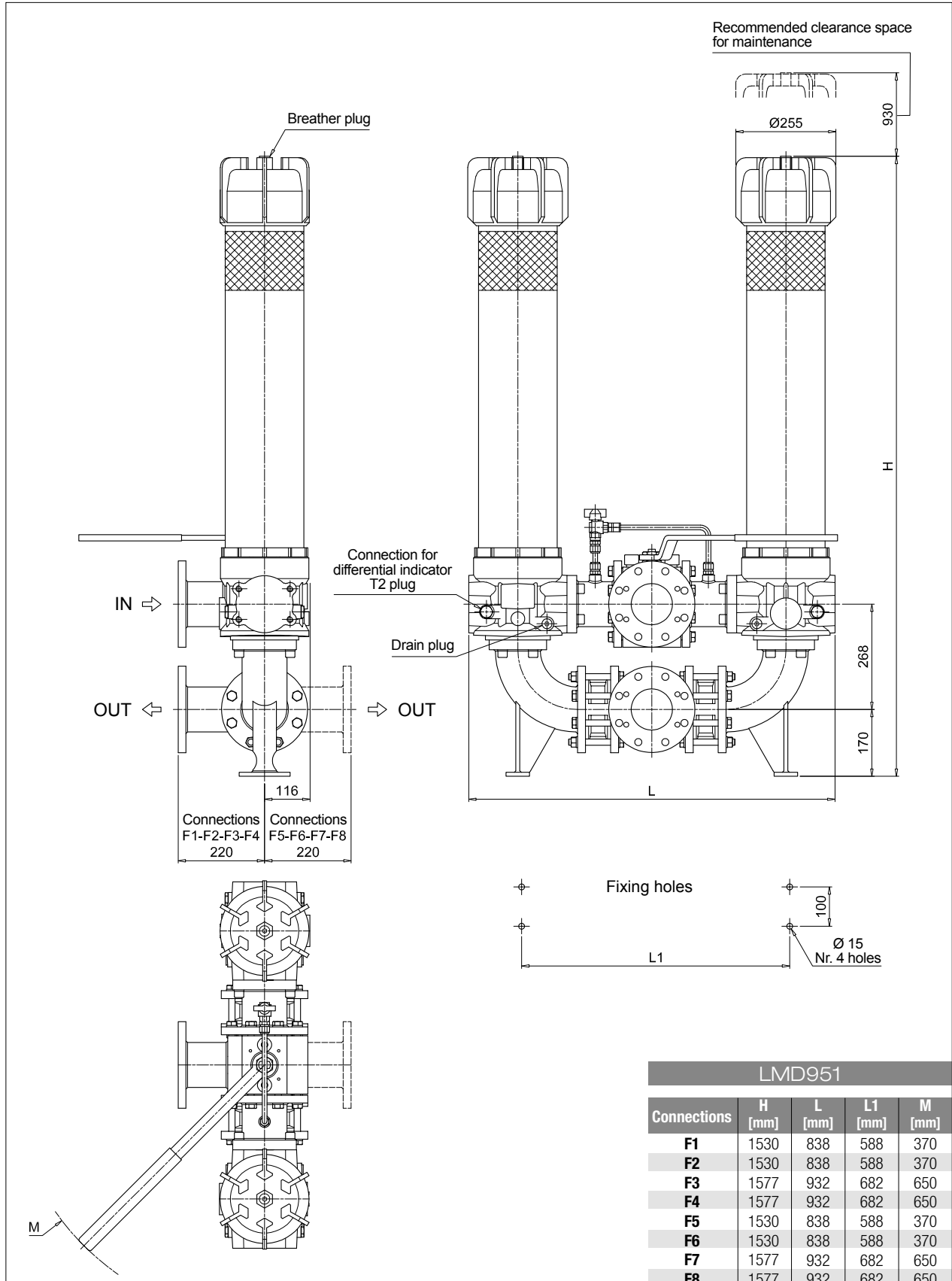
<b>Element series and size</b>	Configuration example: <b>CU950</b>   <b>3</b>   <b>A10</b>   <b>V</b>   <b>N</b>   <b>P01</b>						
<b>CU950</b>							
<b>Element length</b>	<b>3</b>						
<b>Filtration rating (filter media)</b>	<b>A03</b> Inorganic microfiber 3 µm   <b>M25</b> Wire mesh 25 µm <b>A06</b> Inorganic microfiber 6 µm   <b>M60</b> Wire mesh 60 µm <b>A10</b> Inorganic microfiber 10 µm   <b>M90</b> Wire mesh 90 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>WA025</b> Water absorber inorganic microfiber 25 µm						
<b>Seals</b>	<b>V</b> FPM						
	<b>Element Δp</b>				<b>Execution</b>		
	<b>N</b> 20 bar				<b>P01</b> MP Filtri standard <b>Pxx</b> Customized		

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
<b>T2</b> Plug	449		

# LMD 951

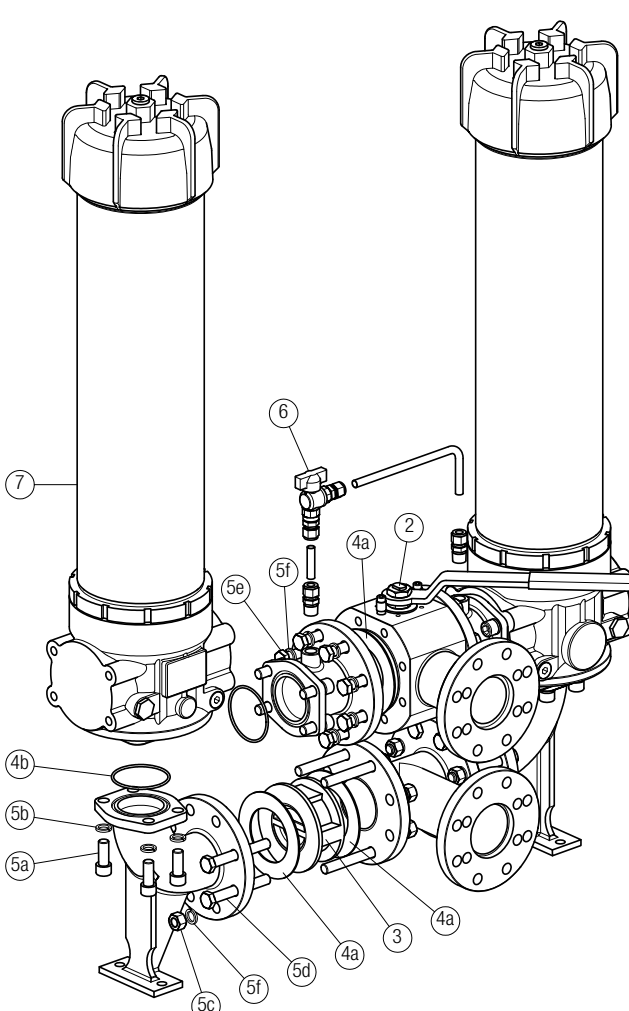
## Dimensions



# LMD 951 SPARE PARTS

Order number for spare parts

**LMD 951**



Item 7:  
for complete filter code and spare parts, see  
LMP 950 - 951 series chapter

Quantity:  
- filter spare parts: 2 pcs.  
- filter seal kit: 2 pcs.

Item:	Q.ty: 1 pc.		Q.ty: 2 pcs.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pcs.
	<b>2</b>		<b>3</b>	<b>4</b>	<b>5</b> (5a ÷ 5f)	<b>6</b>	<b>7</b>
Filter series LMD 951	3-way ball valve PN 16		One-way valve	Seal Kit	Threaded fasteners kit	G 1/2" Ball Valve Kit with straight fittings	Filter
<b>F1 - F2 - F5 - F6 / D1 - D3 (3" SAE / DIN PN16 DN 80)</b>	3" SAE 3000 psi/M 02001135	3" SAE 3000 psi/UNC 02001438	02001418	02050388	02049056	02025043	LMP9513xVF1xxxNP01
<b>F3 - F4 - F7 - F8 / D2 - D4 (4" SAE / DIN PN16 DN 100)</b>	4" SAE 3000 psi/M 02001162	4" SAE 3000 psi/UNC 02001439	02001419	02050389	02049057		LMP9513xVF3xxxNP01



# LMD 951

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Low & Medium Pressure filters

# DIN 24550 Filter element according to DIN 24550

## LDP & LDD series

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 360 l/min

## LMP 900-901 series

Maximum working pressure up to 3 MPa (30 bar) - Flow rate up to 2000 l/min

## LMP 902-903 series

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 3000 l/min





Low & Medium Pressure filters

# LDP & LDD series

Filter element according to DIN 24550

Maximum working pressure up to 6 MPa (60 bar) - Flow rate up to 360 l/min

# LDP & LDD GENERAL INFORMATION

## Filter element according to DIN 24550

### Descriptions

#### Low & Medium Pressure filters

**Maximum working pressure up to 6 MPa (60 bar)**  
**Flow rate up to 360 l/min**

**LDP** is a range of versatile low pressure filter for transmission, protection of sensitive components in low pressure hydraulic systems and filtration of the coolant into the machine tools.

They are also suitable for the off-line filtration of small reservoirs.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2", for a maximum return flow rate of 330 l/min
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in low pressure industrial equipment or mobile machines

**LDD** is a range of versatile low pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 330 l/min
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Balancing valve integrated in the changeover lever, to equalize the housing pressure before the switch
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Optional sampling ports, to get samples of fluid or to connect additional instrument to the system
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Systems where shut-down causes high costs
- Systems where shut-down causes safety issues

### Technical data

#### Filter housing materials

- Head: Aluminium
- Bowl: Cataphoretic Painted Steel
- Bypass valve: AISI 304 - Nylon

#### Pressure

- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25° C to +110° C

#### Connections

Inlet/Outlet In-Line

#### Note

LDP - LDD filters are provided for vertical mounting



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

Filter series	Weights [kg]	Volumes [dm <sup>3</sup> ]
<b>LDP 016</b>	2.0	1.2
<b>LDP 025</b>	3.0	1.6
<b>LDP 040</b>	5.0	2.2
<b>LDD 016</b>	9.3	3.6
<b>LDD 025</b>	9.5	4.1
<b>LDD 040</b>	11.3	4.8

# GENERAL INFORMATION LDP & LDD

## Filter element according to DIN 24550

### FILTER ASSEMBLY SIZING

Flow rates [l/min]

Filter series	Filter element design - N Series										
	A03	A06	A10	A16	A25	M25	M60	M90	M250	P10	P25
<b>LDP 016</b>	83	91	178	198	222	350	353	358	359	295	309
<b>LDP 025</b>	124	134	227	245	265	357	358	358	359	319	330
<b>LDP 040</b>	173	191	274	284	311	359	360	361	362	332	337
<b>LDD 016</b>	68	73	120	130	140	189	190	192	192	169	174
<b>LDD 025</b>	93	98	142	149	157	191	192	192	192	178	181
<b>LDD 040</b>	118	126	161	165	175	192	192	193	193	182	184

### Maximum flow rate for a complete low and medium pressure filter with a pressure drop $\Delta p = 0.7$ bar.

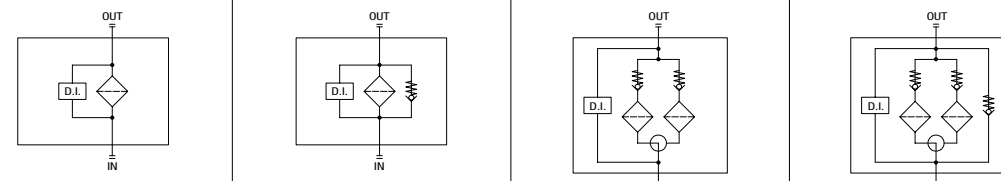
The reference fluid has a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$  (cSt) and a density of  $0.86 \text{ kg}/\text{dm}^3$ .

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

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

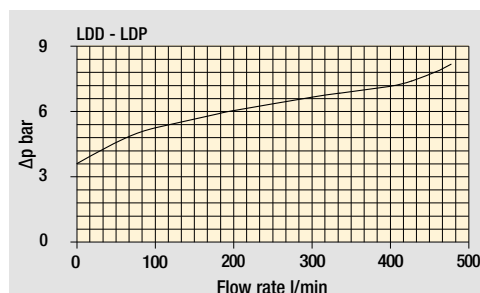
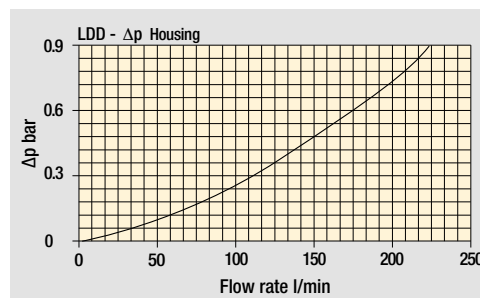
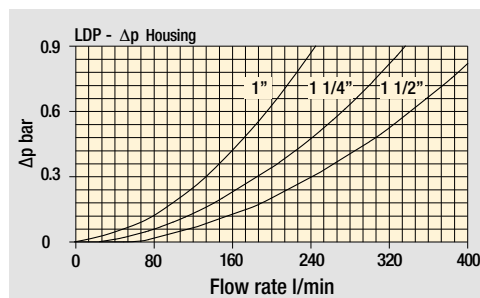
### Hydraulic symbols

Filter series	Execution S	Execution B	Execution S	Execution B
<b>LDP 016</b>	•	•		
<b>LDP 025</b>	•	•		
<b>LDP 040</b>	•	•		
<b>LDD 016</b>			•	•
<b>LDD 025</b>			•	•
<b>LDD 040</b>			•	•

### Pressure drop

Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop

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

# LDP Filter element according to DIN 24550

## Designation & Ordering code

COMPLETE FILTER			
Series	Configuration example: LDP 025 B A D 6 A10 N P01		
<b>LDP</b>			
Size			
<b>016</b> Element according to DIN 24550 - T3 DN160			
<b>025</b> Element according to DIN 24550 - T3 DN250			
<b>040</b> Element according to DIN 24550 - T3 DN400			
Bypass valve			
<b>S</b> Without bypass	<b>B</b> 3.5 bar		
Seals and treatments	Filtration rating		
<b>A</b> NBR	Axx	Mxx	Pxx
<b>V</b> FPM	•	•	•
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•	
Connections			
<b>A</b> G 1"	<b>F</b> 1 1/2" NPT		
<b>B</b> G 1 1/4"	<b>G</b> SAE 16 - 1 5/16" - 12 UN		
<b>C</b> G 1 1/2"	<b>H</b> SAE 20 - 1 5/8" - 12 UN		
<b>D</b> 1" NPT	<b>I</b> SAE 24 - 1 7/8" - 12 UN		
<b>E</b> 1 1/4" NPT			
Connection for differential indicator			
<b>6</b> With plugged connection			
Filtration rating (filter media)			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm		
<b>WA025</b> Water absorber inorganic microfiber 25 µm			
Element $\Delta p$	Execution		
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard		
	<b>Pxx</b> Customized		

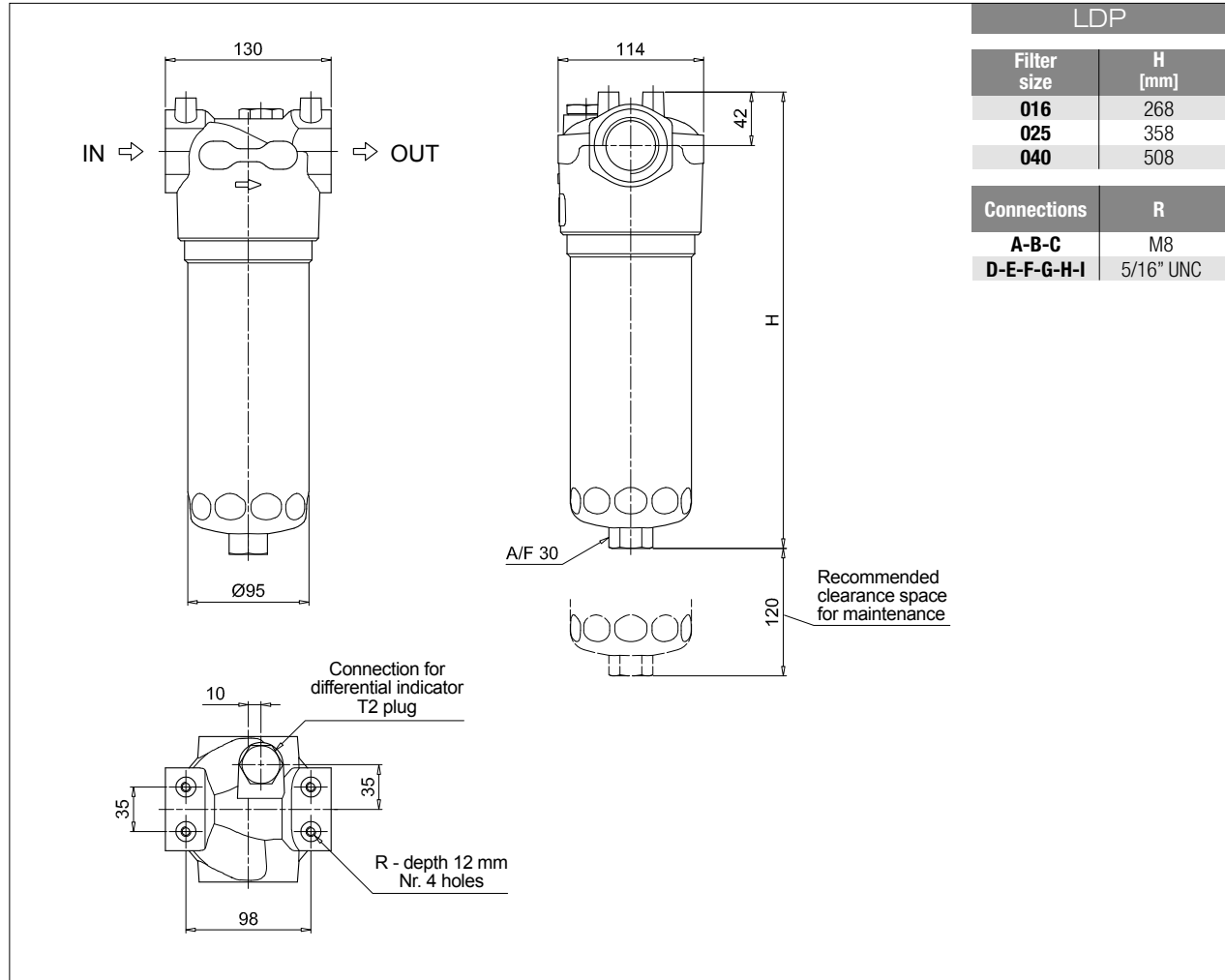
FILTER ELEMENT			
Element series	Configuration example: DN 025 A10 A N P01		
<b>DN</b>			
Element size			
<b>016</b> Element according to DIN 24550 - T3 DN160			
<b>025</b> Element according to DIN 24550 - T3 DN250			
<b>040</b> Element according to DIN 24550 - T3 DN400			
Filtration rating (filter media)			
<b>A03</b> Inorganic microfiber 3 µm	<b>M25</b> Wire mesh 25 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>M60</b> Wire mesh 60 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M90</b> Wire mesh 90 µm		
<b>A16</b> Inorganic microfiber 16 µm	<b>P10</b> Resin impregnated paper 10 µm		
<b>A25</b> Inorganic microfiber 25 µm	<b>P25</b> Resin impregnated paper 25 µm		
<b>WA025</b> Water absorber inorganic microfiber 25 µm			
Seals	Filtration rating		
<b>A</b> NBR	Axx	Mxx	Pxx
<b>V</b> FPM	•	•	•
<b>W</b> NBR compatible with fluids HFA-HFB-HFC	•	•	
Element $\Delta p$	Execution		
<b>N</b> 20 bar	<b>P01</b> MP Filtri standard		
	<b>Pxx</b> Customized		

ACCESSORIES			
Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
Additional features	page		
<b>T2</b> Plug	449		



## Filter element according to DIN 24550 **LDP**

### Dimensions



# LDD Filter element according to DIN 24550

## Designation & Ordering code

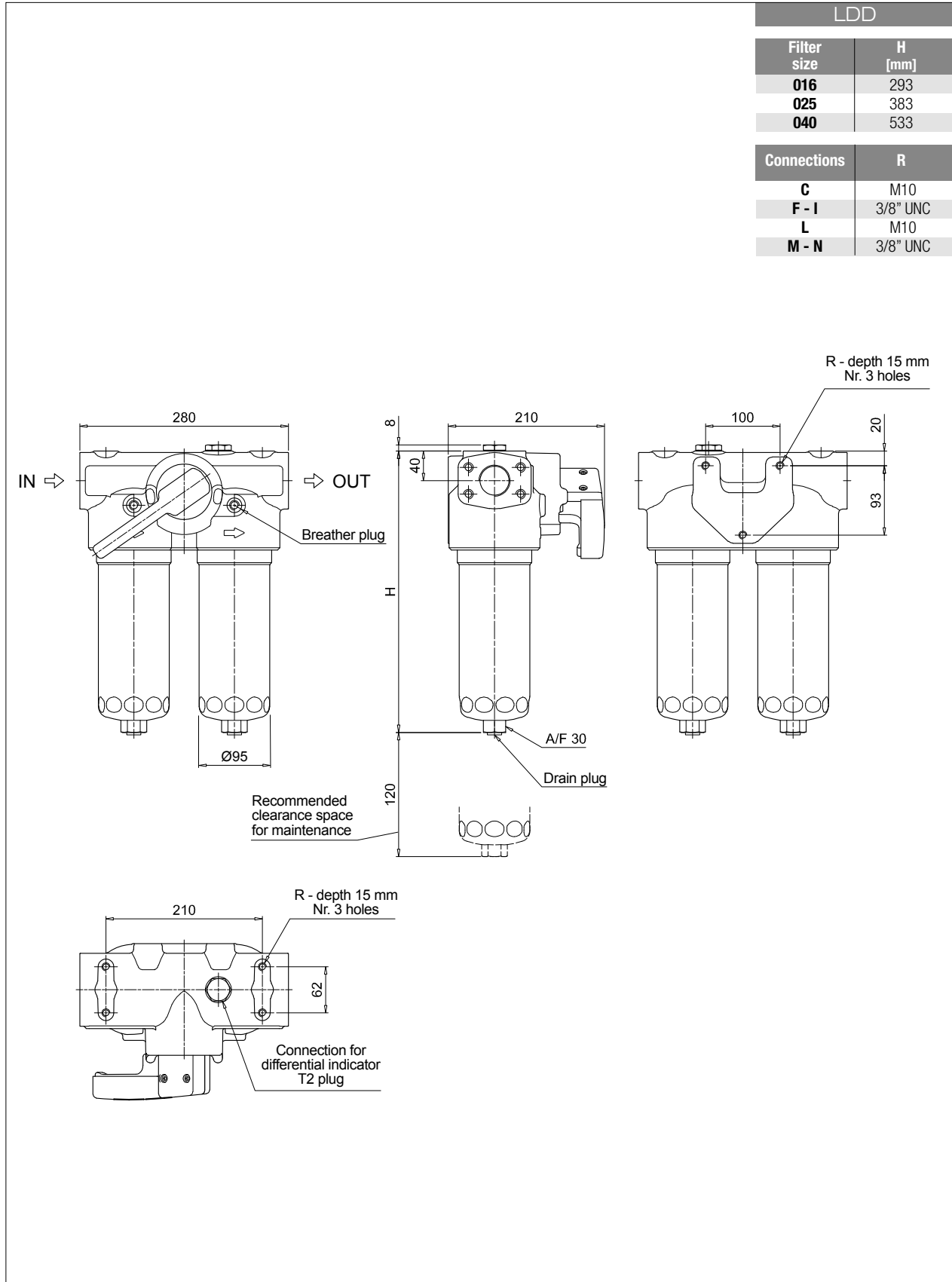
COMPLETE FILTER										
Series	Configuration example: <b>LDD</b> <b>025</b> <b>B</b> <b>A</b> <b>C</b> <b>6</b> <b>A10</b> <b>N</b> <b>P01</b>									
<b>LDD</b>										
Size										
<b>016</b>	Element according to DIN 24550 - T3 DN160									
<b>025</b>	Element according to DIN 24550 - T3 DN250									
<b>040</b>	Element according to DIN 24550 - T3 DN400									
Bypass valve										
<b>S</b>	Without bypass		<b>B</b>	3.5 bar						
Seals and treatments	Axx		Mxx		Pxx					
<b>A</b>	NBR		• •		•					
<b>V</b>	FPM		• •		•					
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC		• •							
Connections										
<b>C</b>	G 1 1/2"									
<b>F</b>	1 1/2" NPT									
<b>I</b>	SAE 24 - 1 7/8" - 12 UN									
<b>L</b>	1 1/2" SAE 3000 psi/M + G 1 1/4"									
<b>M</b>	1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT									
<b>N</b>	1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" UN									
Connection for differential indicator										
<b>6</b>	With plugged connection									
Filtration rating (filter media)										
<b>A03</b>	Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm							
<b>A06</b>	Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm							
<b>A10</b>	Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm							
<b>A16</b>	Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm							
<b>A25</b>	Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm							
<b>WA025</b>	Water absorber inorganic microfiber 25 µm									
Element Δp	<b>N</b>		20 bar							
Execution	<b>P01</b> MP Filtri standard									
	<b>Pxx</b> Customized									

FILTER ELEMENT									
Element series	Configuration example: <b>DN</b> <b>025</b> <b>A10</b> <b>A</b> <b>N</b> <b>P01</b>								
<b>DN</b>									
Element size									
<b>016</b>	Element according to DIN 24550 - T3 DN160								
<b>025</b>	Element according to DIN 24550 - T3 DN250								
<b>040</b>	Element according to DIN 24550 - T3 DN400								
Filtration rating (filter media)									
<b>A03</b>	Inorganic microfiber 3 µm		<b>M25</b> Wire mesh 25 µm						
<b>A06</b>	Inorganic microfiber 6 µm		<b>M60</b> Wire mesh 60 µm						
<b>A10</b>	Inorganic microfiber 10 µm		<b>M90</b> Wire mesh 90 µm						
<b>A16</b>	Inorganic microfiber 16 µm		<b>P10</b> Resin impregnated paper 10 µm						
<b>A25</b>	Inorganic microfiber 25 µm		<b>P25</b> Resin impregnated paper 25 µm						
<b>WA025</b>	Water absorber inorganic microfiber 25 µm								
Seals	Axx		Mxx		Pxx				
<b>A</b>	NBR		• •		•				
<b>V</b>	FPM		• •		•				
<b>W</b>	NBR compatible with fluids HFA-HFB-HFC		• •						
Element Δp	<b>N</b>		20 bar						
Execution	<b>P01</b> MP Filtri standard								
	<b>Pxx</b> Customized								

ACCESSORIES			
Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	445	<b>DTA</b> Electronic differential indicator	448
<b>DEM</b> Electrical differential indicator	445-446	<b>DVA</b> Visual differential indicator	448
<b>DLA</b> Electrical / visual differential indicator	446-447	<b>DVM</b> Visual differential indicator	448
<b>DLE</b> Electrical / visual differential indicator	447		
Additional features	page		
<b>T2</b> Plug	449		

# Filter element according to DIN 24550 LDD

## Dimensions

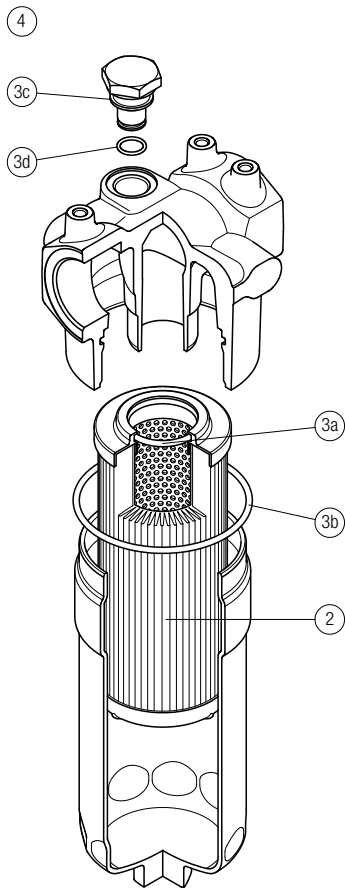


# LDP SPARE PARTS

Filter element according to DIN 24550

Order number for spare parts

**LDP**

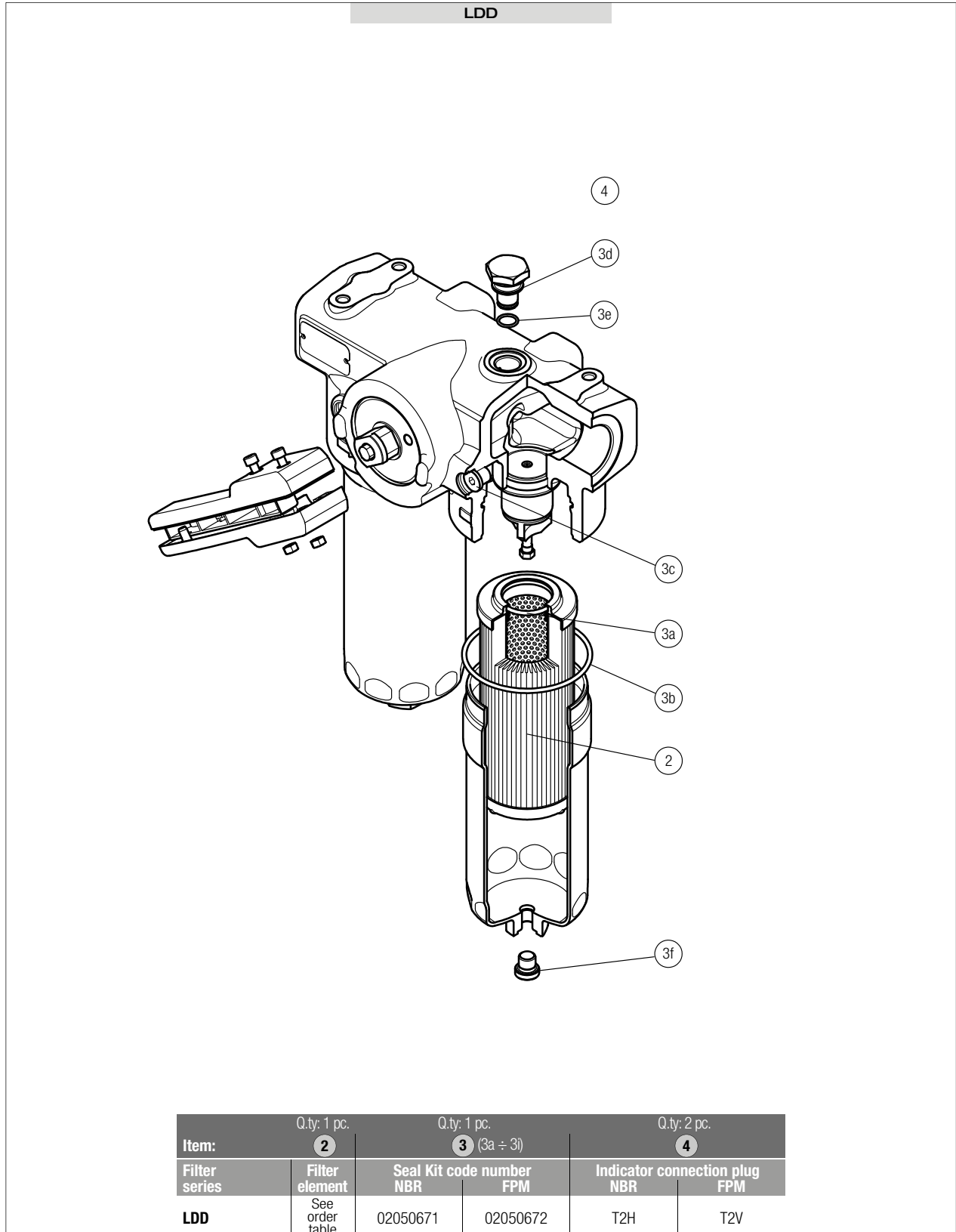


Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
LDP	See order table	NBR	FPM	NBR	FPM
	<b>2</b>	<b>3</b> (3a ÷ 3d)		<b>4</b>	
		02050435	02050436	T2H	T2V

# SPARE PARTS LDD

Filter element according to DIN 24550

Order number for spare parts







Low & Medium Pressure filters

# LMP 900-901 series

Filter element according to DIN 24550

Maximum working pressure up to 3 MPa (30 bar) - Flow rate up to 2000 l/min



# LMP 900-901 GENERAL INFORMATION

## Filter element according to DIN 24550

### Description

#### Low & Medium Pressure filters

**Maximum working pressure up to 3 MPa (30 bar)**  
**Flow rate up to 2000 l/min**

LMP900 is a range of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Flanged connections up to 4", for a maximum flow rate of 2000 l/min
- In line or 90° connections, to meet any type of application
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems
- Lubrication systems

### Technical data

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Anodized Aluminium
- Bypass valve: Steel

#### Pressure

- Test pressure: 4.5 MPa (45 bar)
- Burst pressure: 12 MPa (120 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 3 MPa (30 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar) ±10%
- Other opening pressures on request.

#### Number of filter elements

LMP 900-1: 1 filter element CU900  
LMP 900-2: 2 filter elements CU900

#### Filter elements

Filter element according to DIN 24550  
Size: 1000

#### Δp element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Connections

LMP 900: In-line Inlet/Outlet  
LMP 901: 90° Inlet/Outlet

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Note

LMP 900 - 901 filters are provided for vertical mounting



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

Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]		
	Length	1	2	Length	1	2
<b>LMP 900-901</b>		19.2	30.4		16	24



# GENERAL INFORMATION LMP 900-901

Filter element according to DIN 24550

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90 M250
<b>LMP 900</b>	<b>1</b>	706	877	1264	1291	1444	1803
	<b>2</b>	1100	1264	1556	1573	1668	1867
<b>LMP 901</b>	<b>1</b>	715	899	1337	1369	1552	2000
	<b>2</b>	1147	1337	1689	1710	1828	2081

**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

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

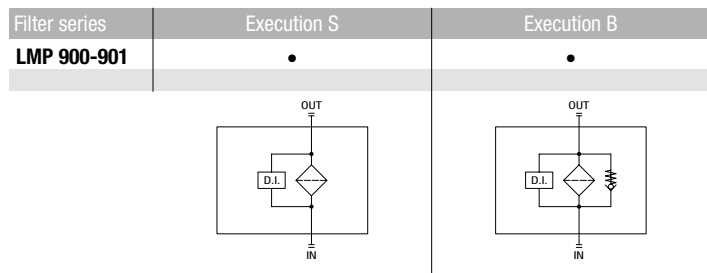
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

LMP 900-901 Length 2

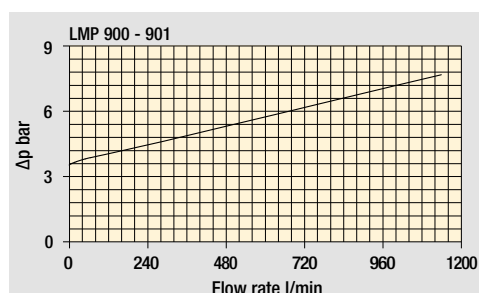
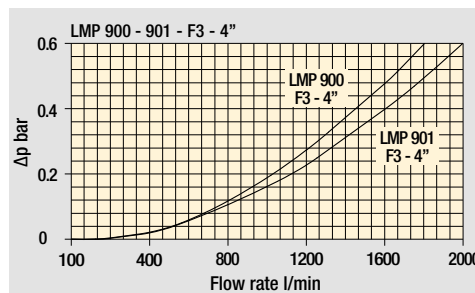
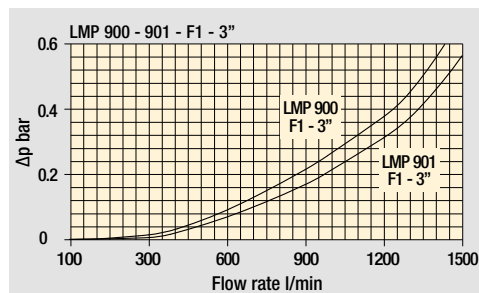


Hydraulic symbols



Pressure drop

Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop

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

# LMP 900-901 Filter element according to DIN 24550

## Designation & Ordering code

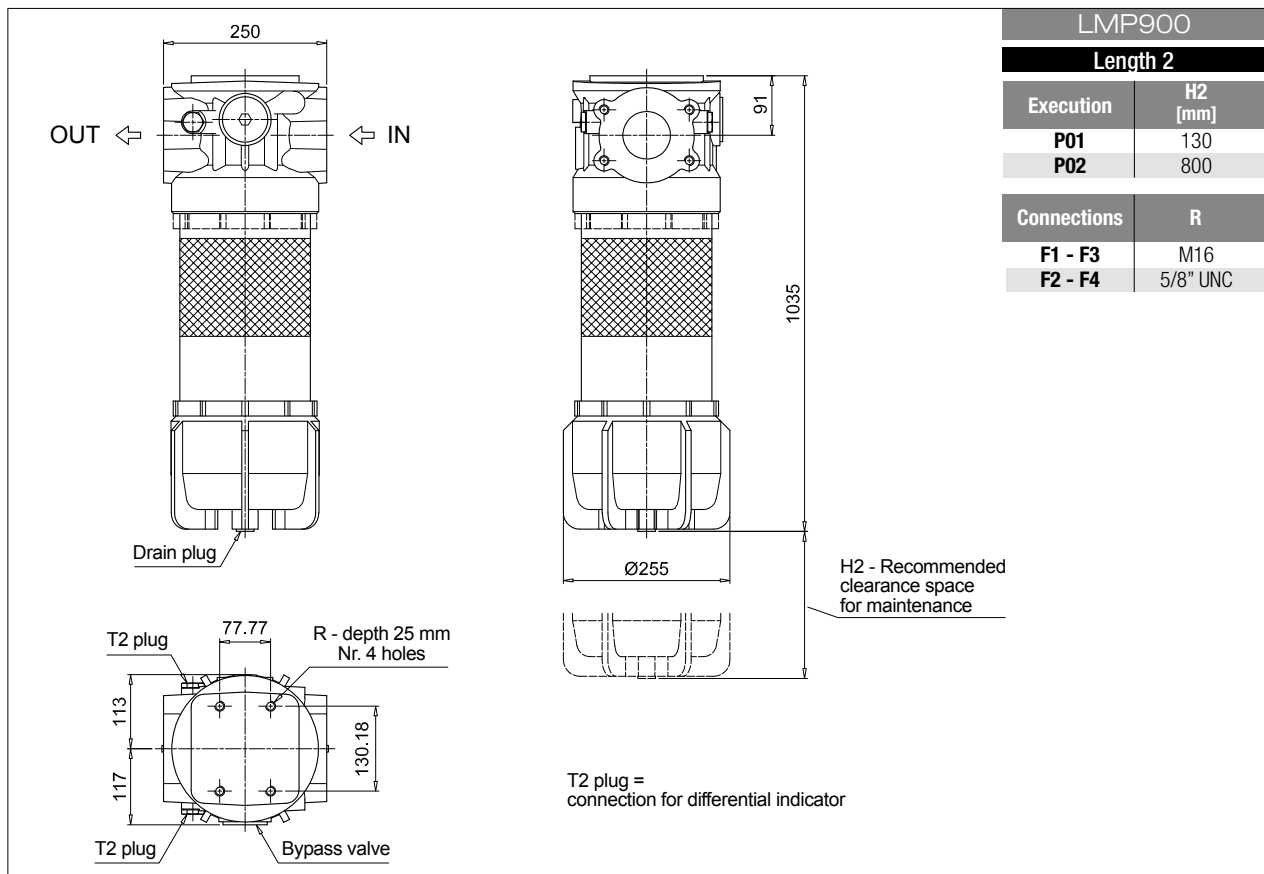
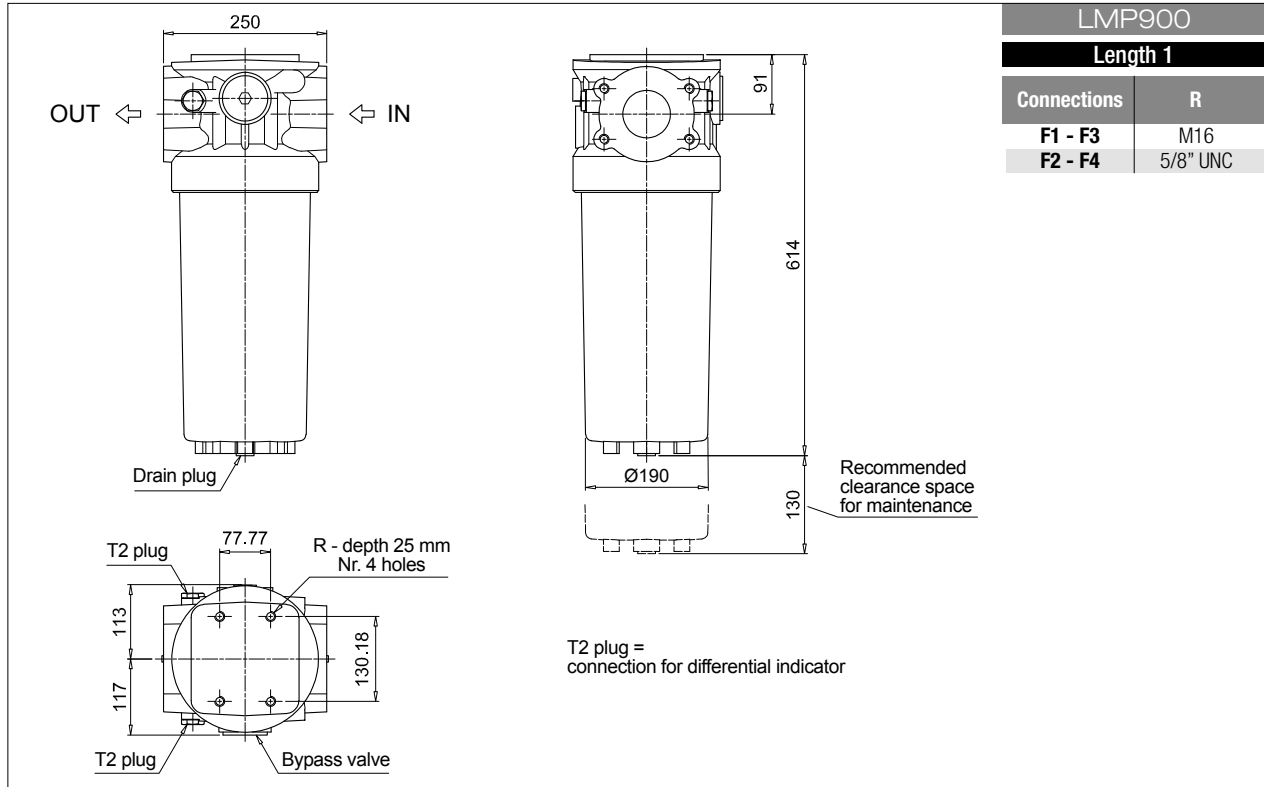
COMPLETE FILTER									
Series and size		Configuration example: LMP901 2 B A F2 A10 N P01							
<b>LMP900   LMP901</b>									
Length									
1   2									
Bypass valve									
S Without bypass		B 3.5 bar							
Seals and treatments									
A NBR									
V FPM									
Connections									
F1 3" SAE 3000 psi/M									
F2 3" SAE 3000 psi/UNC									
F3 4" SAE 3000 psi/M									
F4 4" SAE 3000 psi/UNC									
Filtration rating (filter media)									
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm									
A25 Inorganic microfiber 25 µm									
WA025 Water absorber inorganic microfiber 25 µm									
Element Δp		Execution						Filter length	
N 20 bar		P01 MP Filtri standard						1 2	
		P02 Maintenance from the bottom of the housing						• •	
		Pxx Customized						•	

FILTER ELEMENT									
Element series and size		Configuration example: CU900 A10 A N P01							
<b>CU900</b>									
Length									
1 Nr. 1 filter element									
2 Nr. 2 filter elements									
Filtration rating (filter media)									
A03 Inorganic microfiber 3 µm		M25 Wire mesh 25 µm							
A06 Inorganic microfiber 6 µm		M60 Wire mesh 60 µm							
A10 Inorganic microfiber 10 µm		M90 Wire mesh 90 µm							
A16 Inorganic microfiber 16 µm									
A25 Inorganic microfiber 25 µm									
WA025 Water absorber inorganic microfiber 25 µm									
Seals									
A NBR									
V FPM									
Element Δp		Execution						Filter length	
N 20 bar		P01 MP Filtri standard						1 2	
		Pxx Customized						•	

ACCESSORIES									
Differential indicators					page				
DEA Electrical differential indicator		445			DTA Electronic differential indicator		448		
DEM Electrical differential indicator		445-446			DVA Visual differential indicator		448		
DLA Electrical / visual differential indicator		446-447			DVM Visual differential indicator		448		
DLE Electrical / visual differential indicator		447							
Additional features					Filter length				
T2 Plug		1 2 page			CFA Retaining clamp		1 2 page		
		• • 449					• 450		

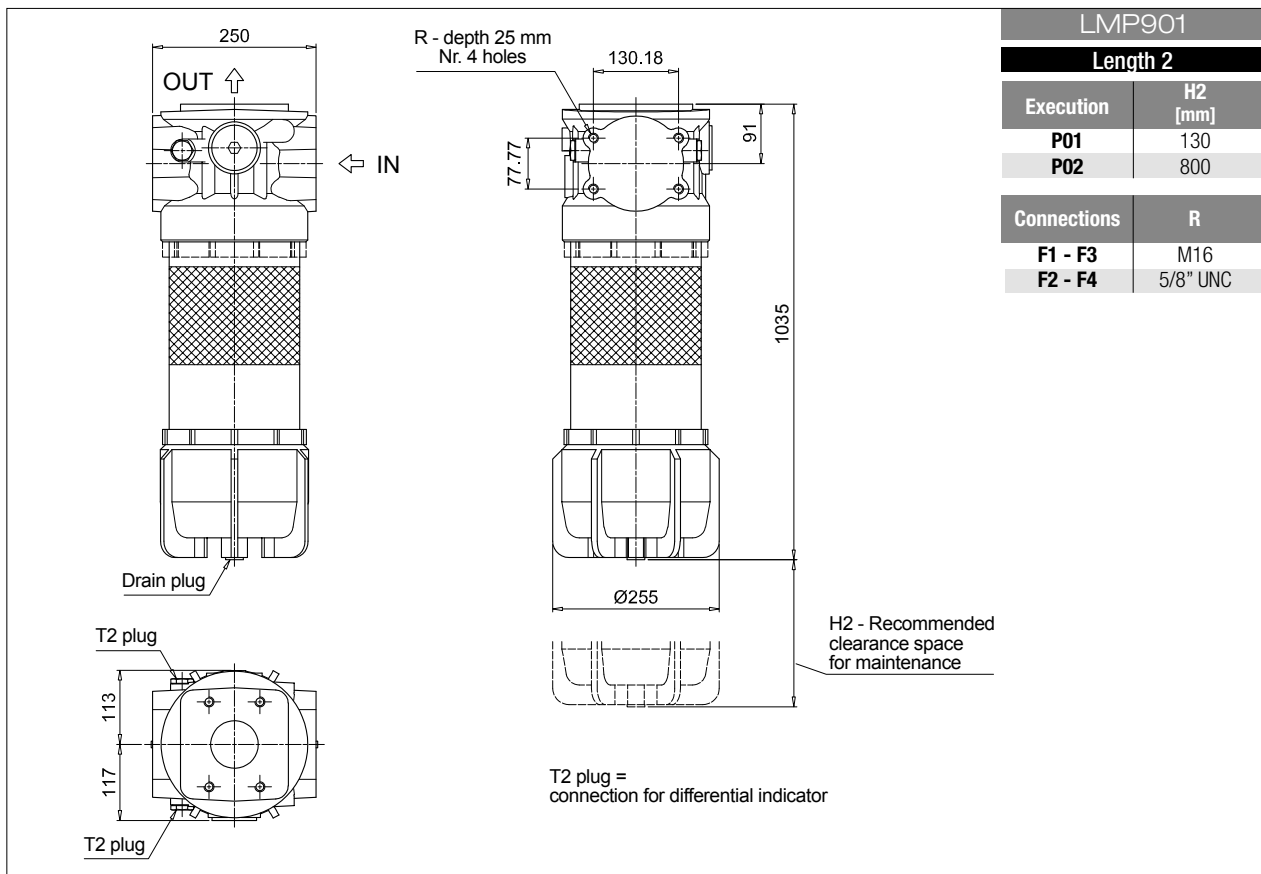
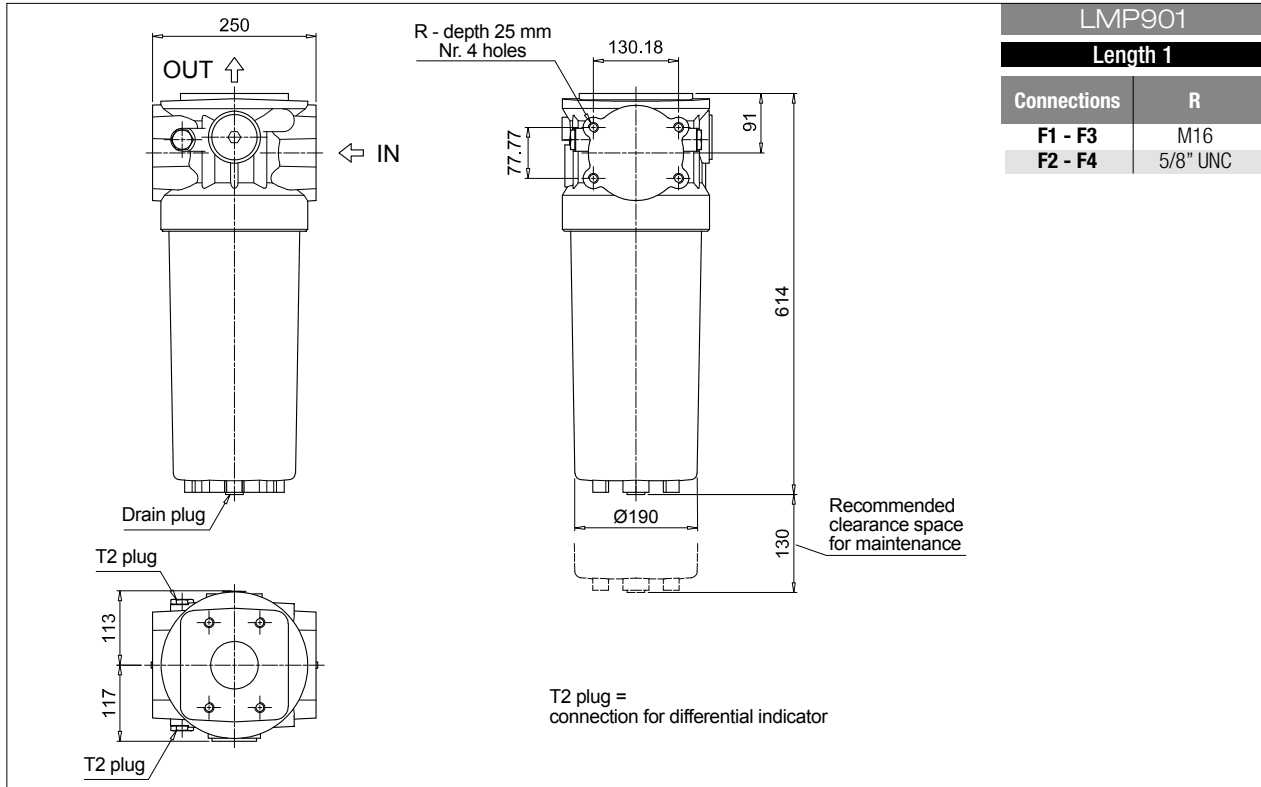
# Filter element according to DIN 24550 LMP 900-901

Dimensions



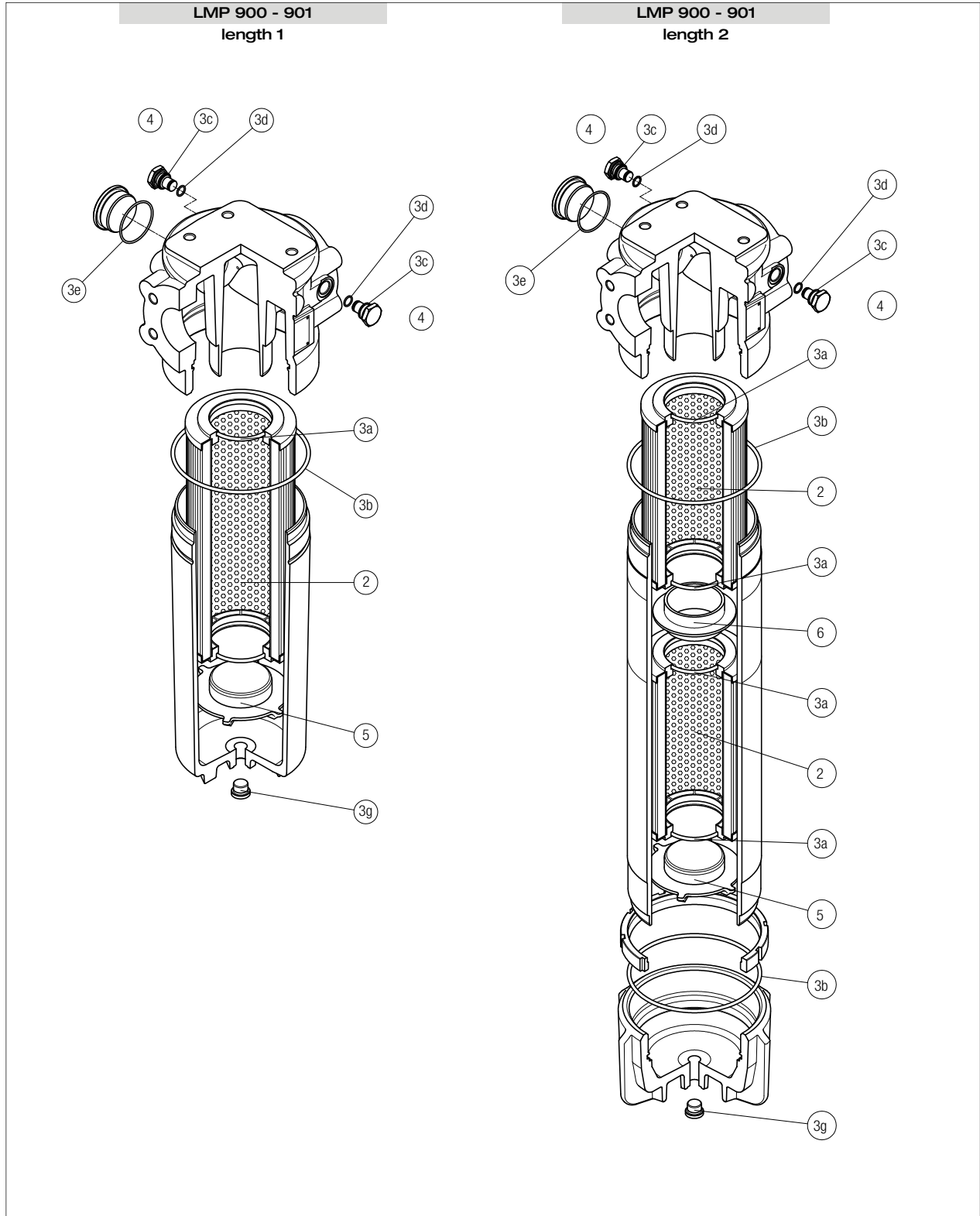
# LMP 900-901 Filter element according to DIN 24550

## Dimensions



# SPARE PARTS LMP 900-901

Order number for spare parts



Item:	2		3 (3a ÷ 3g)			4		5		6		
Filter series	Filter element	Seal Kit code number	Indicator connection plug		Housing spigot		Coupling spigot					
	Q.ty	Q.ty	NBR	FPM	Q.ty	NBR	FPM	Q.ty	Q.ty	Q.ty		
<b>LMP 900-901 length 1</b>	1 pc.	See order table	1 pc.	02050363	02050364	2 pcs.	T2H	T2V	1 pc.	01044104	-	01044099
<b>LMP 900-901 length 2</b>	2 pcs.		1 pc.	02050365	02050366	2 pcs.			1 pc.		1 pc.	





Low & Medium Pressure filters

# LMP 902-903 series

Filter element according to DIN 24550

Maximum working pressure up to 2 MPa (20 bar) - Flow rate up to 3000 l/min



# LMP 902-903 GENERAL INFORMATION

## Filter element according to DIN 24550

### Description

#### Low & Medium Pressure filters

**Maximum working pressure up to 2 MPa (20 bar)**  
**Flow rate up to 3000 l/min**

LMP902 and LMP903 are ranges of low pressure filter with large filtration surface mainly suitable for lubrication, off-line filtration of the reservoirs and filtration equipment.

Multiple LMP950 filters are connected to a manifold to reduce the pressure drop caused by the filter media and to increase the life time of the filter element.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 4" flanged connections, for a maximum flow rate of 3000 l/min
- Filter element designed in accordance with DIN 24550 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Water removal elements, to remove the free water from the hydraulic fluid. For further information, see the Contamination Management document and the dedicate leaflet.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-line filtration of reservoirs
- Filtration systems

### Technical data

#### Filter housing materials

- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Phosphatized Steel
- Bypass valve: Steel
- Size 1000 filter elements complying with DIN 24550 standard

#### Pressure

- Test pressure: 3.5 MPa (35 bar)

#### Bypass valve

- Opening pressure 350 kPa (3.5 bar)  $\pm 10\%$
- Other opening pressures on request.

#### Number of filter elements

- LMP 902: 4 filter elements CU900
- LMP 903: 6 filter elements CU900

#### Filter elements

- Filter element according to DIN 24550
- Size: 1000

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Connections

- LMP 902-903: In-line Inlet/Outlet

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

- From -25 °C to +110 °C

#### Note

- LMP 902 - 903 filters are provided for vertical mounting



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

Filter series	Weights [kg]		Volumes [dm <sup>3</sup> ]	
	Length	2	Length	2
<b>LMP 902</b>		89.6		58
<b>LMP 903</b>		129.2		87



# GENERAL INFORMATION LMP 902-903

Filter element according to DIN 24550

FILTER ASSEMBLY SIZING  
Flow rates [l/min]

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25 M60 M90 M250
<b>LMP 902</b>	<b>2</b>	2217	2576	3241	3282	3506	3987
<b>LMP 903</b>	<b>2</b>	2838	3170	3720	3755	3926	4278

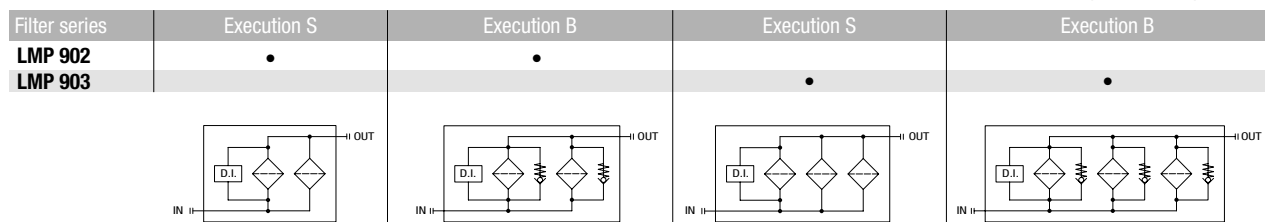
**Maximum flow rate for a complete low and medium pressure filter with a pressure drop  $\Delta p = 0.7$  bar.**

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

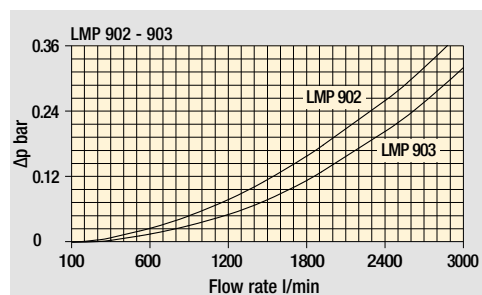
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

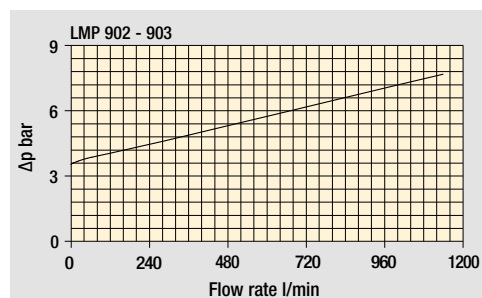
## Hydraulic symbols



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



## Bypass valve pressure drop

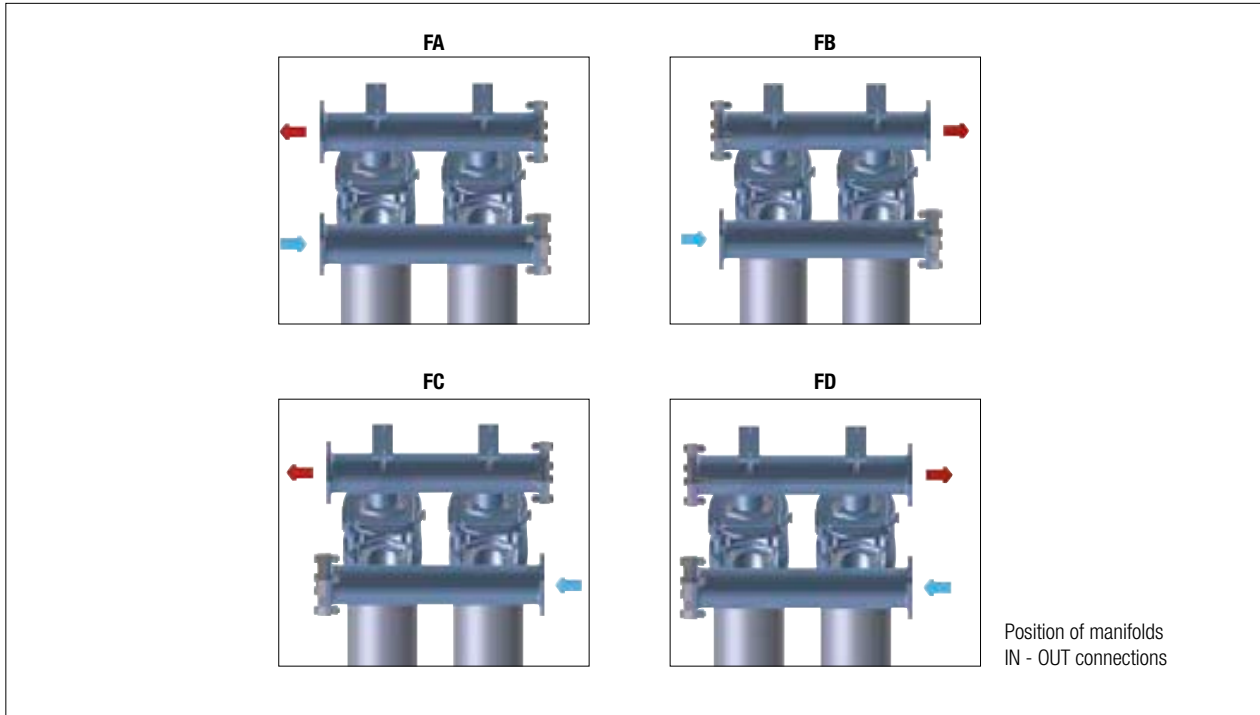


The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

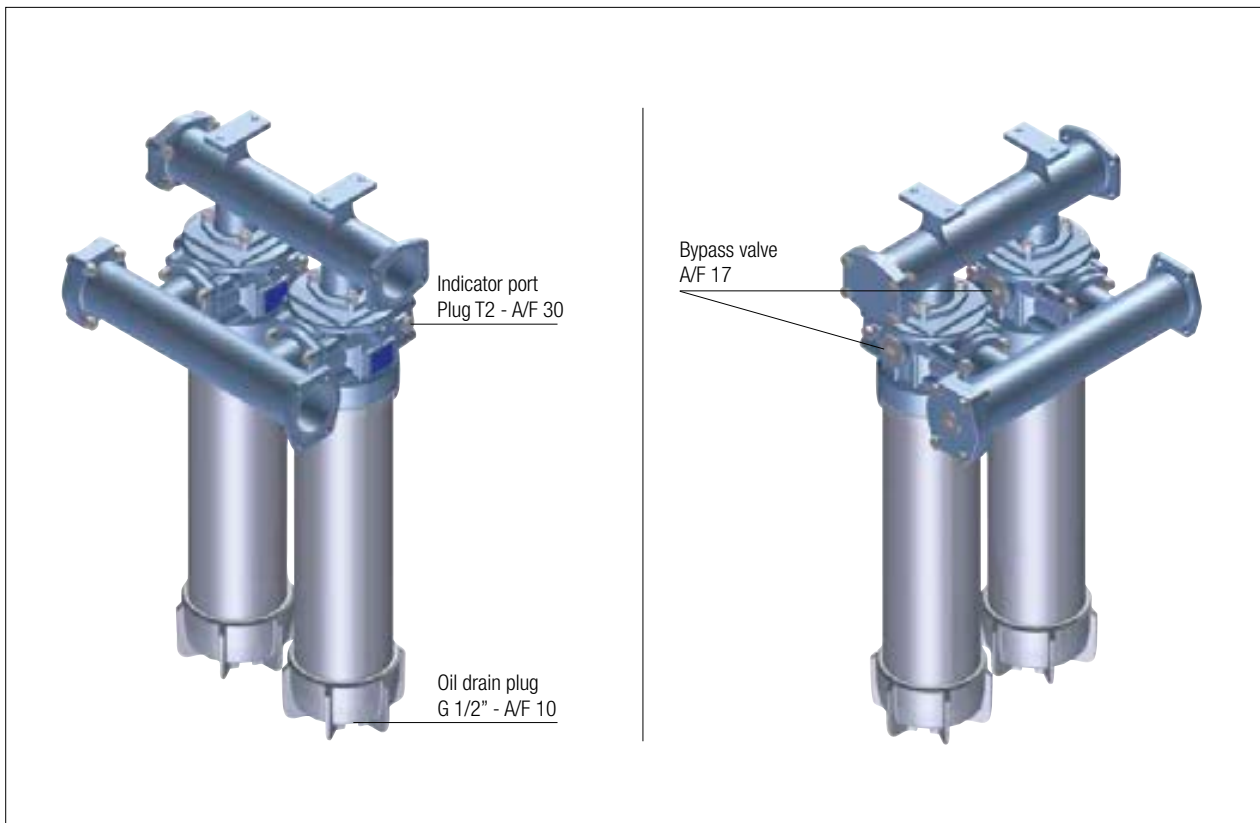
# LMP 902-903 GENERAL INFORMATION

Filter element according to DIN 24550

Manifolds



Focus on



# LMP 902-903

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# LMP 902-903 Filter element according to DIN 24550

## Designation & Ordering code

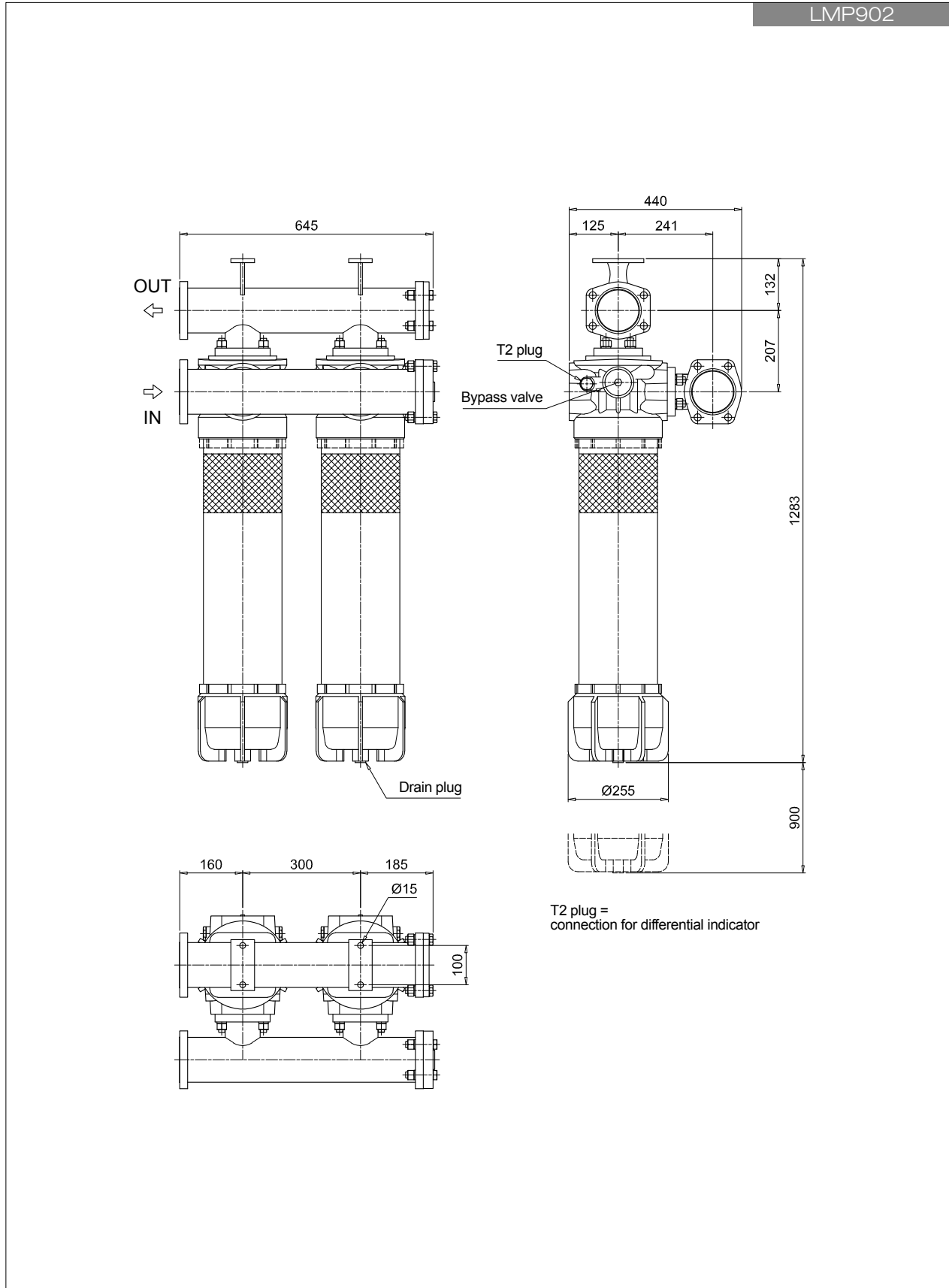
COMPLETE FILTER			
<b>Series and size</b> LMP902   LMP903	Configuration example: LMP902 2 B A FA A10 N P01		
<b>Length</b> 2			
<b>Bypass valve</b> S Without bypass	B 3.5 bar		
<b>Seals and treatments</b> A NBR V FPM			
<b>Connections</b>	IN	OUT	
FA 4" SAE 3000 psi	left	left	
FB 4" SAE 3000 psi	left	right	
FC 4" SAE 3000 psi	right	left	
FD 4" SAE 3000 psi	right	right	
<b>Filtration rating (filter media)</b>			
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm		
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm		
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm		
A16 Inorganic microfiber 16 µm			
A25 Inorganic microfiber 25 µm			
WA025 Water absorber inorganic microfiber 25 µm			
<b>Element Δp</b> N 20 bar	<b>Execution</b> P01 MP Filtri standard Pxx Customized		

FILTER ELEMENT			
<b>Element series and size</b> CU900	Configuration example: CU900 A10 A N P01		
<b>Filter series and size</b> LMP902 Nr. 4 filter elements LMP903 Nr. 6 filter elements			
<b>Filtration rating (filter media)</b>			
A03 Inorganic microfiber 3 µm	M25 Wire mesh 25 µm		
A06 Inorganic microfiber 6 µm	M60 Wire mesh 60 µm		
A10 Inorganic microfiber 10 µm	M90 Wire mesh 90 µm		
A16 Inorganic microfiber 16 µm			
A25 Inorganic microfiber 25 µm			
WA025 Water absorber inorganic microfiber 25 µm			
<b>Seals</b> A NBR V FPM			
<b>Element Δp</b> N 20 bar	<b>Execution</b> P01 MP Filtri standard Pxx Customized		

ACCESSORIES			
<b>Differential indicators</b>	page		page
DEA Electrical differential indicator	445	DTA Electronic differential indicator	448
DEM Electrical differential indicator	445-446	DVA Visual differential indicator	448
DLA Electrical / visual differential indicator	446-447	DVM Visual differential indicator	448
DLE Electrical / visual differential indicator	447		
<b>Additional features</b>	page		
T2 Plug	449		

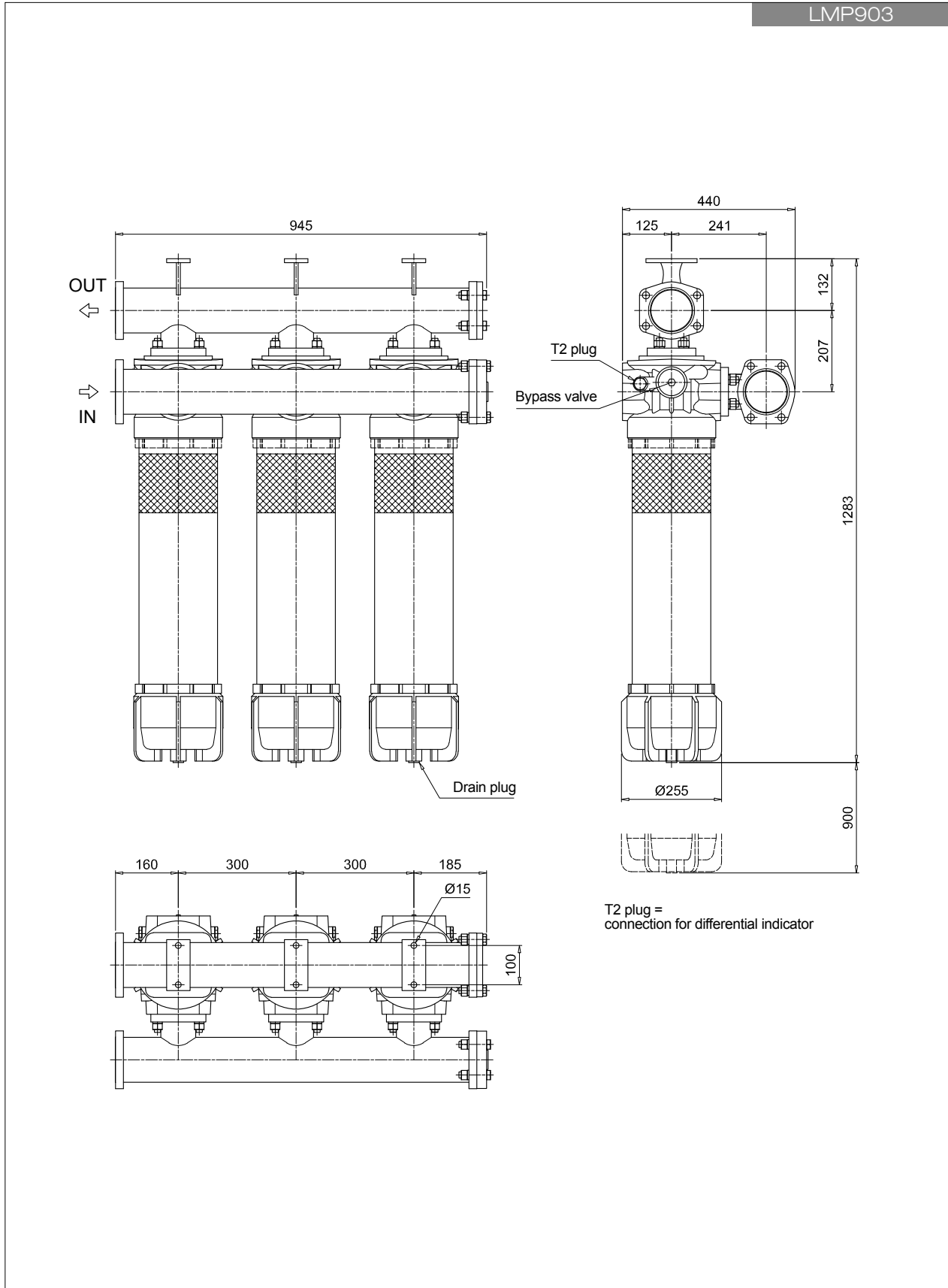
# Filter element according to DIN 24550 LMP 902-903

Dimensions



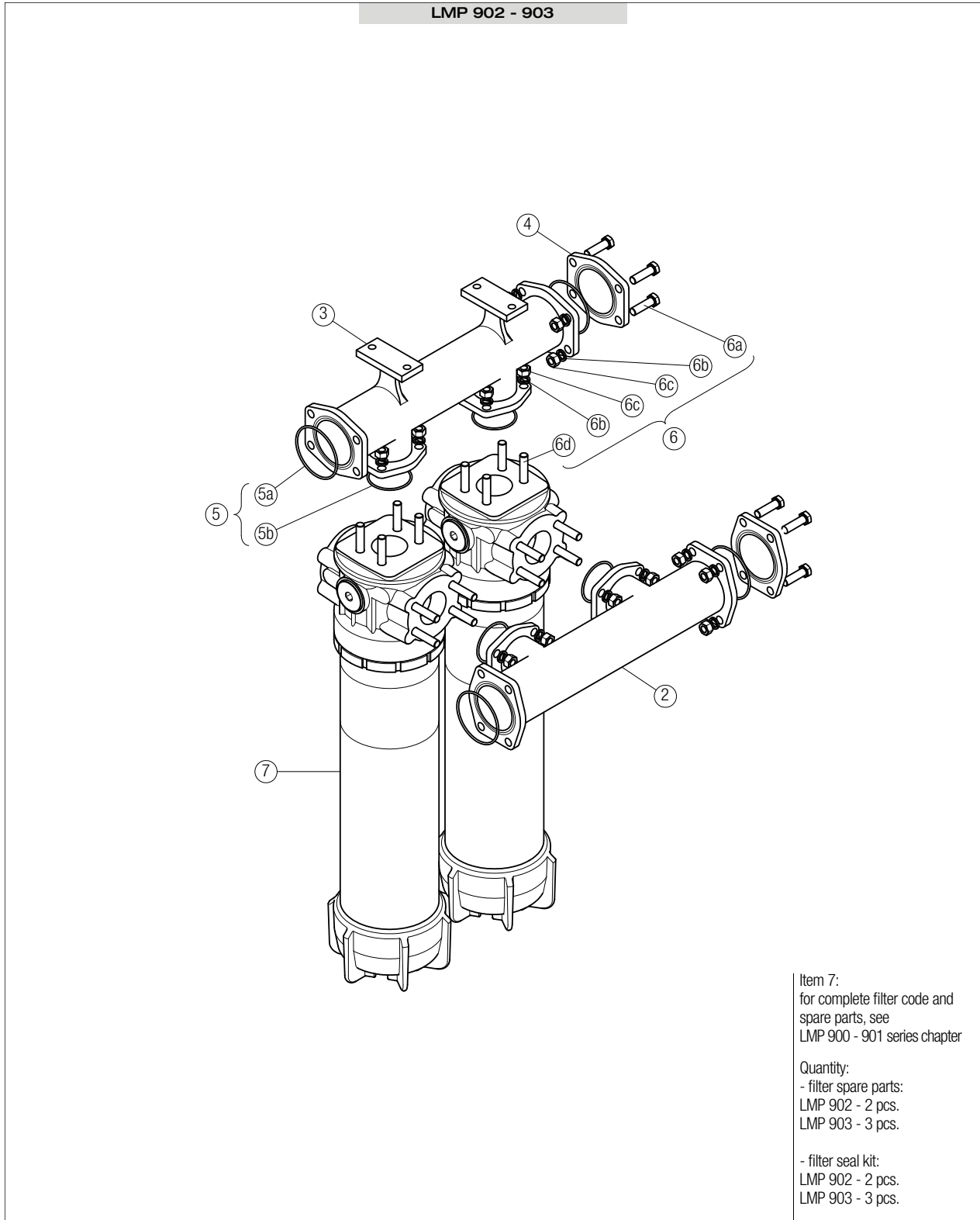
# LMP 902-903 Filter element according to DIN 24550

## Dimensions



# SPARE PARTS LMP 902-903

Order number for spare parts



Item:	2		3		4		5 (5a-5b)			6 (6a ÷ 6d)		7	
Filter series	Q.ty	Manifold		4" SAE 3000 psi plugged flange		Manifolds seal kit			Threaded fasteners kit		Filter		
		IN	OUT	Q.ty		Q.ty	NBR	FPM	Q.ty		Q.ty		
<b>LMP 902</b>	1 pc.	01039270	01039271	2 pcs.	01042012	1 pc.	02050404	02050405	1 pc.	02049051	2 pcs.	LMP9012xxF1xxxNP02	
<b>LMP 903</b>	1 pc.	01039337	01039338	2 pcs.		1 pc.	02050404	02050405	1 pc.	02049052	3 pcs.		



Low & Medium pressure filters

# Clogging indicators

Differential indicators

## Introduction

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

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

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

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

## Suitable indicator types

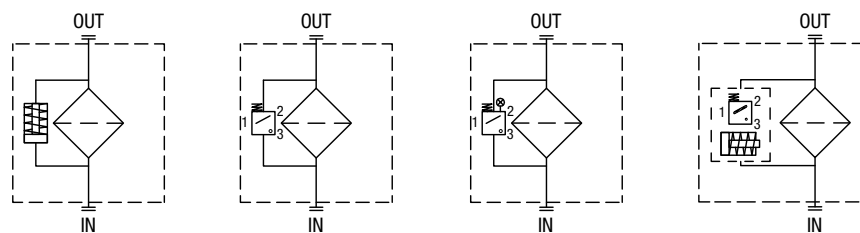
### DIFFERENTIAL INDICATORS

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

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

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

Also available in Stainless Steel models.



## Quick reference guide

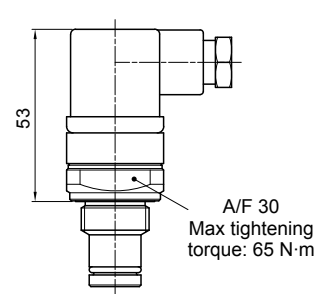
Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
With bypass valve LMP 110 - 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
Without bypass valve LMP 110 - 112 - 116 - 118 - 119 MULTIPORT LMP 120 - 122 - 123 MULTIPORT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01



# DIFFERENTIAL INDICATORS

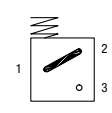
## Dimensions

DEA*50	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE A 20 x A 50 P01
5.0 bar $\pm 10\%$	DE A 50 x A 50 P01

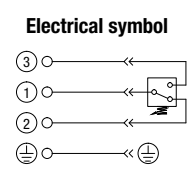


A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

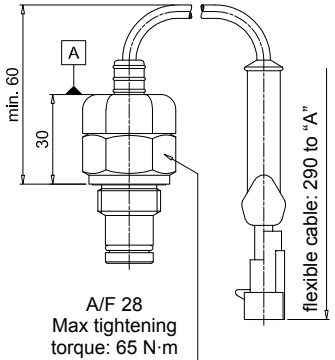
**Technical data**

- 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  
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

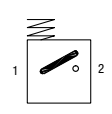
DEM*10	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 x x 10 P01
5.0 bar $\pm 10\%$	DE M 50 x x 10 P01



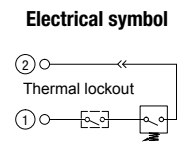
A/F 28  
Max tightening torque: 65 N·m

flexible cable: 290 to "A"

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

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

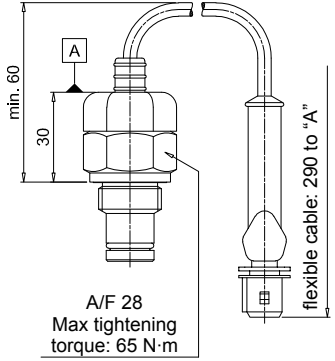
**Technical data**

- 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  
HFA, HFB, 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")

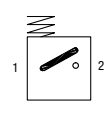
DEM*20	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 x x 20 P01
5.0 bar $\pm 10\%$	DE M 50 x x 20 P01



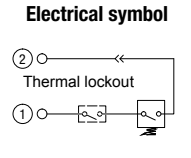
A/F 28  
Max tightening torque: 65 N·m

flexible cable: 290 to "A"

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

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

**Technical data**

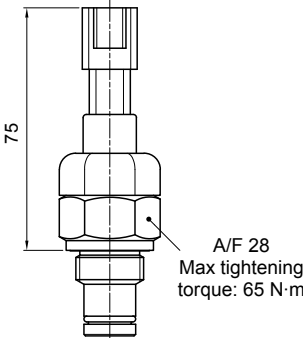
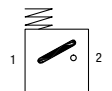
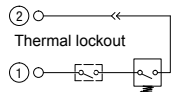
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

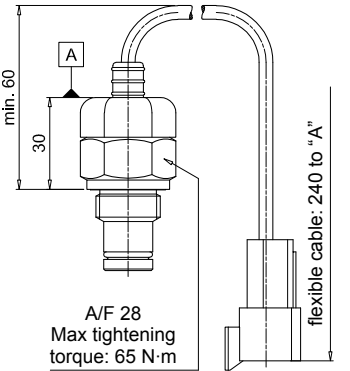
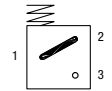
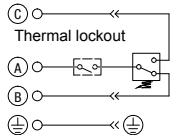
**Electrical data**

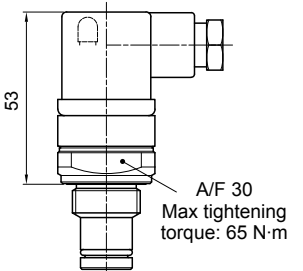
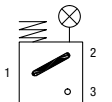
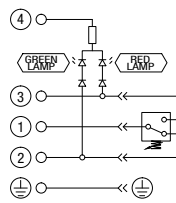
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

# DIFFERENTIAL INDICATORS

## Dimensions

DEM*30	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 x x 30 P01
5.0 bar $\pm 10\%$	DE M 50 x x 30 P01
	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Electrical symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: Deutsch DT-04-2-P</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: Normally open contacts (NC on request)</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>	

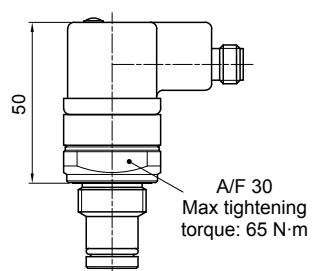
DEM*35	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DE M 20 x x 35 P01
5.0 bar $\pm 10\%$	DE M 50 x x 35 P01
	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Electrical symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Black Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: Deutsch DT-04-3-P</li> <li>- Resistive load: 0.2 A / 115 Vdc</li> <li>- Switching type: SPDT contact</li> <li>- Thermal lockout: Normally open up to 30 °C (option "F")</li> </ul>	

DLA*51 - DLA*52	
<b>Electrical/Visual Differential Indicator</b>	
Settings	Ordering code
2.0 bar $\pm 10\%$	DL A 20 x A x x P01
5.0 bar $\pm 10\%$	DL A 50 x A x x P01
	
<p><b>Hydraulic symbol</b></p> 	
<p><b>Electrical symbol</b></p> 	
<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Base: Transparent Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>	
<p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids</li> <li>- Degree protection: IP66 according to EN 60529, IP69K according to ISO 20653</li> </ul>	
<p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: EN 175301-803</li> <li>- Type: 51                      52</li> <li>- Lamps: 24 Vdc              110 Vdc</li> <li>- Resistive load: 1 A / 24 Vdc    1 A / 110 Vdc</li> </ul>	

# DIFFERENTIAL INDICATORS

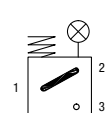
## Dimensions

DLA*71	
Electrical/Visual Differential Indicator	
Settings	Ordering code
2.0 bar $\pm 10\%$	DL A 20 x A 71 P01
5.0 bar $\pm 10\%$	DL A 50 x A 71 P01

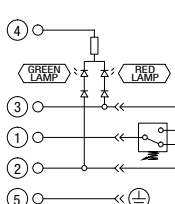


A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

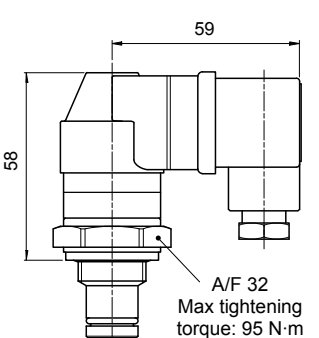
**Technical data**

- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529  
IP69K according to ISO 20653

**Electrical data**

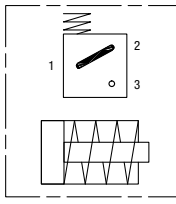
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

DLE*A50	
Electrical/Visual Differential Indicator	
Settings	Ordering code
2.0 bar $\pm 10\%$	DL E 20 x A 50 P01
5.0 bar $\pm 10\%$	DL E 50 x A 50 P01

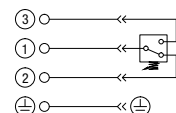


A/F 32  
Max tightening torque: 95 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

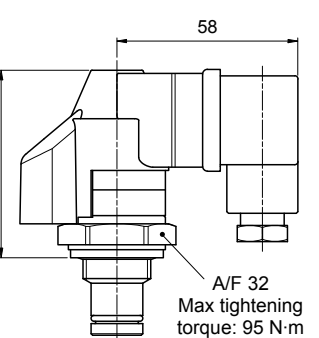
**Technical data**

- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

**Electrical data**

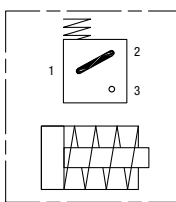
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

DLE*F50	
Electrical/Visual Differential Indicator	
Settings	Ordering code
2.0 bar $\pm 10\%$	DL E 20 x F 50 P01
5.0 bar $\pm 10\%$	DL E 50 x F 50 P01

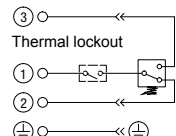


A/F 32  
Max tightening torque: 95 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

**Technical data**

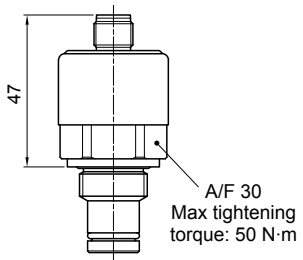
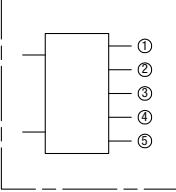

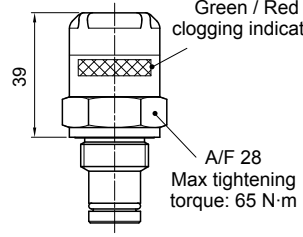
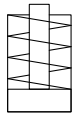
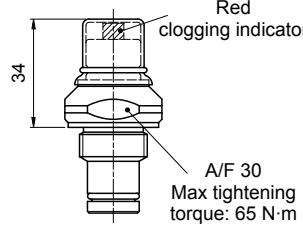
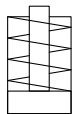
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

**Electrical data**

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

# DIFFERENTIAL INDICATORS

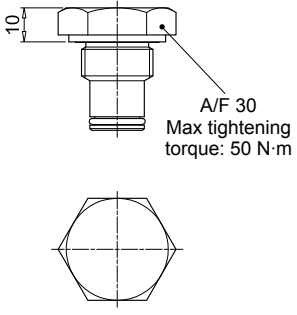
## Dimensions

<p style="text-align: center;"><b>DTA*70</b></p> <p style="text-align: center;"><b>Electronic Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>2.0 bar ±10%</td> <td>DT A 20 x x 70 P01</td> </tr> <tr> <td>5.0 bar ±10%</td> <td>DT A 50 x x 70 P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 30 Max tightening torque: 50 N·m</p>	Settings	Ordering code	2.0 bar ±10%	DT A 20 x x 70 P01	5.0 bar ±10%	DT A 50 x x 70 P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p>  <p style="text-align: center;"><b>Electrical symbol</b></p> <table border="1" style="width: 100%;"> <tbody> <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> </tbody> </table>	①	○	○	+24 Vdc	②	○	○	4 ± 20 mA	③	○	○	75% - N.O. Digital output	④	○	○	100% - N.O. Digital output	⑤	○	○	0 Vdc	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul>  <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP67 according to EN 60529</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Electrical connection: IEC 61076-2-101 D (M12)</li> <li>- Power supply: 24 Vdc</li> <li>- Analogue output: From 4 to 20 mA</li> <li>- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)</li> </ul>
Settings	Ordering code																											
2.0 bar ±10%	DT A 20 x x 70 P01																											
5.0 bar ±10%	DT A 50 x x 70 P01																											
①	○	○	+24 Vdc																									
②	○	○	4 ± 20 mA																									
③	○	○	75% - N.O. Digital output																									
④	○	○	100% - N.O. Digital output																									
⑤	○	○	0 Vdc																									
<p style="text-align: center;"><b>DVA</b></p> <p style="text-align: center;"><b>Visual Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <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> </tbody> </table>  <p style="text-align: center;">Green / Red clogging indicator</p> <p style="text-align: center;">A/F 28 Max tightening torque: 65 N·m</p>	Settings	Ordering code	2.0 bar ±10%	DV A 20 x P01	5.0 bar ±10%	DV A 50 x P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Reset: Automatic reset</li> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul>																				
Settings	Ordering code																											
2.0 bar ±10%	DV A 20 x P01																											
5.0 bar ±10%	DV A 50 x P01																											
<p style="text-align: center;"><b>DVM</b></p> <p style="text-align: center;"><b>Visual Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <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> </tbody> </table>  <p style="text-align: center;">Red clogging indicator</p> <p style="text-align: center;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	2.0 bar ±10%	DV M 20 x P01	5.0 bar ±10%	DV M 50 x P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: Brass</li> <li>- Internal parts: Brass - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - FPM</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Reset: Manual reset</li> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul>																				
Settings	Ordering code																											
2.0 bar ±10%	DV M 20 x P01																											
5.0 bar ±10%	DV M 50 x P01																											

# DIFFERENTIAL INDICATORS

## Dimensions

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



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

**Materials**

- Body: Phosphatized steel
- Seal: HNBR / FPM

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

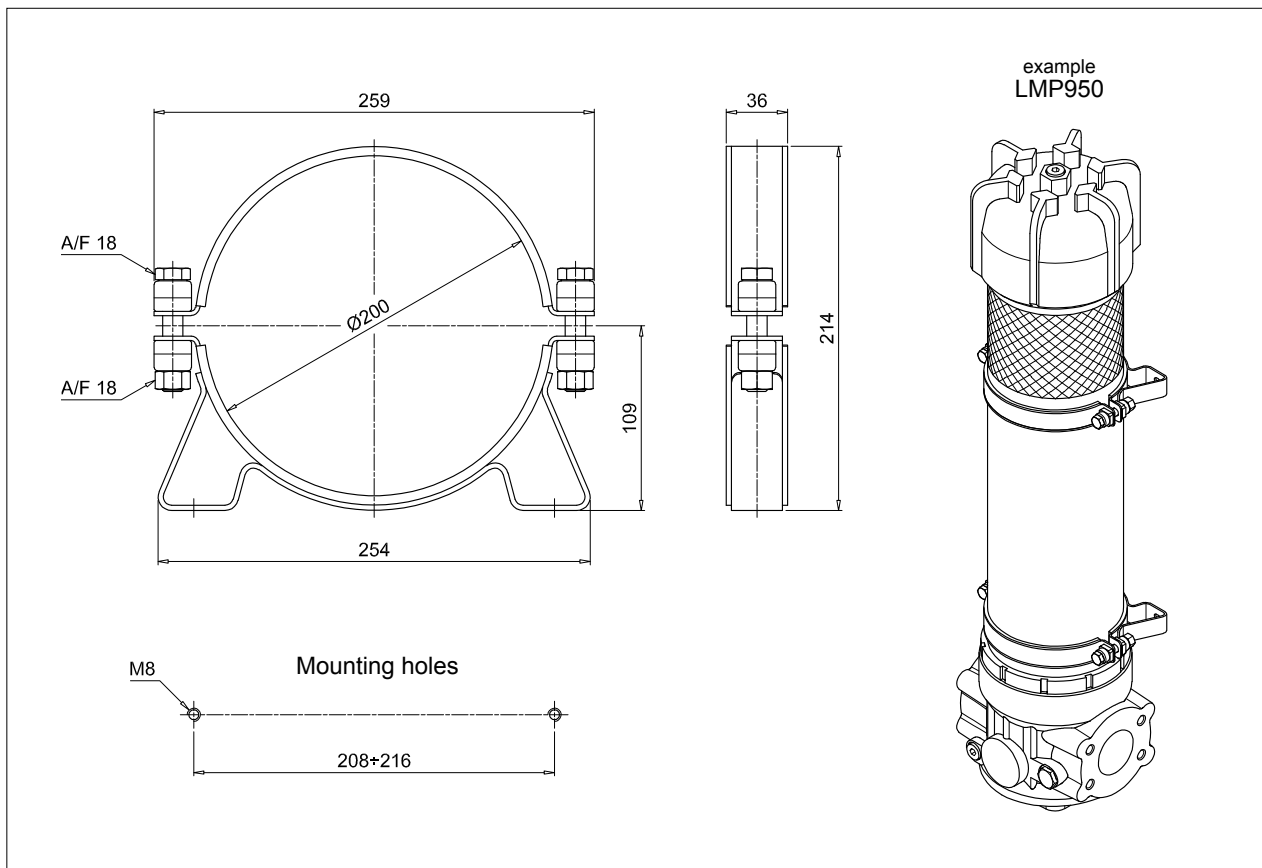
<b>Series</b>	Configuration example 1: <input type="text" value="DE"/> <input type="text" value="M"/> <input type="text" value="20"/> <input type="text" value="H"/> <input type="text" value="F"/> <input type="text" value="50"/> <input type="text" value="P01"/>						
<b>DE</b> Electrical differential indicator	Configuration example 2: <input type="text" value="DL"/> <input type="text" value="E"/> <input type="text" value="50"/> <input type="text" value="V"/> <input type="text" value="A"/> <input type="text" value="71"/> <input type="text" value="P01"/>						
<b>DL</b> Electrical/Visual differential indicator	Configuration example 3: <input type="text" value="DT"/> <input type="text" value="A"/> <input type="text" value="20"/> <input type="text" value="H"/> <input type="text" value="F"/> <input type="text" value="70"/> <input type="text" value="P01"/>						
<b>DT</b> Electronic differential indicator	Configuration example 4: <input type="text" value="DV"/> <input type="text" value="M"/> <input type="text" value="50"/> <input type="text" value="V"/> <input type="text" value=""/> <input type="text" value=""/> <input type="text" value="P01"/>						
<b>DV</b> Visual differential indicator							
<b>Type</b>	<b>DE</b>	<b>DL</b>	<b>DT</b>	<b>DV</b>			
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset			
<b>M</b> With wired electrical connection	•			<b>M</b> With manual reset			
<b>E</b> For high power supply		•					
<b>Pressure setting</b>							
<b>20</b> 2.0 bar							
<b>50</b> 5.0 bar							
<b>Seals</b>							
<b>H</b> HNBR							
<b>V</b> FPM							
<b>Thermostat</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>	
<b>A</b> Without	•	•	•	•			
<b>F</b> With thermostat		•		•	•		
<b>Electrical connections</b>	<b>DEA</b>	<b>DEM</b>	<b>DLA</b>	<b>DLE</b>	<b>DT</b>	<b>DV</b>	
<b>10</b> Connection AMP Superseal series 1.5		•					
<b>20</b> Connection AMP Timer Junior		•					
<b>30</b> Connection Deutsch DT-04-2-P		•					
<b>35</b> Connection Deutsch DT-04-3-P		•					
<b>50</b> Connection EN 175301-803	•			•			
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			•				
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc			•				
<b>70</b> Connection IEC 61076-2-101 D (M12)					•		
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•				
<b>Option</b>							
<b>P01</b> MP Filtri standard							
<b>Pxx</b> Customized							

### DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

<b>Series</b>	Configuration example <input type="text" value="T2"/> <input type="text" value="H"/>	
<b>T2</b> Indicator plug		
<b>Seals</b>		
<b>H</b> HNBR		
<b>V</b> FPM		

# Accessories

## RETAINING CLAMP



<b>Series</b>	CFA Retaining clamp
<b>Size</b>	20
<b>Screw</b>	M Metric
<b>Execution</b>	P01 MP Filtri standard

Configuration example: CFA 20 M P01



High pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406.

9 versions are available with operating pressures range from 110 bar up to 560 bar.

A range of products is available to resolve all filter mounting problems, in the following configurations:

- In-line, with threaded and flange mounting
- Manifold top mounting
- Manifold side mounting
- Manifold mounting, to DIN 24340 CETOP R 35 H
- Manifold threaded/flange mounting in the top extraction filter cartridge version
- Duplex versions for continuous operation requirements

FMP series is specifically designed and suitable for:

- feed pumps of hydrostatic drives
- pressure lubrication
- hydraulic systems in the high pressure range

FMM series is optimized for the protection of servo and proportional hydraulics:

- in agricultural machinery
- in construction machinery
- in commercial vehicles

HPB are kits designed for the direct integration into the control block; they can be easily integrated into the block through a simple cavity.

FHP & FHA series are the typical high-pressure filters optimized for industrial applications.

FHM series is designed for intermediate plate construction, CETOP design.

FHB series is designed for block mounting; the filter head can be screwed in from the outside.

FHF series is designed to assemble HF4 filter element according to SAE J2066.

FHD series is the duplex high pressure filter; with two independent filter heads, the flow can be switched without interruption during operation.

The range includes a complete set of valves:

- Bypass valve
- Check valve
- Bypass + check valve
- Reverse-flow valve
- Reverse-flow + bypass valve

## FILTER SIZING

For the proper corrective factor Y see chapter at page 25





# High pressure filters



FMP 039	page 455
FMP	463
FHP	475
FMM	493
HPB	503
FHA 051	513

FHM	page 521
FHB	539
FHF 325	553
FHD	563
INDICATORS	576





High Pressure filters

# FMP 039 series

Maximum working pressure up to 11 MPa (110 bar) - Flow rate up to 80 l/min



# FMP 039 GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 11 MPa (110 bar)**

**Flow rate up to 80 l/min**

FMP039 is a range of versatile medium pressure filter for transmission, protection of sensitive components in medium pressure hydraulic systems and filtration of the coolant into the machine tools. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 80 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any medium pressure industrial equipment or mobile machines

### Filter housing materials

- Head: Anodized aluminium
- Housing: Anodized aluminium
- Bypass valve: Steel

### Pressure

- Test pressure: 17 MPa (170 bar)
- Burst pressure: 33 MPa (330 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 11 MPa (110 bar)

### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm 10\%$
- Other opening pressures on request.

### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

In-line Inlet/Outlet

### Note

FMP 039 filters are provided for vertical mounting




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

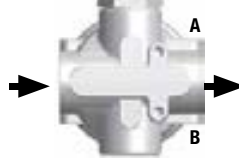
Filter series	Weights [kg]			Volumes [dm <sup>3</sup> ]				
	Length	2	3	4	Length	2	3	4
<b>FMP 039</b>		0.60	0.70	0.80		0.19	0.26	0.34

## Executions

**Execution 1:**  
without indicator connection



**Execution 6:**  
double indicator connection (A - B)



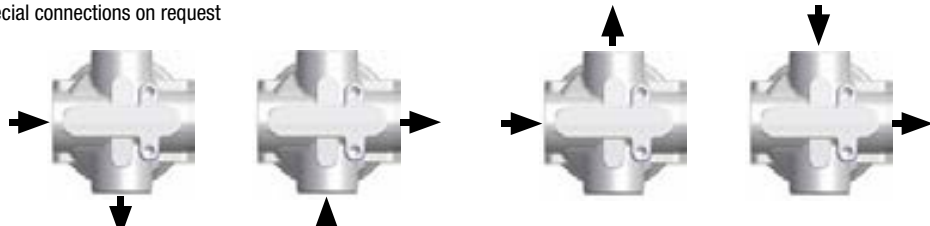
**A:**  
Closure cap with standard T2 steel. The position of the cap is reversible.

**B:**  
Standard closure cap with plastic thread protection.

If necessary, a second T2 plug is available, see ordering information.

---

Special connections on request



# GENERAL INFORMATION FMP 039

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

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FMP 039</b>	<b>2</b>	20	26	45	52	61	97
	<b>3</b>	35	39	56	64	76	98
	<b>4</b>	44	48	66	71	82	92

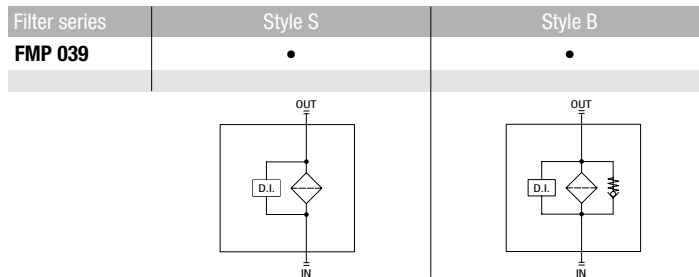
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

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

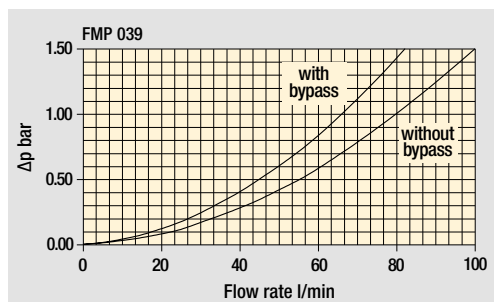
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Hydraulic symbols

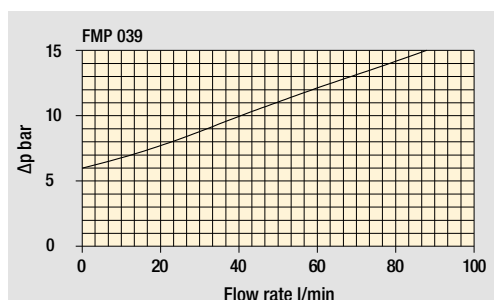


## Pressure drop

Filter housings  $\Delta p$  pressure drop



Bypass valve pressure drop



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

# FMP 039

## Designation & Ordering code

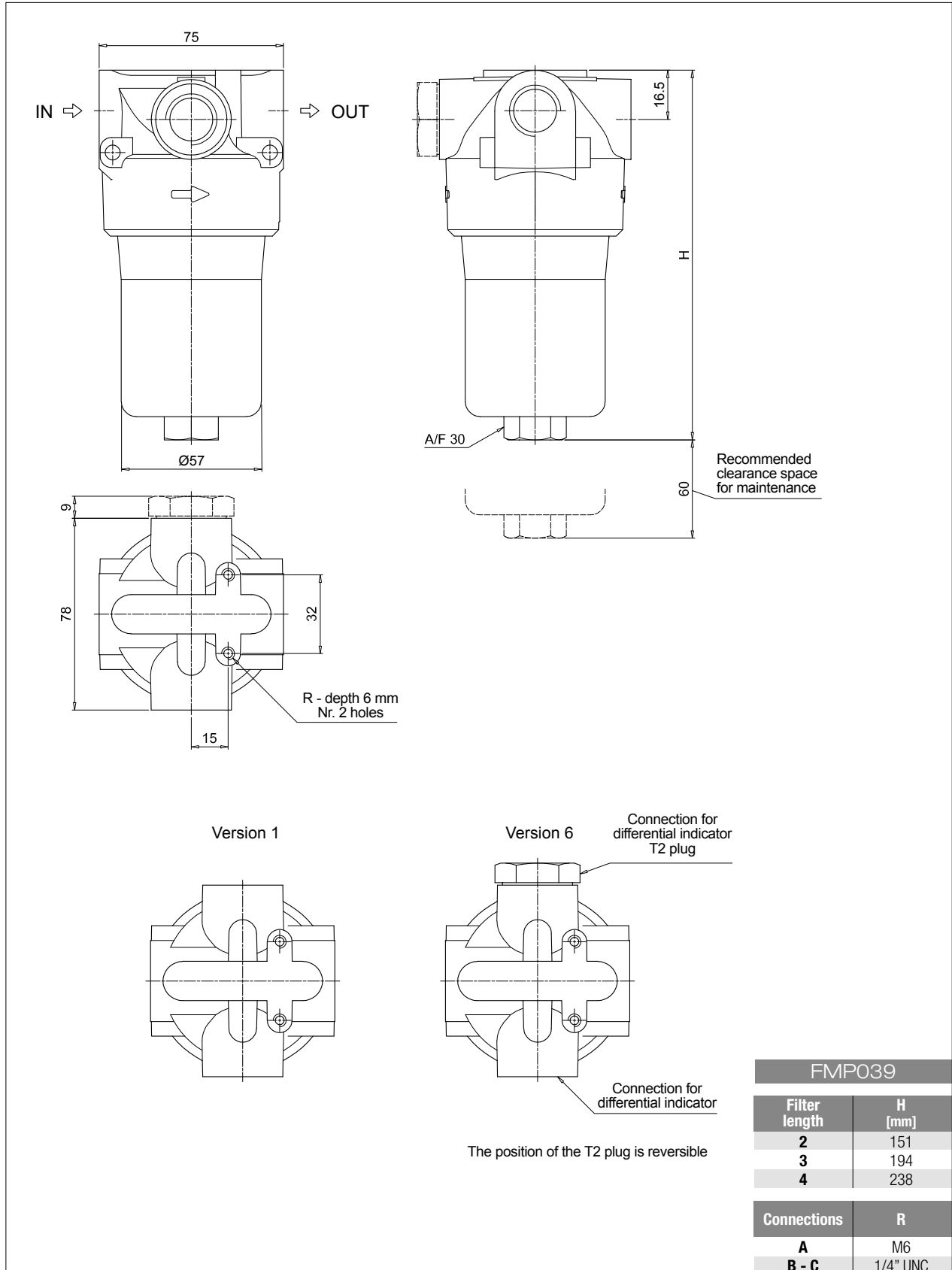
COMPLETE FILTER	
<b>Series and size</b> <b>FMP039</b>	Configuration example: <b>FMP039</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>B</b>   <b>6</b>   <b>A03</b>   <b>N</b>   <b>P01</b>
<b>Length</b> <b>2</b>   <b>3</b>   <b>4</b>	
<b>Valves</b> <b>S</b> Without bypass <b>B</b> 6 bar	
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM	
<b>Connections</b> <b>A</b> G 1/2" <b>B</b> 1/2" NPT <b>C</b> SAE 8 - 3/4" - 16 UNF	
<b>Connection for differential indicator</b> <b>1</b> Without <b>6</b> With two connections on both sides	
<b>Filtration rating (filter media)</b>	
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm
<b>Element Δp</b> <b>N</b> 20 bar	<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

FILTER ELEMENT	
<b>Element series and size</b> <b>HP039</b>	Configuration example: <b>HP039</b>   <b>3</b>   <b>A03</b>   <b>A</b>   <b>N</b>   <b>P01</b>
<b>Element length</b> <b>2</b>   <b>3</b>   <b>4</b>	
<b>Filtration rating (filter media)</b>	
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM	
<b>Element Δp</b> <b>N</b> 20 bar	<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
	page		page
<b>Differential indicators</b>			
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581
<b>Additional features</b>	page		
<b>T2</b> Plug	582		

# FMP 039

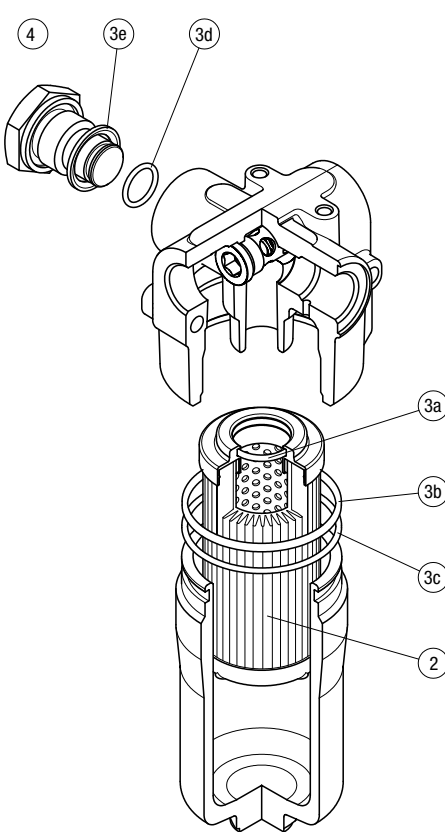
## Dimensions



# FMP 039 SPARE PARTS

Order number for spare parts

**FMP 039**



	Q.ty: 1 pc.	Q.ty: 1 pc.	
Item:	<b>2</b>	<b>3</b> (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FMP 039</b>	See order table	02050509	02050510



# FMP 039

---





High Pressure filters

# FMP series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 500 l/min



# FMP GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 500 l/min**

FMP is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the industrial equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 1 1/2", for a maximum flow rate of 475 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Brass
- Reverse Flow: Steel (only for series FMP 320)
- Check valve: Steel

### Pressure

- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

In-line Inlet/Outlet

### Note

FMP filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FMP 065</b>		3.26	3.62	4.83	-		0.36	0.47	0.84	-
<b>FMP 135</b>		5.61	7.21	8.27	-		0.45	0.78	1.00	-
<b>FMP 320</b>		10.95	13.08	15.37	17.85		1.03	1.75	2.52	3.35

# GENERAL INFORMATION FMP

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

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FMP 065</b>	<b>1</b>	23	30	48	54	72	105
	<b>2</b>	31	45	60	65	82	106
	<b>3</b>	52	60	80	84	94	108
<b>FMP 135</b>	<b>1</b>	69	73	120	129	171	201
	<b>2</b>	110	117	149	152	211	232
	<b>3</b>	151	152	192	195	212	233
<b>FMP 320</b>	<b>1</b>	130	144	244	296	361	477
	<b>2</b>	267	291	417	438	492	509
	<b>3</b>	348	390	476	493	503	519
	<b>4</b>	389	415	483	502	525	534

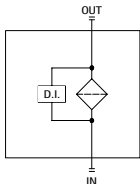
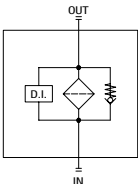
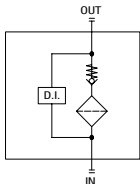
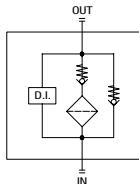
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

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

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

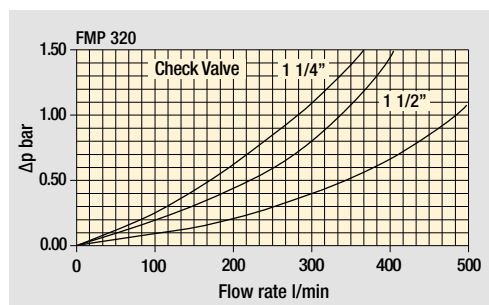
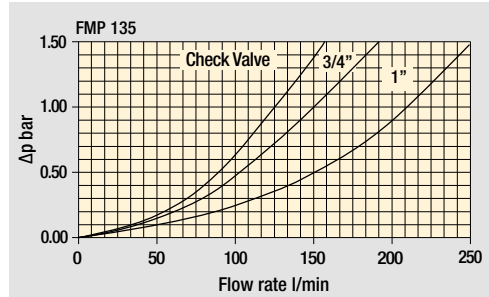
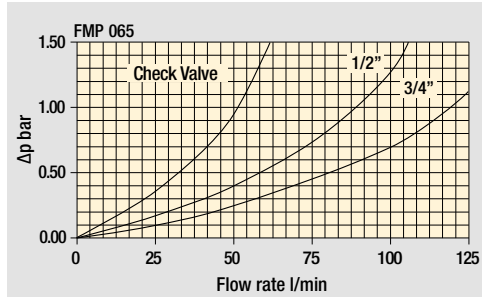
## Hydraulic symbols

Filter series	Style S - E	Style B - C	Style T	Style D
<b>FMP 065</b>	•	•	•	•
<b>FMP 135</b>	•	•	•	•
<b>FMP 320</b>	•	•	•	•
				

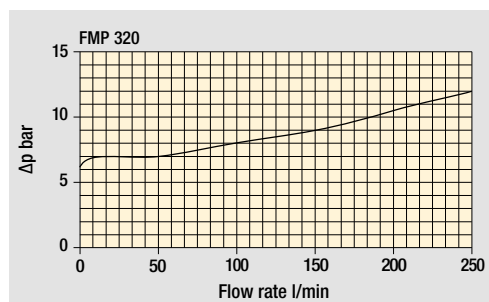
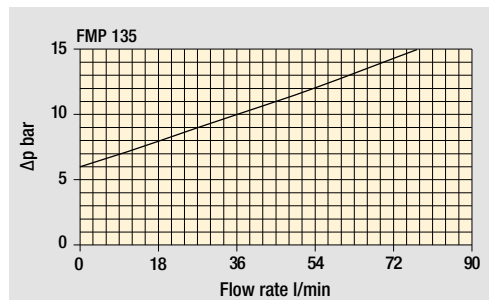
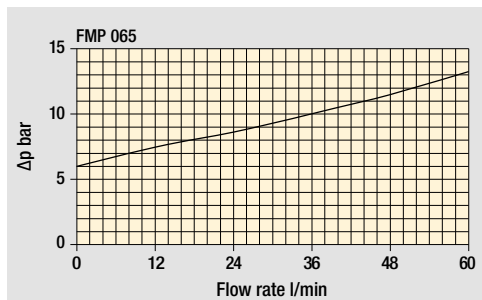
# FMP GENERAL INFORMATION

## Pressure drop

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



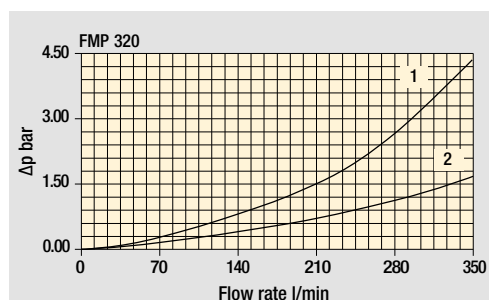
### Bypass valve pressure drop



### Valves

#### Filter housing with check valve

- 1 - Reverse flow
- 2 - In filter direction



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

# GENERAL INFORMATION FMP

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# FMP FMP065 - FMP135 - FMP320

## Designation & Ordering code

COMPLETE FILTER												
Series and size		Configuration example: <b>FMP065</b>   <b>3</b>   <b>T</b>   <b>A</b>   <b>G1</b>   <b>M25</b>   <b>S</b>   <b>P01</b>										
<b>FMP065</b>   <b>FMP135</b>   <b>FMP320</b>												
Length	FMP065	FMP135	FMP320									
1	•	•	•									
2	•	•	•									
3	•	•	•									
4			•									
Valves												
<b>S</b> Without bypass			<b>C</b> With bypass 6 bar, plug on the opposite side									
<b>E</b> Without bypass, plug on the opposite side			<b>T</b> With check valve, without bypass									
<b>B</b> With bypass 6 bar			<b>D</b> With check valve, with bypass									
Seals												
<b>A</b> NBR					<b>V</b> FPM							
Connections	FMP065	FMP135	FMP320									
<b>G1</b>	G 1/2"	G 3/4"	G 1 1/4"									
<b>G2</b>	G 3/4"	G 1"	G 1 1/2"									
<b>G3</b>	1/2" NPT	3/4" NPT	1 1/4" NPT									
<b>G4</b>	3/4" NPT	1" NPT	1 1/2" NPT									
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN									
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN									
<b>F1</b>	-	3/4" SAE 3000 psi/M	1 1/4" SAE 3000 psi/M									
<b>F2</b>	-	1" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M									
<b>F3</b>	-	3/4" SAE 3000 psi/UNC	1 1/4" SAE 3000 psi/UNC									
<b>F4</b>	-	1" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC									
Filtration rating (filter media)												
<b>A03</b>	Inorganic microfiber	3 µm										
<b>A06</b>	Inorganic microfiber	6 µm										
<b>A10</b>	Inorganic microfiber	10 µm										
<b>A16</b>	Inorganic microfiber	16 µm										
<b>A25</b>	Inorganic microfiber	25 µm										
<b>M25</b>	Wire mesh	25 µm										
Element Δp			Valves				Filter length					
<b>N</b>	20 bar		<b>S</b>	<b>E</b>	<b>B</b>	<b>C</b>	<b>T</b>	<b>D</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>R</b>	20 bar					•						
<b>H</b>	210 bar	•	•									•
<b>S</b>	210 bar											
Execution												
<b>P01</b>	MP Filtri standard								•	•	•	•
<b>P02</b>	Maintenance from the bottom of the housing											•
<b>Pxx</b>	Customized											

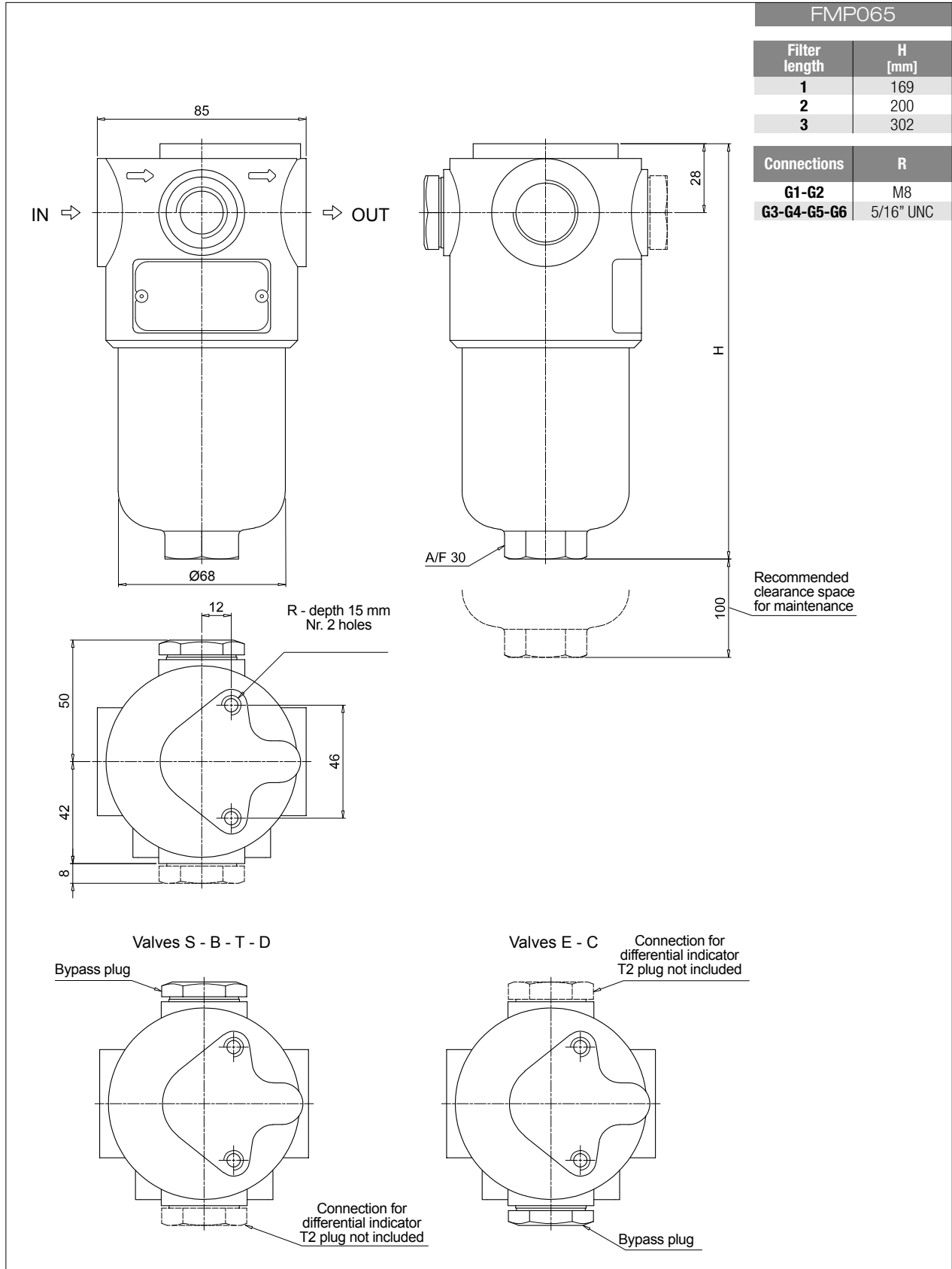
FILTER ELEMENT									
Element series and size		Configuration example: <b>HP065</b>   <b>3</b>   <b>M25</b>   <b>A</b>   <b>S</b>   <b>P01</b>							
<b>HP065</b>   <b>HP135</b>   <b>HP320</b>									
Element length	HP065	HP135	HP320						
1	•	•	•						
2	•	•	•						
3	•	•	•						
4			•						
Filtration rating (filter media)									
<b>A03</b>	Inorganic microfiber	3 µm							
<b>A06</b>	Inorganic microfiber	6 µm							
<b>A10</b>	Inorganic microfiber	10 µm							
<b>A16</b>	Inorganic microfiber	16 µm							
<b>A25</b>	Inorganic microfiber	25 µm							
<b>M25</b>	Wire mesh	25 µm							
Seals			Element Δp			Execution			
<b>A</b> NBR			<b>N</b> 20 bar			<b>P01</b> MP Filtri standard			
<b>V</b> FPM			<b>R</b> 20 bar			<b>Pxx</b> Customized			
			<b>H</b> 210 bar						
			<b>S</b> 210 bar						

ACCESSORIES			
Differential indicators		page	page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator 580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator 581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator 581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator 581
Additional features		page	
<b>T2</b>	Plug	582	



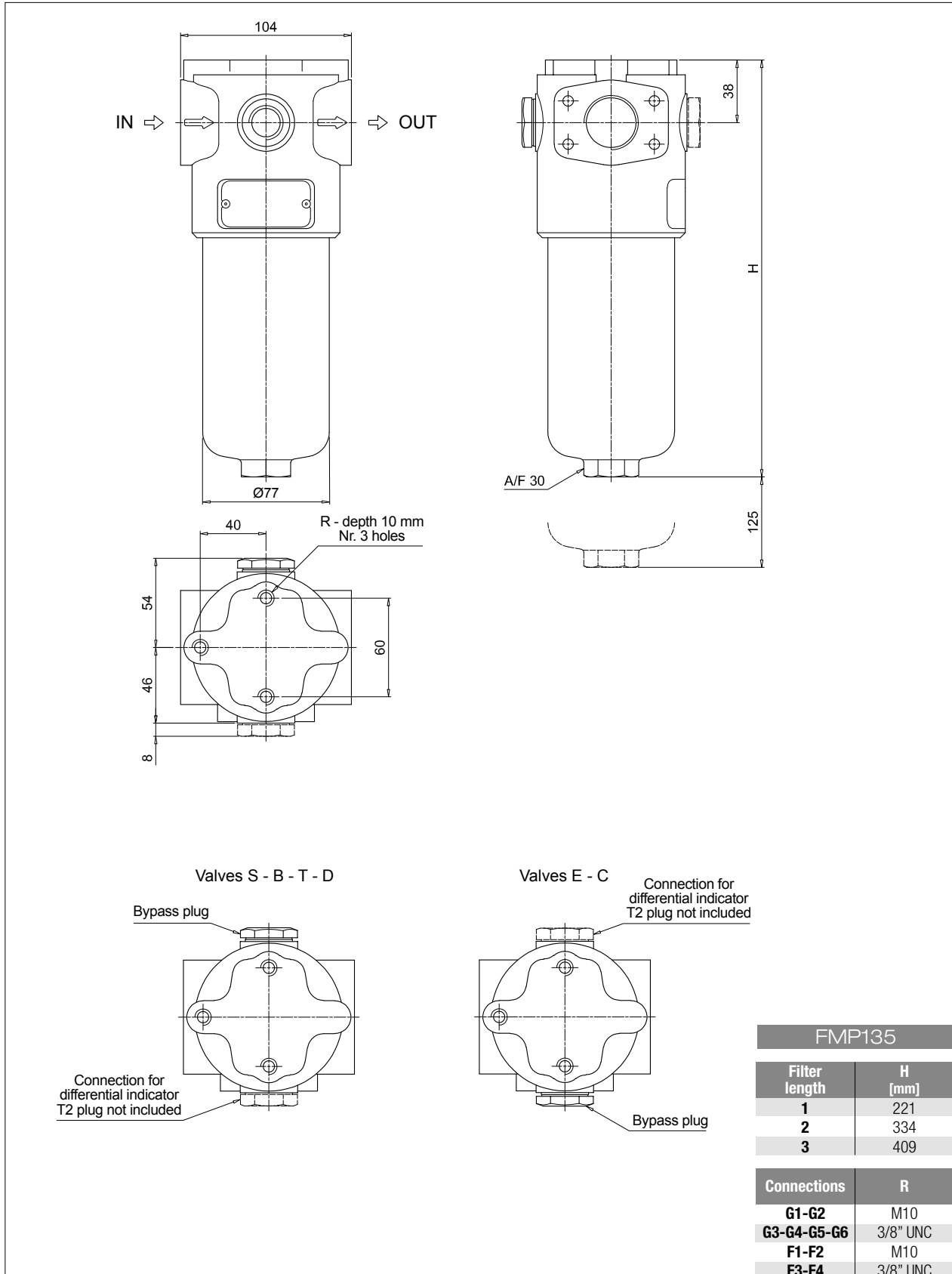
# FMP065 - FMP135 - FMP320 FMP

## Dimensions



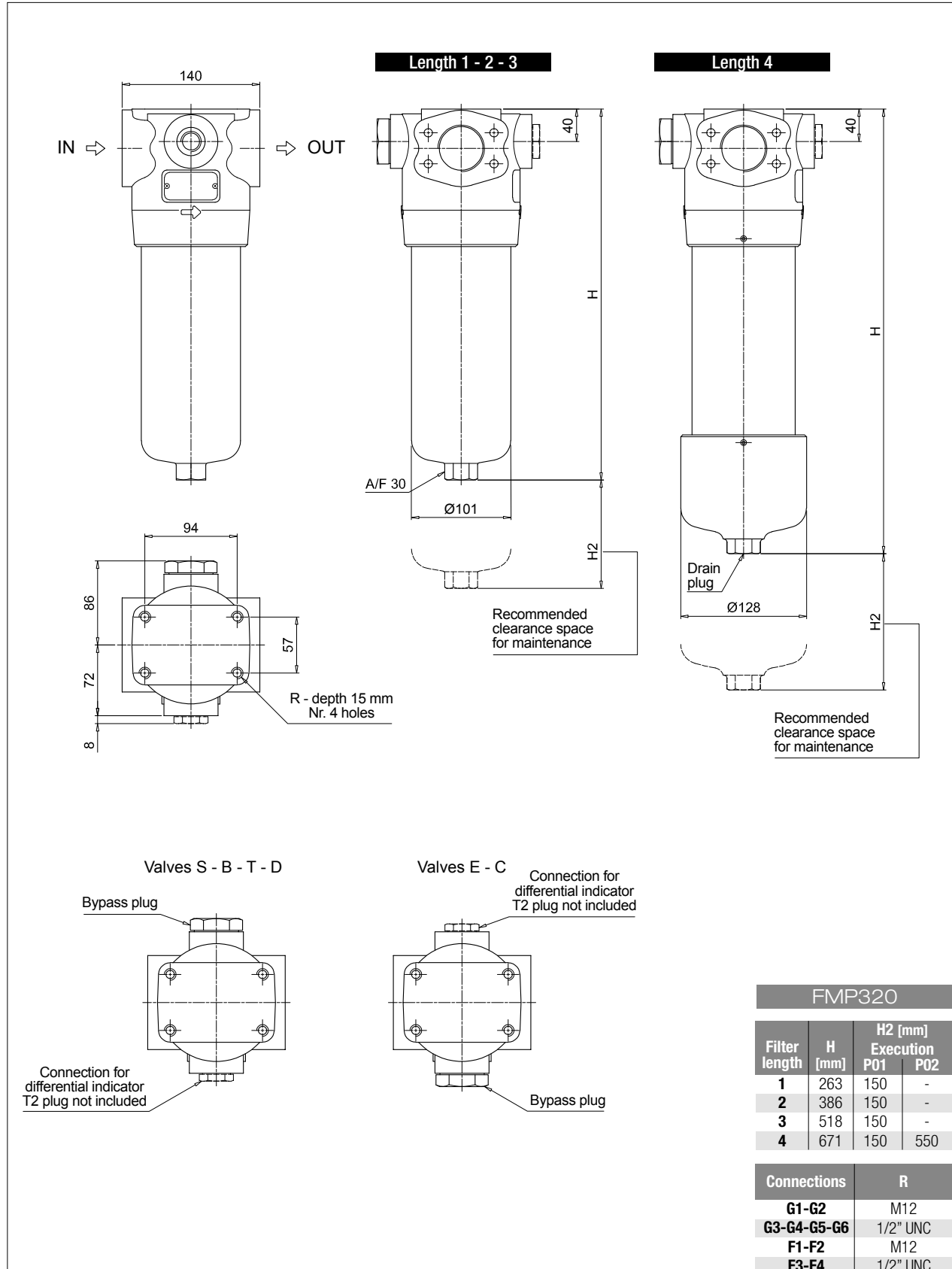
# FMP FMP065 - FMP135 - FMP320

## Dimensions



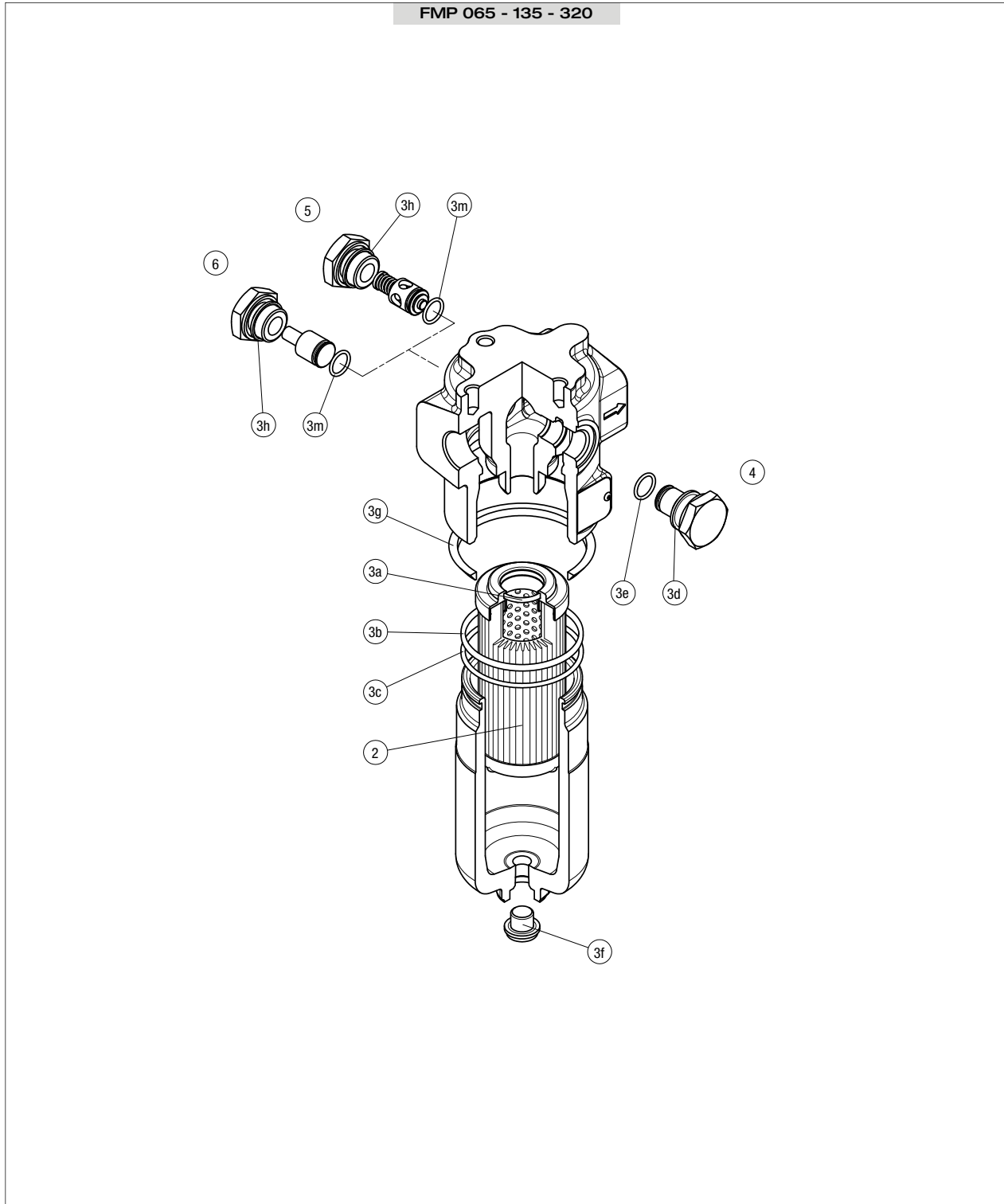
# FMP065 - FMP135 - FMP320 FMP

## Dimensions



# FMP SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FMP 065</b>	See order table	02050267	02050278	T2H	T2V	02001312	02001385	02001314	02001386
<b>FMP 135</b>		02050293	02050294			02001312	02001385	02001314	02001386
<b>FMP 320</b>		02050274	02050285			02001396	02001397	02001398	02001399

# FMP

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High Pressure filters

# FHP series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 630 l/min



# FHP GENERAL INFORMATION

## Description

### High Pressure filters

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

**Flow rate up to 630 l/min**

FHP is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the industrial equipment.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/2" and flanged connections up to 2", for a maximum return flow rate of 750 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Reverse flow valve, to allow bidirectional flow through the filter housing. The back flow is not filtered. The filter requires the use of internal check valves to direct the flow through the element in one direction and around the element in the other
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

## Technical data

### Filter housing materials

- Head: Phosphatized cast iron

- Housing: Phosphatized steel

- Bypass valve

AISI 316L: FHP 010 - 011

Brass: FHP 065 - 135

Brass / AISI 304: FHP 350

Steel: FHP 500

- Reverse Flow

Steel: FHP 350 - FHP 500

- Check valve: Steel

### Pressure

- Test pressure: 63 MPa (630 bar)

- Burst pressure: 126 MPa (1260 bar)

- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%

- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N: 20 bar

- Microfibre filter elements - series R: 20 bar (not available for FHP 010-011 and FHP 500)

- Microfibre filter elements - series H: 210 bar

- Microfibre filter elements - series S: 210 bar (only for FHP 500)

- Wire mesh filter elements - series N: 20 bar

- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A

- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

FHP 010 - 065 - 135 - 350 - 500:

In-line Inlet/Outlet

FHP 011:

90° Inlet/Outlet

### Note

FHP filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHP 010 - 011</b>	2.05	2.18	2.64	3.13	-	0.10	0.12	0.15	0.20	-		
<b>FHP 065</b>	4.26	4.62	5.83	-	-	0.25	0.30	0.50	-	-		
<b>FHP 135</b>	7.11	8.71	9.76	-	-	0.43	0.76	0.97	-	-		
<b>FHP 350</b>	13.95	16.08	18.37	20.85	-	1.00	1.72	2.49	3.32	-		
<b>FHP 500</b>	27.00	31.17	34.69	46.70	52.5	1.71	2.43	3.04	5.18	6.51		



# GENERAL INFORMATION FHP

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

Filter series	Length	Filter element design - H Series					Filter element design - N Series					
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	M25
<b>FHP 010</b>	1	3	5	6	7	8	4	6	8	9	10	37
	2	5	7	13	16	22	6	8	16	19	24	40
	3	10	13	22	25	30	11	14	23	26	31	41
	4	12	15	25	27	32	16	19	27	30	33	41
<b>FHP 011</b>	1	3	5	6	7	9	4	6	8	9	11	47
	2	5	7	14	17	24	7	9	17	21	28	52
	3	11	14	25	29	36	11	14	26	30	37	53
	4	12	16	28	32	38	17	21	32	36	40	54
<b>FHP 065</b>	1	24	25	50	59	84	25	33	56	63	90	142
	2	33	38	68	77	98	34	52	72	79	106	143
	3	61	70	100	107	123	61	73	101	108	125	147
<b>FHP 135</b>	1	49	55	95	98	147	67	72	115	122	159	184
	2	89	106	129	131	163	105	111	140	142	192	209
	3	120	132	158	166	180	141	143	176	179	193	211
<b>FHP 350</b>	1	108	115	188	197	301	127	140	234	282	343	451
	2	196	225	317	323	396	256	278	394	415	465	480
	3	266	310	384	392	440	331	370	450	466	475	490
	4	308	333	391	398	445	369	393	456	474	495	503
<b>FHP 500</b>	1	144	157	265	268	355	269	305	390	406	444	612
	2	232	262	350	363	398	321	357	433	441	484	619
	3	293	301	398	408	455	396	416	497	499	537	622
	4	336	377	452	455	507	430	475	516	524	545	626
	5	420	428	494	500	544	475	493	535	545	569	627

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

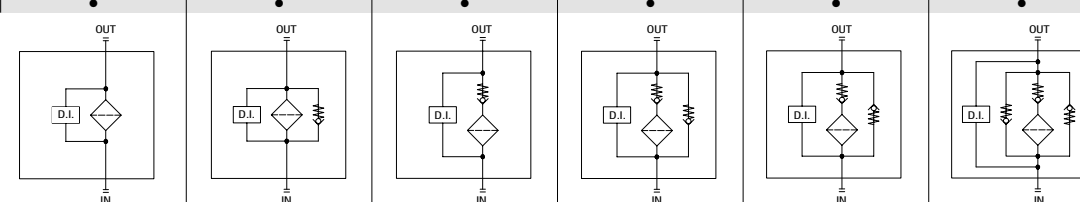
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

### Hydraulic symbols

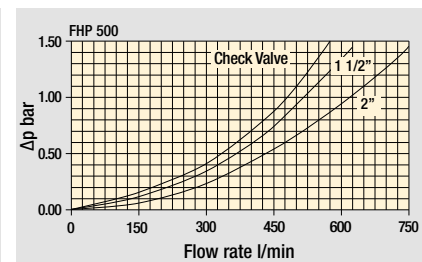
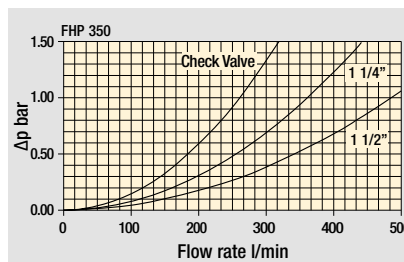
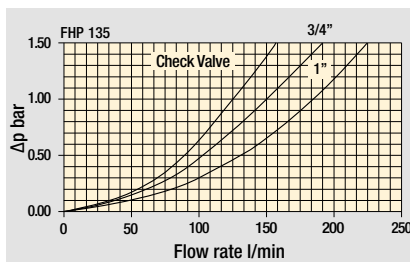
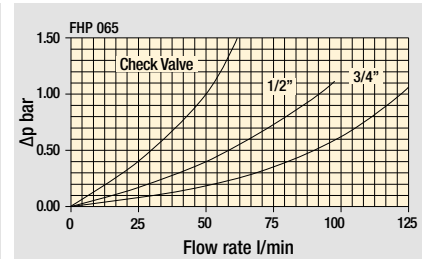
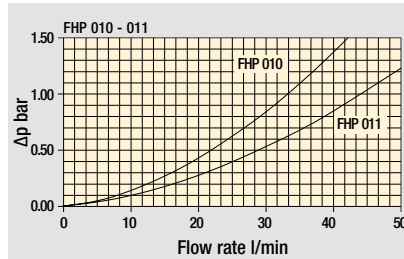
Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FHP 010 - 011</b>	•	•			•	•
<b>FHP 065</b>	•	•	•			
<b>FHP 135</b>	•	•	•			
<b>FHP 350</b>	•	•	•	•	•	•
<b>FHP 500</b>	•	•	•	•	•	•

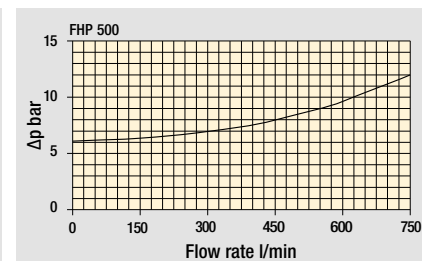
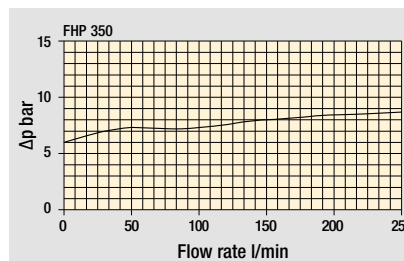
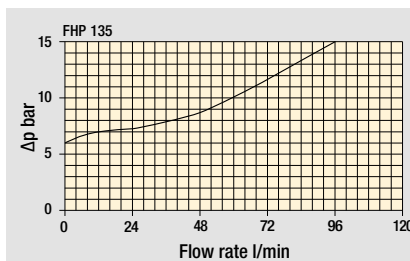
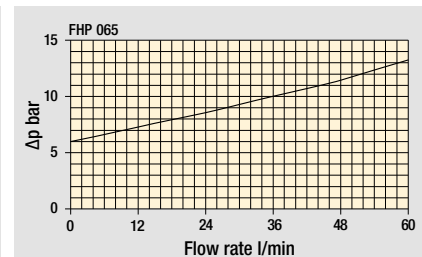
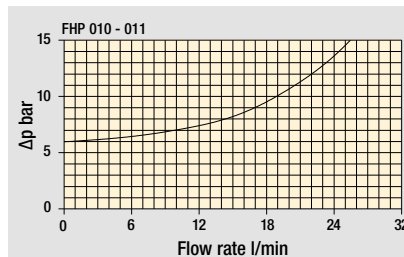
# FHP GENERAL INFORMATION

## Pressure drop

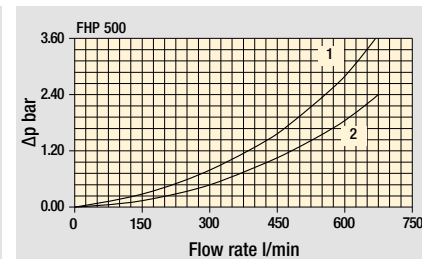
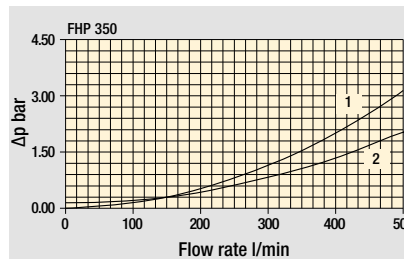
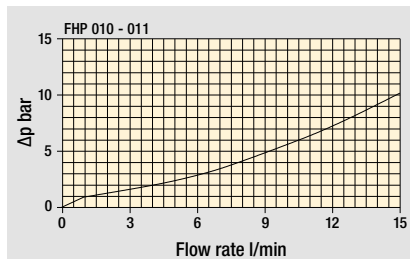
### Filter housings $\Delta p$ pressure drop



### Bypass valve pressure drop



### Valves



Filter housing with check valve

Pressure drop with reverse flow valve in  
1 - Filtering direction  
2 - Opposite direction

Pressure drop with reverse flow valve in  
1 - Opposite direction  
2 - Filtering direction

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

## GENERAL INFORMATION FHP

---

# FHP FHPO10 - FHPO11

## Designation & Ordering code

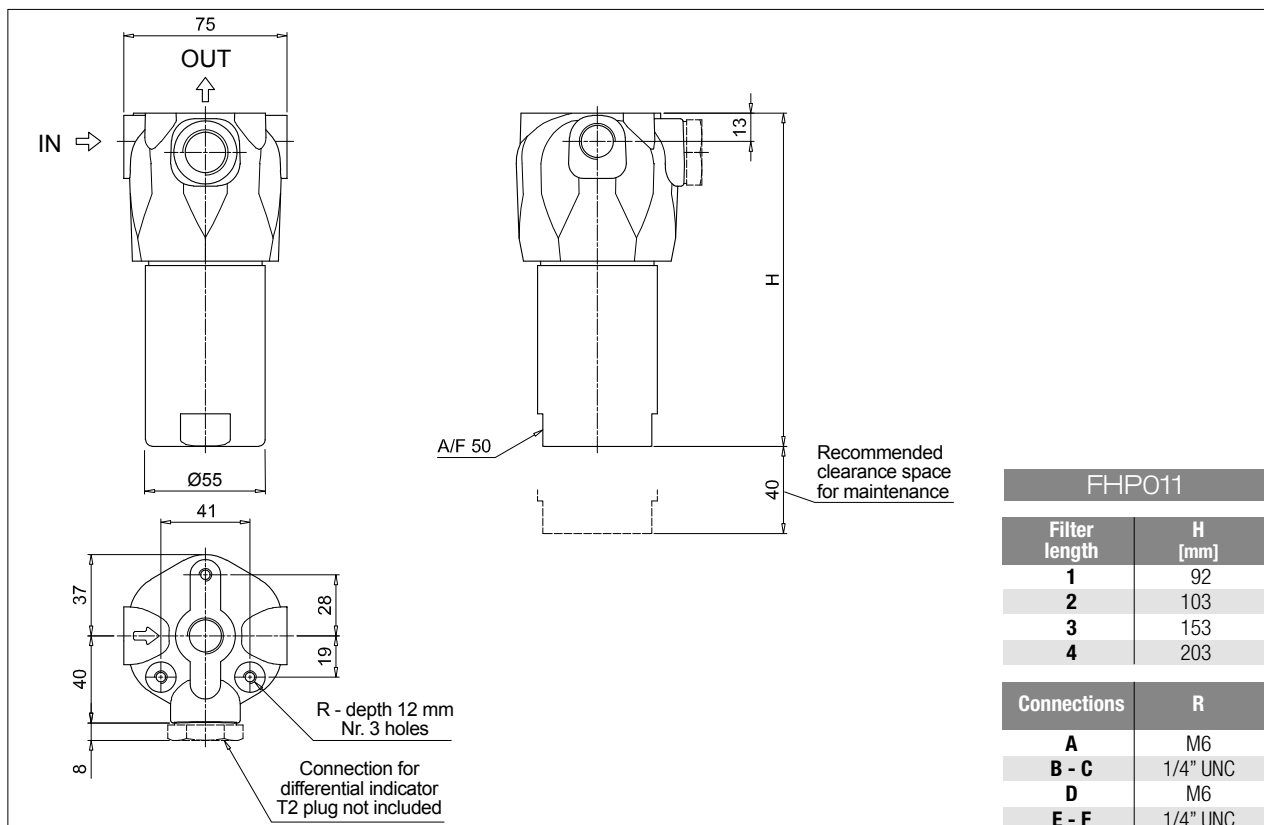
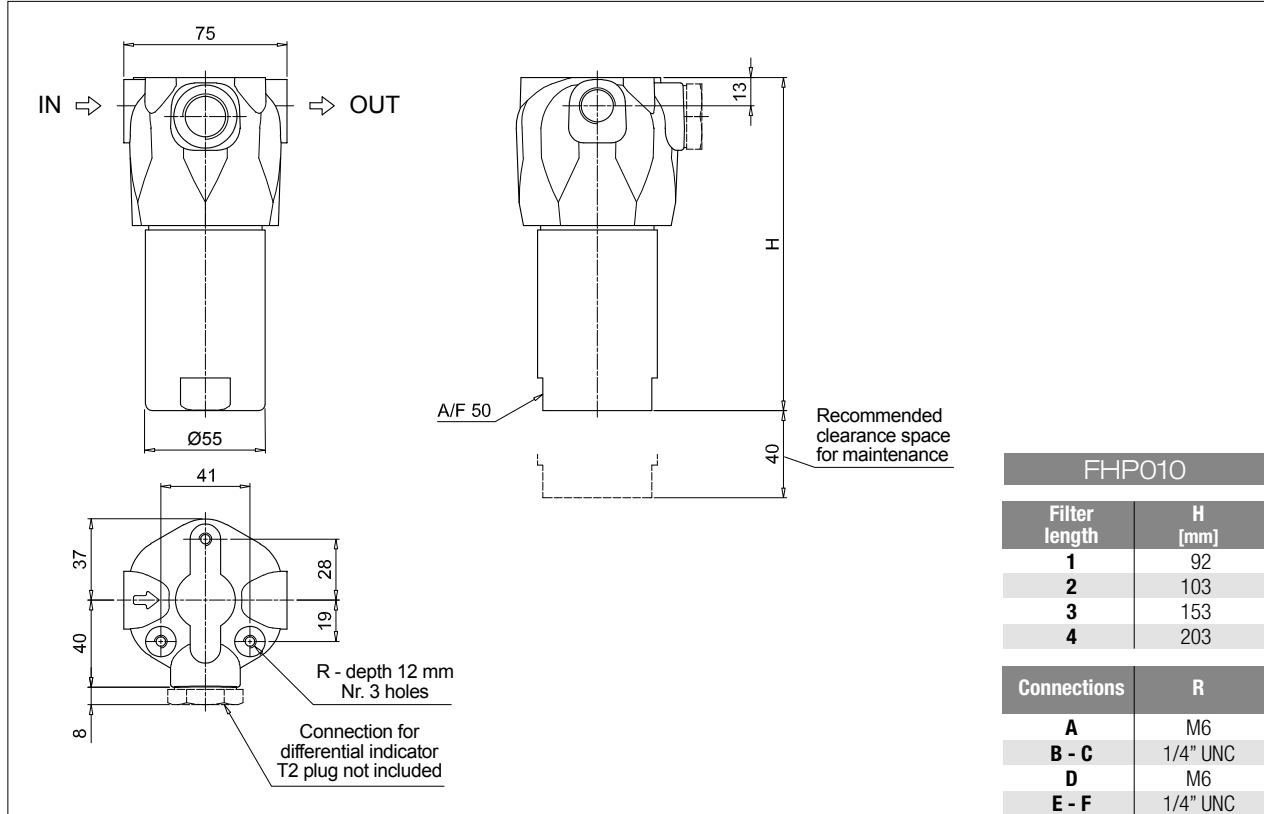
COMPLETE FILTER									
Series and size		Configuration example: <b>FHP010</b>   <b>2</b>   <b>B</b>   <b>A</b>   <b>B</b>   <b>2</b>   <b>A03</b>   <b>N</b>   <b>P01</b>							
<b>FHP010</b>   <b>FHP011</b>									
Length		1   2   3   4							
Valves									
<b>S</b> Without bypass									
<b>B</b> With bypass 6 bar									
<b>V</b> With reverse flow, without bypass									
<b>Z</b> With reverse flow, with bypass 6 bar									
Seals									
<b>A</b> NBR									
<b>V</b> FPM									
Connections									
<b>A</b> G 1/4"									
<b>B</b> 1/4" NPT									
<b>C</b> SAE 5 - 1/2" - 20 UNF									
<b>D</b> G 3/8"									
<b>E</b> 3/8" NPT									
<b>F</b> SAE 6 - 9/16" - 18 UNF									
Connection for differential indicator									
<b>1</b> Without									
<b>2</b> With connection									
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>A16</b> Inorganic microfiber 16 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>A25</b> Inorganic microfiber 25 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M25</b> Wire mesh 25 µm							
				Valves					
				S B V Z				Execution	
				• • • •				<b>P01</b> MP Filtri standard	
				• •				<b>Pxx</b> Customized	

FILTER ELEMENT									
Element series and size		Configuration example: <b>HP011</b>   <b>2</b>   <b>A03</b>   <b>A</b>   <b>N</b>   <b>P01</b>							
<b>HP011</b>									
Element length		1   2   3   4							
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>A16</b> Inorganic microfiber 16 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>A25</b> Inorganic microfiber 25 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M25</b> Wire mesh 25 µm							
Seals									
<b>A</b> NBR									
<b>V</b> FPM									
				Element Δp				Execution	
				<b>N</b> 20 bar				<b>P01</b> MP Filtri standard	
				<b>H</b> 210 bar				<b>Pxx</b> Customized	

ACCESSORIES			
Differential indicators		page	page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator 580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator 581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator 581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator 581
Additional features		page	
<b>T2</b>	Plug	582	

# FHP010 - FHP011 FHP

## Dimensions



# FHP FHP065 - FHP135

## Designation & Ordering code

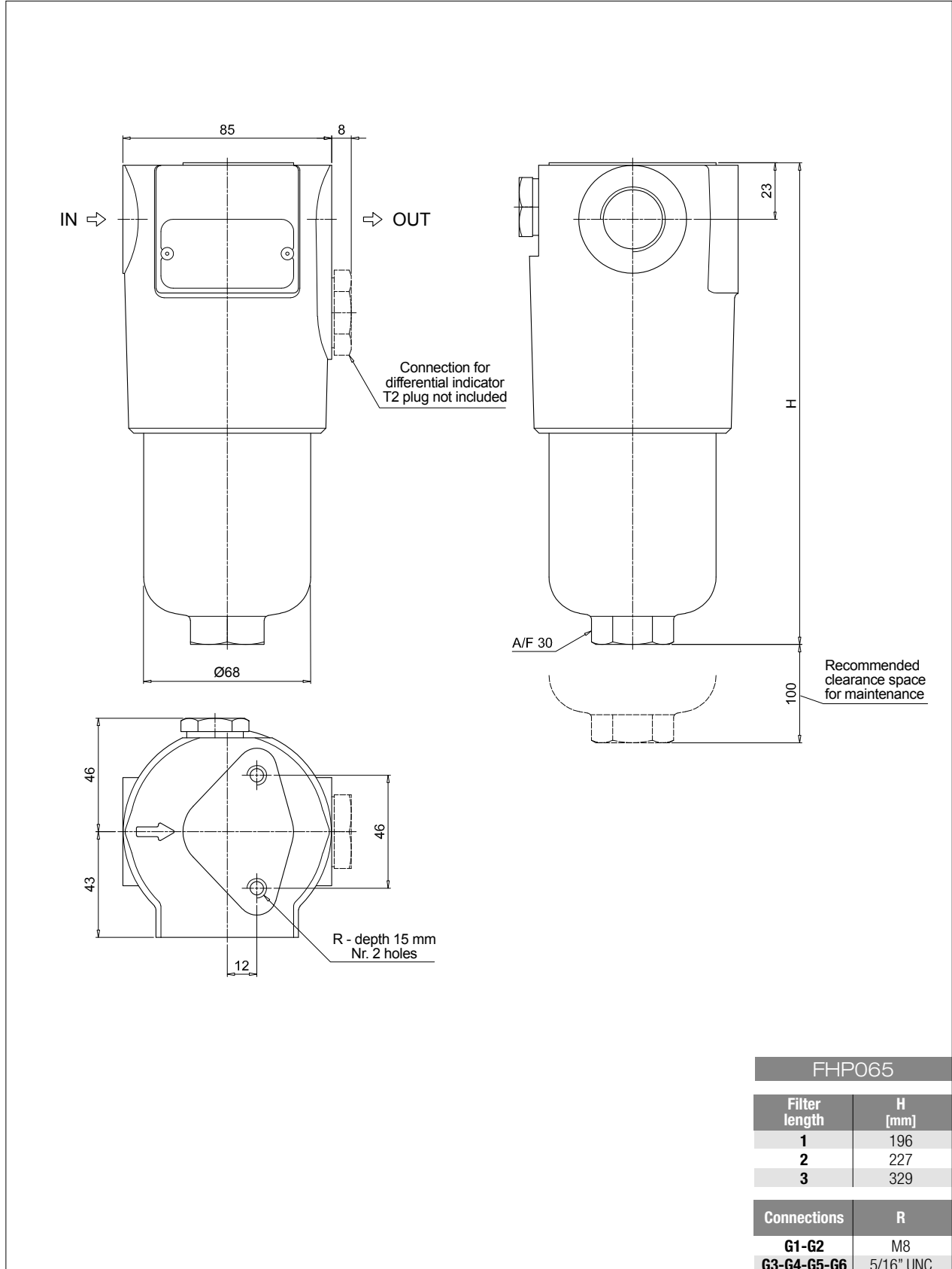
COMPLETE FILTER		
Series and size <b>FHP065   FHP135</b>		Configuration example: <b>FHP135</b> <b>2</b> <b>B</b> <b>A</b> <b>G3</b> <b>A06</b> <b>S</b> <b>P01</b>
Length <b>1</b> <b>2</b> <b>3</b>		
Valves <b>S</b> Without bypass <b>B</b> With bypass 6 bar <b>T</b> With check valve, without bypass		
Seals <b>A</b> NBR <b>V</b> FPM		
Connections	FHP065	FHP135
<b>G1</b>	G 1/2"	G 3/4"
<b>G2</b>	G 3/4"	G 1"
<b>G3</b>	1/2" NPT	3/4" NPT
<b>G4</b>	3/4" NPT	1" NPT
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN
<b>F1</b>	-	3/4" SAE 3000 psi/M
<b>F2</b>	-	1" SAE 3000 psi/M
<b>F3</b>	-	3/4" SAE 3000 psi/UNC
<b>F4</b>	-	1" SAE 3000 psi/UNC
<b>F5</b>	-	3/4" SAE 6000 psi/M
<b>F6</b>	-	3/4" SAE 6000 psi/UNC
Filtration rating (filter media)		
<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm
		Valves
Element Δp		<b>S</b> <b>B</b> <b>T</b> <b>D</b> <b>V</b> <b>Z</b>
<b>N</b> 20 bar		•
<b>R</b> 20 bar		• • •
<b>H</b> 210 bar		•
<b>S</b> 210 bar		• •
		Execution
		<b>P01</b> MP Filtri standard
		<b>Pxx</b> Customized

FILTER ELEMENT		
Element series and size <b>HP065   HP135</b>		Configuration example: <b>HP135</b> <b>2</b> <b>A06</b> <b>A</b> <b>S</b> <b>P01</b>
Element length <b>1</b> <b>2</b> <b>3</b>		
Filtration rating (filter media)		
<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm
Seals <b>A</b> NBR <b>V</b> FPM		
Element Δp <b>N</b> 20 bar <b>R</b> 20 bar <b>H</b> 210 bar <b>S</b> 210 bar		
		Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
Differential indicators		page	page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator 580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator 581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator 581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator 581
Additional features		page	
<b>T2</b>	Plug	582	

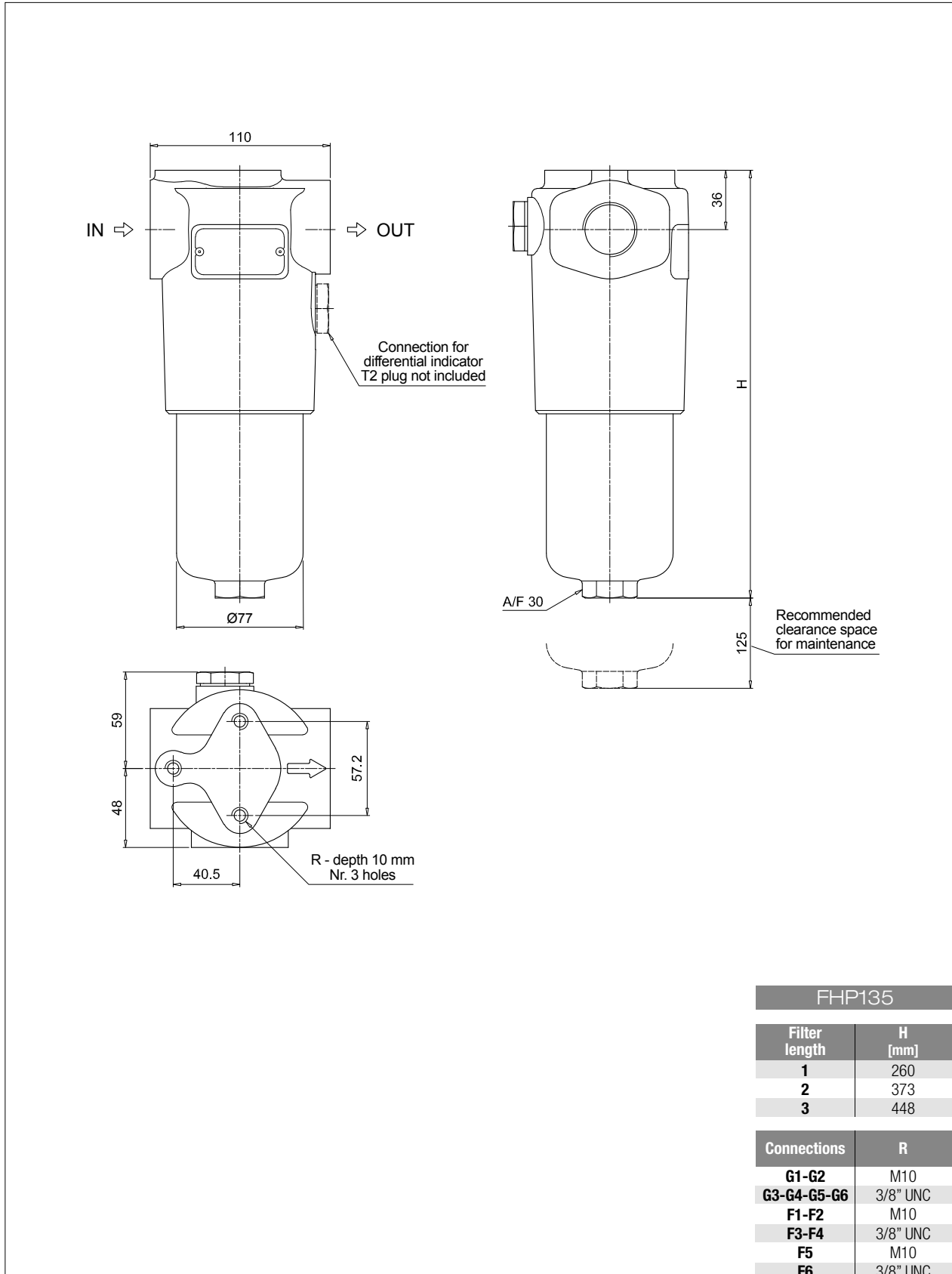
# FHP065 - FHP135 FHP

## Dimensions



# FHP FHP065 - FHP135

## Dimensions





# FHP

## Dimensions

# FHP FHP350

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> FHP350	Configuration example: FHP350	4	B	A	D	2	A06	N	P01																																										
<b>Length</b>	1   2   3   4																																																		
<b>Valves</b>	S Without bypass B With bypass 6 bar T With check valve, without bypass D With check valve, with bypass 6 bar V With reverse flow, without bypass Z With reverse flow, with bypass 6 bar																																																		
<b>Seals</b>	A NBR V FPM																																																		
<b>Connections</b>	A G 1 1/2" B 1 1/2" NPT C SAE 24 - 1 7/8" - 12 UN D 1 1/2" SAE 3000 psi/M + G 1 1/4" E 1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT F 1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" - 12 UN G 1 1/4" SAE 3000 psi/M H 1 1/4" SAE 3000 psi/UNC I 1 1/4" SAE 6000 psi/M L 1 1/4" SAE 6000 psi/UNC																																																		
<b>Connection for differential indicator</b>	2 With connection																																																		
<b>Filtration rating (filter media)</b>	A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm M25 Wire mesh 25 µm																																																		
<b>Element <math>\Delta p</math></b>	<table border="1"> <thead> <tr> <th></th> <th colspan="6">Valves</th> </tr> <tr> <th></th> <th>S</th> <th>B</th> <th>T</th> <th>D</th> <th>V</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td>N 20 bar</td> <td></td> <td>•</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>R 20 bar</td> <td></td> <td></td> <td></td> <td>•</td> <td></td> <td>•</td> </tr> <tr> <td>H 210 bar</td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>S 210 bar</td> <td></td> <td>•</td> <td></td> <td></td> <td>•</td> <td></td> </tr> </tbody> </table>										Valves							S	B	T	D	V	Z	N 20 bar		•					R 20 bar				•		•	H 210 bar	•						S 210 bar		•			•	
	Valves																																																		
	S	B	T	D	V	Z																																													
N 20 bar		•																																																	
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S 210 bar		•			•																																														
<b>Execution</b>	<table border="1"> <thead> <tr> <th></th> <th colspan="4">Filter length</th> </tr> <tr> <th></th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>P01 MP Filtri standard</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> </tr> <tr> <td>P02 Maintenance from the bottom of the housing</td> <td></td> <td></td> <td></td> <td>•</td> </tr> <tr> <td>Pxx Customized</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										Filter length					1	2	3	4	P01 MP Filtri standard	•	•	•	•	P02 Maintenance from the bottom of the housing				•	Pxx Customized																					
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P02 Maintenance from the bottom of the housing				•																																															
Pxx Customized																																																			

### FILTER ELEMENT

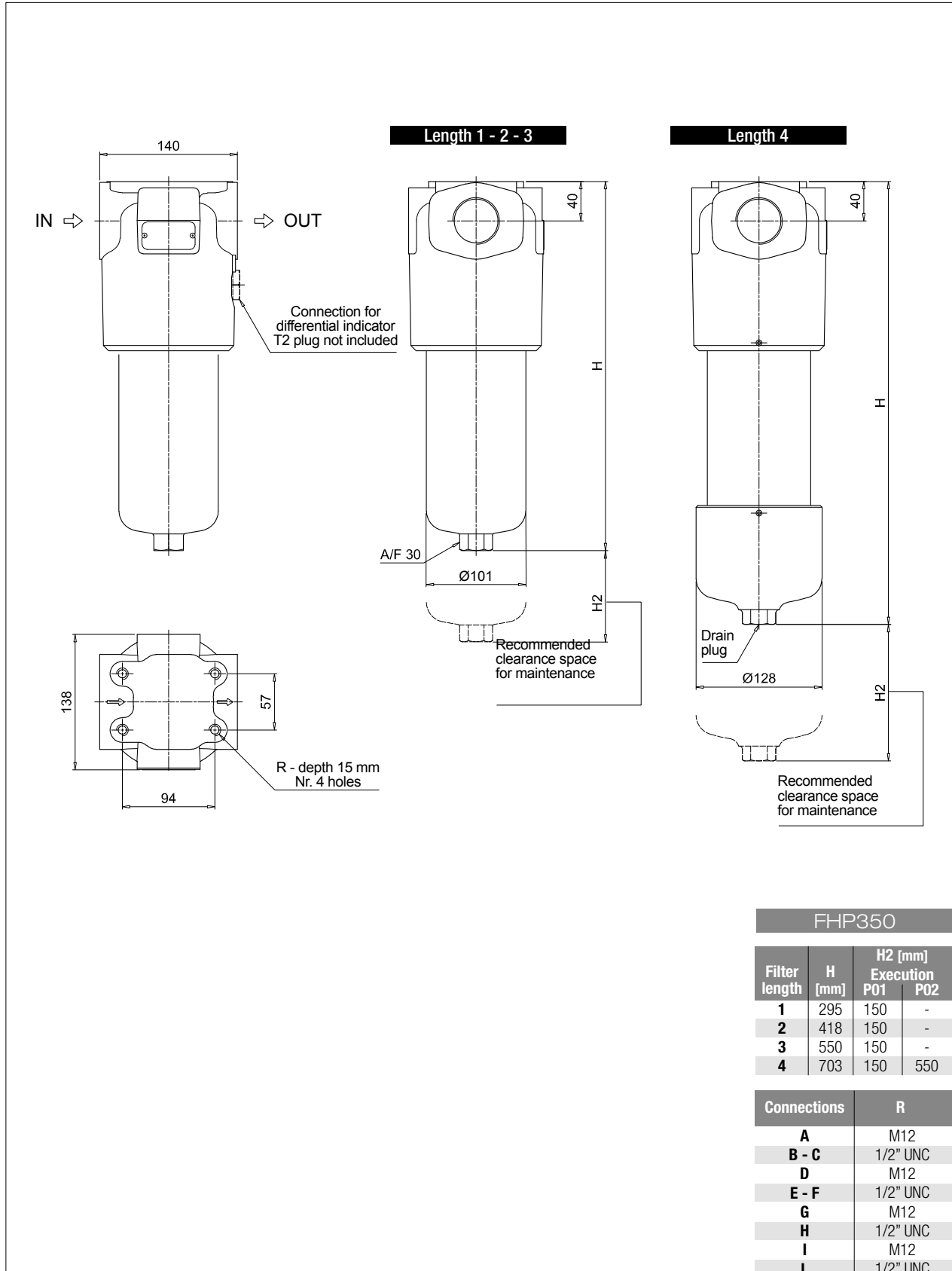
<b>Element series and size</b> HP320	Configuration example: HP320	4	A06	A	N	P01
<b>Element length</b>	1   2   3   4					
<b>Filtration rating (filter media)</b>	A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm M25 Wire mesh 25 µm					
<b>Seals</b>	A NBR V FPM					
<b>Element <math>\Delta p</math></b>	N 20 bar R 20 bar H 210 bar S 210 bar					
<b>Execution</b>	P01 MP Filtri standard Pxx Customized					

### ACCESSORIES

	page		page
<b>Differential indicators</b>			
DEA Electrical differential indicator	577	DLE Electrical / visual differential indicator	580
DEH Hazardous area electronic differential indicator	577-578	DTA Electronic differential indicator	581
DEM Electrical differential indicator	578-579	DVA Visual differential indicator	581
DLA Electrical / visual differential indicator	579-580	DVM Visual differential indicator	581
<b>Additional features</b>	page		
T2 Plug	582		

# FHP350 FHP

## Dimensions



# FHP FHP500

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHP500** | **4** | **V** | **A** | **F1** | **A06** | **S** | **P01**

#### FHP500

#### Length

1 | 2 | 3 | 4 | 5

#### Valves

- S** Without bypass
- B** With bypass 6 bar
- T** With check valve, without bypass
- D** With check valve, with bypass 6 bar
- V** With reverse flow, without bypass
- Z** With reverse flow, with bypass 6 bar

#### Seals

- A** NBR
- V** FPM

#### Connections

- F1** 1 1/2" SAE 3000 psi/M
- F2** 1 1/2" SAE 3000 psi/UNC
- F3** 2" SAE 3000 psi/M
- F4** 2" SAE 3000 psi/UNC + 1 1/2" NPT
- F5** 1 1/2" SAE 6000 psi/M
- F6** 1 1/2" SAE 6000 psi/UNC
- F7** 2" SAE 6000 psi/M + G 1 1/2"
- F8** 2" SAE 6000 psi/UNC + SAE 24 - 1 7/8" - 12 UN

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

Element Δp	Valves						
	S	B	T	D	V	Z	
<b>N</b> 20 bar		•					
<b>R</b> 20 bar				•	•		
<b>S</b> 210 bar	•		•		•		

Execution	Filter length				
	1	2	3	4	5
<b>P01</b> MP Filtri standard	•	•	•	•	•
<b>P02</b> Maintenance from the bottom of the housing				•	•
<b>P03</b> Drain plug		•	•		
<b>Pxx</b> Customized	•	•	•	•	•

### FILTER ELEMENT

Element series and size Configuration example: **HP500** | **4** | **A06** | **A** | **S** | **P01**

#### HP500

#### Element length

1 | 2 | 3 | 4 | 5

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

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

Element Δp	
<b>N</b>	20 bar
<b>R</b>	20 bar
<b>S</b>	210 bar

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

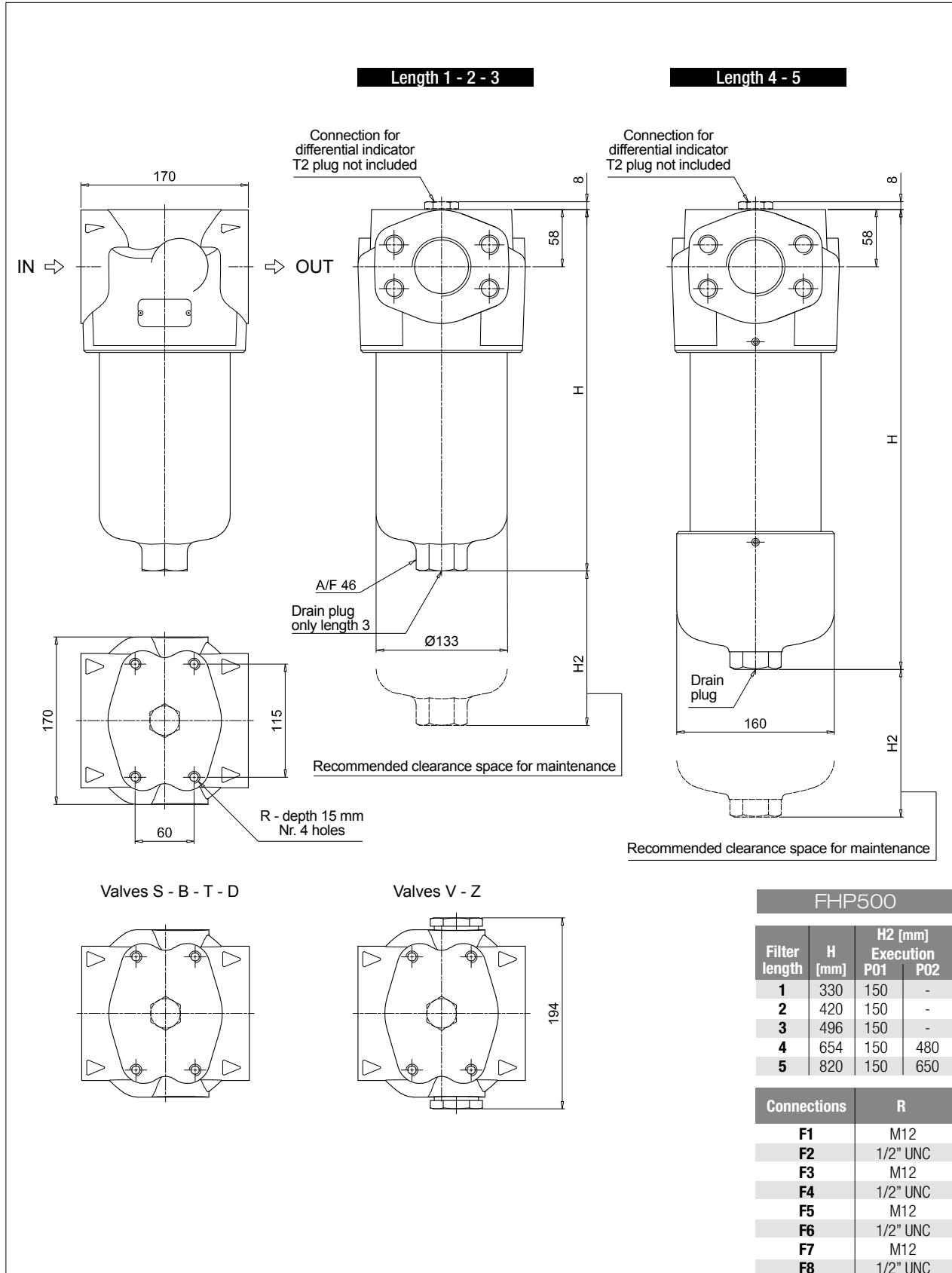
### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581

Additional features	page
<b>T2</b> Plug	582

# FHP500 FHP

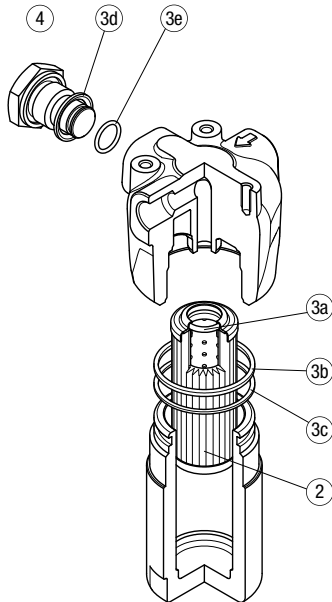
## Dimensions



# FHP SPARE PARTS

Order number for spare parts

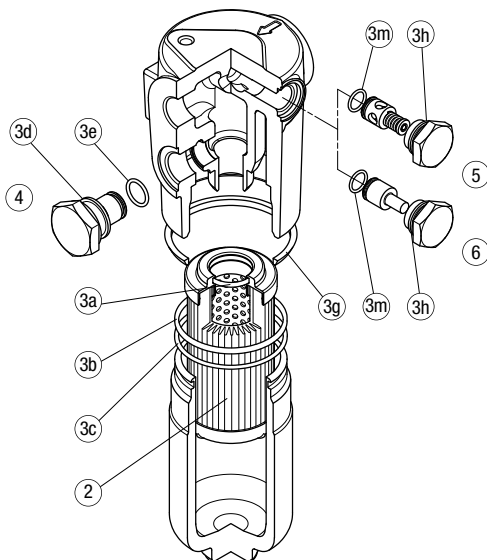
## FHP 010 - 011



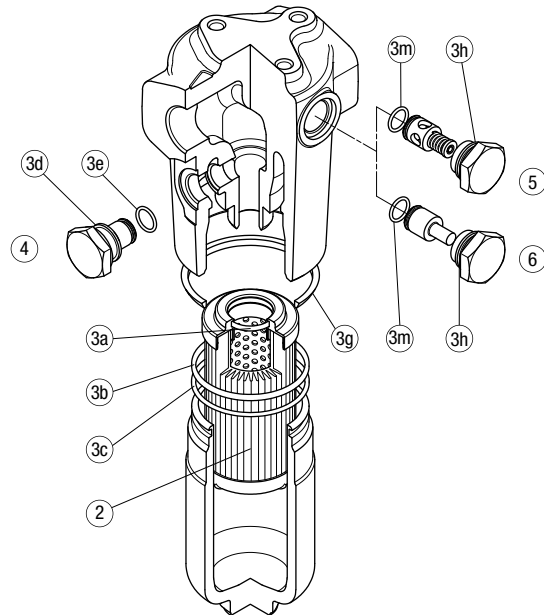
Q.ty:  
nr. 0 pcs. for version 1  
(without indicator port)  
  
nr. 1 pc. for version 2  
(with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)		4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHP 010-011</b>	See order table	02050501	02050492	T2H	T2V

## FHP 065



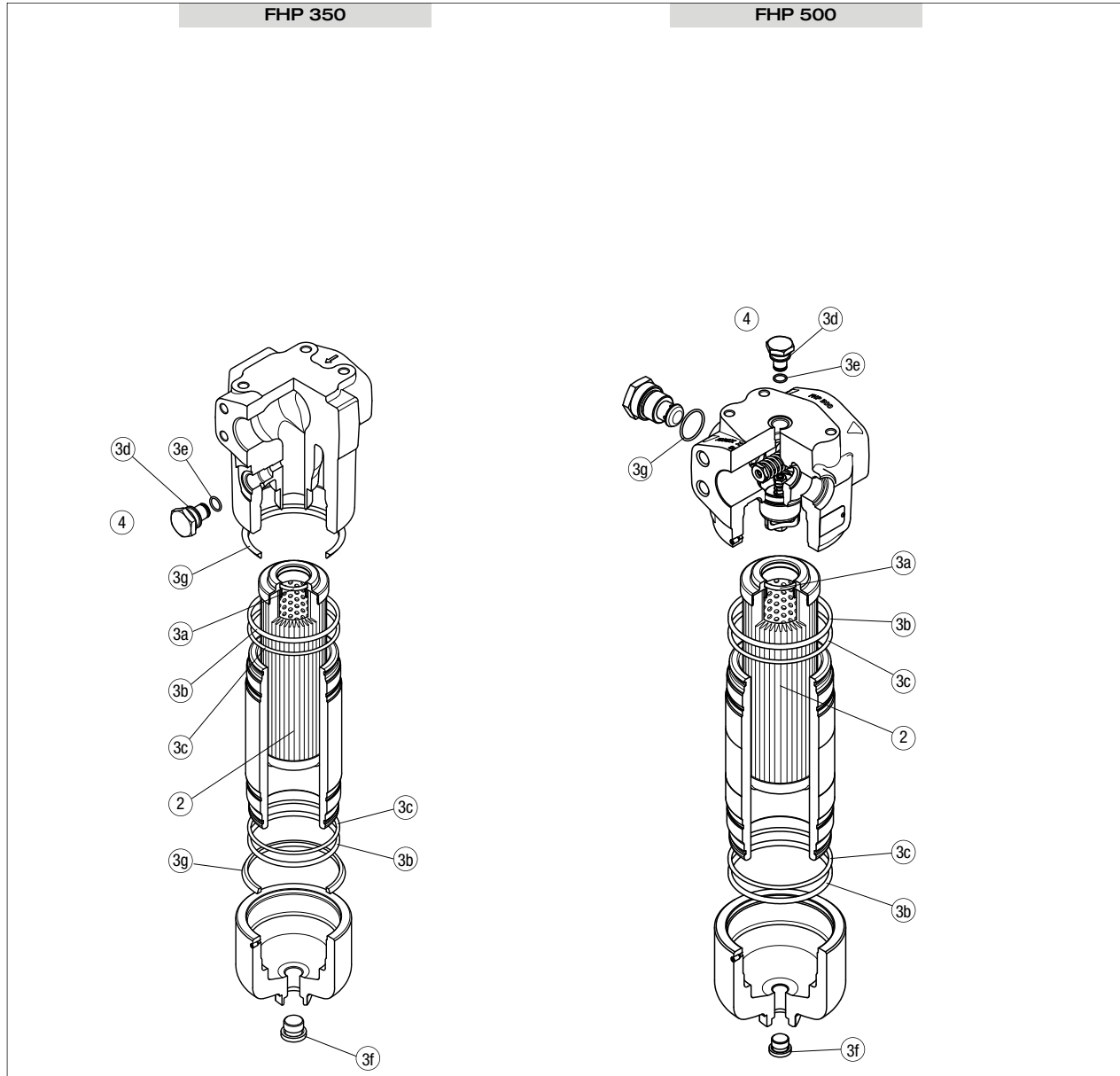
## FHP 135



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3m)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FHP 065</b>	See order table	02050265	02050276	T2H	T2V	02001116	02001136	02001142	02001139
<b>FHP 135</b>		02050269	02050280			02001117	02001137	02001143	02001392

# SPARE PARTS FHP

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc. (3a ÷ 3g for FHP 350) (3a ÷ 3f for FHP 500)		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHP 350</b>	See order table	02050272	02050283	T2H	T2V
<b>FHP 500</b>		02050330	02050331		







High Pressure filters

# FMM series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 300 l/min



# FMM GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 42 MPa (420 bar)**

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

FMM is a range of versatile high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4", for a maximum flow rate of 250 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Agricultural machines
- Mobile machines

#### Filter housing materials

- Head: Painted cast iron, black RAL 9005
- Housing: Phosphatized steel
- Bypass valve: Steel

#### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm 10\%$
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfiber filter elements - series N-R: 20 bar
- Microfiber filter elements - series S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

In-line Inlet/Outlet

#### Note

FMM filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FMM 050</b>		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23
<b>FMM 150</b>		7.50	9.50	10.90	-	-		0.60	1.00	1.25	-	-

# GENERAL INFORMATION FMM

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

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FMM 050</b>	<b>1</b>	42	43	79	82	106	147	29	39	57	59	74
	<b>2</b>	52	57	85	96	121	149	45	49	76	88	114
	<b>3</b>	66	69	97	106	130	150	58	61	89	99	125
	<b>4</b>	83	89	113	115	134	152	74	80	106	108	129
	<b>5</b>	107	110	130	134	141	154	93	95	111	121	139
<b>FMM 150</b>	<b>1</b>	81	88	156	163	179	295					
	<b>2</b>	142	145	227	230	236	312					
	<b>3</b>	170	180	242	245	263	315					

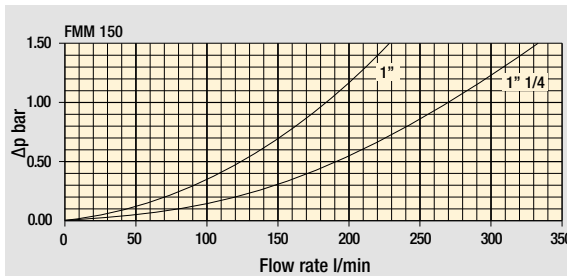
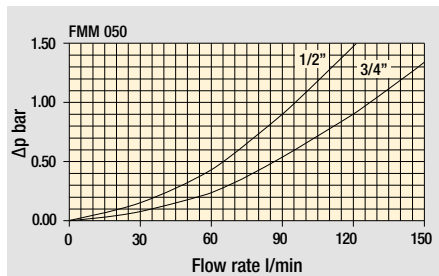
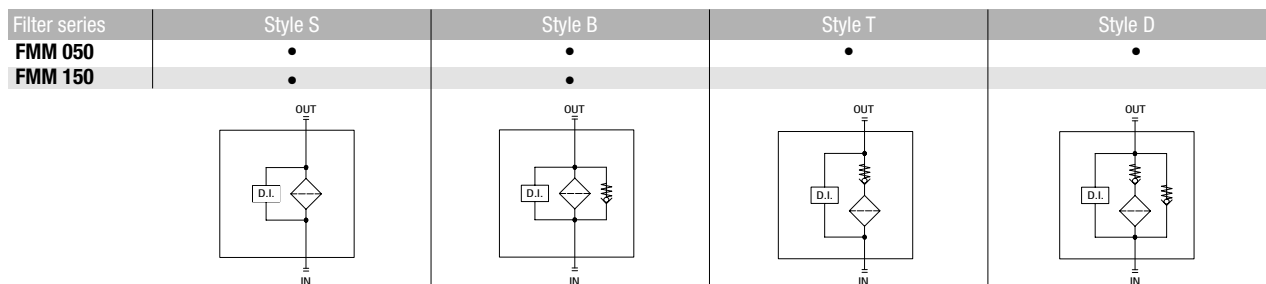
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

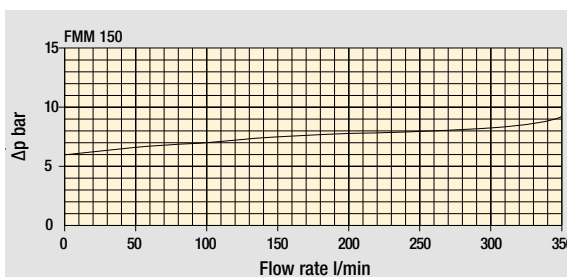
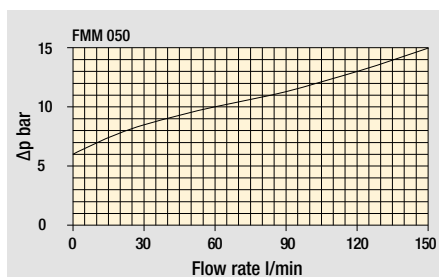
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

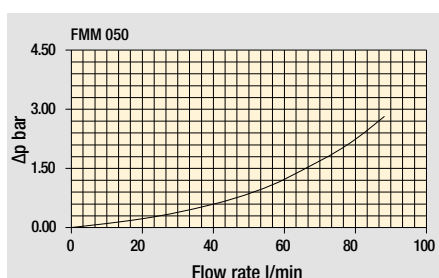
### Hydraulic symbols



Pressure drop  
Filter housings  
 $\Delta p$  pressure drop



Bypass valve  
pressure drop



Filter housing  
with check valve

Valves

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

# FMM FMM050

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FMM050** | **3** | **B** | **A** | **G** | **A10** | **N** | **P01**

#### FMM050

#### Length

1 | 2 | 3 | 4 | 5 |

#### Valves

- S** Without bypass
- B** With bypass 6 bar
- T** With check valve, without bypass
- D** With check valve, with bypass 6 bar

#### Seals

- A** NBR
- V** FPM

#### Connections

- A** M18x1.5 - ISO 6149
- B** M22x1.5 - ISO 6149
- C** G 1/2"
- D** G 3/4"
- E** 1/2" NPT
- F** 3/4" NPT
- G** SAE 8 - 3/4" - 16 UNF
- H** SAE 12 - 1 1/16" - 12 UN

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

Element Δp	Valves			
	S	B	T	D
<b>N</b> 20 bar		•		
<b>R</b> 20 bar				•
<b>S</b> 210 bar	•		•	

#### Execution

- P01** Upper connection for clogging indicator
- P02** Without connection for clogging indicator
- P03** Frontal connection for clogging indicator
- Pxx** Customized

### FILTER ELEMENT

Element series and size Configuration example: **HP050** | **3** | **A10** | **A** | **N** | **P01**

#### HP050

#### Element length

1 | 2 | 3 | 4 | 5 |

#### Filtration rating (filter media)

- A03** Inorganic microfiber 3 µm
- A06** Inorganic microfiber 6 µm
- A10** Inorganic microfiber 10 µm
- A16** Inorganic microfiber 16 µm
- A25** Inorganic microfiber 25 µm
- M25** Wire mesh 25 µm

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

Element Δp	
<b>N</b>	20 bar
<b>R</b>	20 bar
<b>S</b>	210 bar

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

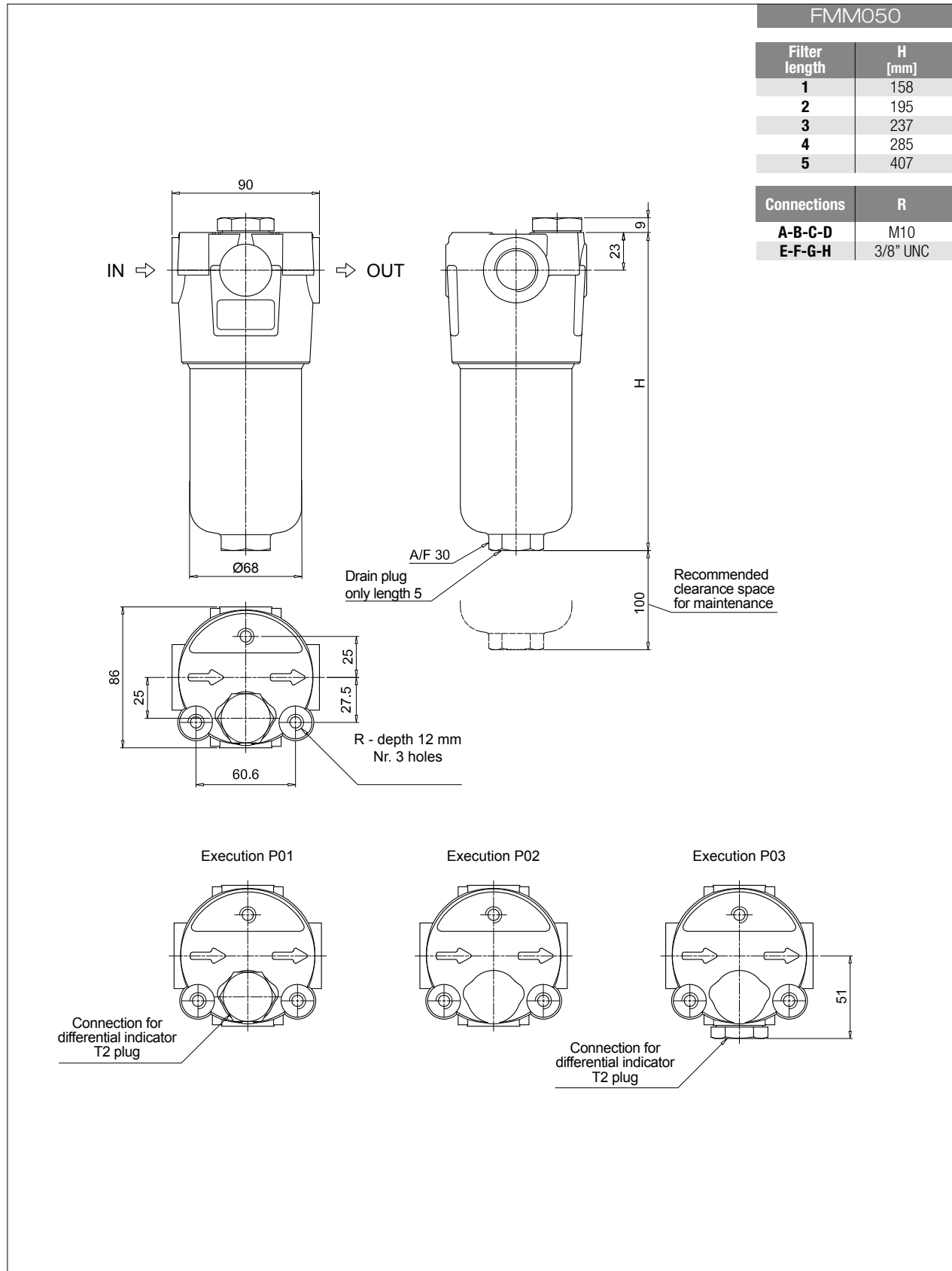
### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581

Additional features	page
<b>T2</b> Plug	582

# FMM050 FMM

## Dimensions



# FMM FMM150

## Designation & Ordering code

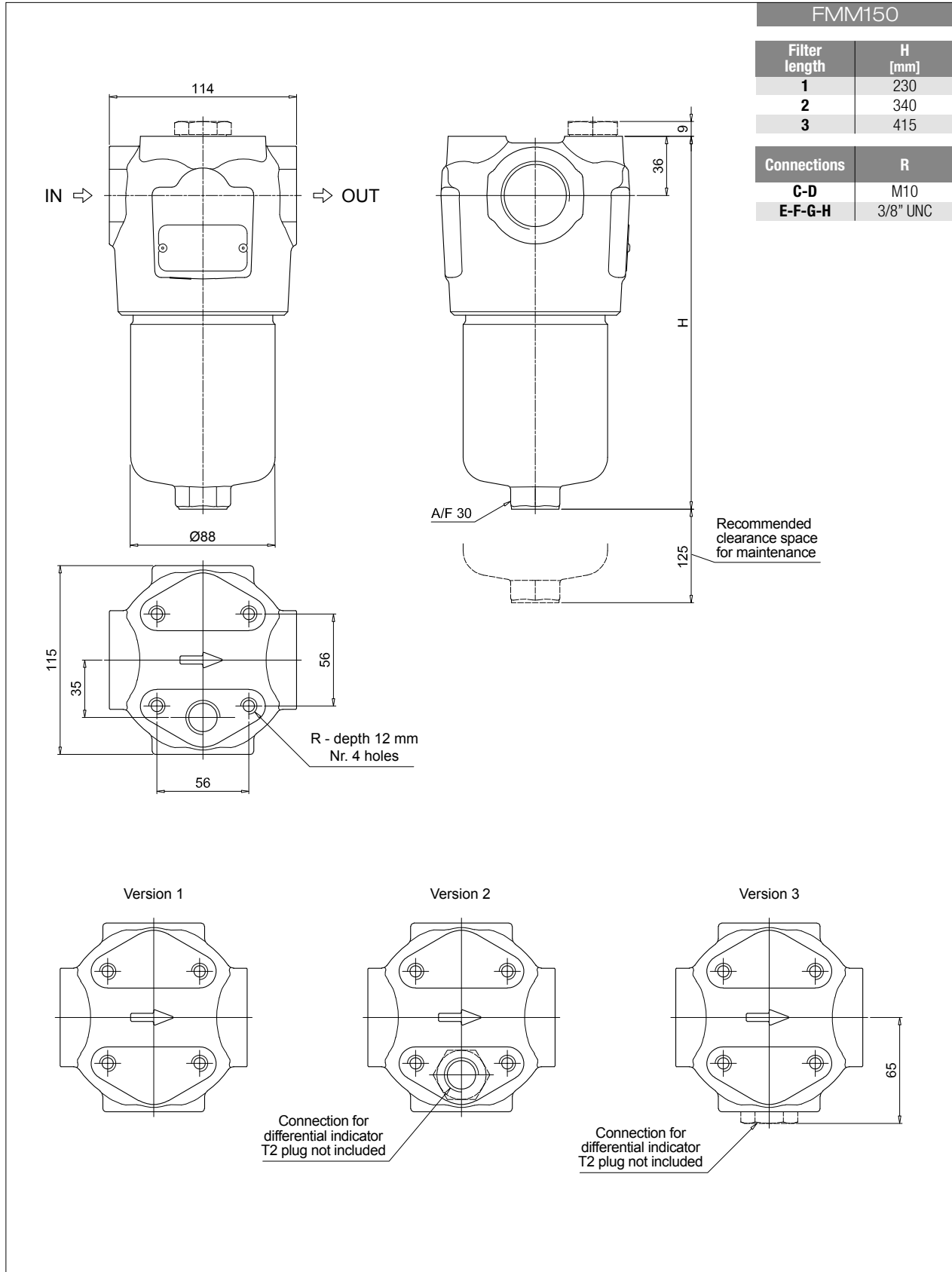
COMPLETE FILTER	
<b>Series and size</b> <b>FMM150</b>	Configuration example: <b>FMM150</b>   <b>2</b>   <b>B</b>   <b>A</b>   <b>D</b>   <b>2</b>   <b>M25</b>   <b>N</b>   <b>P01</b>
<b>Length</b> 1   2   3	
<b>Valves</b> <b>S</b> Without bypass <b>B</b> With bypass 6 bar	
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM	
<b>Connections</b> <b>C</b> G 1" <b>D</b> G 1 1/4" <b>E</b> 1" NPT <b>F</b> 1 1/4" NPT <b>G</b> SAE 16 - 1 5/16" - 12 UN <b>H</b> SAE 20 - 1 5/8" - 12 UN	
<b>Connection for differential indicator</b> <b>1</b> Without connection <b>2</b> Upper connection <b>3</b> Frontal connection	
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>M25</b> Wire mesh 25 µm	
<b>Element Δp</b> <b>N</b> 20 bar	<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

FILTER ELEMENT	
<b>Element series and size</b> <b>HP150</b>	Configuration example: <b>HP150</b>   <b>2</b>   <b>M25</b>   <b>A</b>   <b>N</b>   <b>P01</b>
<b>Element length</b> 1   2   3	
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm <b>M25</b> Wire mesh 25 µm	
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM	<b>Element Δp</b> <b>N</b> 20 bar
	<b>Execution</b> <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
	page		page
<b>Differential indicators</b>			
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581
<b>Additional features</b>	page		
<b>T2</b> Plug	582		

# FMM150 FMM

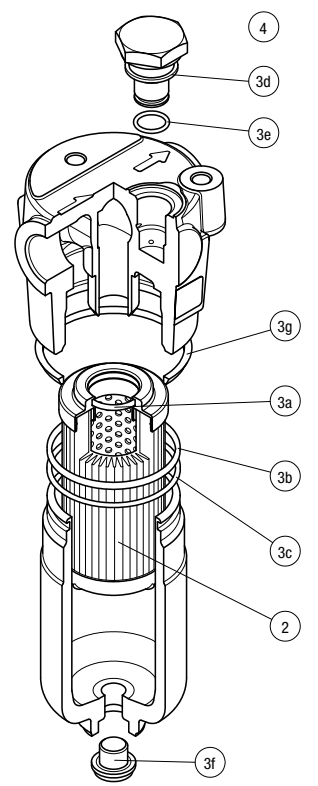
## Dimensions



# FMM SPARE PARTS

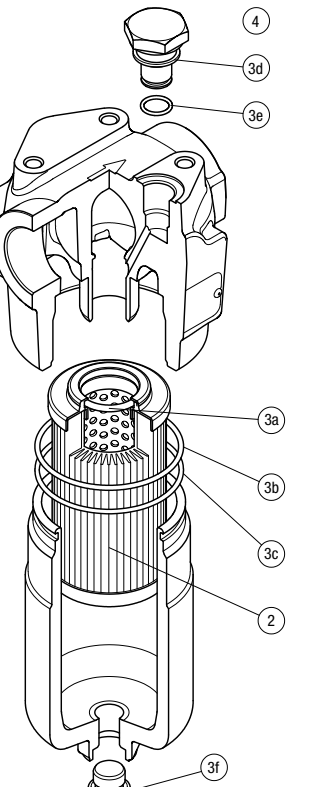
Order number for spare parts

**FMM 050**



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FMM 050</b>	See order table	02050314	02050315	T2H	T2V

**FMM 150**



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FMM 150</b>	See order table	02050731	02050732	T2H	T2V



# FMM

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High Pressure filters

# HPB series

Maximum working pressure up to 42 MPa (420 bar) - Flow rate up to 300 l/min



# HPB GENERAL INFORMATION

## Description

### High Pressure Bowl Kit

**Maximum working pressure up to 42 MPa (420 bar)**  
**Flow rate up to 300 l/min**

HPB is a range of high pressure bowl kits for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly integrated in the control blocks.

#### Available features:

- Fine filtration rating, to get a good cleanliness level into the system
- Low collapse filter element "N", for use with blocks provided with bypass valve
- High collapse filter element with external support "S", for use with blocks not provided with the bypass valve

## Technical data

### Filter housing materials

- Housing: Phosphatized steel

### Pressure

- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

### Δp element type

- Microfibre / Wire mesh filter elements - series N: 20 bar
- Microfibre / Wire mesh filter elements - series S: 210 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

HPB filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>HPB 050</b>		1.10	1.50	1.90	2.40	3.50		0.30	0.45	0.60	0.80	1.20
<b>HPB 150</b>		2.90	4.90	6.30	-	-		0.45	0.85	1.10	-	-

# GENERAL INFORMATION HPB

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

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
HPB 050	1	42	43	79	82	106	147	29	39	57	59	74
	2	52	57	85	96	121	149	45	49	76	88	114
	3	66	69	97	106	130	150	58	61	89	99	125
	4	83	89	113	115	134	152	74	80	106	108	129
	5	107	110	130	134	141	154	93	95	111	121	139
HPB 150	1	81	88	156	163	179	295					
	2	142	145	227	230	236	312					
	3	170	180	242	245	263	315					

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

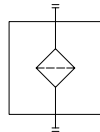
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

Filter series	Style S
HPB 050	•
HPB 150	•

### Hydraulic symbols



# HPB HPB050

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **HPB050** | **3** | **A** | **A10** | **N** | **P01**

**Series and size**  
HPB050

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

**Seals**  
A NBR  
V FPM

**Filtration rating (filter media)**

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

**Element Δp**

N	20 bar
S	210 bar

**Execution**

P01	MP Filtri standard
Pxx	Customized

### FILTER ELEMENT

Configuration example: **HP150** | **3** | **A10** | **A** | **N** | **P01**

**Element series and size**  
HP050

**Element length**  
1 | 2 | 3 | 4 | 5

**Seals**  
A NBR  
V FPM

**Filtration rating (filter media)**

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

**Seals**

A	NBR
V	FPM

**Element Δp**

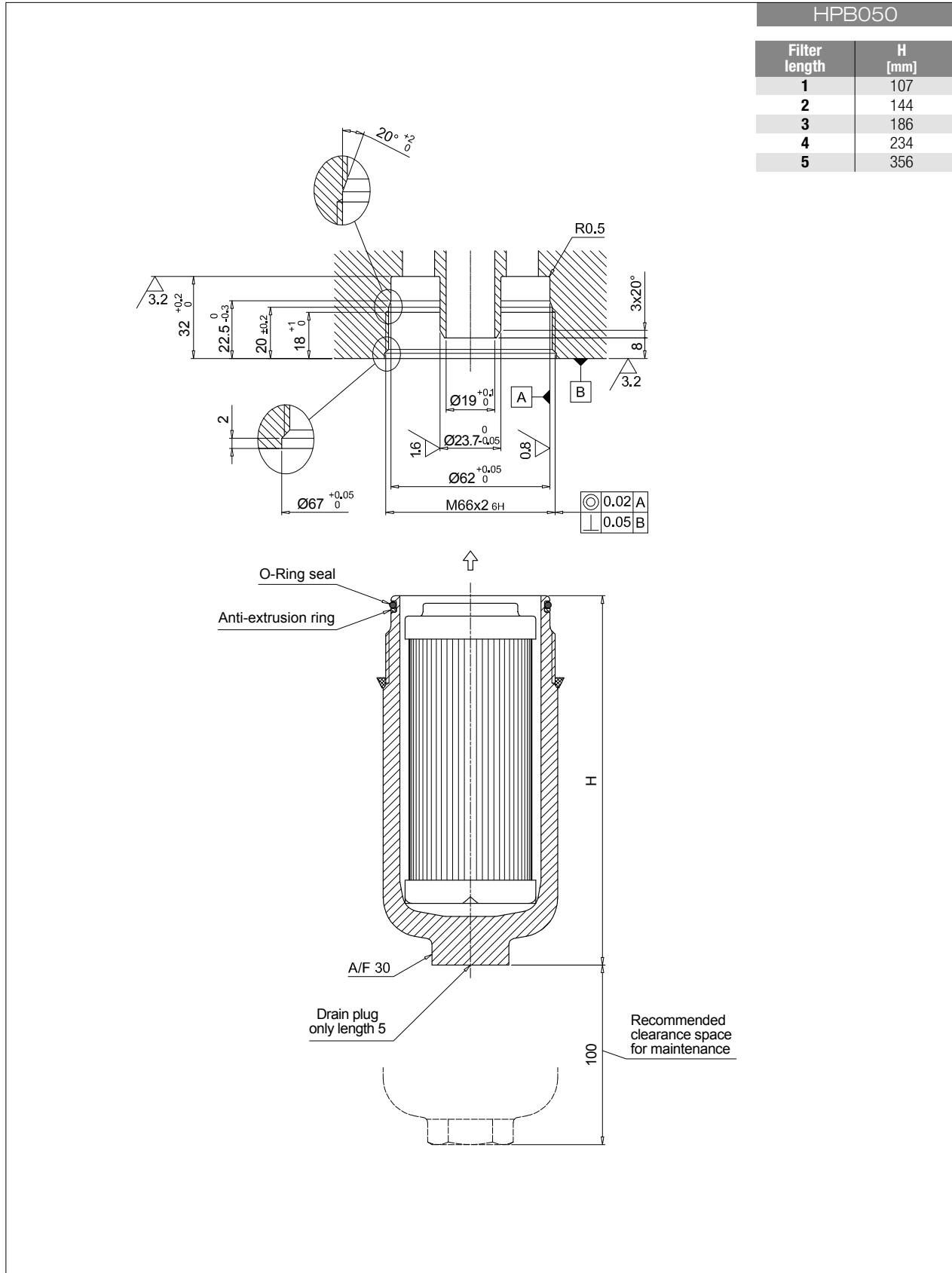
N	20 bar
S	210 bar

**Execution**

P01	MP Filtri standard
Pxx	Customized

# HPB050 HPB

## Dimensions



# HPB HPB150

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **HPB150** | **3** | **A** | **A10** | **N** | **P01**

**Series and size**  
HPB150

**Length**  
1 | 2 | 3 |

**Seals**  
A NBR  
V FPM

**Filtration rating (filter media)**

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

**Element Δp**  
N 20 bar

**Execution**  
P01 MP Filtri standard  
Pxx Customized

### FILTER ELEMENT

Configuration example: **HP050** | **3** | **A10** | **A** | **N** | **P01**

**Element series and size**  
HP150

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

**Seals**  
A NBR  
V FPM

**Filtration rating (filter media)**

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

**Seals**  
A NVR  
V FPM

**Element Δp**  
N 20 bar

**Execution**  
P01 MP Filtri standard  
Pxx Customized

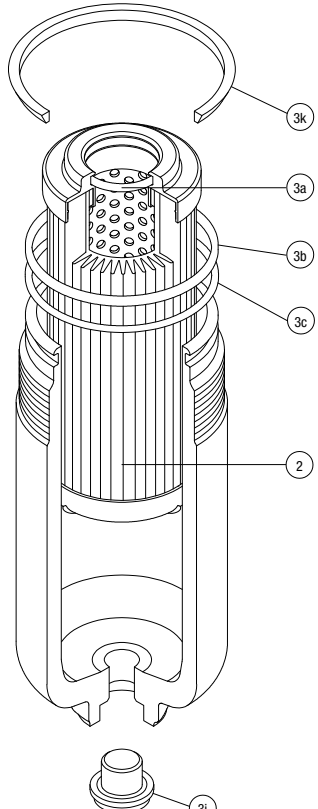




# HPB SPARE PARTS

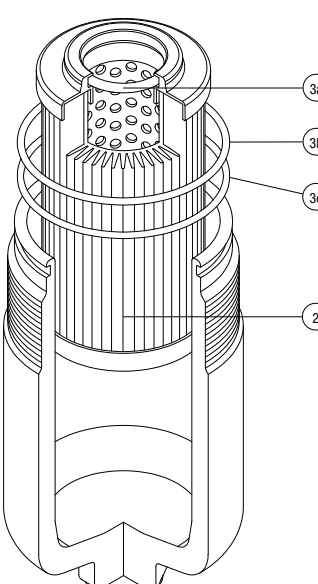
Order number for spare parts

**HPB 050**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
HPB 050	See order table	02050813	02050823

**HPB 150**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
HPB 150	See order table	02050816	02050826

# HPB

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High Pressure filters

# FHA 051 series

Maximum working pressure up to 56 MPa (560 bar) - Flow rate up to 150 l/min



# FHA 051 GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### In-line

**Maximum working pressure up to 56 MPa (560 bar)**

**Flow rate up to 150 l/min**

FHA is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 3/4", for a maximum flow rate of 140 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Reverse flow valve, to allow bidirectional flow through the filter housing. The back flow is not filtered
- Low collapse filter element "N", for use with filters provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any heavy duty industrial equipment or mobile machines

### Filter housing materials

- Head: Steel (chemical heat treatment)
- Housing: Steel (chemical heat treatment)
- Bypass valve: Steel

### Pressure

- Test pressure: 84 MPa (840 bar)
- Burst pressure: 168 MPa (1680 bar)
- Pulse pressure fatigue test: 1 00 000 cycles with pressure from 0 to 56 MPa (560 bar)

### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm 10\%$
- Other opening pressures on request.

### $\Delta p$ element type

- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

In-line Inlet/Outlet

### Note

FHA filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHA 051</b>		3.28	3.65	4.06	4.54	5.74		0.33	0.47	0.62	0.79	1.23

# GENERAL INFORMATION FHA 051

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

Filter series	Length	Filter element design - N Series					Filter element design - R Series					Filter element design - S Series					
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FHA 051</b>	<b>1</b>	42	41	82	85	110	156	42	41	82	85	110	30	40	58	60	76
	<b>2</b>	53	58	87	100	127	158	53	58	87	100	127	45	50	78	91	120
	<b>3</b>	68	71	101	111	137	160	68	71	101	111	137	59	62	92	103	131
	<b>4</b>	86	92	118	121	142	162	86	92	118	121	142	77	83	110	113	137
	<b>5</b>	112	115	137	142	150	165	112	115	137	142	150	96	99	116	128	147

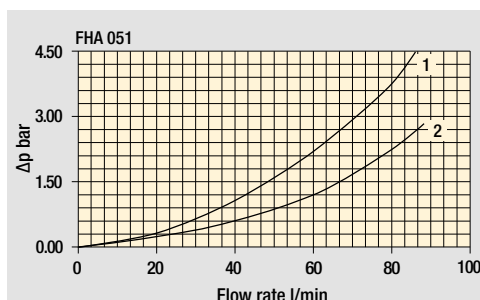
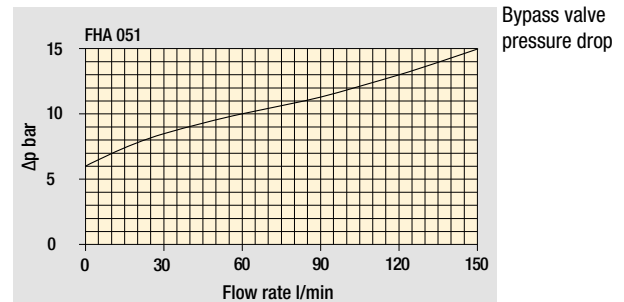
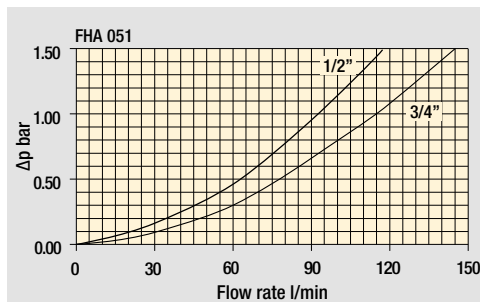
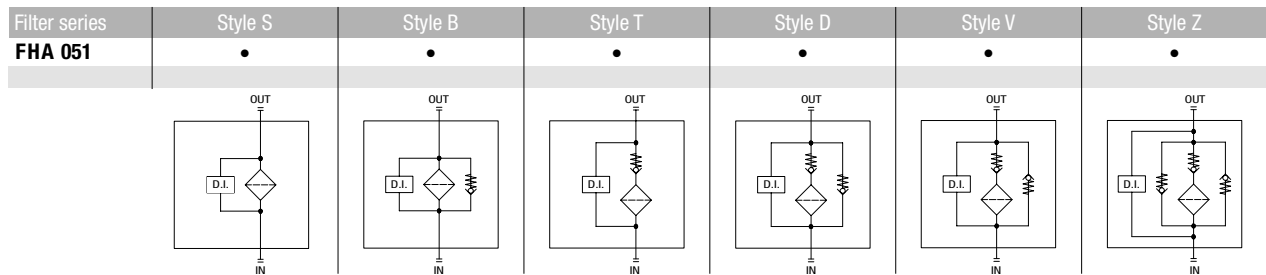
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

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

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

## Hydraulic symbols



### Pressure drop in reverse flow valves

- 1 - Reverse flow
- 2 - In filter direction

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

# FHA 051

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FHA051** | **3** | **B** | **A** | **G** | **A10** | **N** | **P01**

**Series and size**  
**FHA051**

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

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar  
**V** With reverse flow, without bypass  
**Z** With reverse flow, with bypass 6 bar

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

**Connections**  
**A** M18x1.5 - ISO 6149      **E** 1/2" NPT  
**B** M22x1.5 - ISO 6149      **F** 3/4" NPT  
**C** G 1/2"                      **G** SAE 8 - 3/4" - 16 UNF  
**D** G 3/4"                      **H** SAE 12 - 1 1/16" - 12 UN

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm  
**M25** Wire mesh 25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>N</b> 20 bar		•				
<b>R</b> 20 bar				•		•
<b>S</b> 210 bar	•		•		•	

**Execution**  
**P01** Upper connection for clogging indicator  
**P02** Without connection for clogging indicator  
**P03** Frontal connection for clogging indicator  
**Pxx** Customized

### FILTER ELEMENT

Configuration example: **HP050** | **3** | **A10** | **A** | **N** | **P01**

**Element series and size**  
**HP050**

**Element length**  
1 | 2 | 3 | 4 | 5 |

**Filtration rating (filter media)**  
**A03** Inorganic microfiber 3 µm  
**A06** Inorganic microfiber 6 µm  
**A10** Inorganic microfiber 10 µm  
**A16** Inorganic microfiber 16 µm  
**A25** Inorganic microfiber 25 µm  
**M25** Wire mesh 25 µm

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

Element Δp
<b>N</b> 20 bar
<b>R</b> 20 bar
<b>S</b> 210 bar

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

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581

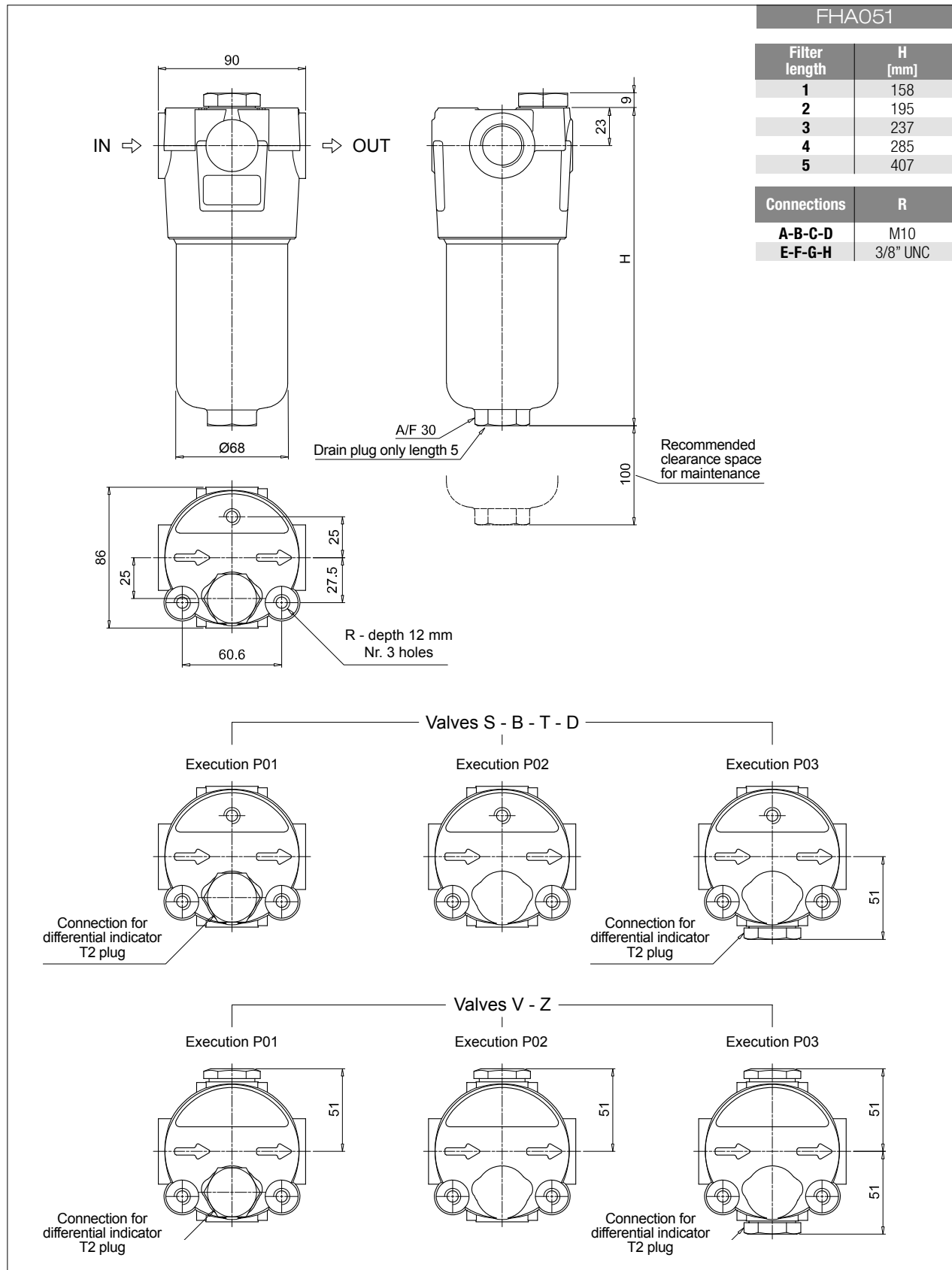
  

Additional features	page
<b>T2</b> Plug	582



# FHA 051

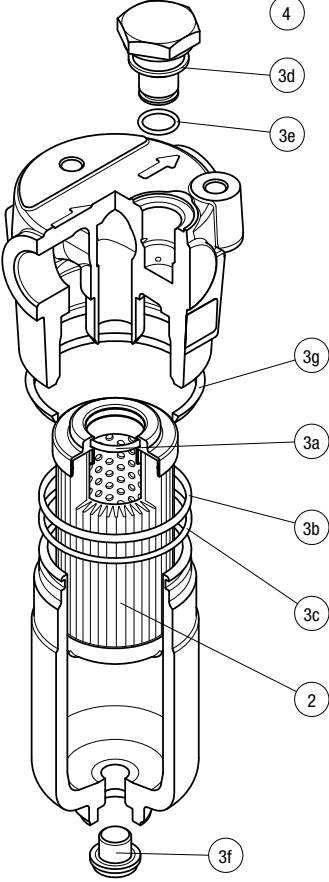
## Dimensions



# FHA 051 SPARE PARTS

Order number for spare parts

**FHA 051**



	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.		
Item:	<b>2</b>	<b>3</b> (3a ÷ 3g)	<b>4</b>		
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHA 051</b>	See order table	02050288	02050305	T2H	T2V

# FHA 051

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High Pressure filters

# FHM series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 400 l/min



# FHM GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### Manifold

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 400 l/min**

FHM is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the top of the manifold, through the proper flanged interface.

#### Available features:

Available features:

- Manifold connections up to Ø30 mm, for a maximum flow rate of 450 l/min
- ISO 4401 CETOP 3 and CETOP 5 interface, for direct mounting on the CETOP valves
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment

#### Filter housing materials

- Head  
Phosphatized cast iron: FHM 006-007-010  
Phosphatized steel: FHM 050-065-135-320-500

- Housing: Phosphatized steel

- Bypass valve: Steel

- Check valve: Steel

#### Pressure

- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

#### Δp element type

- Microfibre filter elements - series N: 20 bar (not available for FHM 006, FHM 007 and FHM 010)
- Microfibre filter elements - series H: 210 bar (not available for FHM 050 and FHM 500)
- Microfibre filter elements - series S: 210 bar (only for FHM 050 and FHM 500)
- Wire mesh filter elements - series N: 20 bar (not available for FHM 006)
- Wire mesh filter elements - series H: 210 bar (not available for FHM 050 and FHM 500)
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

Manifold mounting

#### Note

FHM filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHM 006</b>		2.17	-	-	-	-		0.12	-	-	-	-
<b>FHM 007</b>		-	4.74	5.95	-	-		-	0.30	0.50	-	-
<b>FHM 010</b>		-	4.74	5.95	-	-		-	0.30	0.50	-	-
<b>FHM 050</b>		5.31	5.68	6.09	6.56	7.74		0.29	0.38	0.48	0.60	0.89
<b>FHM 065</b>		5.47	5.83	7.04	-	-		0.27	0.34	0.56	-	-
<b>FHM 135</b>		8.78	10.38	11.43	-	-		0.49	0.82	1.03	-	-
<b>FHM 320</b>		19.80	21.93	24.22	26.70	-		1.04	1.76	2.53	3.36	-
<b>FHM 500</b>		35.00	39.17	42.69	54.70	60.50		1.63	2.35	2.96	5.11	6.44

# GENERAL INFORMATION FHM

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

Filter series	Length	Filter element design - H Series					
		A03	A06	A10	A16	A25	M25
<b>FHM 006</b>	<b>1</b>	9	10	13	14	15	16
	<b>2</b>	13	13	15	16	16	16
<b>FHM 007</b>	<b>3</b>	15	15	16	16	17	17
	<b>2</b>	23	25	32	34	37	38
<b>FHM 010</b>	<b>3</b>	31	33	37	38	39	40

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHM 050</b>	<b>1</b>	38	37	65	67	81	101	28	36	50	52	62
	<b>2</b>	46	50	69	75	89	102	41	44	63	71	85
	<b>3</b>	57	59	76	81	93	103	51	53	71	77	90
	<b>4</b>	68	71	84	86	95	103	62	66	81	82	93
	<b>5</b>	82	83	93	95	98	105	73	75	83	89	97

Filter series	Length	Filter element design - N Series						Filter element design - H Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHM 065</b>	<b>1</b>	23	30	48	53	71	102	22	23	43	50	67
	<b>2</b>	30	45	59	64	81	103	30	34	56	62	76
	<b>3</b>	52	60	78	82	92	105	51	58	77	81	91
<b>FHM 135</b>	<b>1</b>	61	65	99	104	131	149	46	51	83	86	122
	<b>2</b>	91	96	118	119	155	167	79	92	109	111	134
	<b>3</b>	118	119	144	146	156	168	103	112	130	137	146
<b>FHM 320</b>	<b>1</b>	112	121	187	217	252	312	97	102	156	162	228
	<b>2</b>	200	214	281	293	320	328	161	181	237	241	282
	<b>3</b>	245	267	312	320	325	333	207	233	275	280	306
	<b>4</b>	267	281	315	325	336	341	232	247	279	283	309

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHM 500</b>	<b>1</b>	211	232	281	289	309	394	126	135	208	210	261
	<b>2</b>	242	262	303	308	330	397	187	206	258	266	285
	<b>3</b>	284	294	336	338	357	399	226	230	285	290	315
	<b>4</b>	302	325	346	350	361	401	251	273	314	315	341
	<b>5</b>	325	334	356	361	373	401	296	301	335	338	360

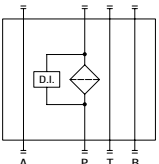
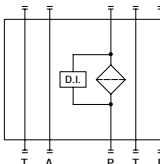
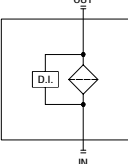
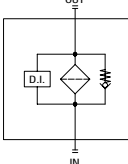
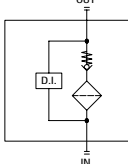
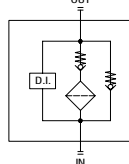
### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

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

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

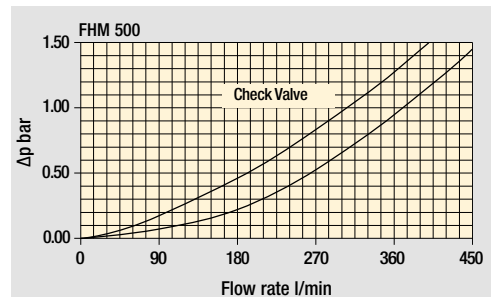
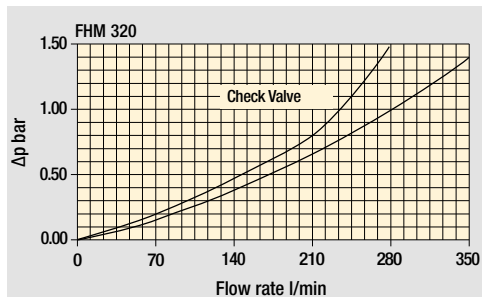
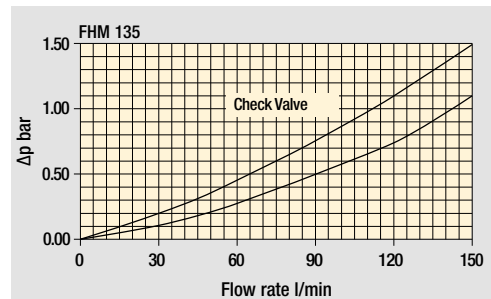
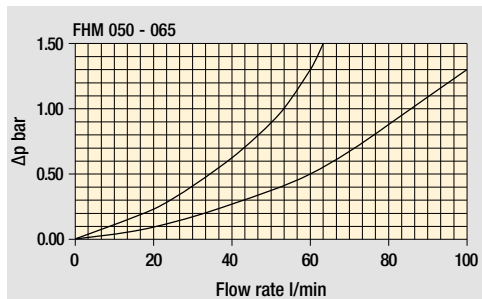
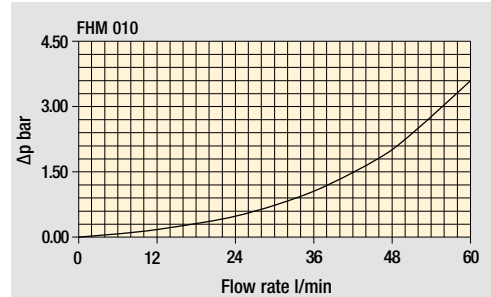
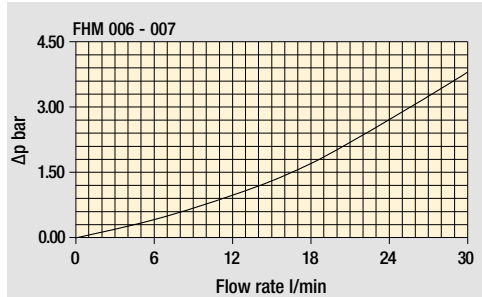
## Hydraulic symbols

Filter series	Stile S	Stile S	Stile S	Stile B	Stile T	Stile D
<b>FHM 006</b>	•					
<b>FHM 007</b>	•					
<b>FHM 010</b>		•				
<b>FHM 050</b>			•	•	•	•
<b>FHM 065</b>			•	•	•	•
<b>FHM 135</b>			•	•	•	•
<b>FHM 320</b>			•	•	•	•
<b>FHM 500</b>			•	•	•	•
						

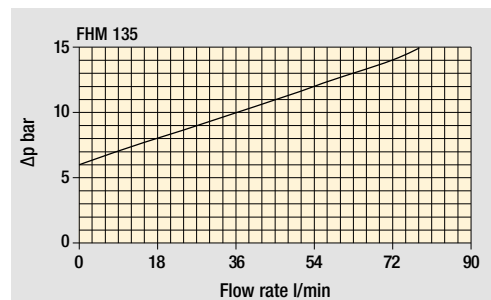
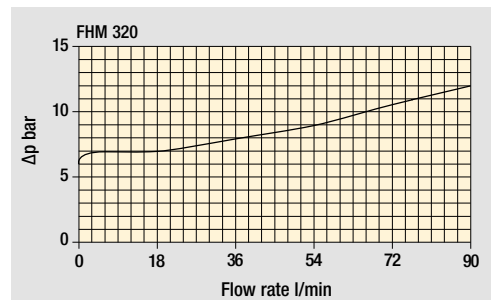
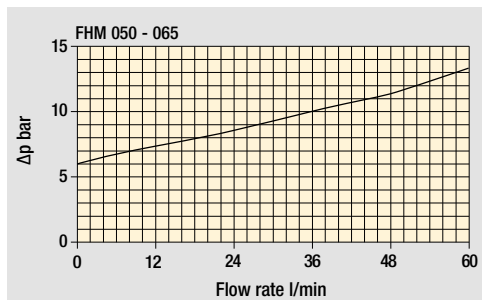
# FHM GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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



# FHM

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# FHM FHM006 - FHM007 - FHM010

## Designation & Ordering code

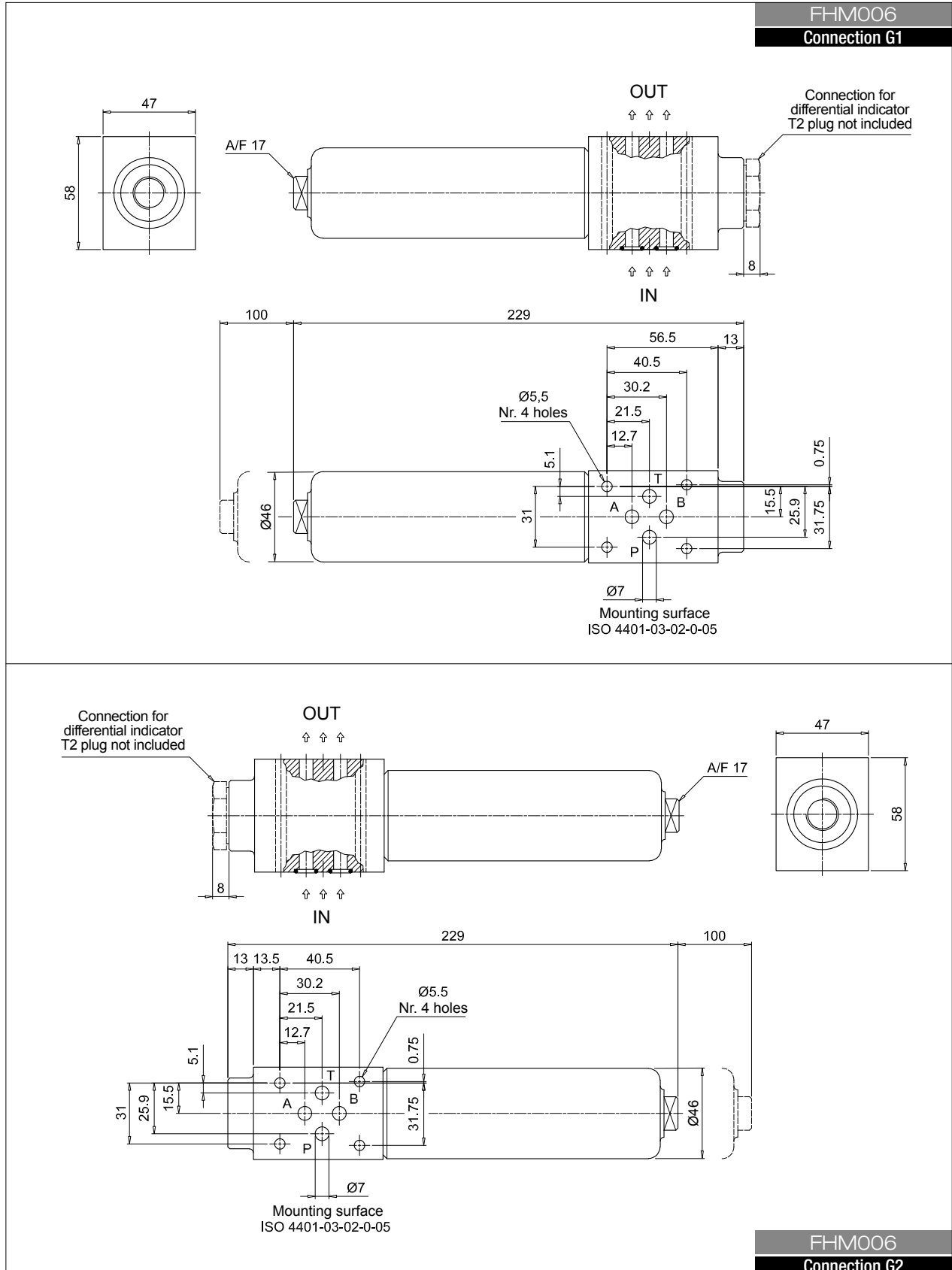
COMPLETE FILTER									
Series and size			Configuration example: <b>FHM010</b>   <b>2</b>   <b>S</b>   <b>V</b>   <b>G1</b>   <b>A03</b>   <b>H</b>   <b>P01</b>						
<b>FHM006</b>   <b>FHM007</b>   <b>FHM010</b>									
Length	FHM006	FHM007	FHM010						
<b>1</b>	•								
<b>2</b>		•	•						
<b>3</b>		•	•						
Valves									
<b>S</b> Without bypass									
Seals									
<b>A</b> NBR									
<b>V</b> FPM									
Connections									
<b>G1</b> Manifold side "A"									
<b>G2</b> Manifold side "B"									
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>A16</b> Inorganic microfiber 16 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>A25</b> Inorganic microfiber 25 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M25</b> Wire mesh 25 µm							
				Element Δp			Execution		
				<b>H</b> 210 bar			<b>P01</b> MP Filtri standard		
							<b>Pxx</b> Customized		

FILTER ELEMENT									
Element series and size			Configuration example: <b>HP065</b>   <b>2</b>   <b>A03</b>   <b>A</b>   <b>H</b>   <b>P01</b>						
<b>HP011</b>   <b>HP065</b>									
Element length	FHM006	FHM007	FHM010						
<b>2</b>		•	•						
<b>3</b>	•	•	•						
Filtration rating (filter media)									
<b>A03</b> Inorganic microfiber 3 µm		<b>A16</b> Inorganic microfiber 16 µm							
<b>A06</b> Inorganic microfiber 6 µm		<b>A25</b> Inorganic microfiber 25 µm							
<b>A10</b> Inorganic microfiber 10 µm		<b>M25</b> Wire mesh 25 µm							
				Seals			Element Δp		
				<b>A</b> NBR			<b>H</b> 210 bar		
				<b>V</b> FPM			<b>P01</b> MP Filtri standard		
							<b>Pxx</b> Customized		

ACCESSORIES			
Differential indicators		page	page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator 580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator 581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator 581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator 581
Additional features		page	
<b>T2</b>	Plug	582	

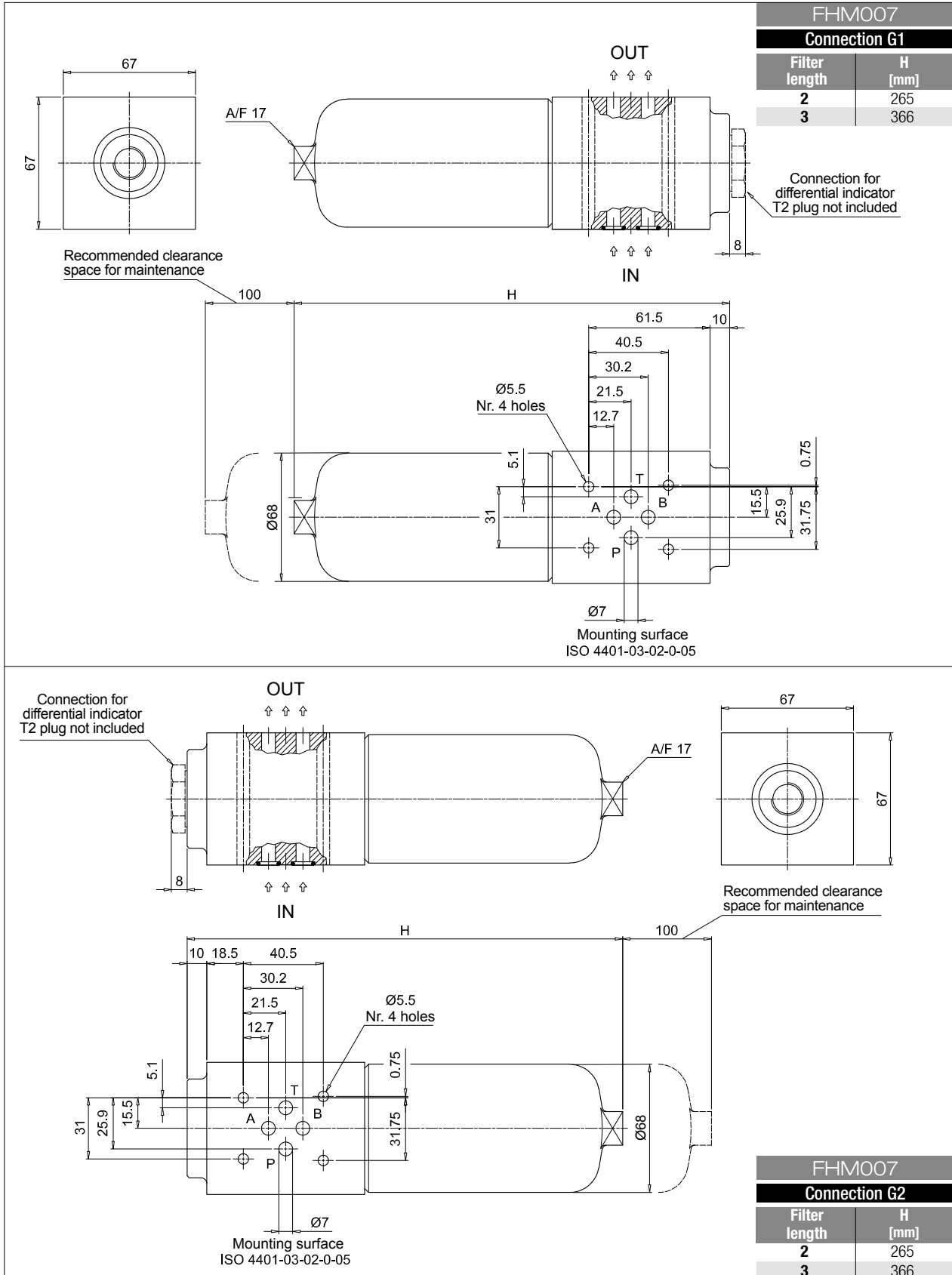
# FHM006 - FHM007 - FHM010 FHM

## Dimensions



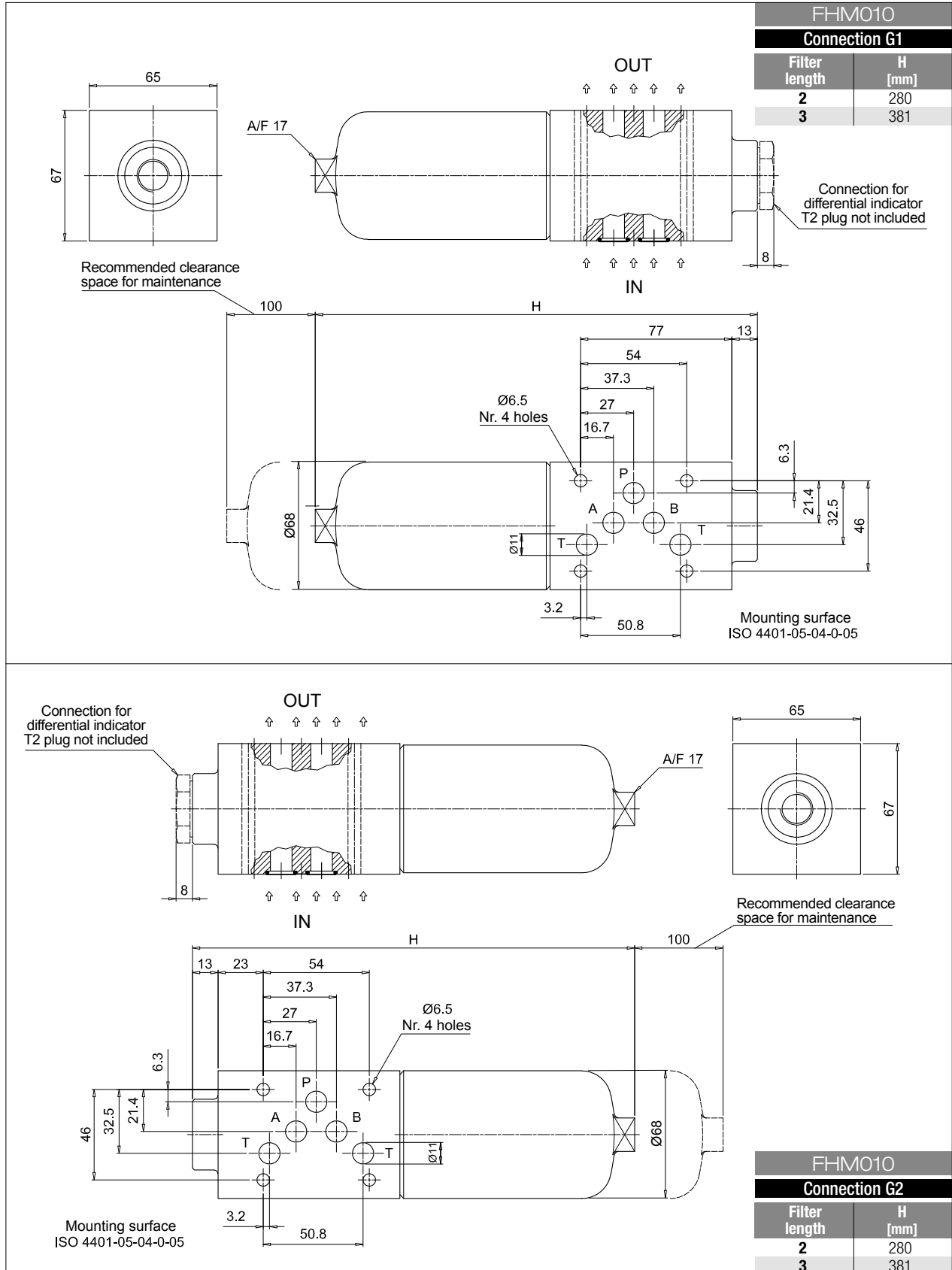
# FHM FHM006 - FHM007 - FHM010

## Dimensions



# FHM006 - FHM007 - FHM010 FHM

## Dimensions



# FHM FHM050 - FHM065 - FHM135

## Designation & Ordering code

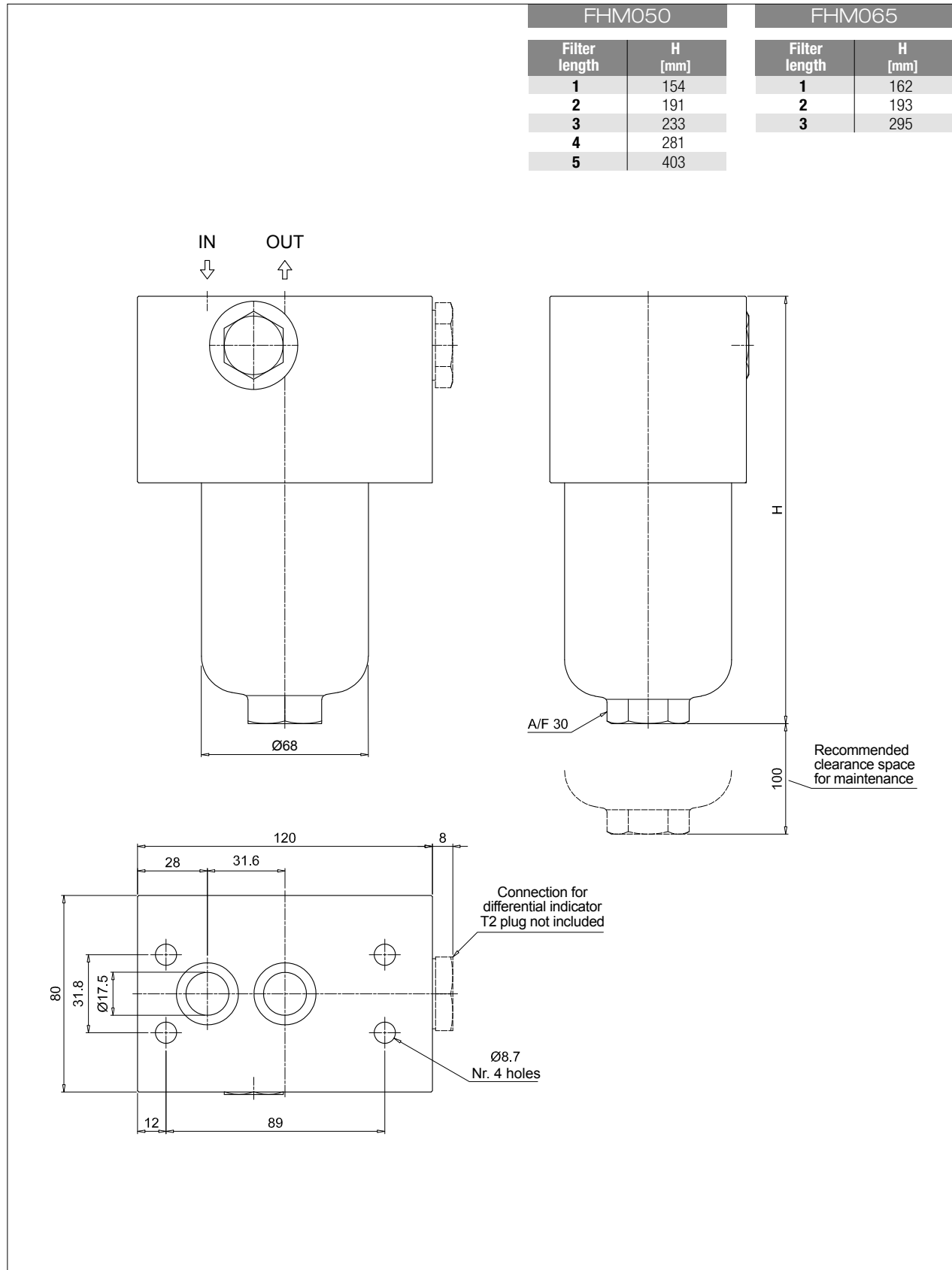
COMPLETE FILTER																																																			
Series and size		Configuration example: <b>FHM135</b>   <b>3</b>   <b>S</b>   <b>A</b>   <b>F1</b>   <b>A10</b>   <b>H</b>   <b>P01</b>																																																	
<b>FHM050</b>   <b>FHM065</b>   <b>FHM135</b>																																																			
Length	FHM050	FHM065	FHM135																																																
1	•	•	•																																																
2	•	•	•																																																
3	•	•	•																																																
4	•																																																		
5	•																																																		
<b>Valves</b>																																																			
<b>S</b>	Without bypass																																																		
<b>B</b>	With bypass 6 bar																																																		
<b>T</b>	With check valve, without bypass																																																		
<b>D</b>	With check valve, with bypass 6 bar																																																		
<b>Seals</b>																																																			
<b>A</b>	NBR																																																		
<b>V</b>	FPM																																																		
<b>Connections</b>																																																			
<b>F1</b>	Manifold																																																		
<b>Filtration rating (filter media)</b>																																																			
<b>A03</b>	Inorganic microfiber	3 µm																																																	
<b>A06</b>	Inorganic microfiber	6 µm																																																	
<b>A10</b>	Inorganic microfiber	10 µm																																																	
<b>A16</b>	Inorganic microfiber	16 µm																																																	
<b>A25</b>	Inorganic microfiber	25 µm																																																	
<b>M25</b>	Wire mesh	25 µm																																																	
Valves: <table border="1"> <thead> <tr> <th rowspan="2">Element Δp</th> <th colspan="4">FHM050</th> <th colspan="4">FHM065-135</th> <th rowspan="2">Execution</th> </tr> <tr> <th>S</th> <th>B</th> <th>T</th> <th>D</th> <th>S</th> <th>B</th> <th>T</th> <th>D</th> </tr> </thead> <tbody> <tr> <td><b>N</b> 20 bar</td> <td></td> <td>•</td> <td></td> <td>•</td> <td></td> <td>•</td> <td></td> <td>•</td> <td><b>P01</b> MP Filtri standard</td> </tr> <tr> <td><b>H</b> 210 bar</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td></td> <td>•</td> <td><b>Pxx</b> Customized</td> </tr> <tr> <td><b>S</b> 210 bar</td> <td>•</td> <td></td> <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Element Δp	FHM050				FHM065-135				Execution	S	B	T	D	S	B	T	D	<b>N</b> 20 bar		•		•		•		•	<b>P01</b> MP Filtri standard	<b>H</b> 210 bar						•		•	<b>Pxx</b> Customized	<b>S</b> 210 bar	•		•						
Element Δp	FHM050				FHM065-135				Execution																																										
	S	B	T	D	S	B	T	D																																											
<b>N</b> 20 bar		•		•		•		•	<b>P01</b> MP Filtri standard																																										
<b>H</b> 210 bar						•		•	<b>Pxx</b> Customized																																										
<b>S</b> 210 bar	•		•																																																

FILTER ELEMENT																							
Element series and size		Configuration example: <b>HP135</b>   <b>3</b>   <b>A10</b>   <b>A</b>   <b>H</b>   <b>P01</b>																					
<b>HP050</b>   <b>HP065</b>   <b>HP135</b>																							
Element length	HP050	HP065	HP135																				
1	•	•	•																				
2	•	•	•																				
3	•	•	•																				
4	•																						
5	•																						
<b>Filtration rating (filter media)</b>																							
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<b>A06</b>	Inorganic microfiber	6 µm																					
<b>A10</b>	Inorganic microfiber	10 µm																					
<b>A16</b>	Inorganic microfiber	16 µm																					
<b>A25</b>	Inorganic microfiber	25 µm																					
<b>M25</b>	Wire mesh	25 µm																					
<b>Seals</b>																							
<b>A</b>	NBR																						
<b>V</b>	FPM																						
Element Δp: <table border="1"> <thead> <tr> <th rowspan="2">Element Δp</th> <th>HP050</th> <th>HP065</th> <th>HP135</th> <th rowspan="2">Execution</th> </tr> </thead> <tbody> <tr> <td><b>N</b> 20 bar</td> <td>•</td> <td>•</td> <td>•</td> <td><b>P01</b> MP Filtri standard</td> </tr> <tr> <td><b>H</b> 210 bar</td> <td></td> <td>•</td> <td>•</td> <td><b>Pxx</b> Customized</td> </tr> <tr> <td><b>S</b> 210 bar</td> <td>•</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Element Δp	HP050	HP065	HP135	Execution	<b>N</b> 20 bar	•	•	•	<b>P01</b> MP Filtri standard	<b>H</b> 210 bar		•	•	<b>Pxx</b> Customized	<b>S</b> 210 bar	•			
Element Δp	HP050	HP065	HP135		Execution																		
	<b>N</b> 20 bar	•	•	•		<b>P01</b> MP Filtri standard																	
<b>H</b> 210 bar		•	•	<b>Pxx</b> Customized																			
<b>S</b> 210 bar	•																						

ACCESSORIES			
<b>Differential indicators</b>		page	page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator 580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator 581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator 581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator 581
<b>Additional features</b>		page	
<b>T2</b>	Plug	582	

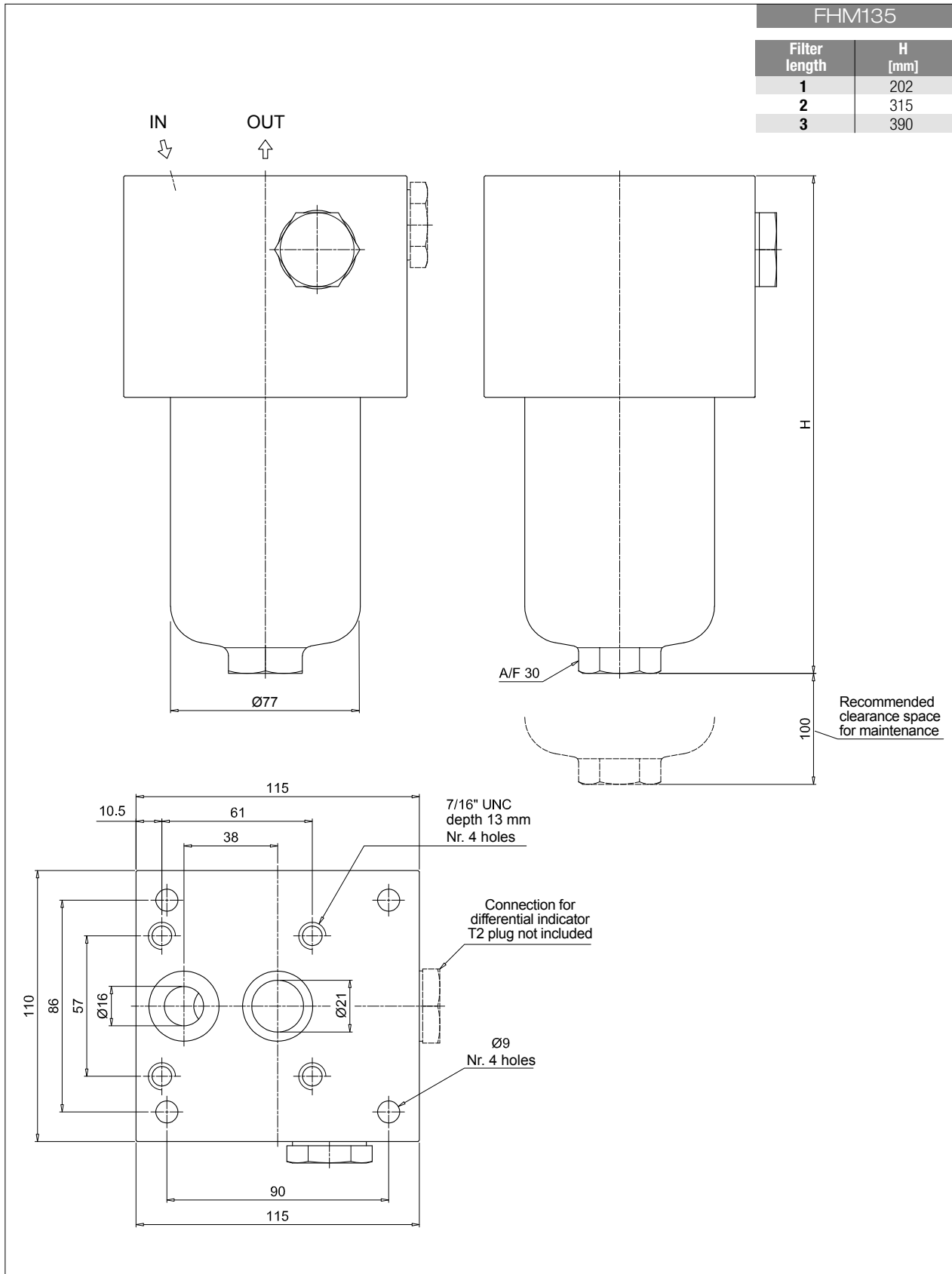
# FHM050 - FHM065 - FHM135 FHM

## Dimensions



# FHM FHM050 - FHM065 - FHM135

## Dimensions





# FHM

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# FHM FHM320 - FHM500

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> FHM320   FHM500		Configuration example: <b>FHM320</b>   <b>4</b>   <b>D</b>   <b>A</b>   <b>F1</b>   <b>A06</b>   <b>N</b>   <b>P01</b>																	
<b>Length</b>	FHM320	FHM500																	
1	•	•																	
2	•	•																	
3	•	•																	
4	•	•																	
5		•																	
<b>Valves</b>																			
<b>S</b>	Without bypass																		
<b>B</b>	With bypass 6 bar																		
<b>T</b>	With check valve, without bypass																		
<b>D</b>	With check valve, with bypass 6 bar																		
<b>Seals</b>																			
<b>A</b>	NBR																		
<b>V</b>	FPM																		
<b>Connections</b>																			
<b>F1</b>	Manifold																		
<b>Filtration rating (filter media)</b>																			
<b>A03</b>	Inorganic microfiber 3 µm		<b>A16</b>	Inorganic microfiber 16 µm															
<b>A06</b>	Inorganic microfiber 6 µm		<b>A25</b>	Inorganic microfiber 25 µm															
<b>A10</b>	Inorganic microfiber 10 µm		<b>M25</b>	Wire mesh 25 µm															
			<b>Valves:</b>				<b>FHM320</b>				<b>FHM500</b>				<b>Filter length</b>				
			<b>Element Δp</b>	<b>S</b>	<b>B</b>	<b>T</b>	<b>D</b>	<b>S</b>	<b>B</b>	<b>T</b>	<b>D</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
			<b>N</b>	20 bar		•	•	•	•	•	•	•	•	•	•	•	•		
			<b>H</b>	210 bar		•	•												
			<b>S</b>	210 bar				•	•										
			<b>Execution</b>																
			<b>P01</b> MP Filtri standard																
			<b>P02</b> Maintenance from the bottom of the housing																
			<b>Pxx</b> Customized																

### FILTER ELEMENT

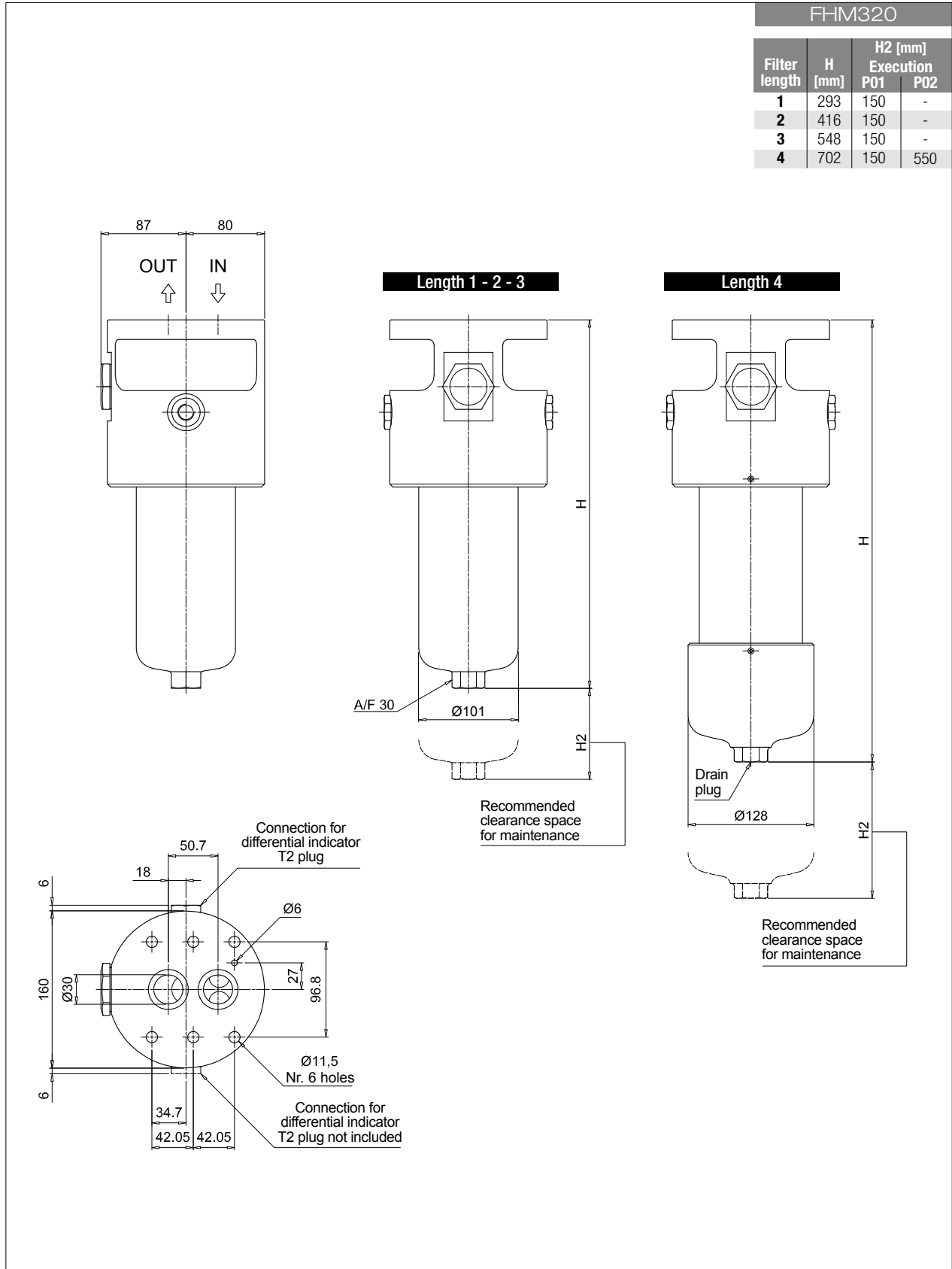
<b>Element series and size</b> HP320   HP500		Configuration example: <b>HP320</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>N</b>   <b>P01</b>													
<b>Element length</b>	HP320	HP500													
1	•	•													
2	•	•													
3	•	•													
4	•	•													
5		•													
<b>Filtration rating (filter media)</b>															
<b>A03</b>	Inorganic microfiber 3 µm		<b>A16</b>	Inorganic microfiber 16 µm											
<b>A06</b>	Inorganic microfiber 6 µm		<b>A25</b>	Inorganic microfiber 25 µm											
<b>A10</b>	Inorganic microfiber 10 µm		<b>M25</b>	Wire mesh 25 µm											
			<b>Seals</b>		<b>Element Δp</b>		<b>HP320</b>		<b>HP500</b>		<b>Execution</b>				
			<b>A</b>		<b>N</b>		<b>20 bar</b>		<b>•</b>		<b>P01</b> MP Filtri standard				
			<b>V</b>		<b>H</b>		<b>210 bar</b>		<b>•</b>		<b>Pxx</b> Customized				
					<b>S</b>		<b>210 bar</b>		<b>•</b>						

### ACCESSORIES

<b>Differential indicators</b>		page			page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b>	Electrical / visual differential indicator	580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b>	Electronic differential indicator	581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b>	Visual differential indicator	581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b>	Visual differential indicator	581
<b>Additional features</b>		page			
<b>T2</b>	Plug	582			

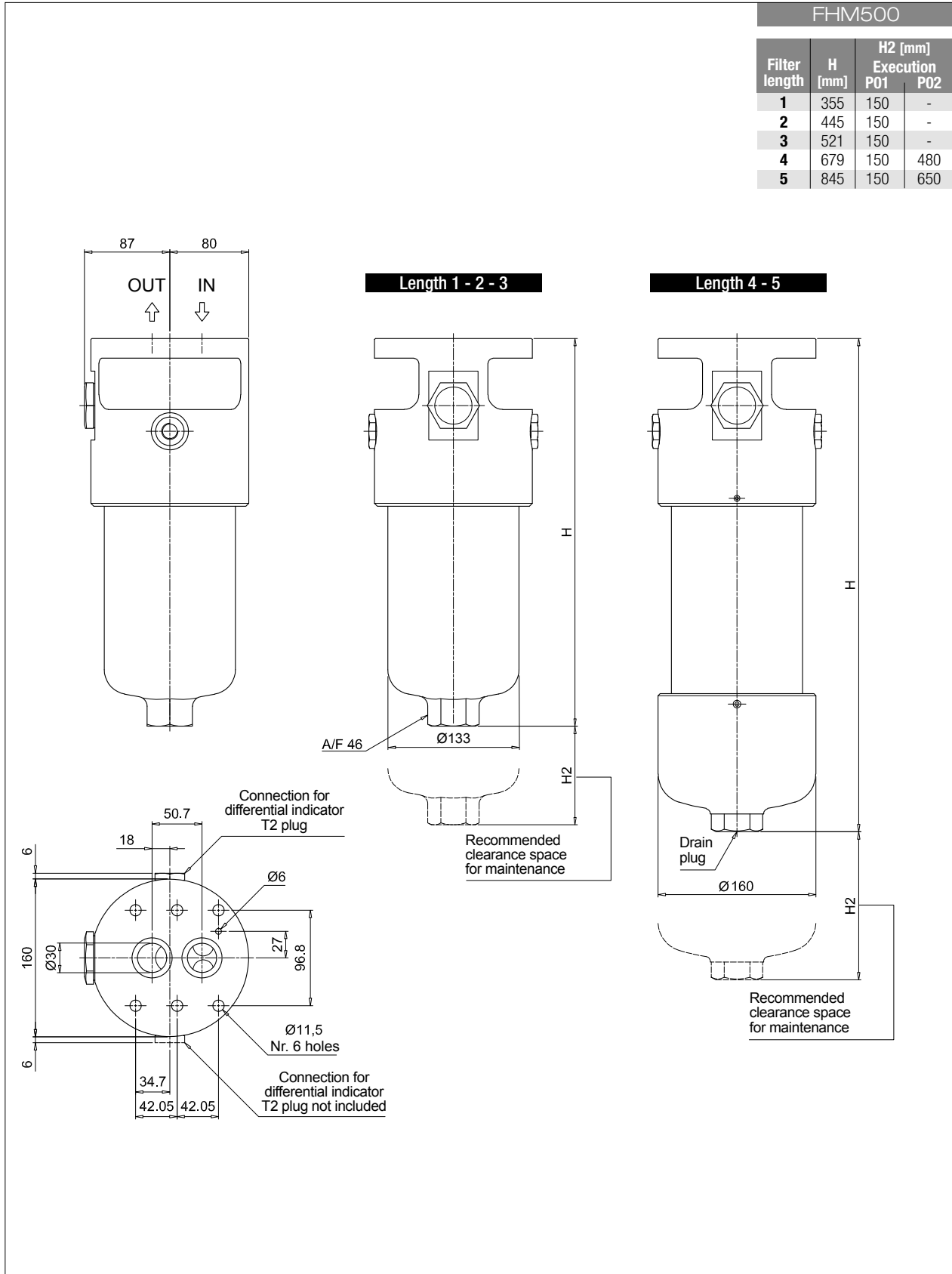
# FHM320 - FHM500 FHM

## Dimensions



# FHM FHM320 - FHM500

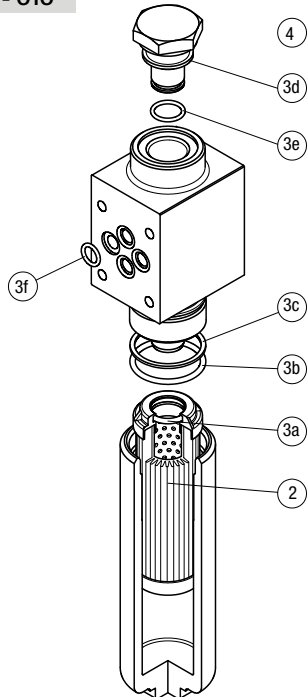
## Dimensions



# SPARE PARTS FHM

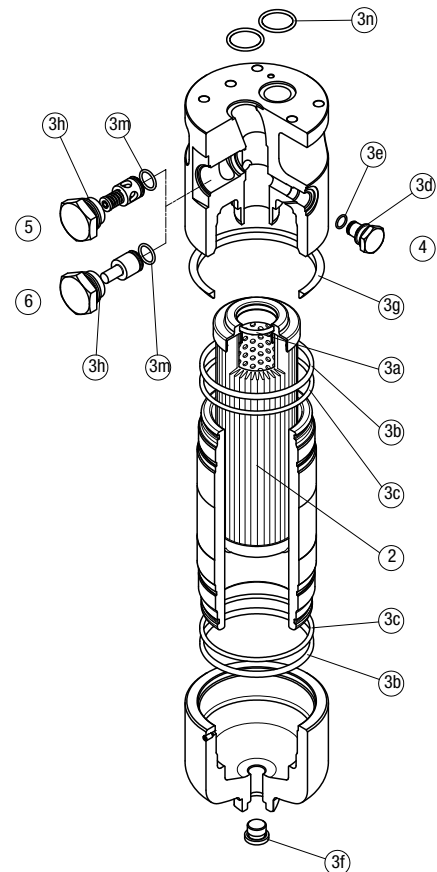
Order number for spare parts

FHM 006 - 007 - 010



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHM 006</b>	See order table	02050324	02050325	T2H	T2V
<b>FHM 007</b>		02050600	02050601		
<b>FHM 010</b>		02050320	02050321		

FHM 050 - 065 - 135 - 320 - 500



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3m)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly		Non-bypass assembly	
		NBR	FPM	NBR	FPM	NBR	FPM	NBR	FPM
<b>FHM 050</b>	See order table	02050410	02050411	T2H	T2V	02001400	02001401	02001402	02001403
<b>FHM 065</b>		02050268	02050279			02001400	02001401	02001402	02001403
<b>FHM 135</b>		02050271	02050282			02001404	02001405	02001406	02001407
<b>FHM 320</b>		02050275	02050286			02001408	02001409	02001410	02001411
<b>FHM 500</b>		02050332	02050333			02001408	02001409	02001410	02001411





High Pressure filters

# FHB series

Maximum working pressure up to 32 MPa (320 bar) - Flow rate up to 485 l/min



# FHB GENERAL INFORMATION

## Description

### High Pressure filters

#### Manifold

**Maximum working pressure up to 32 MPa (320 bar)**

**Flow rate up to 485 l/min**

FHB is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the side of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø30 mm, for a maximum flow rate of 485 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Check valve, to protect the system against reverse flow
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment or mobile machines

## Technical data

### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

### Pressure

- Working pressure: 32 MPa (320 bar)
- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

### Bypass valve

- Opening pressure 600 kPa (6 bar) ±10%
- Other opening pressures on request.

### Δp element type

- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series H: 210 bar (not available for FHB050)
- Microfibre filter elements - series S: 210 bar (only for FHB050)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

Manifold mounting

### Note

FHB filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHB 050</b>		2.61	2.98	3.39	3.86	5.04		0.21	0.30	0.40	0.52	0.81
<b>FHB 065</b>		3.33	3.69	4.90	-	-		0.20	0.27	0.49	-	-
<b>FHB 135</b>		6.61	8.21	9.21	-	-		0.40	0.73	0.94	-	-
<b>FHB 320</b>		12.95	15.08	17.37	26.77	-		0.91	1.63	2.40	3.59	-



# GENERAL INFORMATION FHB

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

Filter series	Length	Filter element design - N Series						Filter element design - S Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHB 050</b>	<b>1</b>	43	42	79	81	101	131	30	40	58	60	74
	<b>2</b>	53	58	84	93	112	132	46	50	76	86	108
	<b>3</b>	67	70	94	101	119	133	59	62	87	95	115
	<b>4</b>	82	87	106	108	122	134	74	80	101	103	119
	<b>5</b>	102	104	119	122	127	136	90	92	105	113	126

Filter series	Length	Filter element design - N Series						Filter element design - H Series				
		A03	A06	A10	A16	A25	M25	A03	A06	A10	A16	A25
<b>FHB 065</b>	<b>1</b>	25	33	55	62	87	133	23	25	49	58	81
	<b>2</b>	33	51	70	76	101	134	33	38	66	75	94
	<b>3</b>	60	71	97	103	118	138	60	68	95	102	116
<b>FHB 135</b>	<b>1</b>	67	72	120	129	177	212	49	55	97	100	160
	<b>2</b>	109	116	152	154	224	250	90	110	137	140	182
	<b>3</b>	153	155	201	205	226	253	126	142	175	187	207
<b>FHB 320</b>	<b>1</b>	130	143	238	286	343	442	110	117	192	201	304
	<b>2</b>	259	281	391	409	454	468	200	230	319	325	392
	<b>3</b>	332	368	441	455	463	476	269	312	381	389	432
	<b>4</b>	368	390	446	462	481	488	311	334	388	394	437

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

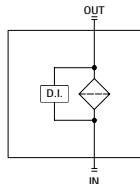
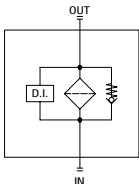
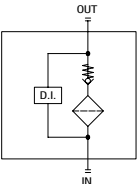
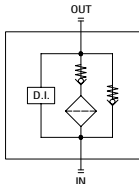
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

## Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D
<b>FHB 050</b>	•	•	•	•
<b>FHB 065</b>	•	•	•	•
<b>FHB 135</b>	•	•	•	•
<b>FHB 320</b>				

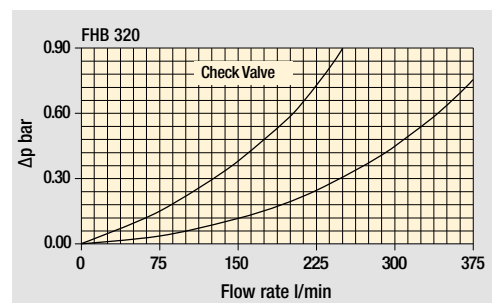
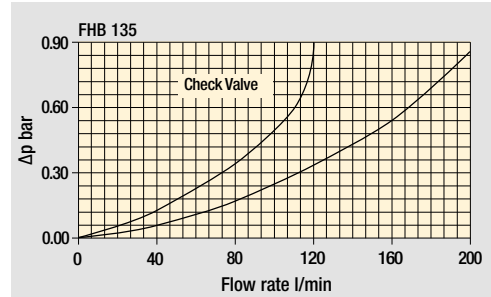
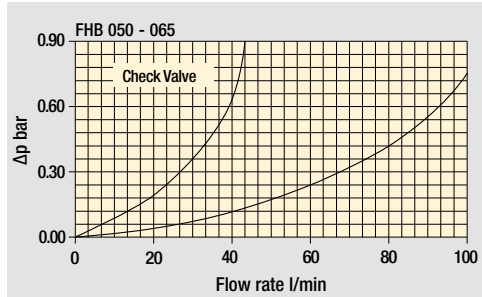
  

			
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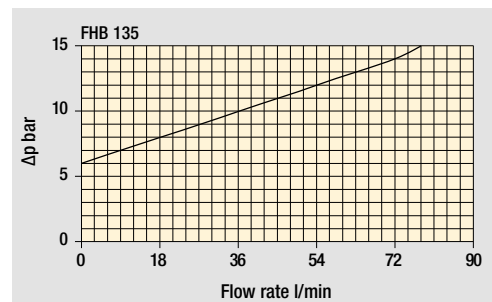
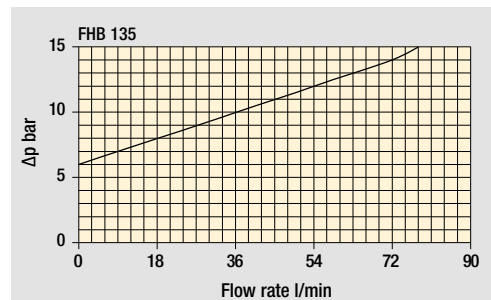
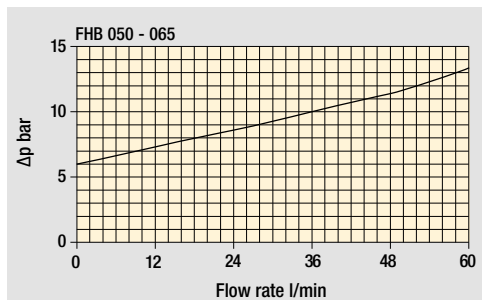
# FHB GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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

# FHB

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# FHB FHB050

## Designation & Ordering code

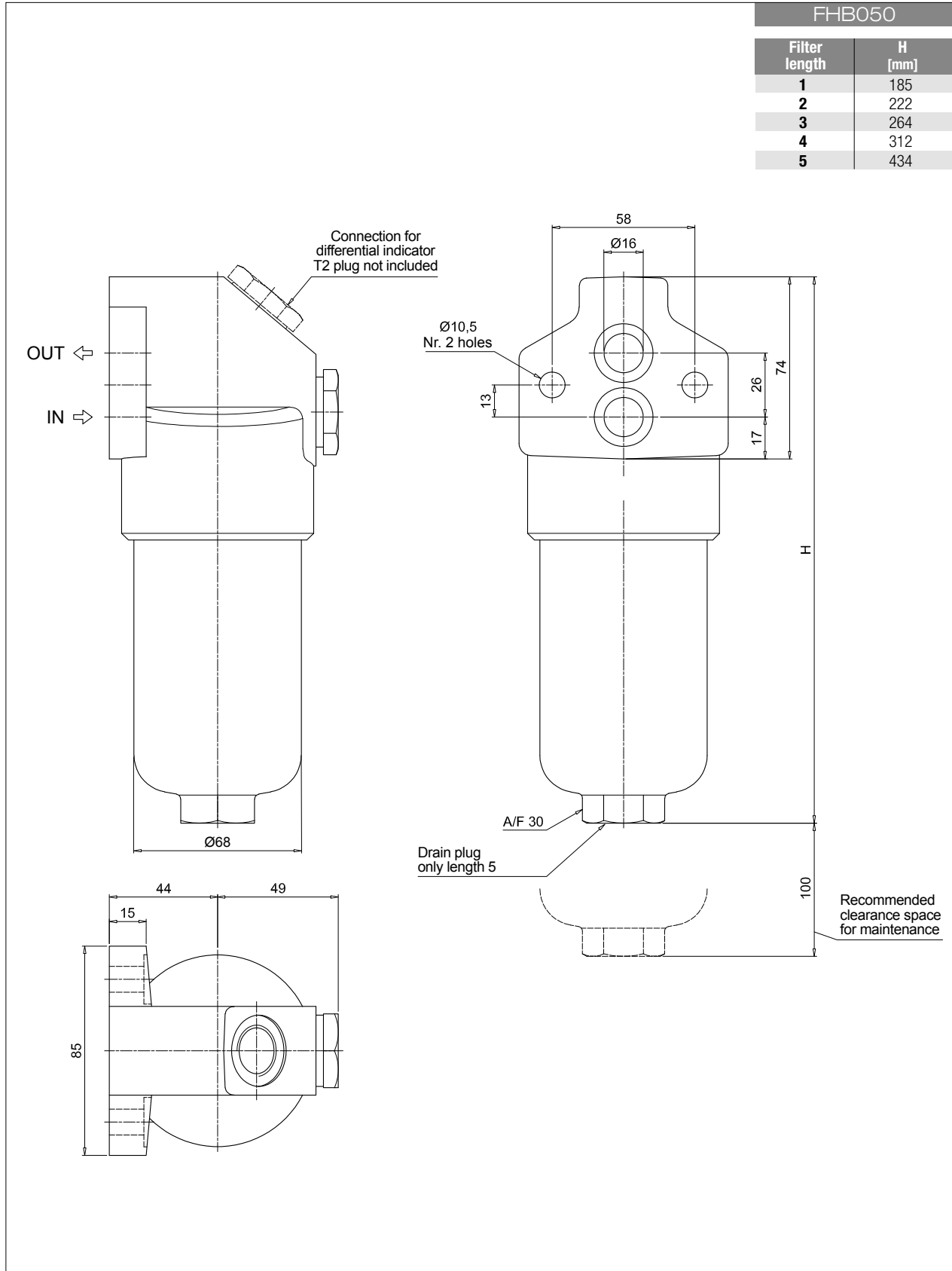
COMPLETE FILTER																																
Series and size <b>FHB050</b>		Configuration example: <b>FHB050</b>   <b>2</b>   <b>T</b>   <b>A</b>   <b>F1</b>   <b>A06</b>   <b>S</b>   <b>P01</b>																														
Length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>   <b>5</b>																																
Valves <b>S</b> Without bypass <b>B</b> With bypass 6 bar <b>T</b> With check valve, without bypass <b>D</b> With check valve, with bypass 6 bar																																
Seals <b>A</b> NBR <b>V</b> FPM																																
Connections <b>F1</b> Manifold																																
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<b>A10</b> Inorganic microfiber 10 µm		<b>M25</b> Wire mesh 25 µm																														
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FILTER ELEMENT																							
Element series and size <b>HP050</b>		Configuration example: <b>HP050</b>   <b>2</b>   <b>A06</b>   <b>A</b>   <b>S</b>   <b>P01</b>																					
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ACCESSORIES			
<b>Differential indicators</b>		page	page
<b>DEA</b>	Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator 580
<b>DEH</b>	Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator 581
<b>DEM</b>	Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator 581
<b>DLA</b>	Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator 581
<b>Additional features</b>		page	
<b>T2</b>	Plug	582	

# FHB050 FHB

## Dimensions



# FHB FHB065 - FHB135 - FHB320

## Designation & Ordering code

### COMPLETE FILTER

Configuration example: **FHB320** | **4** | **S** | **A** | **F1** | **A06** | **H** | **P01**

**Series and size**  
FHB065 | FHB135 | FHB320

Length	FHB065	FHB135	FHB320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

**Valves**  
**S** Without bypass  
**B** With bypass 6 bar  
**T** With check valve, without bypass  
**D** With check valve, with bypass 6 bar

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

**Connections**  
**F1** Manifold

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm

Element Δp	Valves			
	S	B	T	D
<b>N</b> 20 bar		•	•	•
<b>H</b> 210 bar	•		•	

**Execution**

	1	2	3	4
<b>P01</b> MP Filtri standard	•	•	•	•
<b>P02</b> Maintenance from the bottom of the housing				•
<b>Pxx</b> Customized				

### FILTER ELEMENT

Configuration example: **HP320** | **4** | **A06** | **A** | **H** | **P01**

**Element series and size**  
HP065 | HP135 | HP320

Element length	HP065	HP135	HP320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

**Filtration rating (filter media)**

<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm

Seals	Element Δp	Execution
<b>A</b> NBR	<b>N</b> 20 bar	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>H</b> 210 bar	<b>Pxx</b> Customized

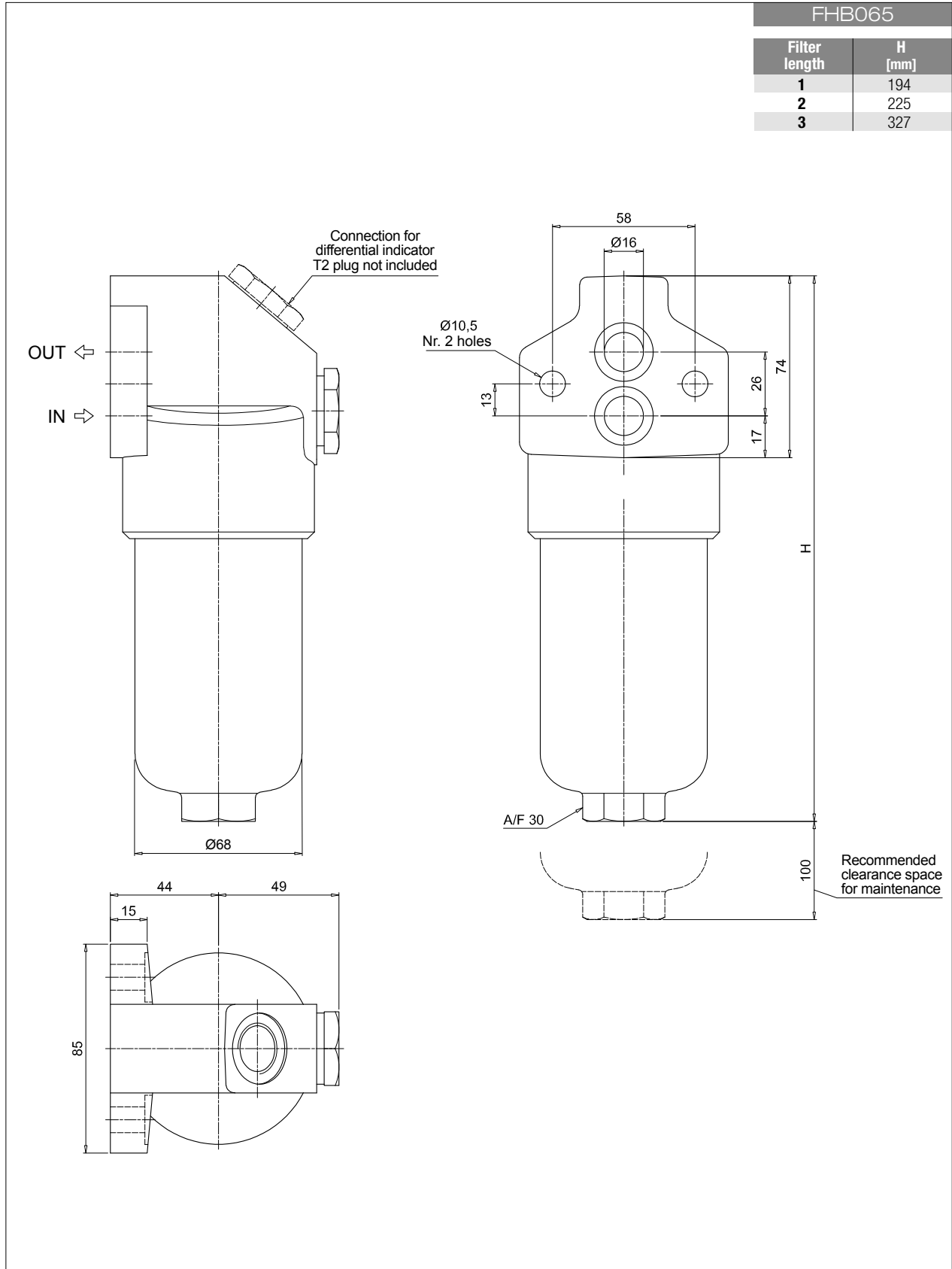
### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581

Additional features	page
<b>T2</b> Plug	582

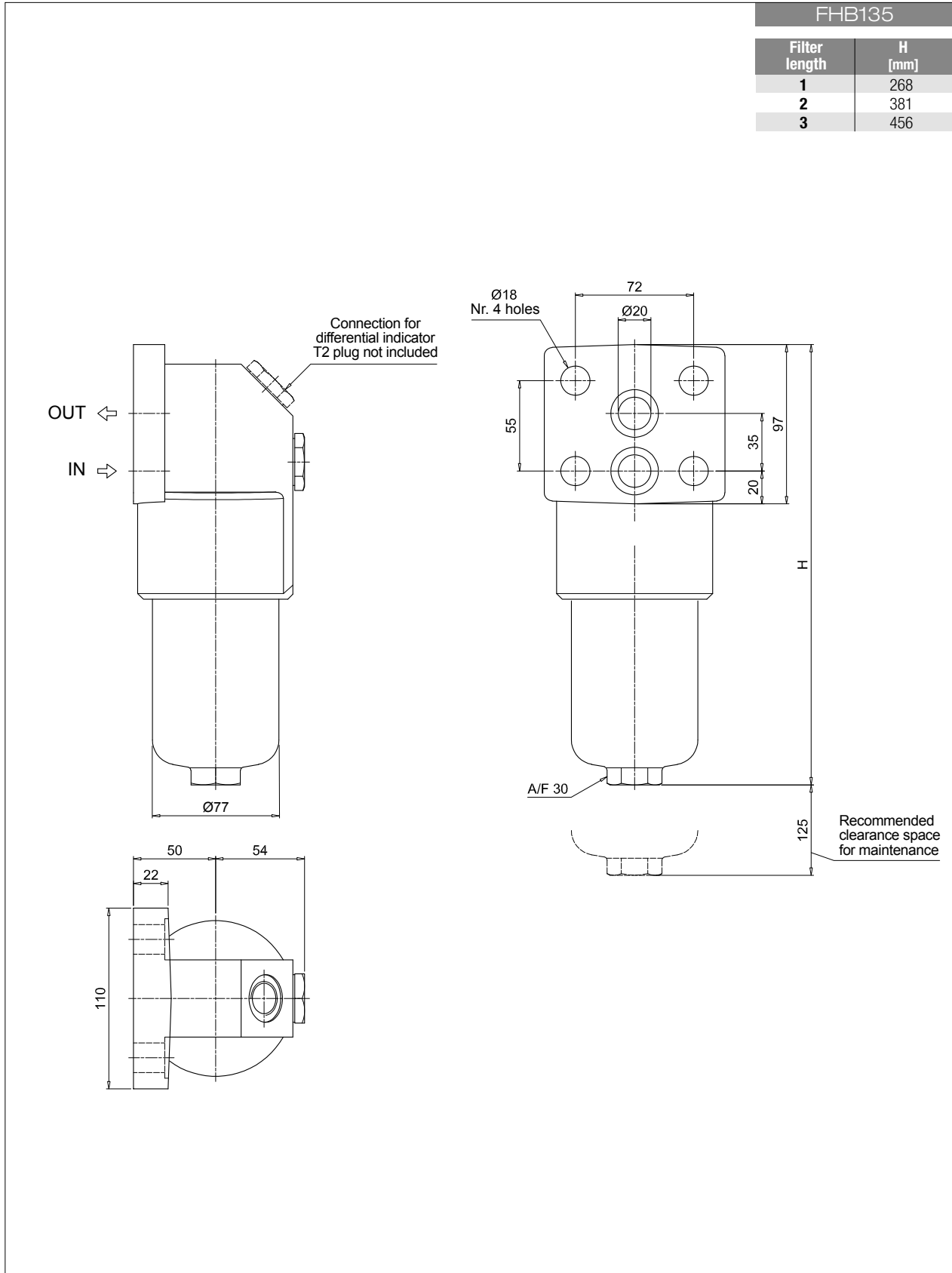
# FHB065 - FHB135 - FHB320 FHB

## Dimensions



# FHB FHB065 - FHB135 - FHB320

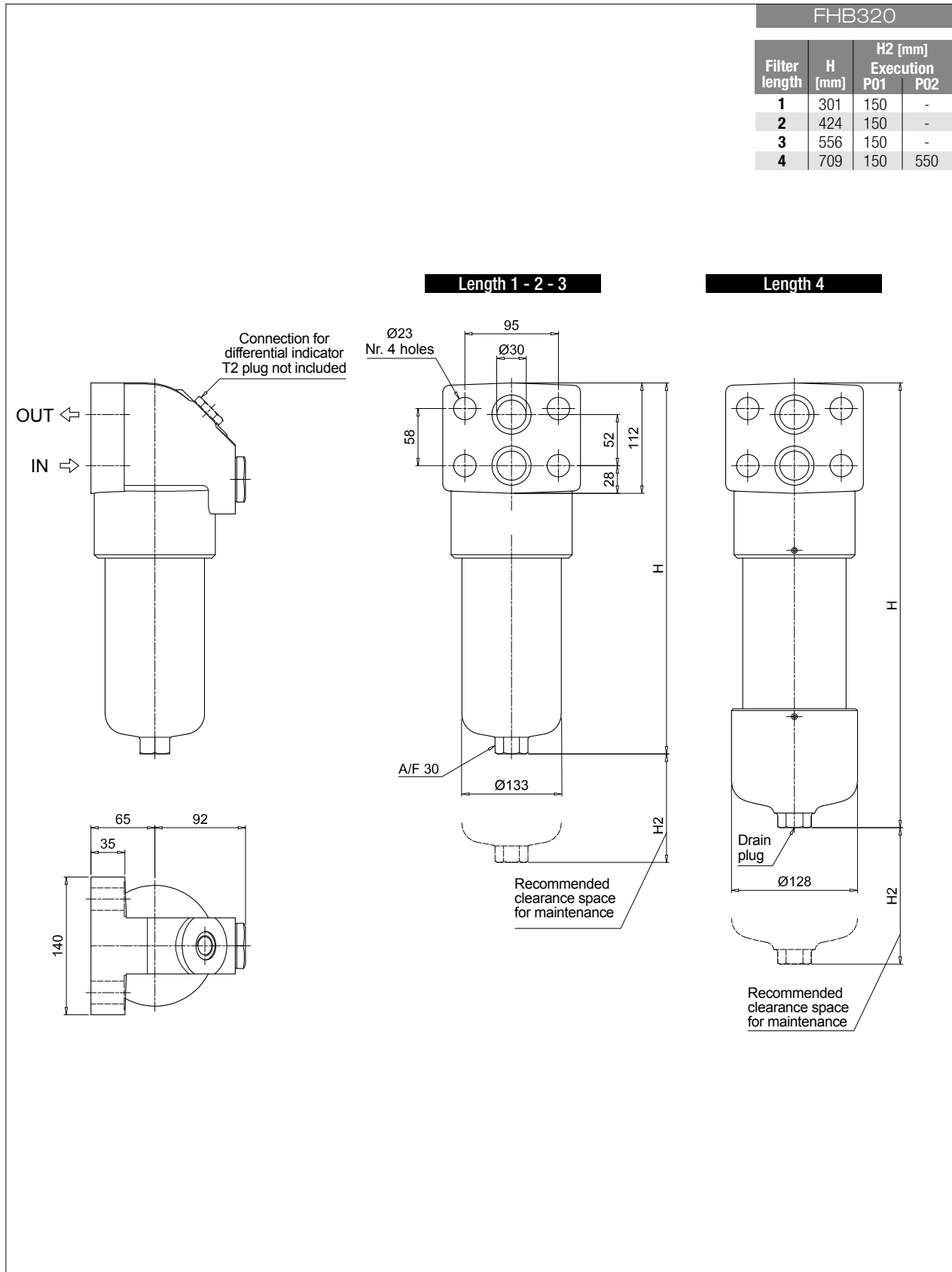
## Dimensions





# FHB065 - FHB135 - FHB320 FHB

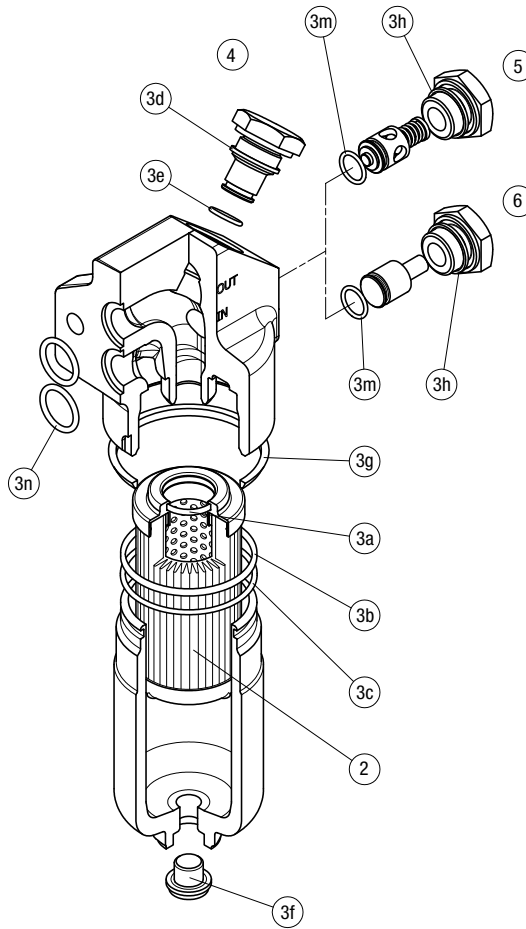
## Dimensions



# FHB SPARE PARTS

Order number for spare parts

FHB 050 - 065 - 135 - 320



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3n)	Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	Filter element	Seal Kit code number NBR	Indicator connection plug NBR	Bypass assembly NBR	Non-bypass assembly NBR
FHB 050	See order table	02050412	T2H	02001312	02001314
FHB 065		02050266		02001385	02001386
FHB 135		02050270		02001385	02001386
FHB 320		02050273		02001381	02001384

# FHB

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High Pressure filters

# FHF 325 series

Maximum working pressure up to 35 MPa (350 bar) - Flow rate up to 550 l/min

Filter housing according to SAE J2066 for HF4 filter elements



# FHF 325 GENERAL INFORMATION

## Filter housing according to SAE J2066 for HF4 filter elements

### Description

#### High Pressure filters

#### Manifold

**Maximum working pressure up to 35 MPa (350 bar)**  
**Flow rate up to 550 l/min**

FHF is a range of high pressure filter for protection of sensitive components in high pressure hydraulic systems in the mobile machines. They are directly connected to the lines of the system through the hydraulic fittings or the proper flanged interface.

#### Available features:

- 1 1/2" female threaded connections, 1 1/2" flanged connections and manifold connections up to 1 1/2", for a maximum flow rate of 500 l/min
- Base-mounting design, for ease of the replacement of the filter element
- Filter element designed in accordance with SAE J2066 HF4 regulation
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

Delivery lines, in any high pressure industrial equipment

### Technical data

#### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Cover: Cast iron (chemical heat treatment)
- Bypass valve: Brass - Steel

#### Pressure

- Working pressure: 35 MPa (350 bar)
- Test pressure: 52.5 MPa (525 bar)
- Burst pressure: 105 MPa (1050 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 35 MPa (350 bar)

#### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm$ 10%
- Other opening pressures on request.

#### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

#### Seals

- Standard NBR series A
- Optional FPM series V

#### Temperature

From -25 °C to +110 °C

#### Connections

- FHF 325: In-line threaded connection
- FHF 325: In-line flanged connection
- FHF 325: Manifold mounting

#### Note

FHF filters are provided for vertical mounting



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

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]			
	Length	1	2	3	Length	1	2	3
<b>FHF 325</b>		23.90	32.68	41.47		3.50	5.80	8.11

# GENERAL INFORMATION FHF 325

## Filter housing according to SAE J2066 for HF4 filter elements

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

Filter series	Length	Filter element design - N Series					
		A03	A06	A10	A16	A25	M25
<b>FHF 325</b>	<b>1</b>	302	339	348	419	500	556
	<b>2</b>	401	424	434	457	505	557
	<b>3</b>	416	451	460	469	510	559

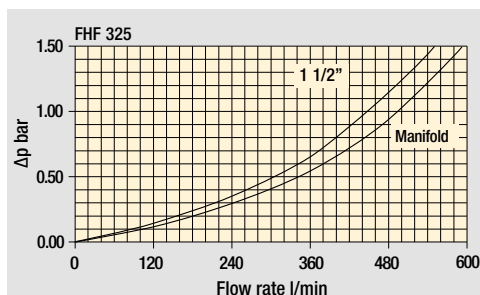
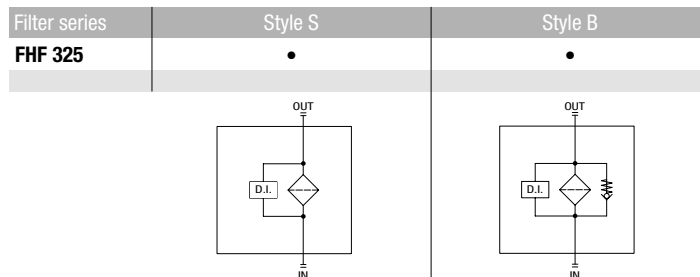
#### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

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

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

### Hydraulic symbols



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

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

# FHF 325

## Designation & Ordering code

COMPLETE FILTER			
Series and size <b>FHF325</b>	Configuration example: <b>FHF325</b>   <b>2</b>   <b>S</b>   <b>A</b>   <b>H</b>   <b>7</b>   <b>A10</b>   <b>N</b>   <b>P01</b>		
Length <b>1</b>   <b>2</b>   <b>3</b>			
Valves <b>S</b> Without bypass <b>B</b> With bypass 6 bar			
Seals <b>A</b> NBR <b>V</b> FPM			
Connections <b>A</b> G 1 1/2" <b>B</b> 1 1/2" NPT <b>C</b> SAE 24 - 1 7/8" - 12 UN <b>G</b> 1 1/2" SAE 6000 psi/M <b>H</b> 1 1/2" SAE 6000 psi/UNC <b>M</b> Manifold ø1.38" <b>N</b> Manifold ø1.50"			
Connection for differential indicator <b>7</b> With two connections plugged on both sides			
Filtration rating (filter media)			
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm		
	Element Δp <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized	

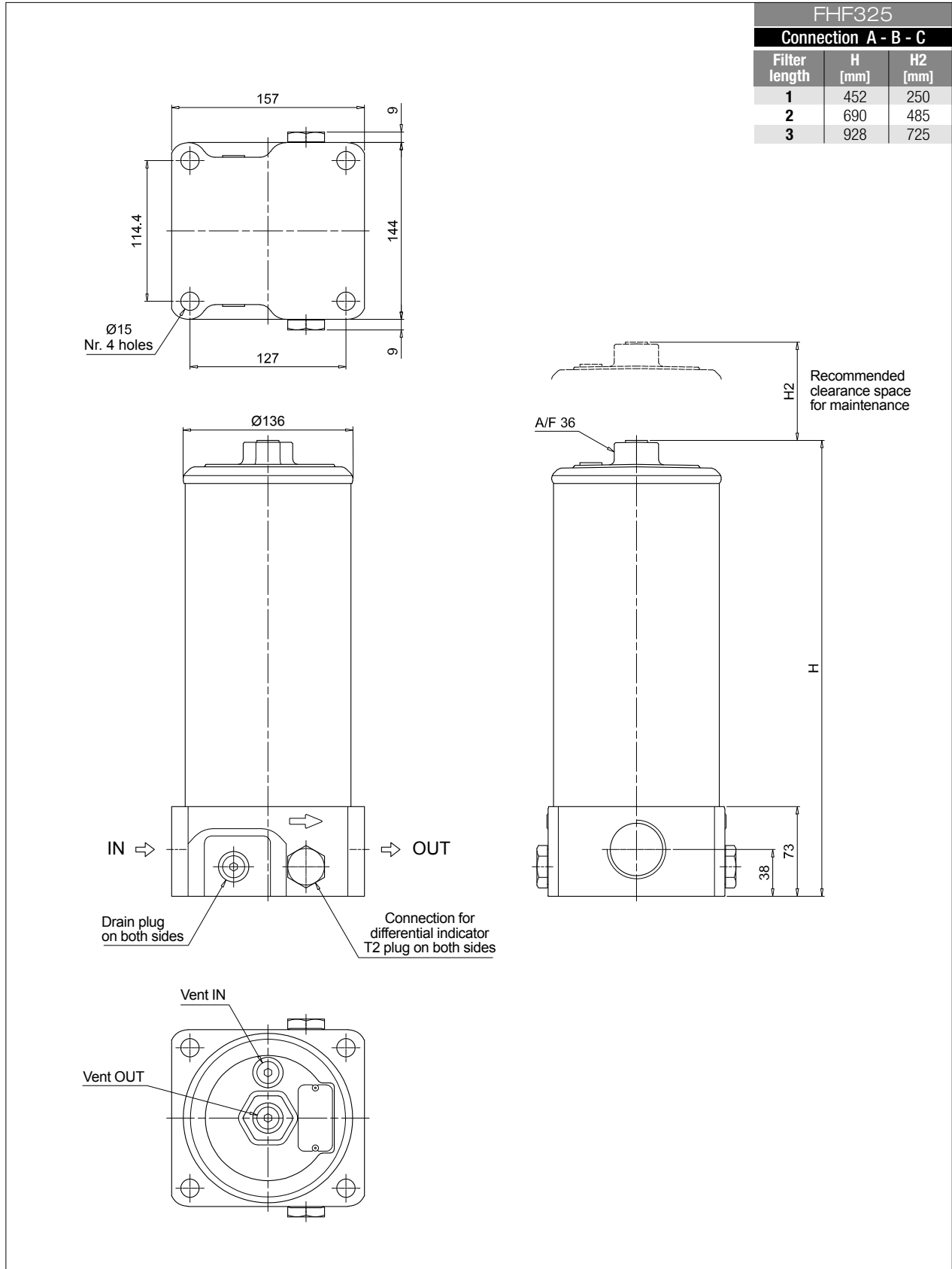
FILTER ELEMENT			
Element series and size <b>HF325</b>	Configuration example: <b>HF325</b>   <b>2</b>   <b>A10</b>   <b>A</b>   <b>N</b>   <b>P01</b>		
Element length <b>1</b>   <b>2</b>   <b>3</b>			
Filtration rating (filter media)			
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm		
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm		
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm		
	Seals <b>A</b> NBR <b>V</b> FPM	Element Δp <b>N</b> 20 bar	Execution <b>P01</b> MP Filtri standard <b>Pxx</b> Customized

ACCESSORIES			
Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581
Additional features	page		
<b>T2</b> Plug	582		



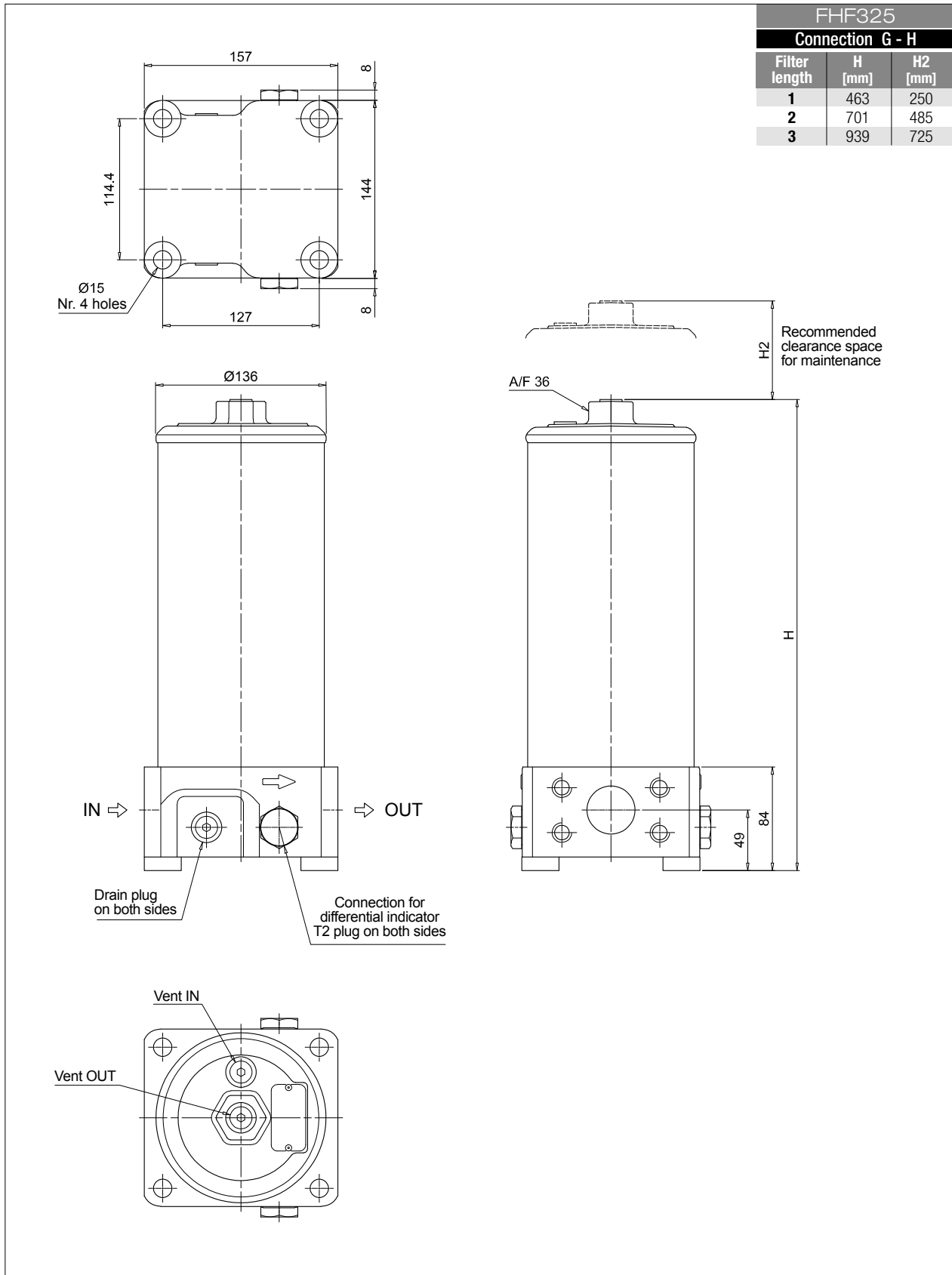
# FHF 325

## Dimensions



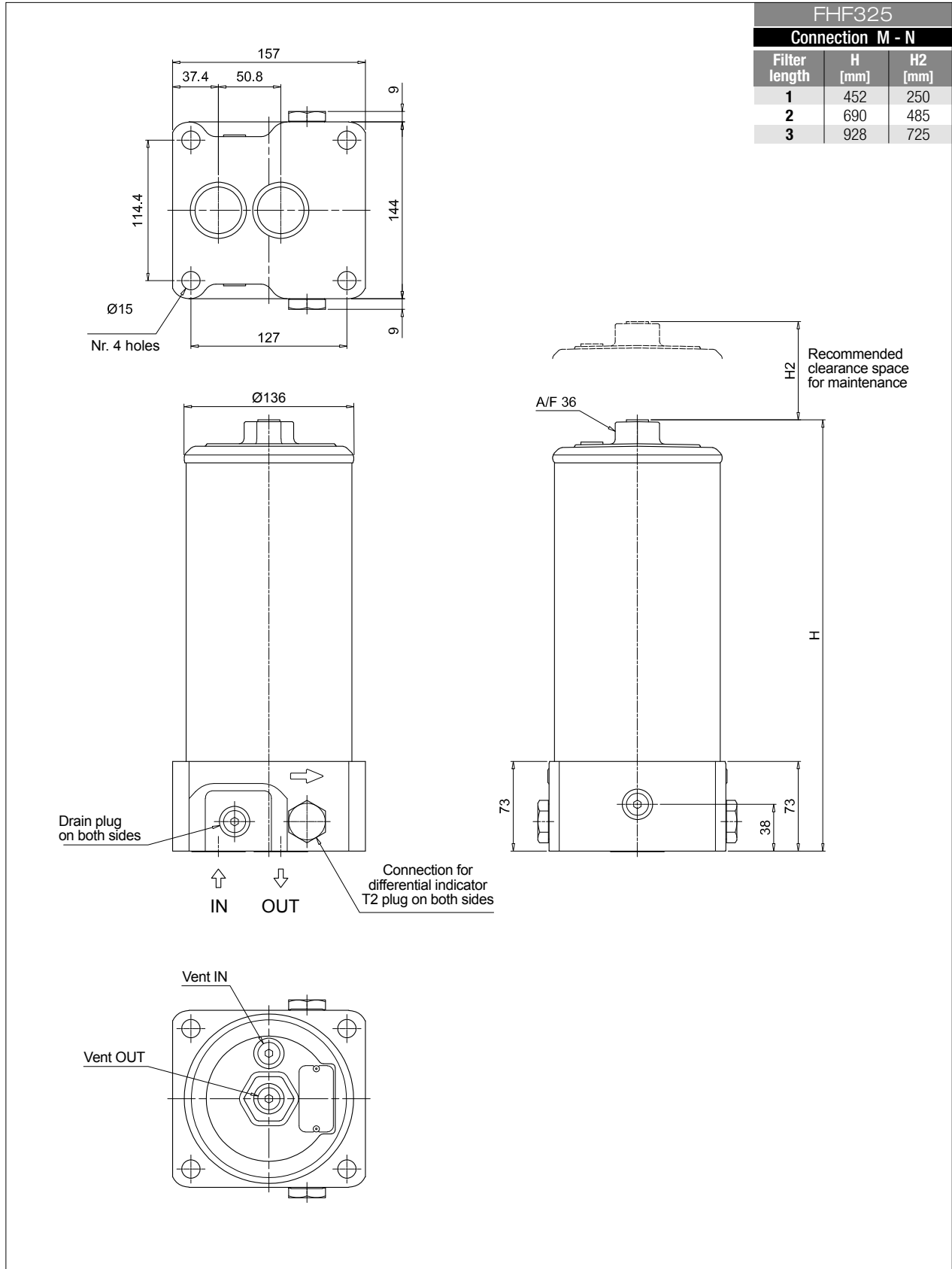
# FHF 325

## Dimensions



# FHF 325

## Dimensions

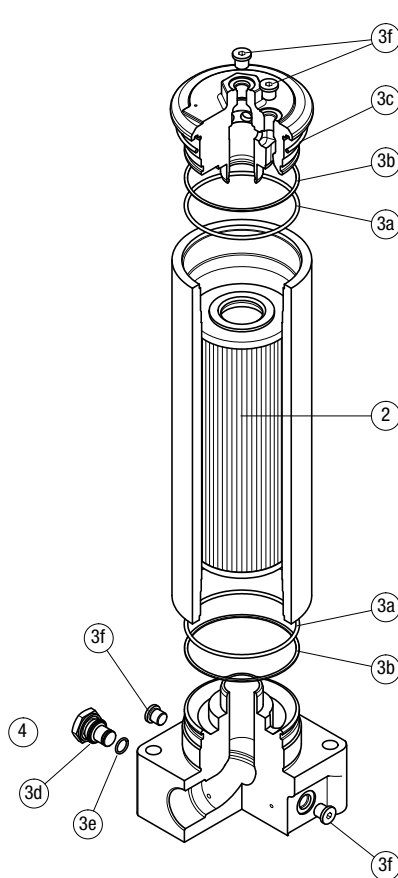


# FHF 325 SPARE PARTS

Filter housing according to SAE J2066 for HF4 filter elements

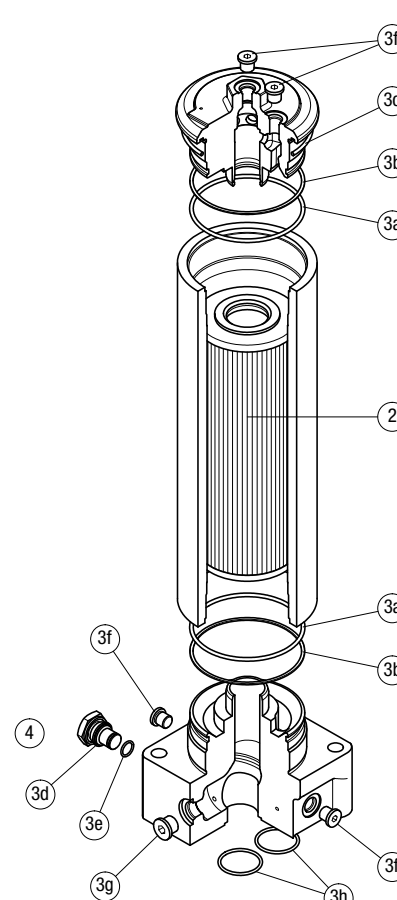
Order number for spare parts

**FHF 325**  
Connections  
**A - B - C - G - H**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pc.		
Filter series	Filter element	Seal Kit code number	NBR	FPM	Indicator connection plug
<b>FHF 325</b> <b>A-B-C-G-H</b>	See order table	02050588	02050589	T2H	T2V

**FHF 325**  
Connections  
**M - N**



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 2 pc.		
Filter series	Filter element	Seal Kit code number	NBR	FPM	Indicator connection plug
<b>FHF 325</b> <b>M-N</b>	See order table	02050590	02050591	T2H	T2V

# FHF 325

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High Pressure filters

# FHD series

Maximum working pressure up to 35 MPa (350 bar) - Flow rate up to 250 l/min



# FHD GENERAL INFORMATION

## Description

## Technical data

### High Pressure filters

#### Duplex

**Maximum working pressure up to 35 MPa (350 bar)**

**Flow rate up to 250 l/min**

FHD is a range of high pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 1 1/4" and flanged connections up to 1 1/2", for a maximum flow rate of 345 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Balancing valve, available for FHD051, FHD326 and FHD333, to equalize the housing pressure before the switch.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- System where shut-down causes high costs
- System where shut-down causes safety issues

### Filter housing materials

- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel

### Pressure

- Test pressure: 52.5 MPa (525 bar)
- Burst pressure: 105 MPa (1050 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 35 MPa (350 bar)

### Bypass valve

- Opening pressure 600 kPa (6 bar)  $\pm$ 10%
- Other opening pressures on request.

### $\Delta p$ element type

- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series R: 20 bar (not available for FHD 021)
- Microfibre filter elements - series H: 210 bar (only for FHD 021)
- Microfibre filter elements - series S: 210 bar (not available for FHD 021)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Connections

In-line Inlet/Outlet 90°

### Note

FHD filters are provided for vertical mounting



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	5
<b>FHD 021</b>	-	-	8.0	9.0	9.9	-	-	-	0.06	0.12	0.22	-
<b>FHD 051</b>	-	-	16.9	17.5	18.5	19.8	-	-	0.31	0.41	0.53	0.83
<b>FHD 326</b>	-	43.0	50.0	54.0	-	-	-	0.88	1.60	2.37	-	-
<b>FHD 333</b>	-	-	74.0	79.0	98.0	-	-	-	1.75	2.52	3.35	-



# GENERAL INFORMATION FHD

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

Filter series	Length	Filter element design - H Series					M25
		A03	A06	A10	A16	A25	
<b>FHD 021</b>	<b>2</b>	6	8	14	16	19	26
	<b>3</b>	10	12	18	20	22	27
	<b>4</b>	13	16	21	22	24	27

Filter series	Length	Filter element design - R Series					N Series	Filter element design - S Series				
		A03	A06	A10	A16	A25		A03	A06	A10	A16	A25
<b>FHD 051</b>	<b>2</b>	39	41	51	54	59	64	35	37	48	51	58
	<b>3</b>	45	46	54	56	61	65	41	43	52	54	60
	<b>4</b>	50	52	58	58	62	65	47	49	56	56	61
	<b>5</b>	56	57	61	62	63	65	53	53	57	59	63
<b>FHD 326</b>	<b>1</b>	93	99	131	142	154	171	83	87	117	120	146
	<b>2</b>	136	141	163	166	173	176	119	128	149	151	163
	<b>3</b>	152	159	171	174	175	177	139	148	161	163	170
<b>FHD 333</b>	<b>2</b>	175	184	224	230	245	249	147	162	199	201	225
	<b>3</b>	204	217	241	245	247	252	179	196	221	224	238
	<b>4</b>	216	224	242	247	253	255	196	204	223	225	239

### Maximum flow rate for a complete pressure filter with a pressure drop $\Delta p = 1.5$ bar.

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

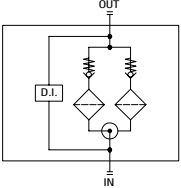
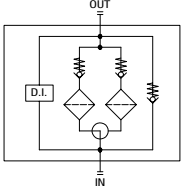
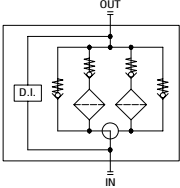
For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

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

## Hydraulic symbols

Filter series	Style S	Style B	Style B
<b>FHD 021</b>	•		
<b>FHD 051</b>	•	•	
<b>FHD 326</b>	•		•
<b>FHD 333</b>	•		•

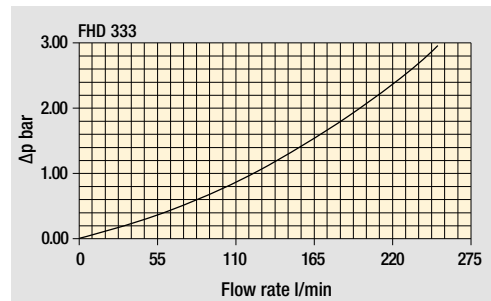
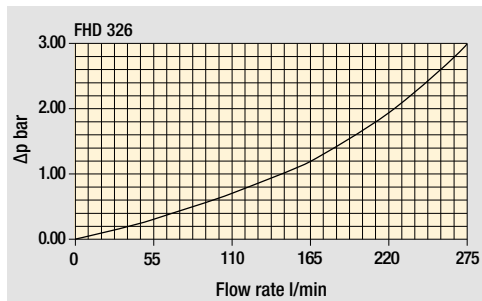
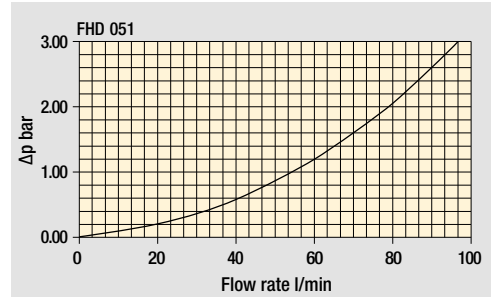
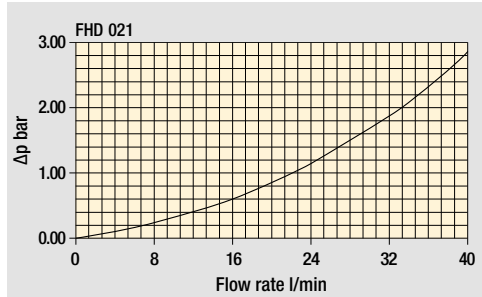
  

		
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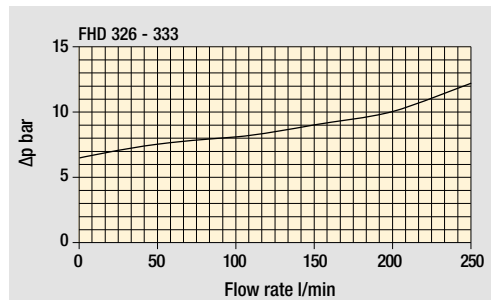
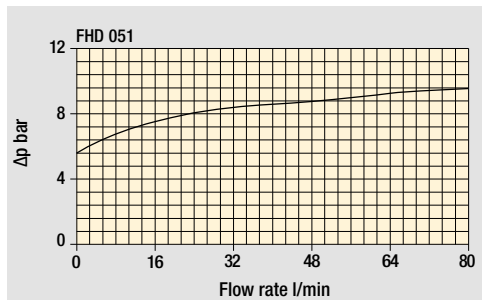
# FHD GENERAL INFORMATION

## Pressure drop

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



### Bypass valve pressure drop



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

# FHD

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# FHD FHD021

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> <b>FHD021</b>	Configuration example: <b>FHD021</b>   <b>4</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>A06</b>   <b>H</b>   <b>P01</b>									
<b>Length</b> 2   3   4										
<b>Valves</b> <b>S</b> Without bypass										
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM										
<b>Connections</b> <b>G1</b> G 1/2" <b>G2</b> 1/2" NPT <b>G3</b> SAE 8 - 3/4" - 16 UNF										
<b>Filtration rating (filter media)</b>										
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm									
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm									
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm									
		<b>Filtration rating</b>								
		<b>Element Δp</b>	<b>Axx</b>	<b>M25</b>					<b>Execution</b>	
		<b>N</b> 20 bar		•					<b>P01</b> MP Filtri standard	
		<b>H</b> 210 bar	•						<b>Pxx</b> Customized	

### FILTER ELEMENT

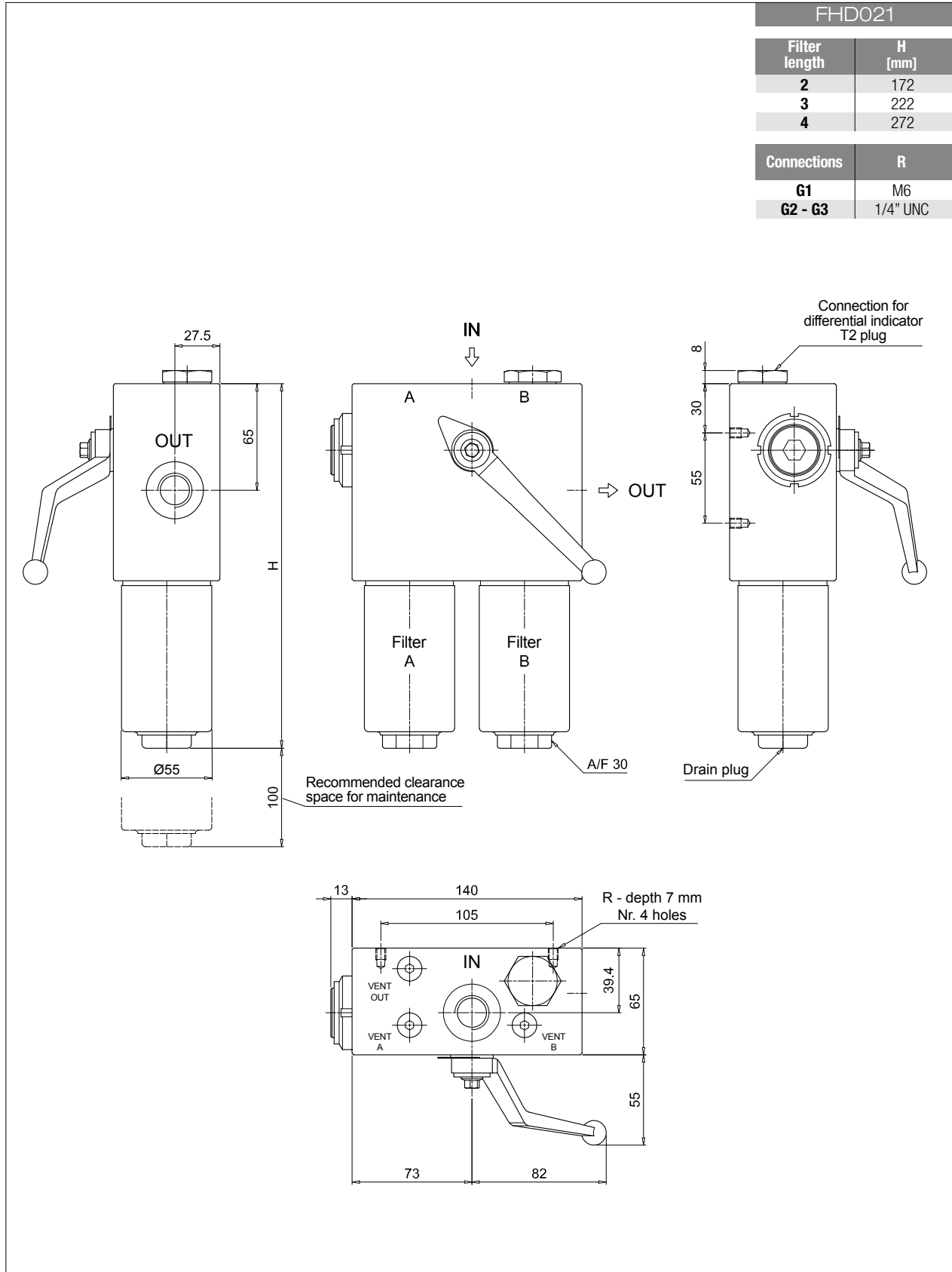
<b>Element series and size</b> <b>HP011</b>	Configuration example: <b>HP011</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>H</b>   <b>P01</b>									
<b>Element length</b> 2   3   4										
<b>Filtration rating (filter media)</b>										
<b>A03</b> Inorganic microfiber 3 µm	<b>A16</b> Inorganic microfiber 16 µm									
<b>A06</b> Inorganic microfiber 6 µm	<b>A25</b> Inorganic microfiber 25 µm									
<b>A10</b> Inorganic microfiber 10 µm	<b>M25</b> Wire mesh 25 µm									
		<b>Filtration rating</b>								
		<b>Element Δp</b>	<b>Axx</b>	<b>M25</b>					<b>Execution</b>	
		<b>N</b> 20 bar		•					<b>P01</b> MP Filtri standard	
		<b>H</b> 210 bar	•	•					<b>Pxx</b> Customized	
		<b>Seals</b>								
		<b>A</b> NBR								
		<b>V</b> FPM								

### ACCESSORIES

<b>Differential indicators</b>	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581
<b>Additional features</b>			
<b>T2</b> Plug	582		

# FHD021 FHD

## Dimensions



# FHD FHD051 - FHD326 - FHD333

## Designation & Ordering code

### COMPLETE FILTER

Series and size Configuration example: **FHD326** | **3** | **S** | **A** | **G1** | **M25** | **N** | **P01**

**FHD051** | **FHD326** | **FHD333**

Length	FHD051	FHD326	FHD333
1		•	
2	•	•	•
3	•	•	•
4	•		•
5	•		

#### Valves

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

#### Seals

<b>A</b>	NBR
<b>V</b>	FPM

Connections	FHD051	FHD326	FHD333
<b>G1</b>	G 3/4"	G 1 1/4"	-
<b>G2</b>	3/4" NPT	-	-
<b>G3</b>	G 1/2"	1 1/4" NPT	-
<b>G4</b>	1/2" NPT	SAE 20 - 1 5/8" - 12 UN	-
<b>G5</b>	SAE 8 - 3/4" - 16 UNF	-	-
<b>G6</b>	SAE 12 - 1 1/16" - 12 UN	-	-
<b>F1</b>	-	-	1 1/2" SAE 6000 psi/M
<b>F2</b>	-	-	1 1/2" SAE 6000 psi/UNC

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

Element Δp	Filtration rating		Execution
	Axx	M25	
<b>N</b> 20 bar		•	<b>P01</b> MP Filtri standard
<b>R</b> 20 bar	•	•	<b>Pxx</b> Customized
<b>S</b> 210 bar	•	•	

### FILTER ELEMENT

Element series and size Configuration example: **HP320** | **3** | **M25** | **A** | **N** | **P01**

	FHD051	FHD326	FHD333
<b>HP050</b>	•		
<b>HP320</b>		•	•

Element length	HP050	HP320
1		•
2	•	•
3	•	•
4	•	•
5	•	

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm
<b>M25</b>	Wire mesh	25 µm

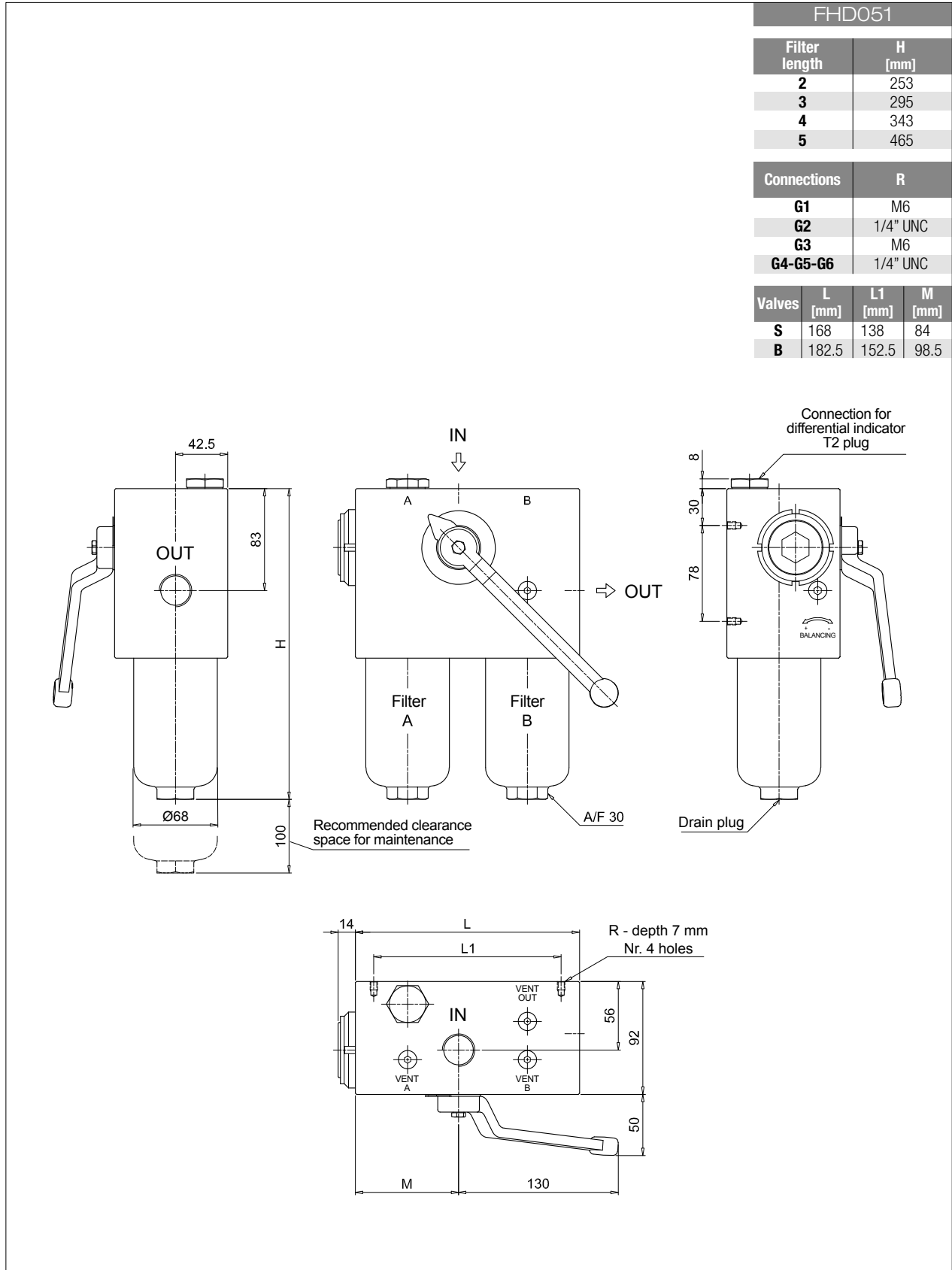
Seals	Element Δp	Filtration rating		Execution
		Axx	M25	
<b>A</b> NBR	<b>N</b> 20 bar		•	<b>P01</b> MP Filtri standard
<b>V</b> FPM	<b>R</b> 20 bar	•	•	<b>Pxx</b> Customized
	<b>S</b> 210 bar	•	•	

### ACCESSORIES

Differential indicators	page		page
<b>DEA</b> Electrical differential indicator	577	<b>DLE</b> Electrical / visual differential indicator	580
<b>DEH</b> Hazardous area electronic differential indicator	577-578	<b>DTA</b> Electronic differential indicator	581
<b>DEM</b> Electrical differential indicator	578-579	<b>DVA</b> Visual differential indicator	581
<b>DLA</b> Electrical / visual differential indicator	579-580	<b>DVM</b> Visual differential indicator	581
Additional features	page		
<b>T2</b> Plug	582		

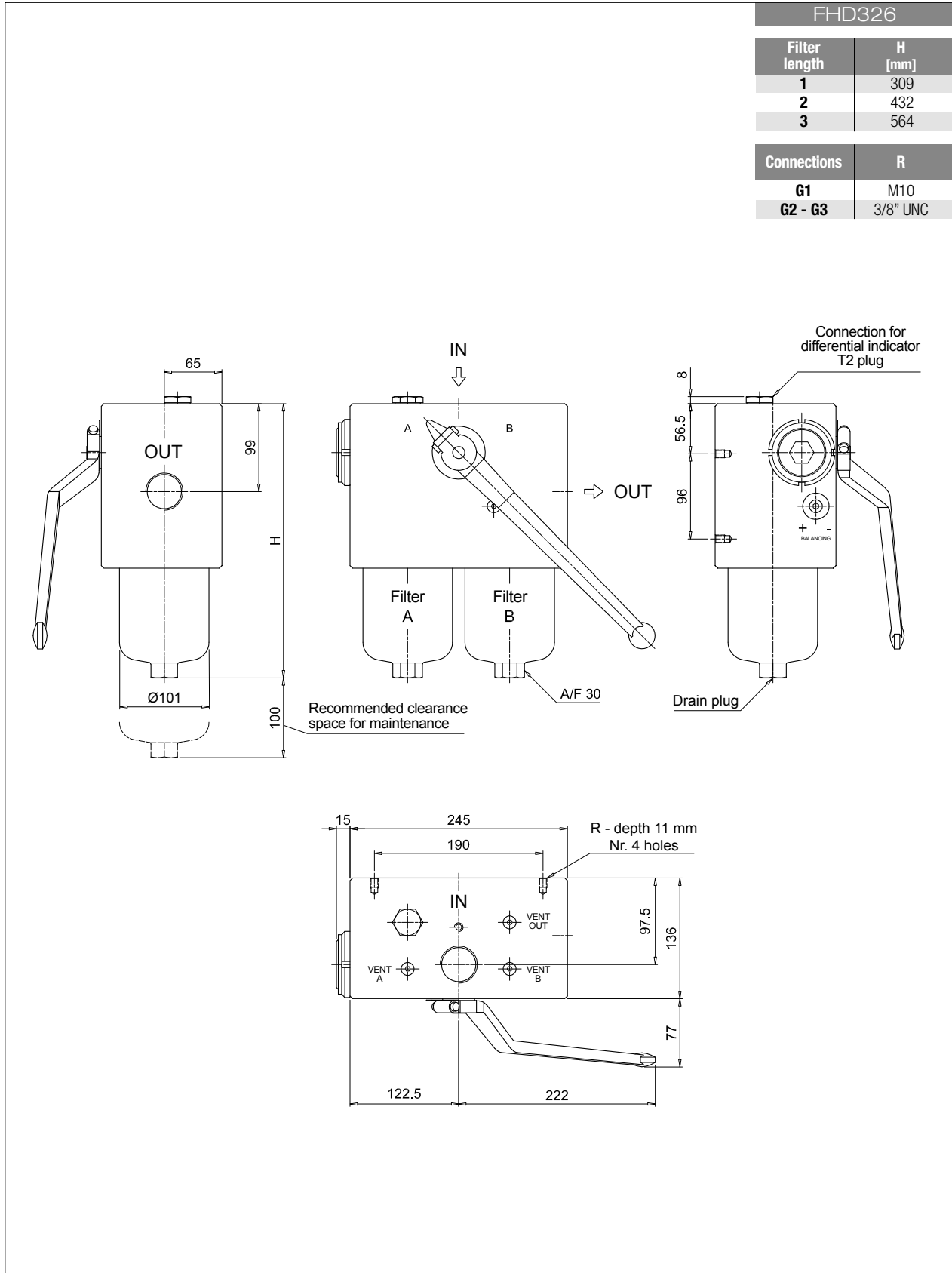
# FHD051 - FHD326 - FHD333 FHD

## Dimensions



# FHD FHD051 - FHD326 - FHD333

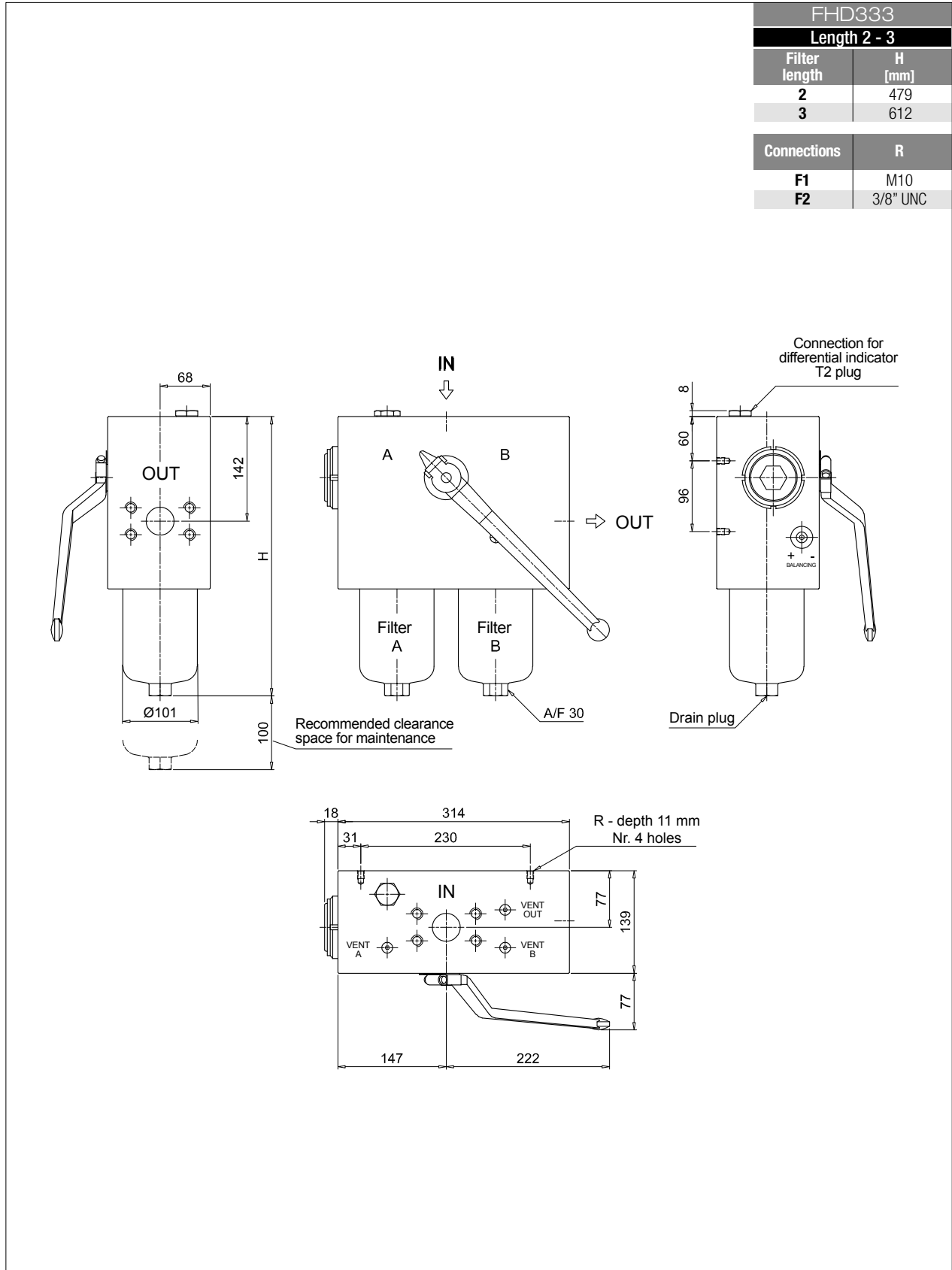
## Dimensions





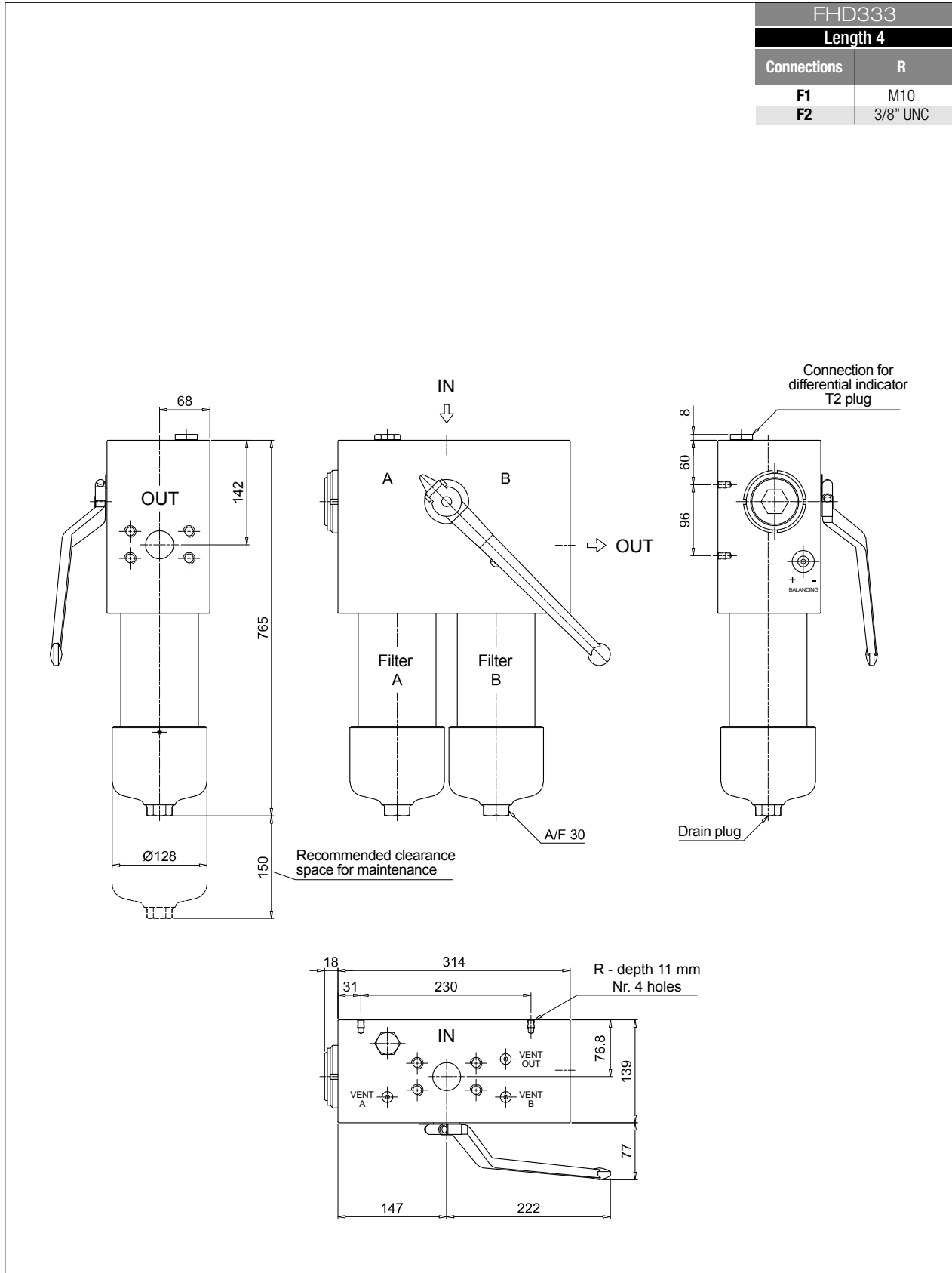
# FHD051 - FHD326 - FHD333 FHD

## Dimensions



# FHD FHD051 - FHD326 - FHD333

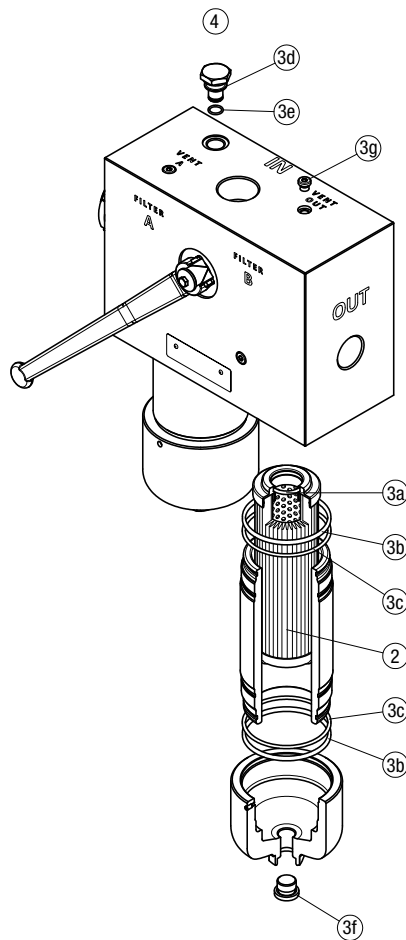
## Dimensions



# SPARE PARTS FHD

Order number for spare parts

FHD 021 - 051 - 326 - 333



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a + 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
		NBR	FPM	NBR	FPM
<b>FHD 021</b>	See order table	02050511	02050512	T2H	T2V
<b>FHD 051</b>		02050420	02050421		
<b>FHD 326-333</b>		02050377	02050378		



High Pressure filters

# Clogging indicators

Differential indicators

## Introduction

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

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

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

MP Filtri can supply indicators of the following designs:

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

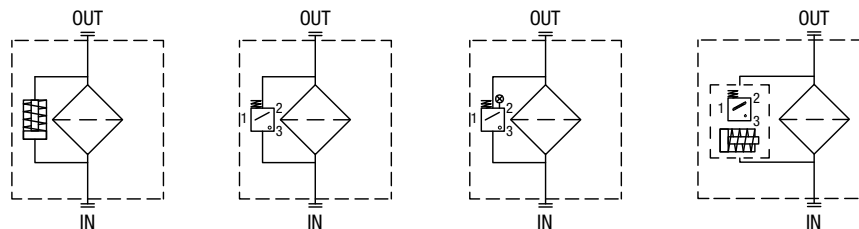
These type of devices can be provided with a visual, electrical or both signals.

The electronic model (only available for differential type indicators) with warning signals (75% of clogging) and alarm (clogging).

## Suitable indicator types

### DIFFERENTIAL INDICATORS

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



## Quick reference guide

Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Hazardous area electronic indicator <span style="float: right; border: 1px solid black; padding: 2px;">NEW</span>
With bypass valve					
FMP 039 - 065 - 135 - 320					
FHP 010 - 011 - 065 - 135 - 350 - 500					
FMM 050 - 150					
FHA 051	DVA50xP01	DEA50xA50P01	DLA50xA51P01	DTA50xF70P01	DEH50xA48P01
FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500	DVM50xP01	DEM50xAxxP01	DLA50xA52P01		DEH50xA49P01
FHB 050 - 135 - 320			DLA50xA71P01		DEH50xA70P01
FHF 325			DLE50xA50P01		DEH70xA48P01
FHD 021 - 051 - 326 - 333			DLE50xF50P01		DEH70xA49P01
Without bypass valve					
FMP 039 - 065 - 135 - 320					
FHP 010 - 011 - 065 - 135 - 350 - 500					
FMM 050 - 150					
FHA 051	DVA70xP01	DEA70xA50P01	DLA70xA51P01	DTA70xF70P01	DEH50xA48P01
FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500	DVM70xP01	DEM70xAxxP01	DLA70xA52P01		DEH50xA49P01
FHB 050 - 135 - 320			DLA70xA71P01		DEH50xA70P01
FHF 325			DLE70xA50P01		DEH70xA48P01
FHD 021 - 051 - 326 - 333			DLE70xF50P01		DEH70xA49P01

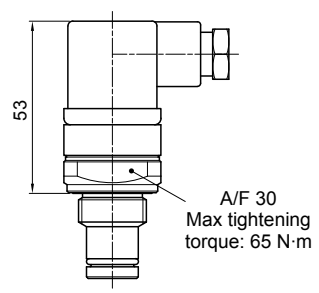
# DIFFERENTIAL INDICATORS

## Dimensions

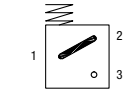
**DEA\*50**

**Electrical Differential Indicator**

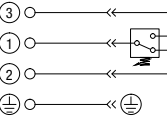
Settings	Ordering code
5.0 bar ±10%	DE A 50 x A 50 P01
7.0 bar ±10%	DE A 70 x A 50 P01
9.5 bar ±10%	DE A 95 x A 50 P01



### Hydraulic symbol



### Electrical symbol



### Materials

- Body: Brass
- Base: Black Nylon
- 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: IP66 according to EN 60529  
IP69K according to ISO 20653

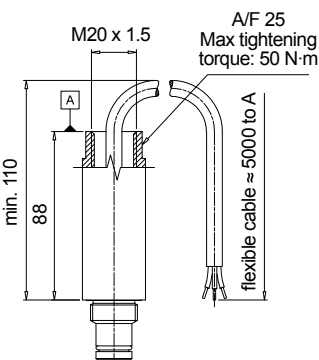
### Electrical data

- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

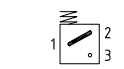
**DEH\*48**

**Hazardous Area  
Electronic Differential Indicator**

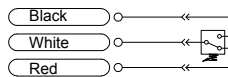
Settings	Ordering code
5.0 bar ±10%	DE H 50 x A 48 P01
7.0 bar ±10%	DE H 70 x A 48 P01



### Hydraulic symbol



### Electrical symbol



### 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
- Protection class: EX ia IIC T4/T6: Intrinsically safe
- 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

- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac
- Electrical Ratings: Ui = 30 Vdc  
Ii = 250 mA  
Pi = 1.3 W

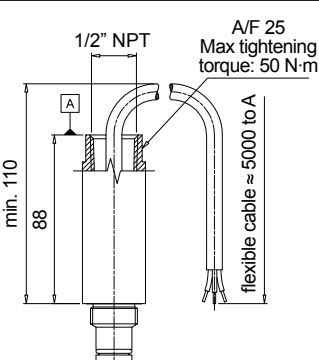


- Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO
- Certification included as standard

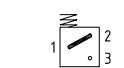
**DEH\*49**

**Hazardous Area  
Electronic Differential Indicator**

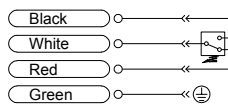
Settings	Ordering code
5.0 bar ±10%	DE H 50 x A 49 P01
7.0 bar ±10%	DE H 70 x A 49 P01



### Hydraulic symbol



### Electrical symbol



### 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
- Compatibility with fluids: Mineral oils, Synthetic fluids
- Protection class: Ex d IIC T4/T6: Flameproof
- 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

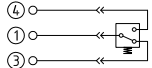
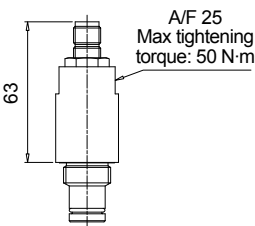

- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac
- Max voltage: 150 Vac/dc
- Power: 20 W

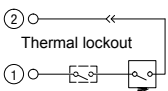
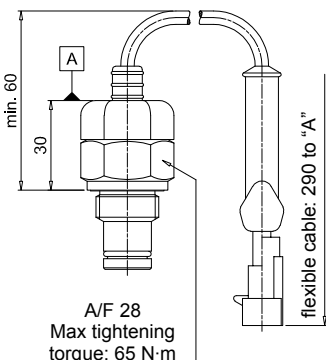


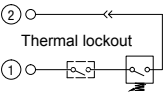
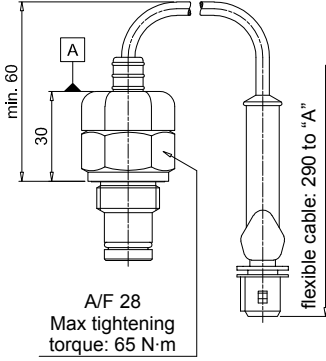
- Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO, UL/CSA Class I Division 1 Groups A-D, UL/CSA Class II Division 1 Groups E-G
- Certification included as standard

# DIFFERENTIAL INDICATORS

## Dimensions

DEH*70		Hydraulic symbol	Materials
<b>Hazardous Area Electronic Differential Indicator</b>			
Settings	Ordering code		
5.0 bar $\pm 10\%$	DE H 50 x A 70 P01	<b>Electrical symbol</b> 	<b>Technical data</b> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -60 °C to +80 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Protection class: EX ia IIC T6: Intrinsically safe - Temperature class: T6 (85 °C) - Degree of protection: IP 66/67 according to EN 60529 - Connection type: IEC 61076-2-101 D (M12) - Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)
7.0 bar $\pm 10\%$	DE H 70 x A 70 P01		
		<b>Electrical data</b> - Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vdc - Electrical Ratings: Ui = 30 Vdc, li = 250 mA, Pi = 1.3 W	
		- Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO - Certification included as standard	

DEM*10		Hydraulic symbol	Materials
<b>Electrical Differential Indicator</b>			
Settings	Ordering code		
5.0 bar $\pm 10\%$	DE M 50 x x 10 P01	<b>Electrical symbol</b> 	<b>Technical data</b> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529
7.0 bar $\pm 10\%$	DE M 70 x x 10 P01		
9.5 bar $\pm 10\%$	DE M 95 x x 10 P01		
		<b>Electrical data</b> - Electrical connection: AMP Superseal series 1.5 - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")	

DEM*20		Hydraulic symbol	Materials
<b>Electrical Differential Indicator</b>			
Settings	Ordering code		
5.0 bar $\pm 10\%$	DE M 50 x x 20 P01	<b>Electrical symbol</b> 	<b>Technical data</b> - Max working pressure: 420 bar - Proof pressure: 630 bar - Burst pressure: 1260 bar - Working temperature: From -25 °C to +110 °C - Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 - Degree protection: IP66 according to EN 60529
7.0 bar $\pm 10\%$	DE M 70 x x 20 P01		
9.5 bar $\pm 10\%$	DE M 95 x x 20 P01		
		<b>Electrical data</b> - Electrical connection: AMP Time junior - Resistive load: 0.2 A / 115 Vdc - Switching type: Normally open contacts (NC on request) - Thermal lockout: Normally open up to 30 °C (option "F")	

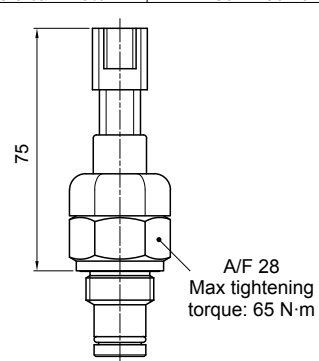
# DIFFERENTIAL INDICATORS

## Dimensions

**DEM\*30**

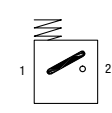
**Electrical Differential Indicator**

Settings	Ordering code
5.0 bar ±10%	DE M 50 x x 30 P01
7.0 bar ±10%	DE M 70 x x 30 P01
9.5 bar ±10%	DE M 95 x x 30 P01

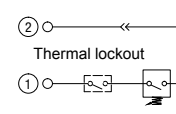


A/F 28  
Max tightening  
torque: 65 N-m

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

- Body: Brass
- Base: Black Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

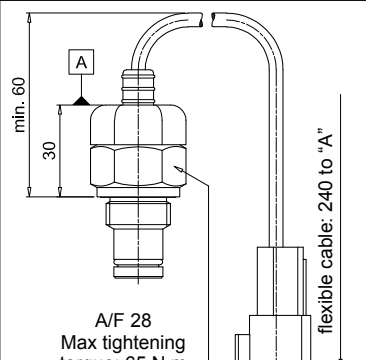
**Electrical data**

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

**DEM\*35**

**Electrical Differential Indicator**

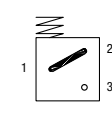
Settings	Ordering code
5.0 bar ±10%	DE M 50 x x 35 P01
7.0 bar ±10%	DE M 70 x x 35 P01
9.5 bar ±10%	DE M 95 x x 35 P01



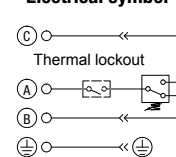
A/F 28  
Max tightening  
torque: 65 N-m

flexible cable: 240 to "A"

**Hydraulic symbol**



**Electrical symbol**



Thermal lockout

**Materials**

- Body: Brass
- Base: Black Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

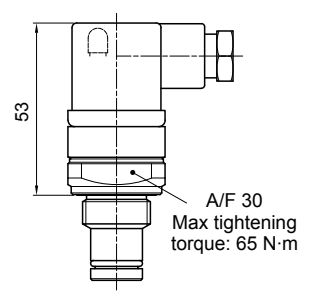
**Electrical data**

- 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")

**DLA\*51 - DLA\*52**

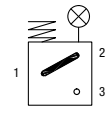
**Electrical/Visual Differential Indicator**

Settings	Ordering code
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

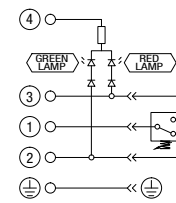


A/F 30  
Max tightening  
torque: 65 N-m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: Brass
- Base: Transparent Nylon
- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

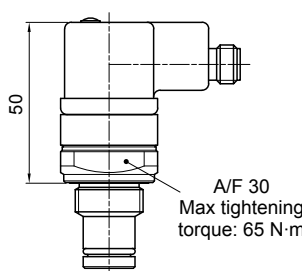
**Electrical data**

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

# DIFFERENTIAL INDICATORS

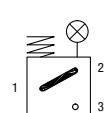
## Dimensions

DLA*71	
<b>Electrical/Visual Differential Indicator</b>	
Settings	Ordering code
5.0 bar $\pm 10\%$	DL A 50 x A 71 P01
7.0 bar $\pm 10\%$	DL A 70 x A 71 P01
9.5 bar $\pm 10\%$	DL A 95 x A 71 P01

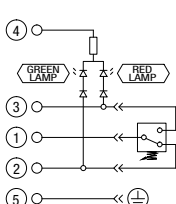


A/F 30  
Max tightening torque: 65 N-m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

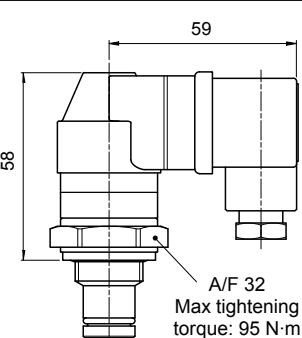
**Technical data**

- 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: IP65 according to ISO 2943  
IP69K according to ISO 20653

**Electrical data**

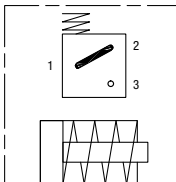
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

DLE*A50	
<b>Electrical/Visual Differential Indicator</b>	
Settings	Ordering code
5.0 bar $\pm 10\%$	DL E 50 x A 50 P01
7.0 bar $\pm 10\%$	DL E 70 x A 50 P01
9.5 bar $\pm 10\%$	DL E 95 x A 50 P01

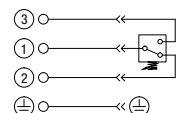


A/F 32  
Max tightening torque: 95 N-m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

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

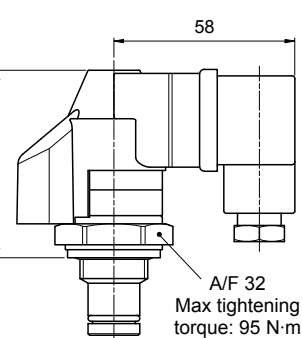
**Technical data**

- 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: IP65 according to EN 60529

**Electrical data**

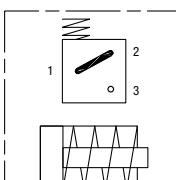
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

DLE*F50	
<b>Electrical/Visual Differential Indicator</b>	
Settings	Ordering code
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

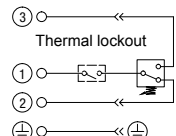


A/F 32  
Max tightening torque: 95 N-m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: Brass
- Base: Black Nylon
- 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: IP65 according to EN 60529

**Electrical data**

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



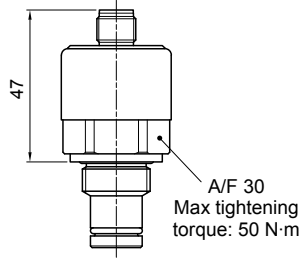
# DIFFERENTIAL INDICATORS

## Dimensions

**DTA\*70**

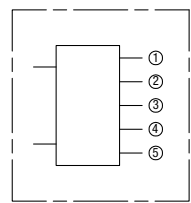
**Electronic Differential Indicator**

Settings	Ordering code
5.0 bar $\pm 10\%$	DT A 50 x x 70 P01
7.0 bar $\pm 10\%$	DT A 70 x x 70 P01
9.5 bar $\pm 10\%$	DT A 95 x x 70 P01



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

**Hydraulic symbol**




**Electrical symbol**

①	+24 Vdc
②	4 $\div$ 20 mA
③	75% - N.O. Digital output
④	100% - N.O. Digital output
⑤	0 Vdc

**Materials**

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM



**Technical data**

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

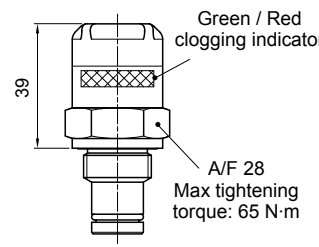
**Electrical data**

- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

**DVA**

**Visual Differential Indicator**

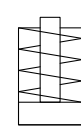
Settings	Ordering code
5.0 bar $\pm 10\%$	DV A 50 x P01
7.0 bar $\pm 10\%$	DV A 70 x P01
9.5 bar $\pm 10\%$	DV A 95 x P01



Green / Red clogging indicator

A/F 28  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Materials**

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

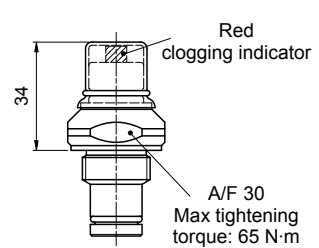
**Technical data**

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

**DVM**

**Visual Differential Indicator**

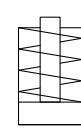
Settings	Ordering code
5.0 bar $\pm 10\%$	DV M 50 x P01
7.0 bar $\pm 10\%$	DV M 70 x P01
9.5 bar $\pm 10\%$	DV M 95 x P01



Red clogging indicator

A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Materials**

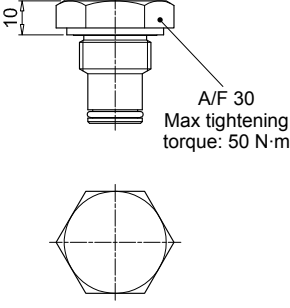
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**

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

## DIFFERENTIAL INDICATORS

### Dimensions

T2		Materials
Indicator plug		
Seal	Ordering code	- Body: Phosphatized steel - Seal: HNBR / FPM
HNBR	T2 H	
FPM	T2 V	
		

# DIFFERENTIAL INDICATORS

Designation & Ordering code

## DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Series	Configuration example 1:						
<b>DE</b> Electrical or Electronic differential indicator	DE	M	50	H	F	50	P01
<b>DL</b> Electrical / Visual differential indicator	DE	H	50	F	A	70	P01
<b>DT</b> Electronic differential indicator	DL	E	70	V	A	71	P01
<b>DV</b> Visual differential indicator	DT	A	50	H	F	70	P01
	DV	M	95	V			P01

Type	DE	DL	DT	DV
<b>A</b> Standard type	•	•	•	<b>A</b> With automatic reset
<b>M</b> With wired electrical connection	•			<b>M</b> With manual reset
<b>E</b> For high power supply		•		
<b>H</b> Hazardous area	•			

Pressure setting	DEA	DEH	DEM	DLA	DLE	DT	DV
<b>50</b> 5 bar	•	•	•	•	•	•	•
<b>70</b> 7 bar	•	•	•	•	•	•	•
<b>95</b> 9.5 bar	•		•	•	•	•	•

Seals	DEA	DEH	DEM	DLA	DLE	DT	DV
<b>F</b> MFQ		•					
<b>H</b> HNBR	•		•	•	•	•	•
<b>V</b> FPM	•	•	•	•	•	•	•

Thermostat	DEA	DEH	DEM	DLA	DLE	DT	DV
<b>A</b> Without	•	•	•	•	•		
<b>F</b> With thermostat			•		•	•	

Electrical connections	DEA	DEH	DEM	DLA	DLE	DT	DV
<b>10</b> Connection AMP Superseal series 1.5			•				
<b>20</b> Connection AMP Timer Junior			•				
<b>30</b> Connection Deutsch DT-04-2-P			•				
<b>35</b> Connection Deutsch DT-04-3-P			•				
<b>48</b> Connection via three-core cable - fitting M20x1.5		•					
<b>49</b> Connection via four-core cable - fitting 1/2" NPT		•					
<b>50</b> Connection EN 175301-803	•				•		
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc				•			
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc				•			
<b>70</b> Connection IEC 61076-2-101 D (M12)		•				•	
<b>71</b> Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc				•			

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

## DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Series	Configuration example	
<b>T2</b> Indicator plug	T2	H

Seals
<b>H</b> HNBR
<b>V</b> FPM

**Stainless steel high pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406. 6 versions are available with operating pressures ranging from 320 bar up to 1000 bar.**

**A range of products is available to resolve all filter mounting problems, in the following configurations:**

- FZP In-line pressure filter with threaded mount
- FZH In-line pressure filter with threaded mount for higher pressure
- FZX In-line pressure filter with threaded mount up to 1000 bar
- FZB Manifold side mounting
- FZM Manifold top mounting
- FZD Duplex pressure filter for continuous operation requirements

**FZ stainless steel filters are specifically designed for applications in the:**

- Process engineering
- Water hydraulics
- Offshore technology
- Marine technology
- High pressure hydraulics
- Any application in harsh or aggressive environment

## FILTER SIZING

For the proper corrective factor Y see chapter at page 25



# Stainless steel high pressure filters



FZP	page 587
FZH	597
FZX	607
FZM	615
FZB	623
FZD	631
INDICATORS	641





Stainless steel high pressure filters

## FZP series

Maximum working pressure up to 42 Mpa (420 bar) - Flow rate up to 160 l/min



# FZP GENERAL INFORMATION

## Description

## Technical data

### Stainless steel high pressure filters

#### In-line

**Maximum working pressure up to 42 Mpa (420 bar)**  
**Flow rate up to 160 l/min**

FZP is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1 1/4" female threaded connections, for a maximum flow rate of 150 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZP filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZP 039</b>	-	-	4.5	5.1	5.6	-	-	0.19	0.26	0.34
<b>FZP 136</b>	8.3	10.2	11.5	-	-	0.45	0.78	1.00	-	-



# GENERAL INFORMATION FZP

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

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
FZP 039	2	19	25	43	50	59	19	23	41	45	55
	3	34	37	53	62	74	31	34	48	52	66
	4	42	46	63	72	81	38	41	55	71	78
FZP 136	1	63	67	102	108	136	47	53	87	89	127
	2	95	100	122	123	159	81	95	113	115	138
	3	122	124	148	150	160	106	116	135	141	151

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

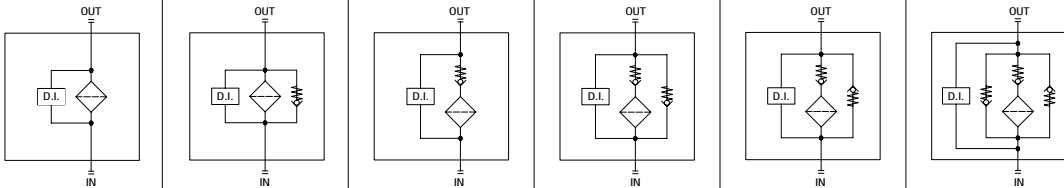
The reference fluid has a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$  (cSt) and a density of  $0.86 \text{ kg}/\text{dm}^3$ .

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

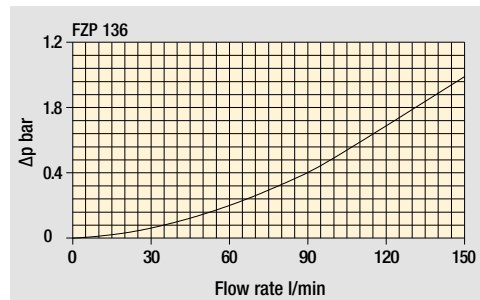
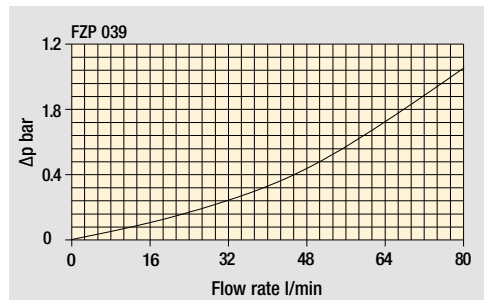
You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
FZP 039	•	•	•	•	•	•
FZP 136	•	•	•	•	•	•



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



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

# FZP FZP039

## IN-LINE

### Designation & Ordering code

#### COMPLETE FILTER

<b>Series and size</b> <b>FZP039</b>	Configuration example: <b>FZP039</b>   <b>2</b>   <b>B</b>   <b>F</b>   <b>B</b>   <b>2</b>   <b>A03</b>   <b>U</b>   <b>P01</b>																																						
<b>Length</b> <b>2</b>   <b>3</b>   <b>4</b>																																							
<b>Valves</b>																																							
<b>S</b> Without bypass																																							
<b>B</b> With bypass 6 bar																																							
<b>T</b> With check valve, without bypass																																							
<b>D</b> With check valve, with bypass 6 bar																																							
<b>V</b> With reverse flow, without bypass																																							
<b>Z</b> With reverse flow, with bypass 6 bar																																							
<b>Seals</b>																																							
<b>A</b> NBR																																							
<b>V</b> FPM																																							
<b>F</b> MFQ																																							
<b>Connections</b>																																							
<b>A</b> G 1/2"																																							
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<b>C</b> SAE 8 - 3/4" - 16 UNF																																							
<b>Connections for differential indicators</b>																																							
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<b>A25</b> Inorganic microfiber 25 µm																																							
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#### FILTER ELEMENT

<b>Element series and size</b> <b>HP039</b>	Configuration example: <b>HP039</b>   <b>2</b>   <b>A03</b>   <b>F</b>   <b>U</b>   <b>P01</b>																																							
<b>Element length</b> <b>2</b>   <b>3</b>   <b>4</b>																																								
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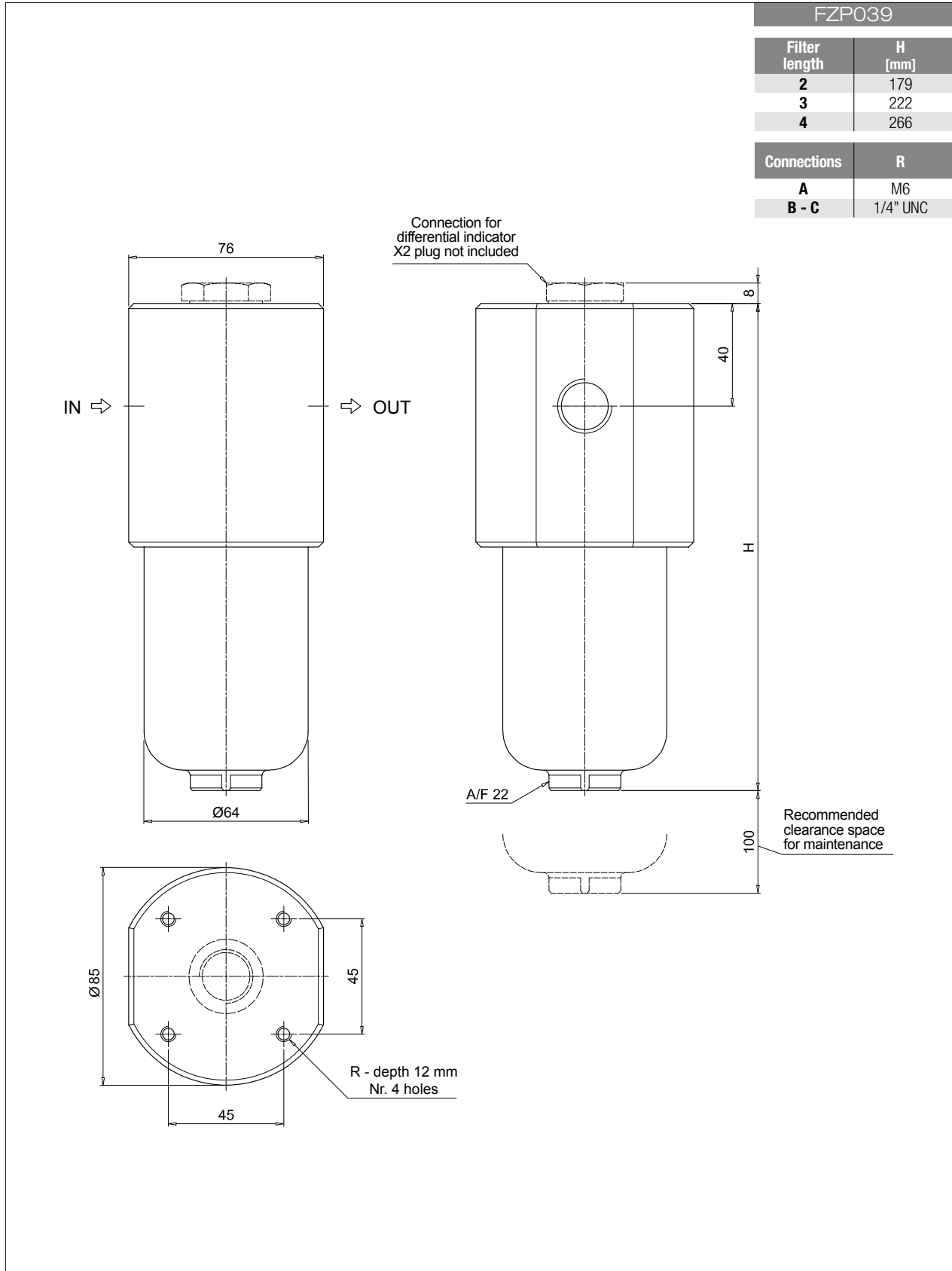
#### ACCESSORIES

Differential indicators	page		page
<b>DEH</b> Hazardous area electronic differential indicator	642	<b>DVX</b> Visual differential indicator	643
<b>DEX</b> Electrical differential indicator	643	<b>DVY</b> Visual differential indicator	644
<b>DLX</b> Electrical / visual differential indicator	643		
Additional features	page		
<b>X2</b> Plug	644		

IN-LINE

FZP039 FZP

Dimensions



# FZP FZP136

## IN-LINE

### Designation & Ordering code

COMPLETE FILTER									
<b>Series and size</b> <b>FZP136</b>	Configuration example: <b>FZP136</b>   <b>1</b>   <b>B</b>   <b>A</b>   <b>B</b>   <b>6</b>   <b>A03</b>   <b>R</b>   <b>P01</b>								
<b>Length</b> <b>1</b>   <b>2</b>   <b>3</b>									
<b>Valves</b> <b>S</b> Without bypass <b>B</b> With bypass 6 bar									
<b>Seals</b> <b>A</b> NBR <b>V</b> FPM <b>F</b> MFQ									
<b>Connections</b> <b>A</b> G 3/4" <b>B</b> 3/4" NPT <b>C</b> SAE 12 - 1 1/16" - 12 UN <b>D</b> G 1" <b>E</b> 1" NPT <b>F</b> SAE 16 - 1 5/16" - 12 UN <b>G</b> G 1 1/4" <b>H</b> 1 1/4" NPT <b>I</b> SAE 20 - 1 5/8" - 12 UN									
<b>Connections for differential indicators</b> <b>1</b> Without <b>6</b> With two connections on both sides									
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm									
	<b>Element Δp</b>		<b>Valves</b>		<b>Execution</b>				
	<b>R</b>	20 bar	<b>S</b>	<b>B</b>	<b>P01</b> MP Filtri standard				
	<b>S</b>	210 bar	•		<b>Pxx</b> Customized				
	<b>U</b>	210 bar, stainless steel filter element	•	•					

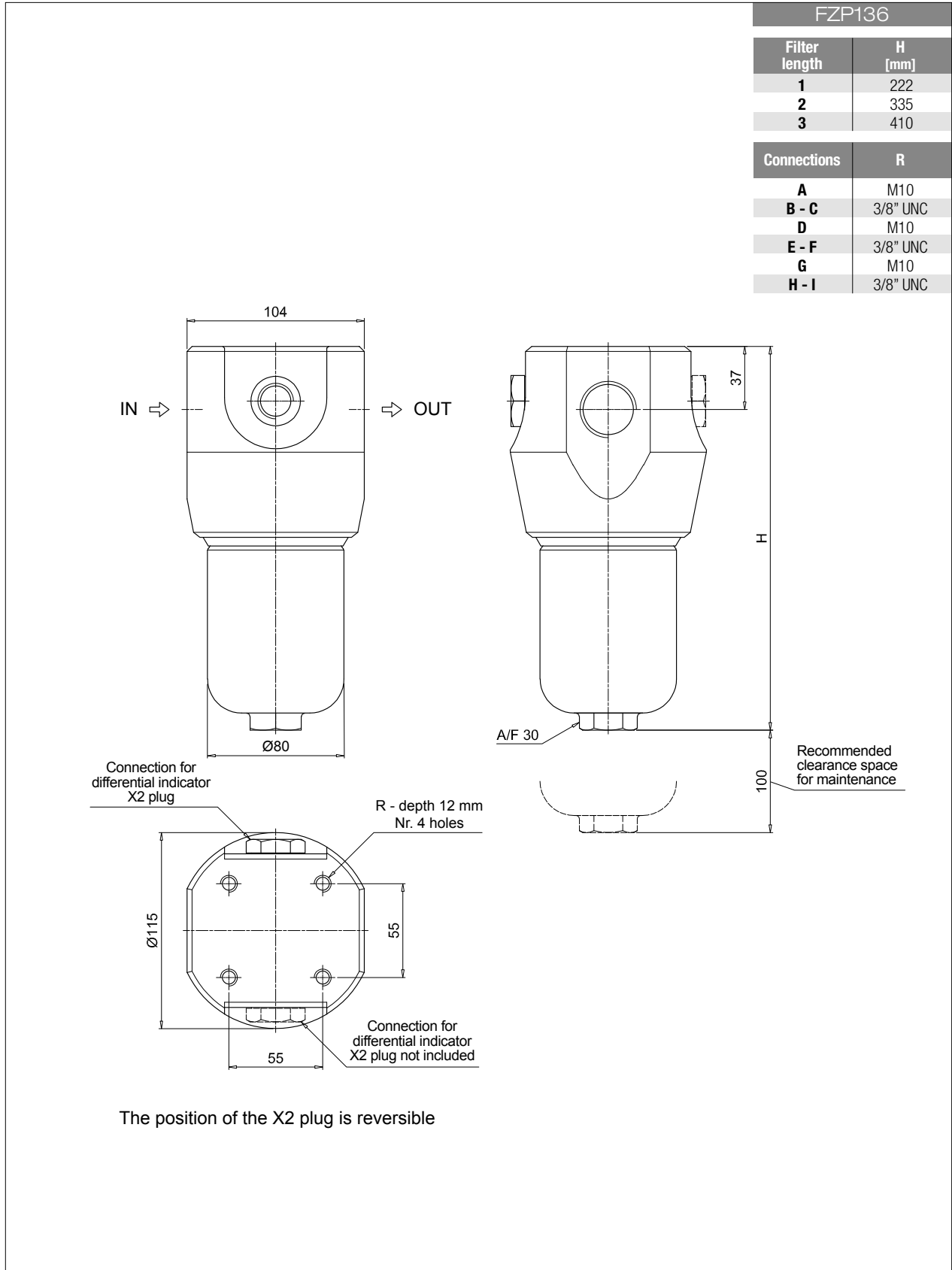
FILTER ELEMENT									
<b>Element series and size</b> <b>HP135</b>	Configuration example: <b>HP135</b>   <b>1</b>   <b>A03</b>   <b>A</b>   <b>R</b>   <b>P01</b>								
<b>Element length</b> <b>1</b>   <b>2</b>   <b>3</b>									
<b>Filtration rating (filter media)</b> <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm									
	<b>Element Δp</b>		<b>Valves</b>		<b>Execution</b>				
	<b>R</b>	20 bar	<b>S</b>	<b>B</b>	<b>P01</b> MP Filtri standard				
	<b>S</b>	210 bar	•		<b>Pxx</b> Customized				
	<b>U</b>	210 bar, stainless steel filter element	•	•					

ACCESSORIES			
<b>Differential indicators</b>	page		page
<b>DEH</b> Hazardous area electronic differential indicator	642	<b>DVX</b> Visual differential indicator	643
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<b>Additional features</b>	page		
<b>X2</b> Plug	644		

IN-LINE

FZP136 FZP

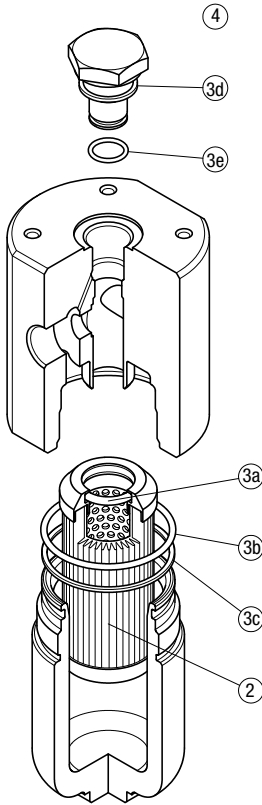
Dimensions



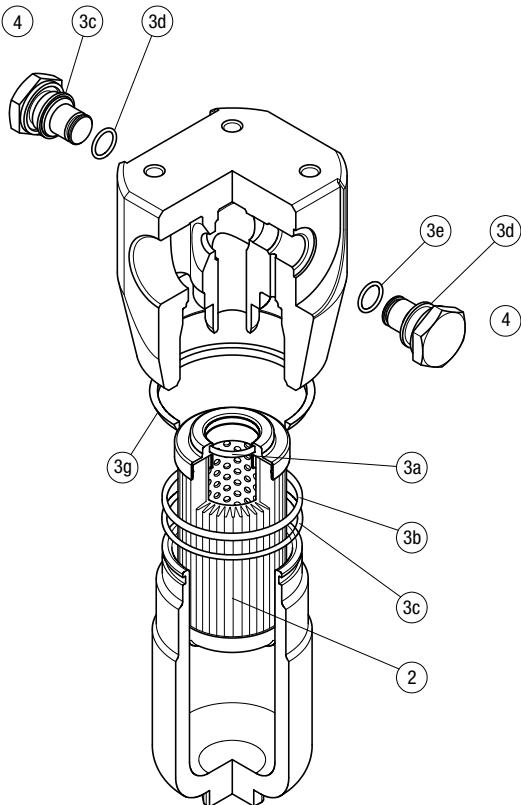
# FZP SPARE PARTS

Order number for spare parts

**FZP 039**



**FZP 136**



	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Item:	2	3 (3a ÷ 3g)		4	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
<b>FZP 039</b>	See order table	02050299	02050300	X2H	X2V
<b>FZP 136</b>		02050636	02050637		

FZP

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Stainless steel high pressure filters

## FZH series

Maximum working pressure up to 70 Mpa (700 bar) - Flow rate up to 80 l/min



# FZH GENERAL INFORMATION

## Description

## Technical data

### Stainless steel high pressure filters

#### In-line

**Maximum working pressure up to 80 Mpa (700 bar)**  
**Flow rate up to 80 l/min**

FZH is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 50 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element "N", for use with filters provided with bypass valve
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZH filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series N-R: 20 bar.

Element series "N - R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series H-S: 210 bar.

Element series "H - S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZH 010-011</b>		2.1	2.2	2.7	3.3		0.10	0.12	0.15	0.20
<b>FZH 039</b>		-	7.8	8.9	10.1		-	0.19	0.26	0.34

# GENERAL INFORMATION FZH

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

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZH 010</b>	<b>1</b>	4	6	8	9	11	4	5	6	7	9
	<b>2</b>	7	9	17	20	26	5	7	14	17	23
	<b>3</b>	11	14	25	27	32	11	14	24	27	32
	<b>4</b>	17	20	29	31	34	13	16	26	29	33
<b>FZH 011</b>	<b>1</b>	4	6	8	9	11	3	5	6	7	9
	<b>2</b>	7	9	17	21	28	5	7	14	17	24
	<b>3</b>	11	14	26	30	37	11	14	25	29	36
	<b>4</b>	17	21	32	36	40	12	16	28	32	38
<b>FZH 039</b>	<b>2</b>	19	25	43	50	59	19	23	41	45	55
	<b>3</b>	34	37	53	62	74	31	34	48	52	66
	<b>4</b>	42	46	63	72	81	38	41	55	71	78

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

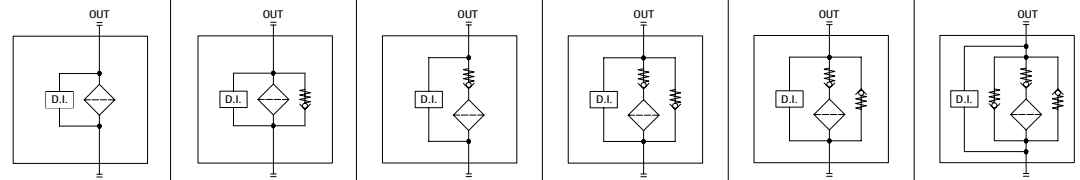
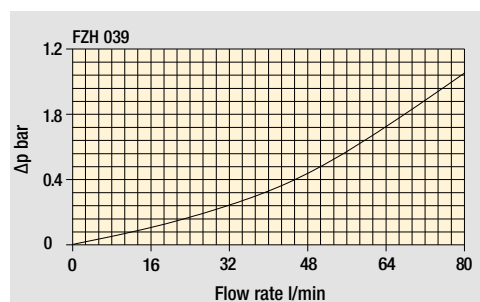
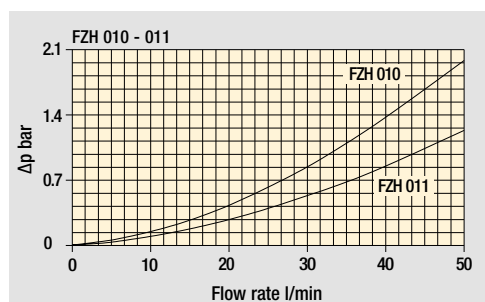
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D	Style V	Style Z
<b>FZH 010-011</b>	•	•			•	•
<b>FZH 039</b>	•	•	•	•	•	•

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

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

# FZH FZH010 - FZH011

## IN-LINE

### Designation & Ordering code

COMPLETE FILTER									
Series and size <b>FZH010</b>   <b>FZH011</b>		Configuration example: <b>FZH010</b>   <b>2</b>   <b>B</b>   <b>F</b>   <b>B</b>   <b>2</b>   <b>A03</b>   <b>U</b>   <b>P01</b>							
Length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
Valves <b>S</b> Without bypass <b>B</b> With bypass 6 bar <b>V</b> With reverse flow, without bypass <b>Z</b> With reverse flow, with bypass 6 bar									
Seals <b>A</b> NBR <b>V</b> FPM <b>F</b> MFQ									
Connections <b>A</b> G 1/4" <b>B</b> 1/4" NPT <b>C</b> SAE 5 - 1/2" - 20 UNF <b>D</b> G 3/8" <b>E</b> 3/8" NPT <b>F</b> SAE 6 - 9/16" - 18 UNF									
Connections for differential indicator <b>1</b> Without <b>2</b> With connection on the top									
Filtration rating (filter media) <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm		Element Δp		Valves				Execution	
		<b>N</b> 20 bar		<b>S</b> <b>B</b> <b>V</b> <b>Z</b>				<b>P01</b> MP Filtri standard	
		<b>H</b> 210 bar		• • • •				<b>Pxx</b> Customized	
		<b>U</b> 210 bar, stainless steel filter element		• • • •					

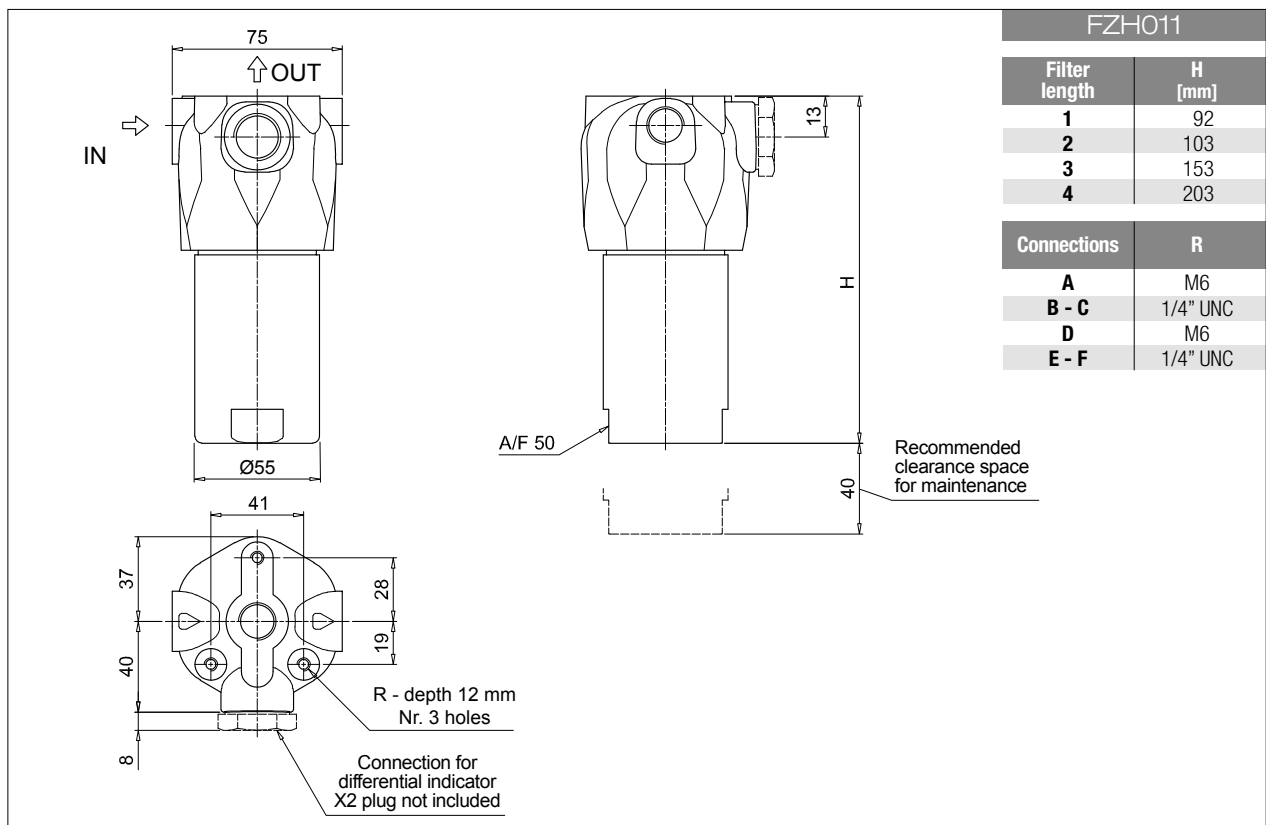
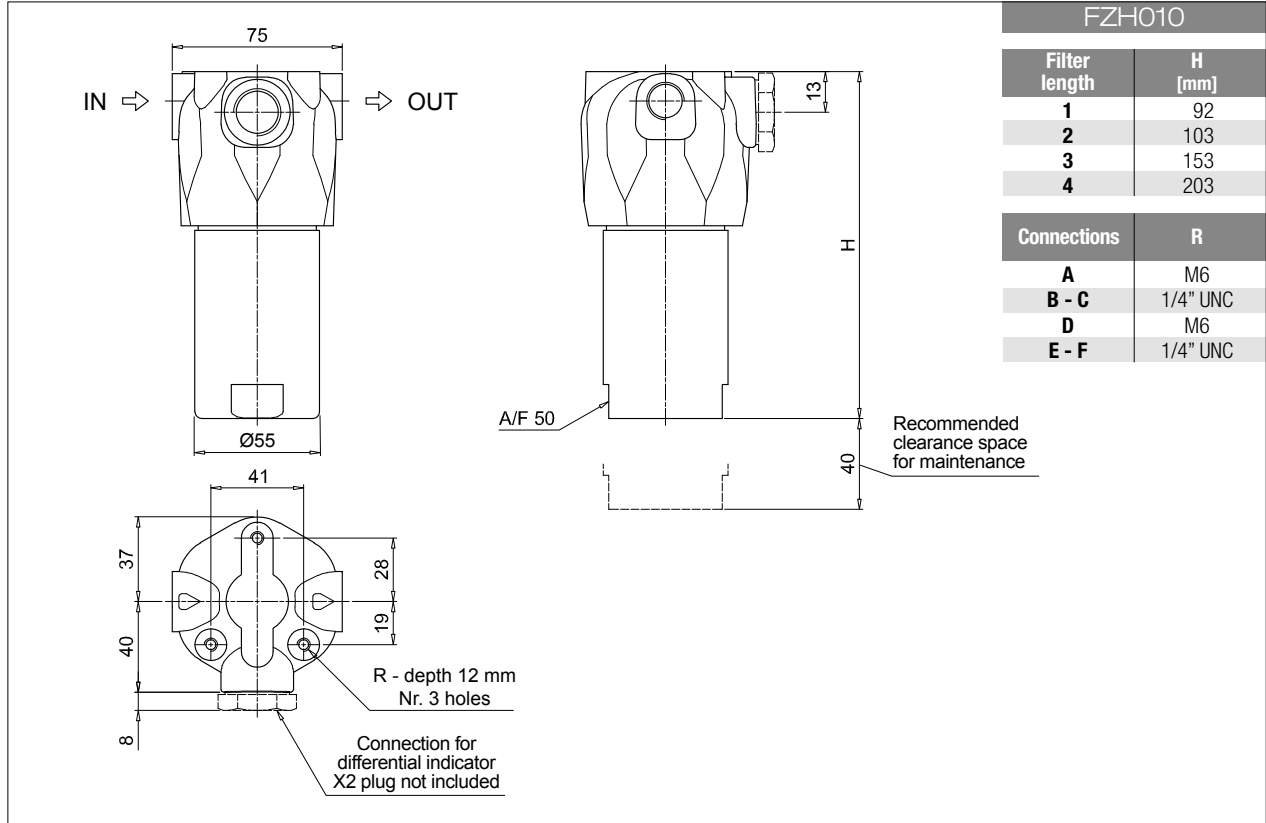
FILTER ELEMENT									
Element series and size <b>HP011</b>		Configuration example: <b>HP011</b>   <b>2</b>   <b>A03</b>   <b>F</b>   <b>U</b>   <b>P01</b>							
Element length <b>1</b>   <b>2</b>   <b>3</b>   <b>4</b>									
Filtration rating (filter media) <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm		Element Δp		Valves				Execution	
		<b>N</b> 20 bar		<b>S</b> <b>B</b> <b>V</b> <b>Z</b>				<b>P01</b> MP Filtri standard	
		<b>H</b> 210 bar		• • • •				<b>Pxx</b> Customized	
		<b>U</b> 210 bar, stainless steel filter element		• • • •					

ACCESSORIES			
<b>Differential indicators</b>		page	page
<b>DEH</b> Hazardous area electronic differential indicator	642	<b>DVX</b> Visual differential indicator	643
<b>DEX</b> Electrical differential indicator	643	<b>DVY</b> Visual differential indicator	644
<b>DLX</b> Electrical / visual differential indicator	643		
<b>Additional features</b>		page	
<b>X2</b> Plug	644		

IN-LINE

FZH010 - FZH011 FZH

Dimensions



# FZH FZH039

# IN-LINE

## Designation & Ordering code

### COMPLETE FILTER

Series and size **FZH039** Configuration example: **FZH039 2 T A A 2 A03 S P01**

#### Length

2 | 3 | 4 |

#### Valves

- S** Without bypass
- B** With bypass 6 bar
- T** With check valve, without bypass
- D** With check valve, with bypass 6 bar
- V** With reverse flow, without bypass
- Z** With reverse flow, with bypass 6 bar

#### Seals

- A** NBR
- V** FPM
- F** MFQ

#### Connections

- A** G 1/2"
- B** 1/2" NPT
- C** SAE 8 - 3/4" - 16 UNF

#### Connections for differential indicator

- 1** Without
- 2** With connection on the top

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>R</b> 20 bar		•		•		•
<b>S</b> 210 bar	•		•		•	
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

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

### FILTER ELEMENT

Element series and size **HP039** Configuration example: **HP039 2 A03 A S P01**

#### Element length

2 | 3 | 4 |

#### Filtration rating (filter media)

<b>A03</b>	Inorganic microfiber	3 µm
<b>A06</b>	Inorganic microfiber	6 µm
<b>A10</b>	Inorganic microfiber	10 µm
<b>A16</b>	Inorganic microfiber	16 µm
<b>A25</b>	Inorganic microfiber	25 µm

Element Δp	Valves					
	S	B	T	D	V	Z
<b>R</b> 20 bar		•		•		•
<b>S</b> 210 bar	•		•		•	
<b>U</b> 210 bar, stainless steel filter element	•	•	•	•	•	•

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

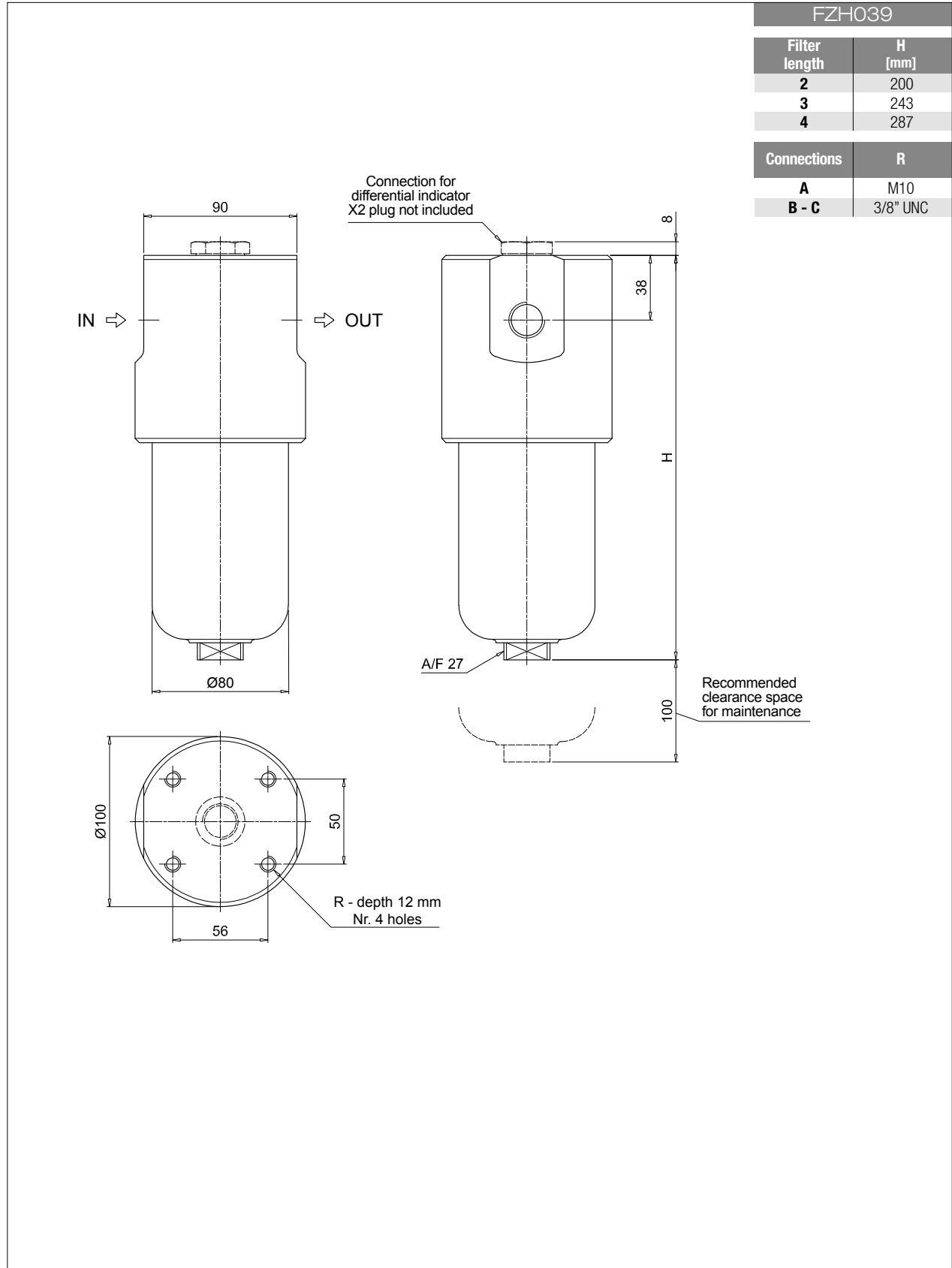
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<b>DLX</b> Electrical / visual differential indicator	643		
Additional features	page		
<b>X2</b> Plug	644		

IN-LINE

FZH039 FZH

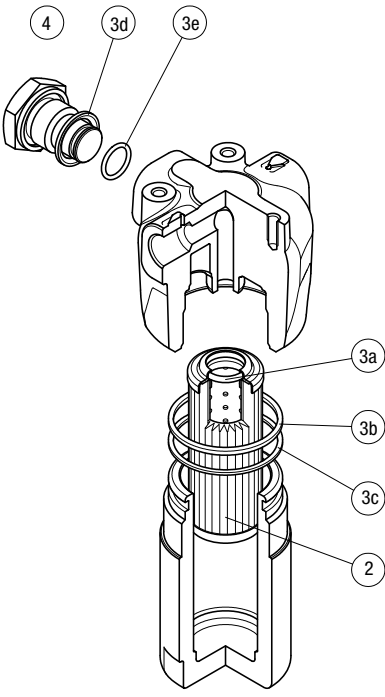
Dimensions



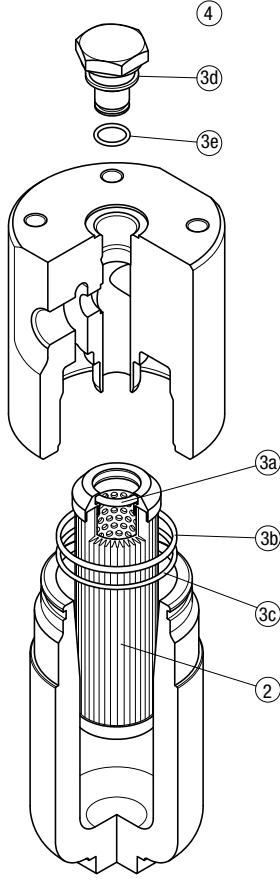
# FZH SPARE PARTS

Order number for spare parts

**FZH 010 - 011**



**FZH 039**



	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.	Q.ty: 1 pc.
Item:	<b>2</b>	<b>3</b> (3a ÷ 3e)		<b>4</b>	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
<b>FZH 010-011</b>	See order table	02050501	02050492	X2H	X2V
<b>FZH 039</b>		02050335	02050336		



FZH

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Stainless steel high pressure filters

## FZX series

Maximum working pressure up to 100 Mpa (1000 bar) - Flow rate up to 10 l/min



# FZX GENERAL INFORMATION

## Description

## Technical data

### Stainless steel high pressure filters

#### In-line

**Maximum working pressure up to 100 Mpa (1000 bar)**

**Flow rate up to 10 l/min**

FZX is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- 1/2" female threaded connections, for a maximum flow rate of 10 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- High collapse filter element "H", for use with filters not provided with bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

### Bypass valve

Opening pressure 6 bar ±10%

### Temperature

From -50 °C to +120 °C

### Note

FZX filters are provided for vertical mounting

### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series H: 210 bar.

Element series "H":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic



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

Filter series	Weights [kg]				Volumes [dm <sup>3</sup> ]					
	Length	1	2	3	4	Length	1	2	3	4
<b>FZX 011</b>	-	-	6.5	-	-	-	-	0.15	-	-

# GENERAL INFORMATION FZX

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

Filter series	Length	Filter element design - H-U Series				
		A03	A06	A10	A16	A25
<b>FZX 011</b>	<b>3</b>	1.57	1.63	1.73	1.74	1.77

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

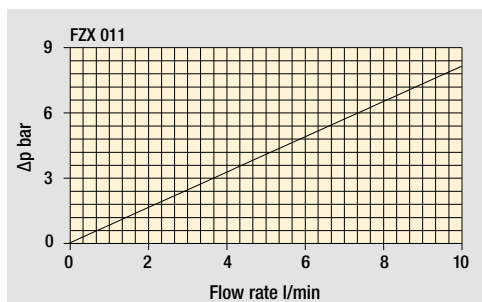
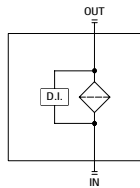
The reference fluid has a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$  (cSt) and a density of  $0.86 \text{ kg}/\text{dm}^3$ .

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

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

## Hydraulic symbols

Filter series	Style S
<b>FZX 011</b>	•



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

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

# FZX FZX011

## IN-LINE

### Designation & Ordering code

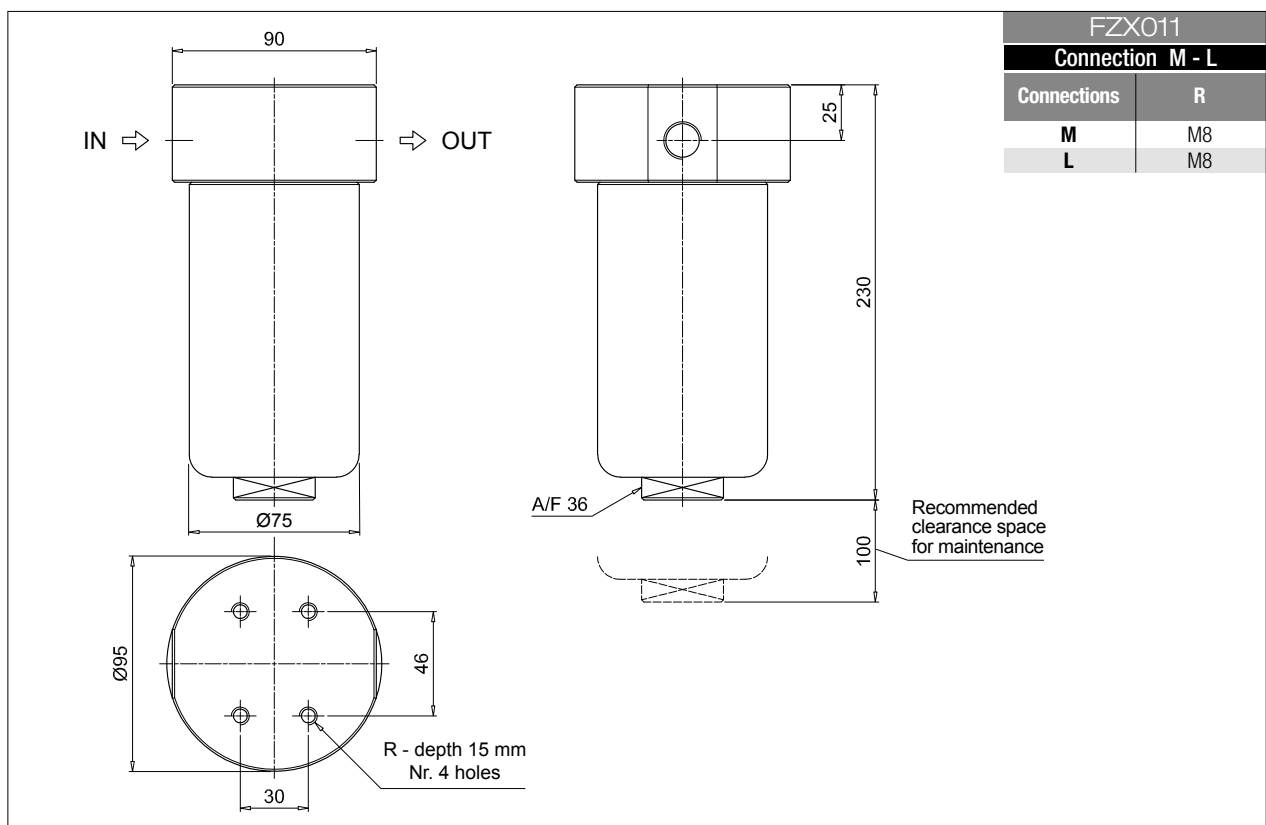
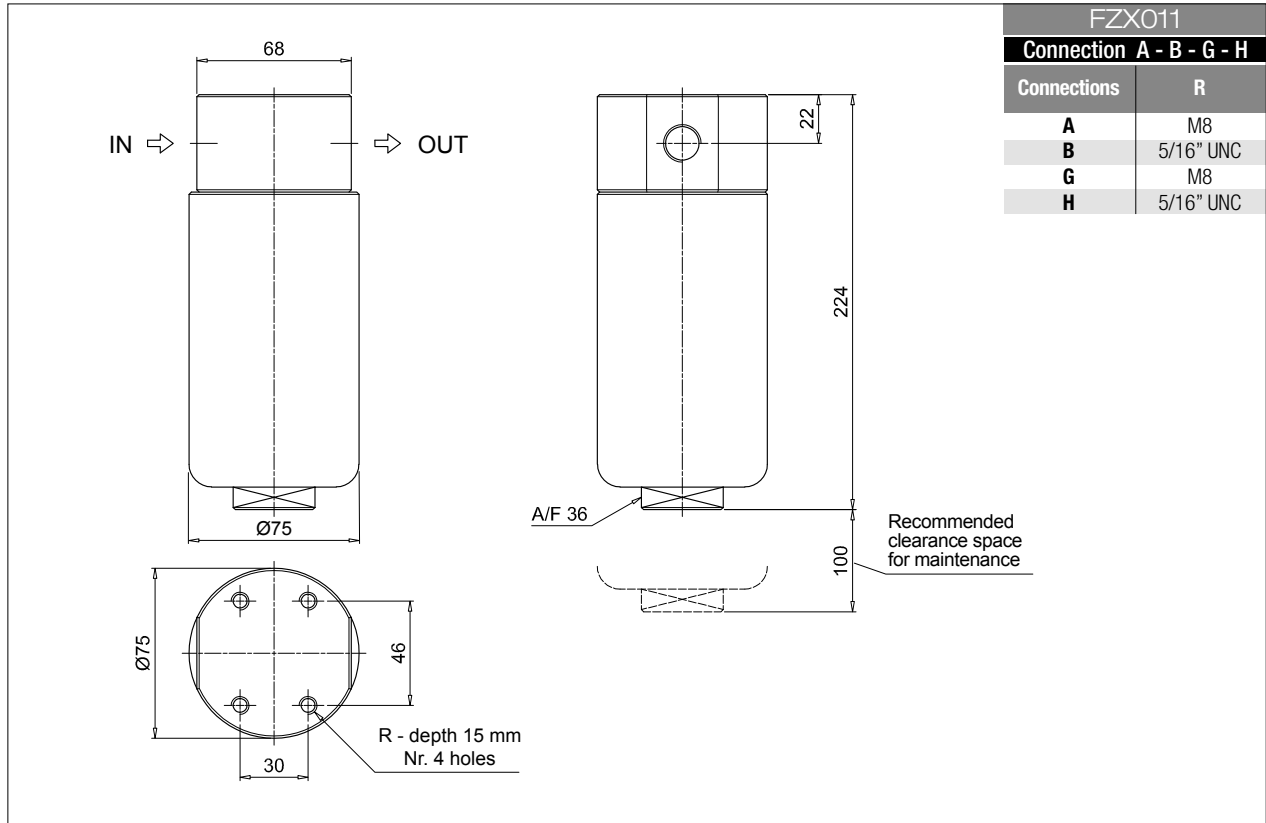
COMPLETE FILTER							
Series and size <b>FZX011</b>	Configuration example: <b>FZX011</b>   <b>3</b>   <b>S</b>   <b>V</b>   <b>B</b>   <b>1</b>   <b>A03</b>   <b>U</b>   <b>P01</b>						
Length <b>3</b>							
Valves <b>S</b> Without bypass							
Seals <b>A</b> NBR <b>V</b> FPM <b>F</b> MFQ							
Connections <b>700 bar</b> <b>A</b> G 1/4" <b>B</b> 1/4" NPT <b>G</b> G 1/2" <b>H</b> 1/2" NPT"							
<b>Autoclave 1000 bar</b> <b>M</b> 9/16" - 18 UNF <b>L</b> 3/4" - 14 NPS							
Connection for differential indicators <b>1</b> Without							
Filtration rating (filter media) <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm							
	<table border="1"> <thead> <tr> <th>Element Δp</th> <th>Execution</th> </tr> </thead> <tbody> <tr> <td><b>H</b> 210 bar</td> <td><b>P01</b> MP Filtri standard</td> </tr> <tr> <td><b>U</b> 210 bar, stainless steel filter element</td> <td><b>Pxx</b> Customized</td> </tr> </tbody> </table>	Element Δp	Execution	<b>H</b> 210 bar	<b>P01</b> MP Filtri standard	<b>U</b> 210 bar, stainless steel filter element	<b>Pxx</b> Customized
Element Δp	Execution						
<b>H</b> 210 bar	<b>P01</b> MP Filtri standard						
<b>U</b> 210 bar, stainless steel filter element	<b>Pxx</b> Customized						

FILTER ELEMENT							
Element series and size <b>HP011</b>	Configuration example: <b>HP011</b>   <b>3</b>   <b>A03</b>   <b>V</b>   <b>U</b>   <b>P01</b>						
Element length <b>3</b>							
Filtration rating (filter media) <b>A03</b> Inorganic microfiber 3 µm <b>A06</b> Inorganic microfiber 6 µm <b>A10</b> Inorganic microfiber 10 µm <b>A16</b> Inorganic microfiber 16 µm <b>A25</b> Inorganic microfiber 25 µm							
Seals <b>A</b> NBR <b>V</b> FPM <b>F</b> MFQ							
	<table border="1"> <thead> <tr> <th>Element Δp</th> <th>Execution</th> </tr> </thead> <tbody> <tr> <td><b>H</b> 210 bar</td> <td><b>P01</b> MP Filtri standard</td> </tr> <tr> <td><b>U</b> 210 bar, stainless steel filter element</td> <td><b>Pxx</b> Customized</td> </tr> </tbody> </table>	Element Δp	Execution	<b>H</b> 210 bar	<b>P01</b> MP Filtri standard	<b>U</b> 210 bar, stainless steel filter element	<b>Pxx</b> Customized
Element Δp	Execution						
<b>H</b> 210 bar	<b>P01</b> MP Filtri standard						
<b>U</b> 210 bar, stainless steel filter element	<b>Pxx</b> Customized						

IN-LINE

FZX011 FZX

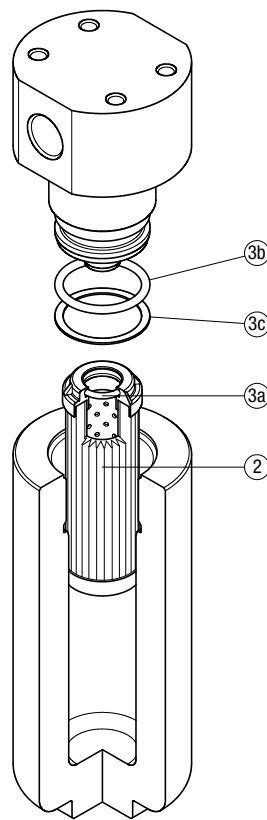
Dimensions



# FZX SPARE PARTS

Order number for spare parts

FZX 011



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number	
		NBR	FPM
<b>FZX 011</b>	See order table	02050643	02050644



FZX





Stainless steel high pressure filters

# FZM series

Maximum working pressure up to 32 Mpa (320 bar) - Flow rate up to 70 l/min



# FZM GENERAL INFORMATION

## Description

## Technical data

### Stainless steel high pressure filters

#### Manifold

**Maximum working pressure up to 32 Mpa (320 bar)**  
**Flow rate up to 70 l/min**

FZM is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the top of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø15 mm, for a maximum flow rate of 70 l/min
- ISO 4401 CETOP 3 and CETOP 5 interface, for direct mounting on the CETOP valves.
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZM filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic



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

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZM 039</b>	-	5.0	5.6	6.1		-	0.19	0.26	0.34	

# GENERAL INFORMATION FZM

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

Filter series	Length	Filter element design - R Series					Filter element design - S-U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZM 039</b>	<b>2</b>	19	25	41	47	54	19	23	39	43	51
	<b>3</b>	33	36	50	56	65	30	33	45	49	60
	<b>4</b>	41	44	58	64	70	37	39	51	63	68

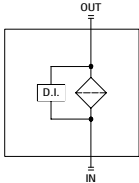
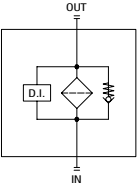
### Maximum flow rate for a complete stainless steel high pressure filter with a return drop $\Delta p = 1.5$ bar.

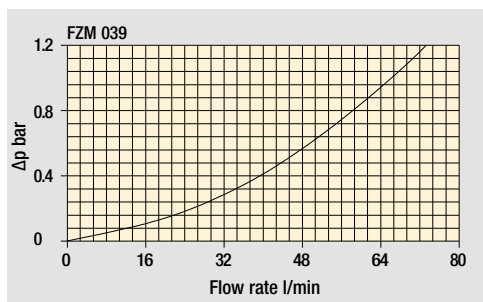
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

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

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

## Hydraulic symbols

Filter series	Style S	Style B
<b>FZM 039</b>	•	•
		



The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

## Pressure drop Filter housings $\Delta p$ pressure drop

# FZM FZM039

# MANIFOLD

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> FZM039	Configuration example: <b>FZM039</b>   <b>2</b>   <b>S</b>   <b>A</b>   <b>M</b>   <b>1</b>   <b>A10</b>   <b>H</b>   <b>P01</b>									
<b>Length</b> 2   3   4										
<b>Valves</b> S Without bypass B With bypass 6 bar										
<b>Seals</b> A NBR V FPM F MFQ										
<b>Connections</b> M Manifold										
<b>Connection for differential indicator</b> 1 Without 2 With connection										
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm										
	<b>Element Δp</b>		<b>Valves</b>		<b>Execution</b>					
	<b>R</b> 20 bar		<b>S</b>	<b>B</b>	<b>P01</b> MP Filtri standard					
	<b>S</b> 210 bar		•	•	<b>Pxx</b> Customized					
	<b>U</b> 210 bar, stainless steel filter element		•	•						

### FILTER ELEMENT

<b>Element series and size</b> HP039	Configuration example: <b>HP039</b>   <b>3</b>   <b>A10</b>   <b>A</b>   <b>S</b>   <b>P01</b>					
<b>Element length</b> 2   3   4						
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm						
	<b>Seals</b>		<b>Element Δp</b>		<b>Execution</b>	
	<b>A</b> NBR	<b>R</b> 20 bar	<b>P01</b> MP Filtri standard			
	<b>V</b> FPM	<b>S</b> 210 bar	<b>Pxx</b> Customized			
	<b>F</b> MFQ	<b>U</b> 210 bar, stainless steel filter element				

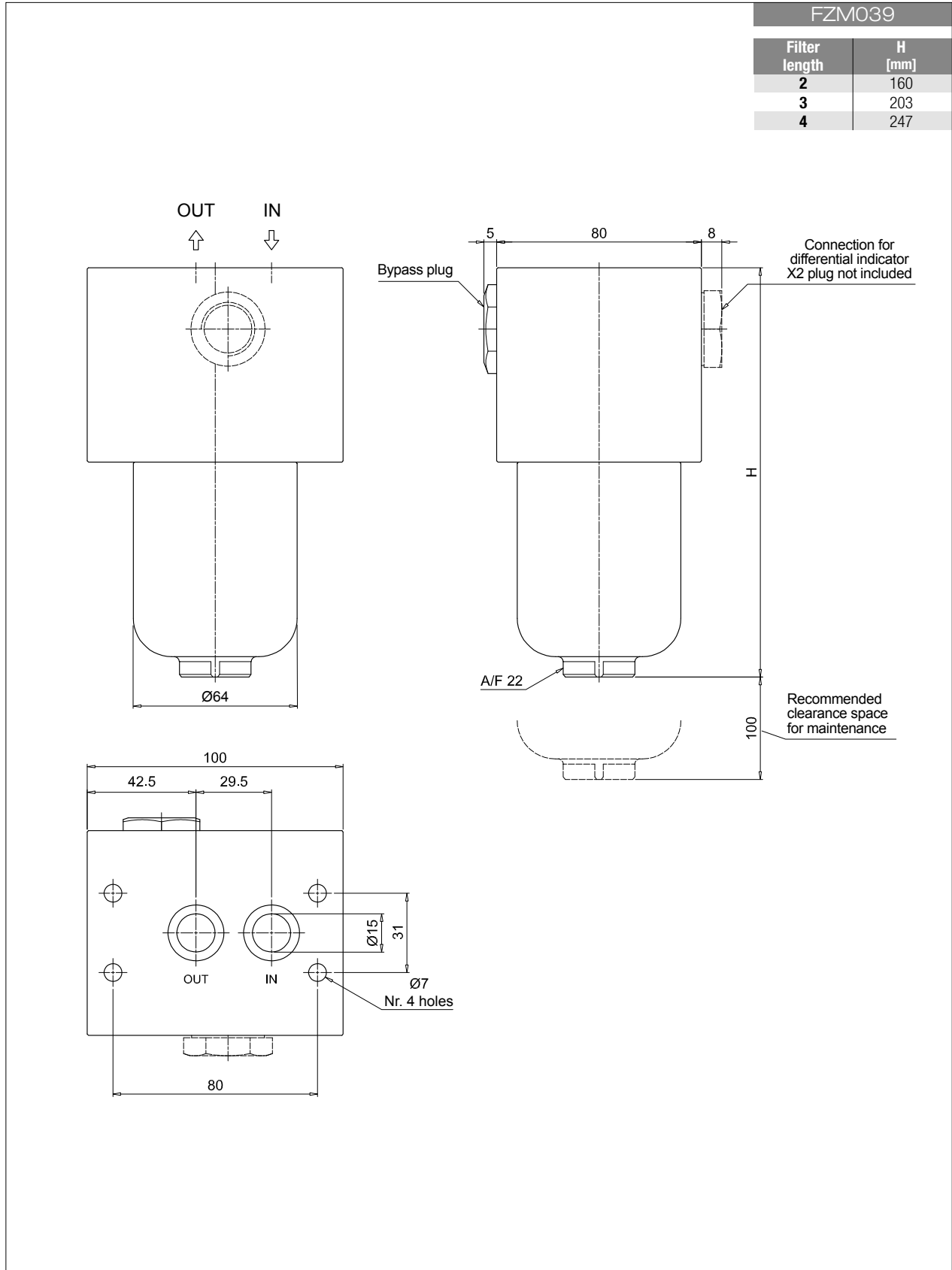
### ACCESSORIES

<b>Differential indicators</b>	page		page
<b>DEH</b> Hazardous area electronic differential indicator	642	<b>DVX</b> Visual differential indicator	643
<b>DEX</b> Electrical differential indicator	643	<b>DVY</b> Visual differential indicator	644
<b>DLX</b> Electrical / visual differential indicator	643		
<b>Additional features</b>	page		
<b>X2</b> Plug	644		

# MANIFOLD

# FZM039 FZM

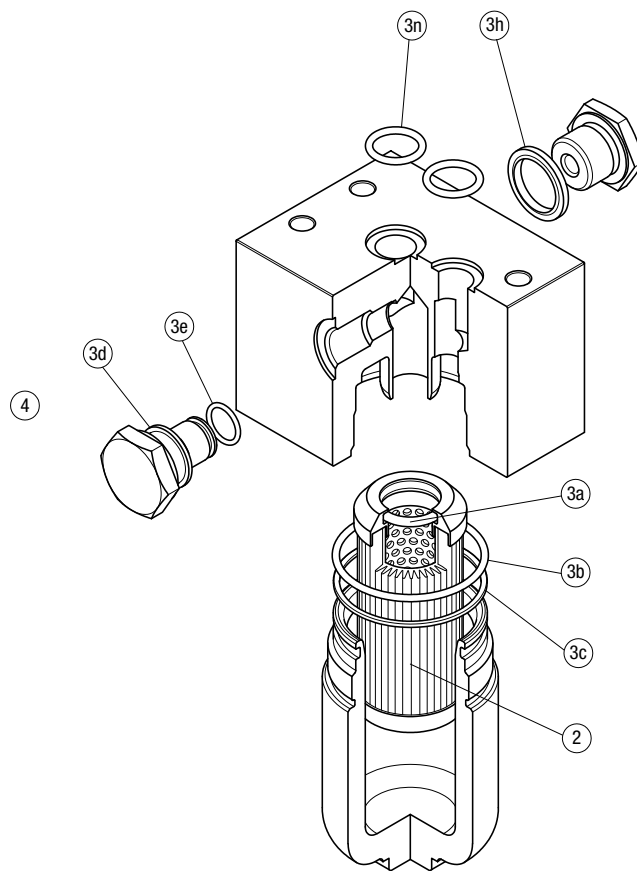
## Dimensions



# FZM SPARE PARTS

Order number for spare parts

FZM 039



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug	
FZM 039	See order table	NBR	FPM	NBR	FPM
	<b>2</b>	<b>3</b> (3a + 3n)		<b>4</b>	
		02050651	02050652	X2H	X2V



FZM





Stainless steel high pressure filters

# FZB series

Maximum working pressure up to 32 Mpa (320 bar) - Flow rate up to 70 l/min



# FZB GENERAL INFORMATION

## Description

## Technical data

### Stainless steel high pressure filters

#### Manifold

**Maximum working pressure up to 32 Mpa (320 bar)**  
**Flow rate up to 70 l/min**

FZB is a range of stainless steel high pressure filter for protection of sensitive components in high pressure hydraulic systems placed in difficult environmental conditions.

They are directly connected to the side of the manifold, through the proper flanged interface.

#### Available features:

- Manifold connections up to Ø16 mm, for a maximum flow rate of 75 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Bypass valve, to relieve excessive pressure drop across the filter media
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- Off-shore equipment
- Water filtration systems
- Systems with strong or corrosive environmental conditions
- Systems with corrosive fluids

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZB filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Synthetic

Microfibre filter elements - series S: 210 bar.

Element series "S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Synthetic



## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]				
	Length	1	2	3	4	Length	1	2	3	4
<b>FZB 039</b>	-	4.6	5.2	5.7		-	0.19	0.26	0.34	

# GENERAL INFORMATION FZB

## FILTER ASSEMBLY SIZING Flow rates [l/min]

Filter series	Length	Filter element design - R Series					Filter element design - S Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZB 039</b>	<b>2</b>	18	23	39	44	52	18	22	37	40	48	18	22	37	40	48
	<b>3</b>	31	33	47	54	65	28	31	43	46	84	28	31	43	46	84
	<b>4</b>	38	41	56	63	71	34	36	48	62	68	34	36	48	62	68

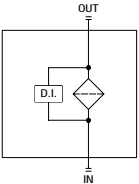
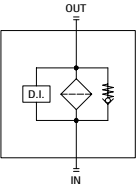
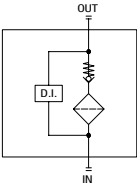
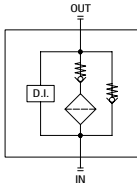
### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

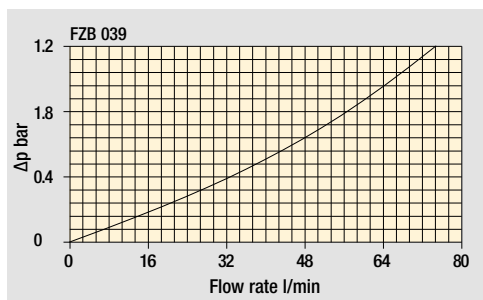
The reference fluid has a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) and a density of 0.86 kg/dm<sup>3</sup>.

For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfilter.com](http://www.mpfilter.com).

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Hydraulic symbols

Filter series	Style S	Style B	Style T	Style D
<b>FZB 039</b>	•	•	•	•
				



The curves are plotted using mineral oil with density of 0.86 kg/dm<sup>3</sup> in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

## Pressure drop Filter housings $\Delta p$ pressure drop

# FZB FZB039

# MANIFOLD

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> FZB039	Configuration example: <b>FZB039</b>   <b>2</b>   <b>T</b>   <b>A</b>   <b>F</b>   <b>2</b>   <b>A06</b>   <b>S</b>   <b>P01</b>									
<b>Length</b> 2   3   4										
<b>Valves</b> S Without bypass B With bypass 6 bar T With check valve, without bypass D With check valve, with bypass 6 bar										
<b>Seals</b> A NBR V FPM F MFQ										
<b>Connections</b> F Manifold										
<b>Connections for differential indicator</b> 1 Without 2 With connection on the top										
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm										
	<b>Element Δp</b>				<b>Valves</b>				<b>Execution</b>	
	R	S	U		S	B	T	D	P01	MP Filtri standard
	20 bar	210 bar	210 bar, stainless steel filter element		•	•	•	•	Pxx	Customized

### FILTER ELEMENT

<b>Element series and size</b> HP039	Configuration example: <b>HP039</b>   <b>2</b>   <b>A06</b>   <b>A</b>   <b>S</b>   <b>P01</b>						
<b>Element length</b> 2   3   4							
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm							
	<b>Seals</b>		<b>Element Δp</b>		<b>Execution</b>		
	A	V	F	R	S	U	P01
	NBR	FPM	MFQ	20 bar	210 bar	210 bar, stainless steel filter element	MP Filtri standard
							Customized

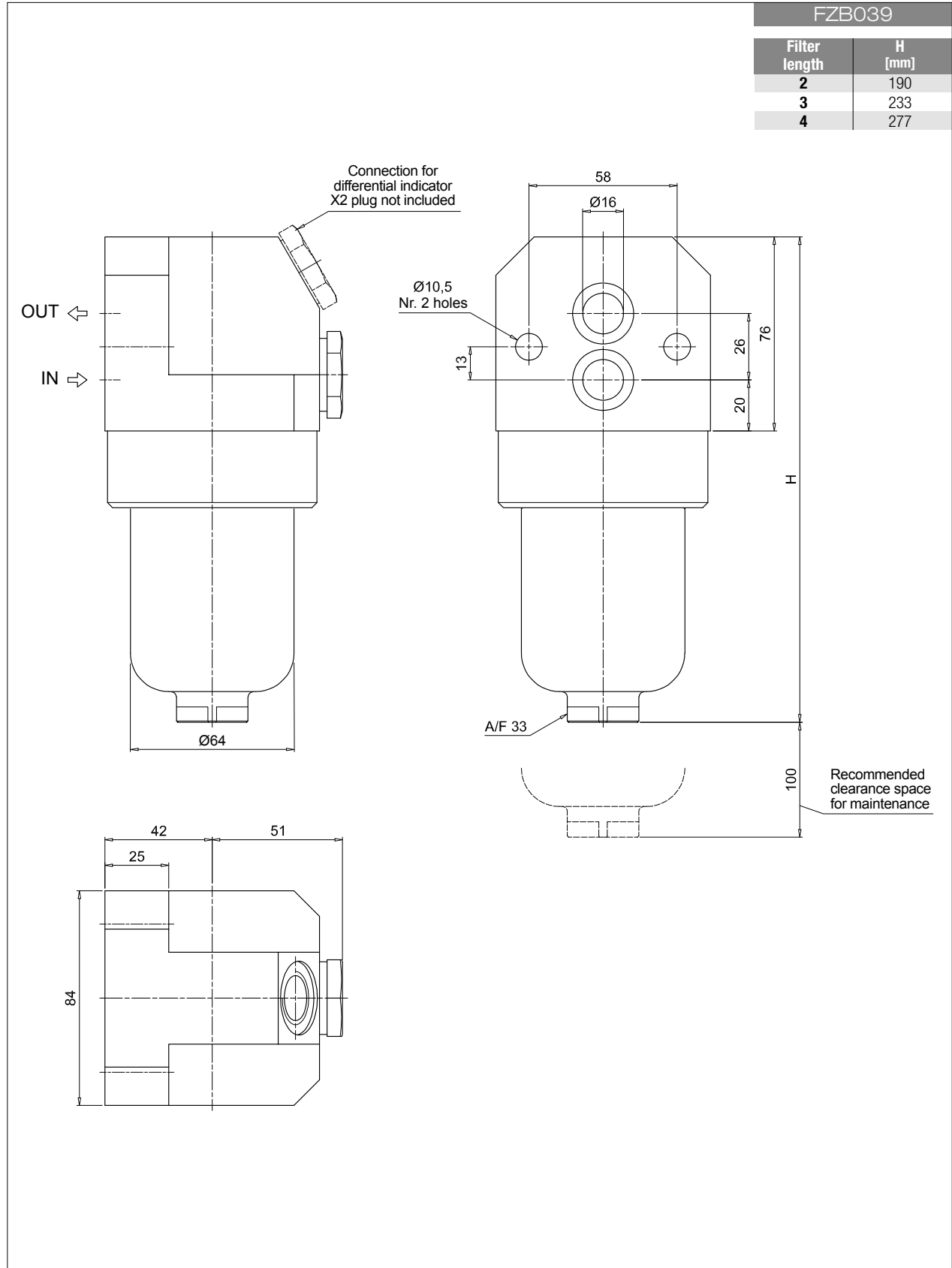
### ACCESSORIES

<b>Differential indicators</b>	page		page
DEH Hazardous area electronic differential indicator	642	DVX Visual differential indicator	643
DEX Electrical differential indicator	643	DVY Visual differential indicator	644
DLX Electrical / visual differential indicator	643		
<b>Additional features</b>	page		
X2 Plug	644		

# MANIFOLD

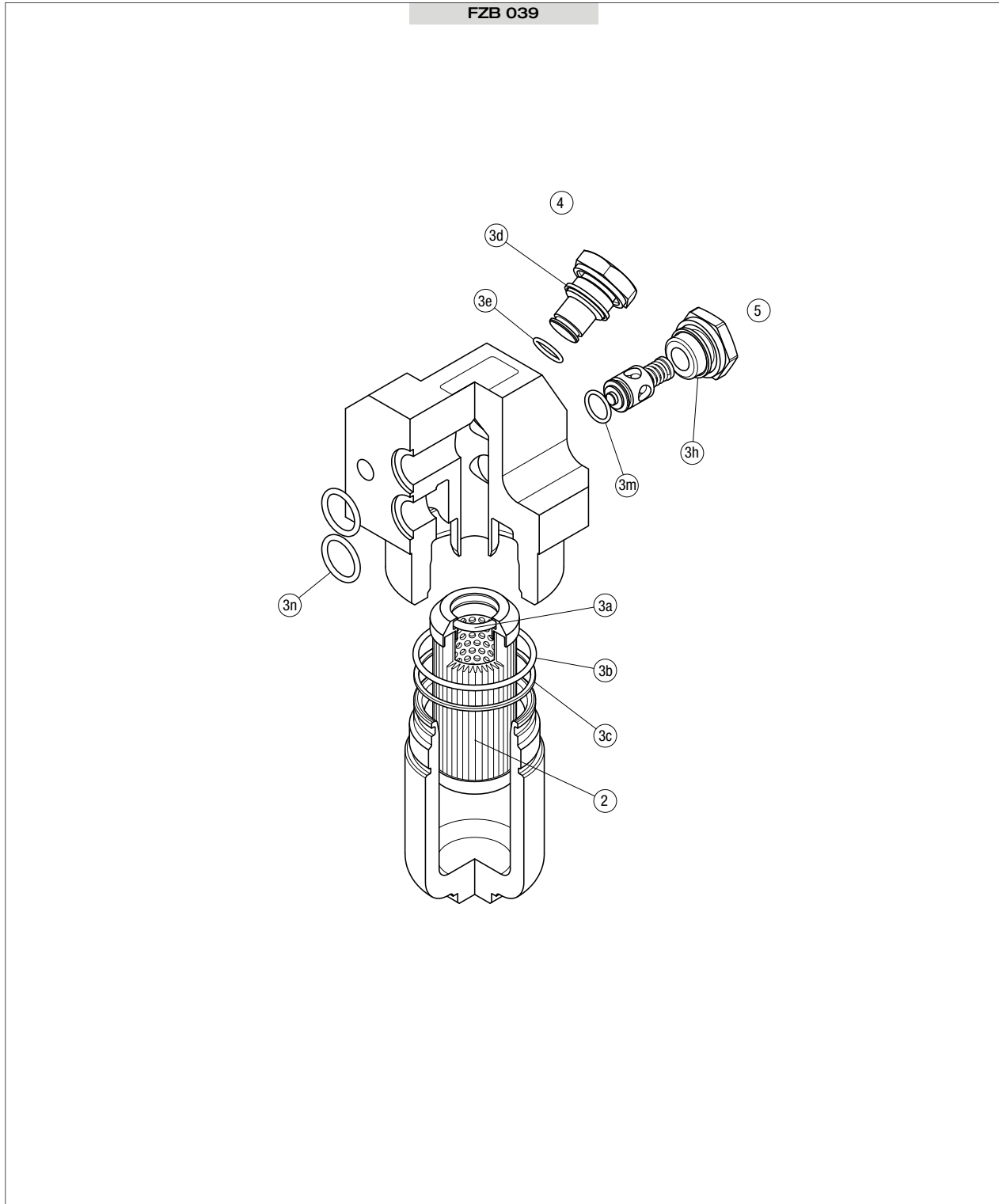
# FZB039 FZB

## Dimensions



# FZB SPARE PARTS

Order number for spare parts



Item:	Q.ty: 1 pc.	Q.ty: 1 pc.		Q.ty: 1 pc.		Q.ty: 1 pc.	
Filter series	Filter element	Seal Kit code number		Indicator connection plug		Bypass assembly / plug	
		NBR	FPM	NBR	FPM	NBR	FPM
<b>FZB 039</b>	See order table	02050647	02050648	X2H	X2V	02001286	02001295



FZB

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Stainless steel high pressure filters

# FZD series

Maximum working pressure up to 35 Mpa (350 bar) - Flow rate up to 60 l/min



# FZD GENERAL INFORMATION

## Description

## Technical data

### Stainless steel high pressure filters

#### Duplex

**Maximum working pressure up to 35 Mpa (350 bar)**  
**Flow rate up to 60 l/min**

FZD is a range of stainless steel high pressure duplex filter with integrated changeover function to allow the filter element replacement without the system shut-down. They are directly connected to the lines of the system through the hydraulic fittings.

#### Available features:

- Female threaded connections up to 3/4", for a maximum flow rate of 90 l/min
- Fine filtration rating, to get a good cleanliness level into the system
- Balancing valve, available for FZD051, to equalize the housing pressure before the switch.
- Bypass valve, to relieve excessive pressure drop across the filter media
- Vent ports, to avoid air trapped into the filter going into the system
- Drain ports, to remove the fluid from the housing prior the maintenance work
- High collapse filter element "H", for use with filters not provided with bypass valve
- Low collapse filter element with external support "R", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters provided with the bypass valve
- High collapse filter element with external support "S", for filter element protection against the back pressure caused by the check valve or the reverse flow in filters not provided with the bypass valve
- High collapse filter element "U", for use with aggressive fluids
- Visual, electrical and electronic differential clogging indicators

#### Common applications:

- System where shut-down causes high costs
- System where shut-down causes safety issues

#### Filter housing materials

- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

#### Seals

- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

#### Bypass valve

Opening pressure 6 bar ±10%

#### Temperature

From -50 °C to +120 °C

#### Note

FZD filters are provided for vertical mounting

#### Δp element type

Fluid flow through the filter element from OUT to IN

Microfibre filter elements - series R: 20 bar.

Element series "R":

- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epoxy painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Microfibre filter elements - series H-S: 210 bar.

Element series "H - S":

- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epoxy painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Stainless Steel Microfibre filter elements series U: 210 bar.

Element series "U":

- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic



## Weights [kg] and volumes [dm<sup>3</sup>]

Filter series	Weights [kg]					Volumes [dm <sup>3</sup> ]						
	Length	1	2	3	4	5	Length	1	2	3	4	4
<b>FZD 010</b>	-	-	7.9	-	-	-	-	-	0.10	-	-	-
<b>FZD 021</b>	-	-	9.6	9.8	10.3	-	-	-	0.06	0.12	0.22	-
<b>FZD 051</b>	-	-	17.4	18.0	19.0	20.3	-	-	0.31	0.41	0.53	0.83

# GENERAL INFORMATION FZD

## FILTER ASSEMBLY SIZING Flow rates [l/min]

Filter series	Length	Filter element design - H Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZD 010</b>	<b>2</b>	4	5	7	8	11	4	5	7	8	11
	<b>3</b>	5	6	11	12	16	5	6	11	12	16
<b>FZD 021</b>	<b>3</b>	9	11	16	18	20	9	11	16	18	20
	<b>4</b>	10	12	17	19	21	10	12	17	19	21

Filter series	Length	Filter element design - R Series					Filter element design - S Series					Filter element design - U Series				
		A03	A06	A10	A16	A25	A03	A06	A10	A16	A25	A03	A06	A10	A16	A25
<b>FZD 051</b>	<b>2</b>	39	41	51	54	59	35	37	48	51	58	35	37	48	51	58
	<b>3</b>	45	46	54	56	61	41	43	52	54	60	41	43	52	54	60
	<b>4</b>	50	52	58	58	62	47	49	56	56	61	47	49	56	56	61
	<b>5</b>	56	57	61	62	63	53	53	57	59	63	53	53	57	59	63
	<b>6</b>	61	62	66	67	71	59	59	63	65	69	59	59	63	65	69

### Maximum flow rate for a complete stainless steel high pressure filter with a pressure drop $\Delta p = 1.5$ bar.

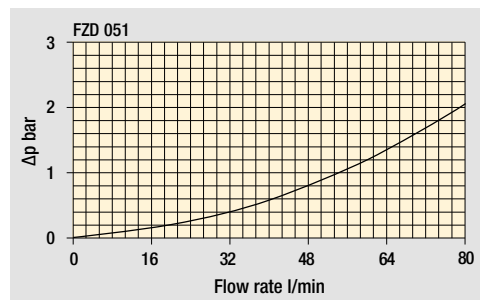
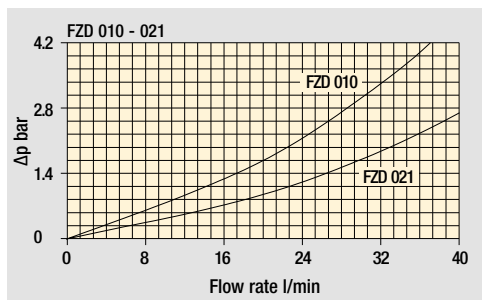
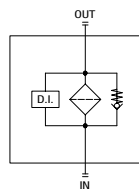
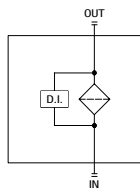
The reference fluid has a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$  (cSt) and a density of  $0.86 \text{ kg}/\text{dm}^3$ .

For different pressure drop or fluid viscosity we recommend to use our selection software available on [www.mpfiltri.com](http://www.mpfiltri.com).

You can also calculate the right size using the formulas present on the FILTER SIZING paragraph at the beginning of the full catalogue or at the beginning of the filter family brochure. Please, contact our Sales Department for further additional information.

## Hydraulic symbols

Filter series	Style S	Style B
<b>FZD 010</b>	•	
<b>FZD 021</b>	•	
<b>FZD 051</b>	•	•



## Pressure drop Filter housings $\Delta p$ pressure drop

The curves are plotted using mineral oil with density of  $0.86 \text{ kg}/\text{dm}^3$  in compliance with ISO 3968.  $\Delta p$  varies proportionally with density.

# FZD FZD010 - FZD021

# DUPLEX

## Designation & Ordering code

COMPLETE FILTER			
Series and size		Configuration example: <b>FZD021</b>   <b>4</b>   <b>S</b>   <b>A</b>   <b>G1</b>   <b>A06</b>   <b>H</b>   <b>P01</b>	
<b>FZD010</b>   <b>FZD021</b>			
Length	FZD010	FZD021	
<b>2</b>	•	•	
<b>3</b>		•	
<b>4</b>		•	
Valves			
<b>S</b> Without bypass			
Seals			
<b>A</b> NBR			
<b>V</b> FPM			
Connections	FZD010	FZD021	
<b>G1</b>	G 3/8"	G 1/2"	
<b>G2</b>	3/8" NPT	1/2" NPT	
<b>G3</b>	-	SAE 8 - 3/4" - 16 UNF	
Filtration rating (filter media)			
<b>A03</b>	Inorganic microfiber	3 µm	
<b>A06</b>	Inorganic microfiber	6 µm	
<b>A10</b>	Inorganic microfiber	10 µm	
<b>A16</b>	Inorganic microfiber	16 µm	
<b>A25</b>	Inorganic microfiber	25 µm	
Element Δp		Execution	
<b>H</b> 210 bar		<b>P01</b> MP Filtri standard	
<b>U</b> 210 bar, stainless steel filter element		<b>Pxx</b> Customized	

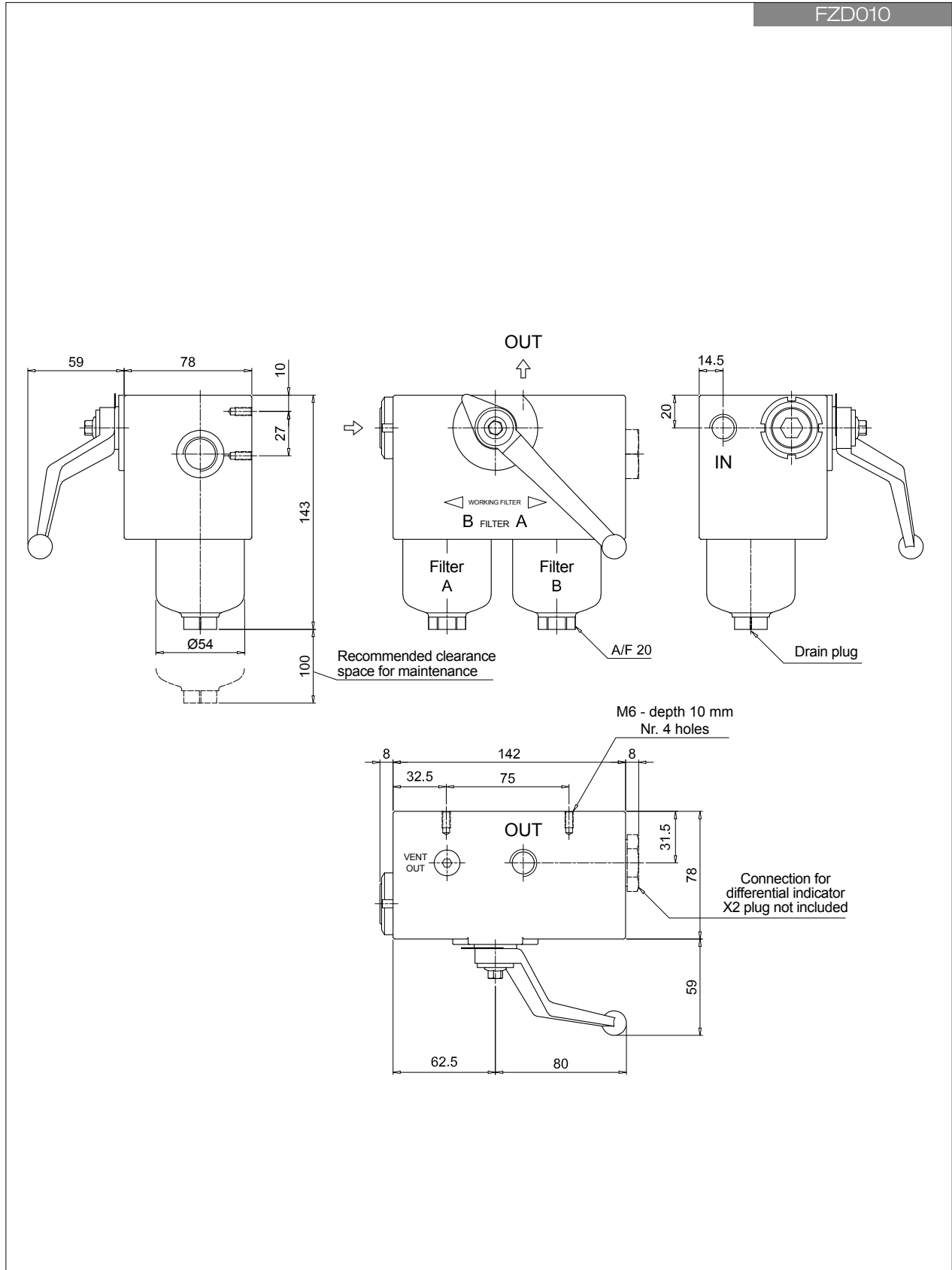
FILTER ELEMENT			
Element series and size		Configuration example: <b>HP011</b>   <b>4</b>   <b>A06</b>   <b>A</b>   <b>H</b>   <b>P01</b>	
<b>HP010</b>   <b>HP011</b>			
Element length	HP010	HP011	
<b>2</b>	•	•	
<b>3</b>		•	
<b>4</b>		•	
Filtration rating (filter media)			
<b>A03</b>	Inorganic microfiber	3 µm	
<b>A06</b>	Inorganic microfiber	6 µm	
<b>A10</b>	Inorganic microfiber	10 µm	
<b>A16</b>	Inorganic microfiber	16 µm	
<b>A25</b>	Inorganic microfiber	25 µm	
Seals		Element Δp	
<b>A</b> NBR		<b>H</b> 210 bar	
<b>V</b> FPM		<b>U</b> 210 bar, stainless steel filter element	
		Execution	
		<b>P01</b> MP Filtri standard	
		<b>Pxx</b> Customized	

ACCESSORIES			
Differential indicators		page	page
<b>DEH</b>	Hazardous area electronic differential indicator	642	<b>DVX</b> Visual differential indicator 643
<b>DEX</b>	Electrical differential indicator	643	<b>DVY</b> Visual differential indicator 644
<b>DLX</b>	Electrical / visual differential indicator	643	
Additional features		page	
<b>X2</b>	Plug	644	

DUPLEX

FZD010 - FZD021 FZD

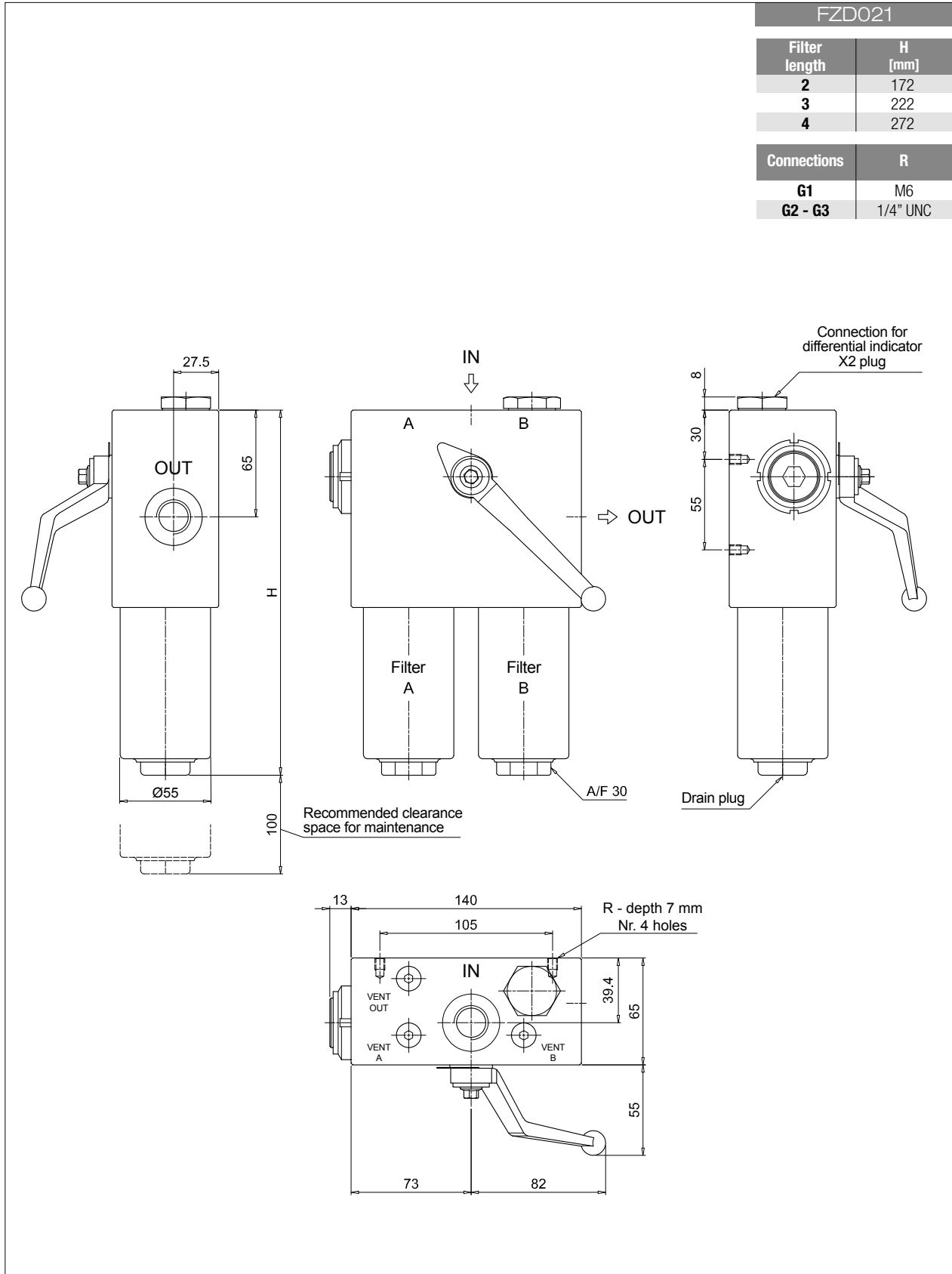
Dimensions



# FZD FZD010 - FZD021

## DUPLEX

### Dimensions





FZD

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# FZD FZD051

# DUPLEX

## Designation & Ordering code

### COMPLETE FILTER

<b>Series and size</b> FZD051	Configuration example: <b>FZD051</b>   <b>3</b>   <b>B</b>   <b>A</b>   <b>G3</b>   <b>A03</b>   <b>U</b>   <b>P01</b>							
<b>Length</b> 2   3   4   5								
<b>Valves</b> S Without bypass B With bypass 6 bar								
<b>Seals</b> A NBR V FPM								
<b>Connections</b> G1 G 3/4" G2 3/4" NPT G3 G 1/2" G4 1/2" NPT G5 SAE 8 - 3/4" - 16 UNF G6 SAE 12 - 1 1/16" - 12 UN								
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm								
	<b>Element Δp</b>		<b>Valves</b>		<b>Execution</b>			
	<b>R</b> 20 bar		<b>S</b>	<b>B</b>	<b>P01</b> MP Filtri standard			
	<b>S</b> 210 bar		•		<b>Pxx</b> Customized			
	<b>U</b> 210 bar, stainless steel filter element		•	•				

### FILTER ELEMENT

<b>Element series and size</b> HP050	Configuration example: <b>HP050</b>   <b>3</b>   <b>A03</b>   <b>A</b>   <b>U</b>   <b>P01</b>					
<b>Element length</b> 2   3   4   5						
<b>Filtration rating (filter media)</b> A03 Inorganic microfiber 3 µm A06 Inorganic microfiber 6 µm A10 Inorganic microfiber 10 µm A16 Inorganic microfiber 16 µm A25 Inorganic microfiber 25 µm						
	<b>Seals</b>		<b>Element Δp</b>		<b>Execution</b>	
	<b>A</b> NBR	<b>R</b> 20 bar			<b>P01</b> MP Filtri standard	
	<b>V</b> FPM	<b>S</b> 210 bar			<b>Pxx</b> Customized	
		<b>U</b> 210 bar, stainless steel filter element				

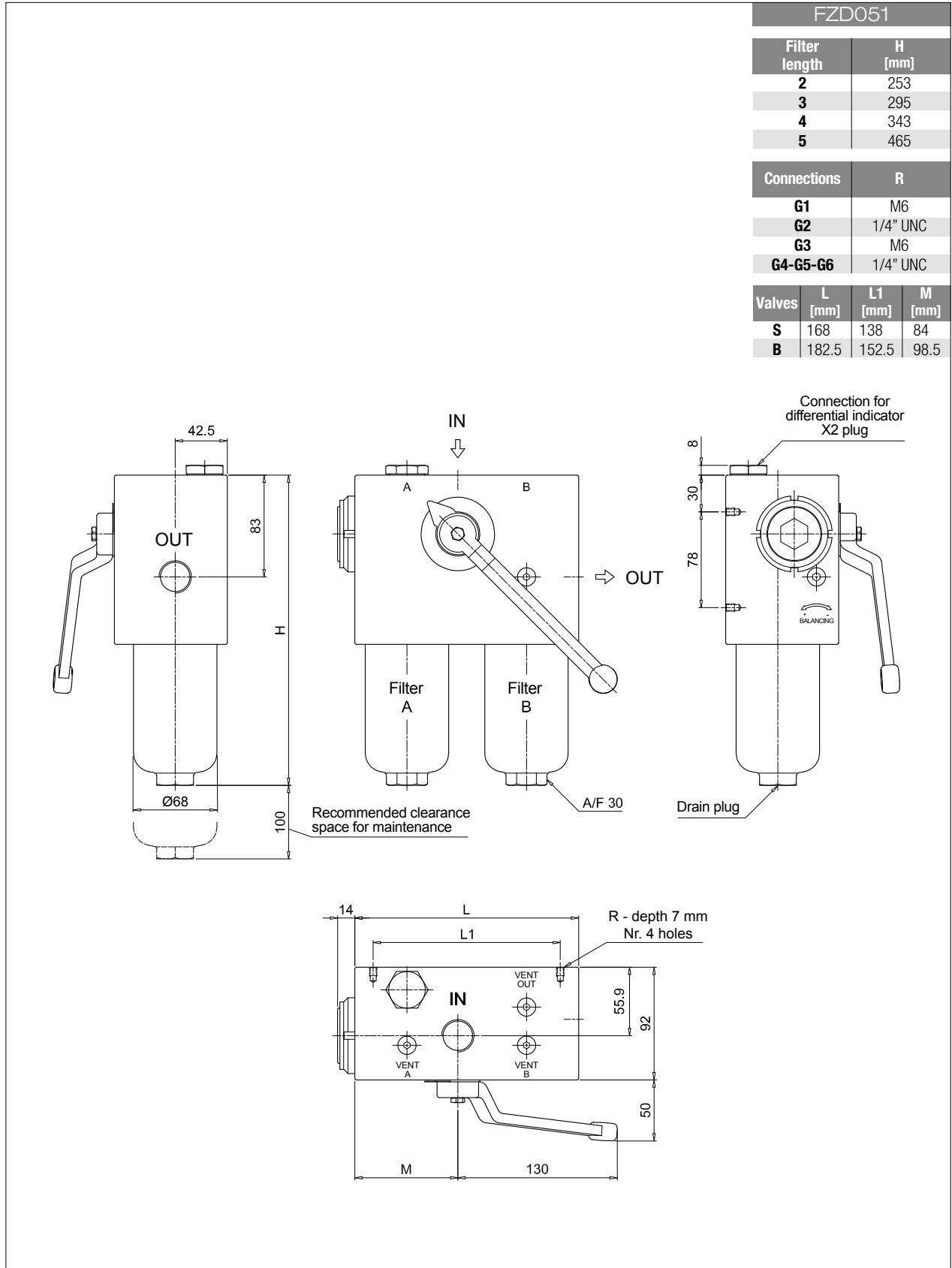
### ACCESSORIES

<b>Differential indicators</b>	page		page
<b>DEH</b> Hazardous area electronic differential indicator	642	<b>DVX</b> Visual differential indicator	643
<b>DEX</b> Electrical differential indicator	643	<b>DVY</b> Visual differential indicator	644
<b>DLX</b> Electrical / visual differential indicator	643		
<b>Additional features</b>	page		
<b>X2</b> Plug	644		

# DUPLEX

# FZD051 FZD

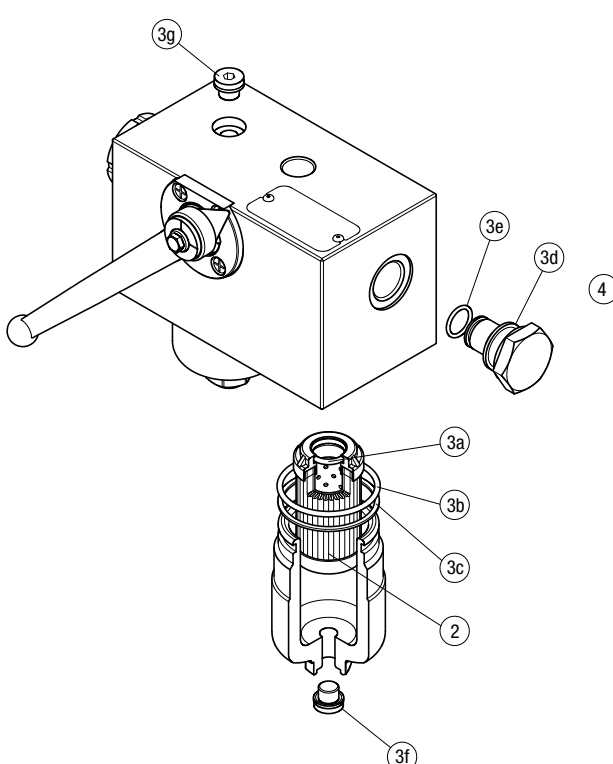
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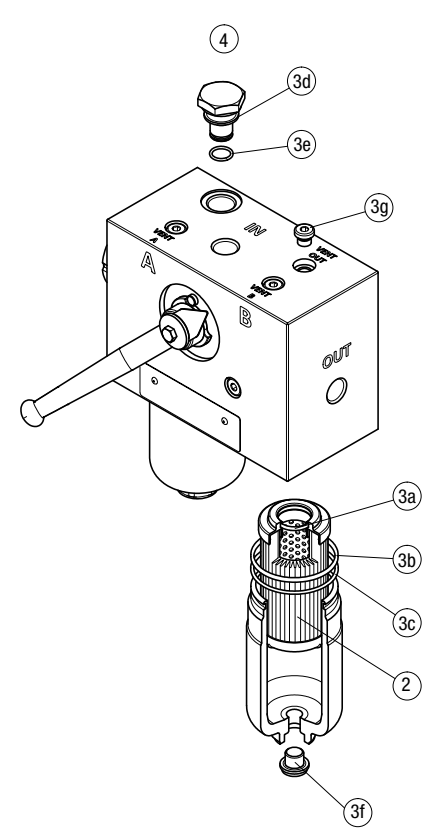
# FZD SPARE PARTS

Order number for spare parts

**FZD 010**



**FZD 021 - FZD 051**



	Q.ty: 1 pc. <b>2</b>	Q.ty: 1 pc. <b>3</b> (3a ÷ 3g)	Q.ty: 1 pc. <b>4</b>		
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection NBR	FPM
<b>FZD 010</b>	See order table	02050613	02050655		
<b>FZD 021</b>	See order table	02050796	02050797	X2H	X2V
<b>FZD 051</b>	See order table	02050800	02050801		

# Clogging indicators

## Differential indicators

### Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

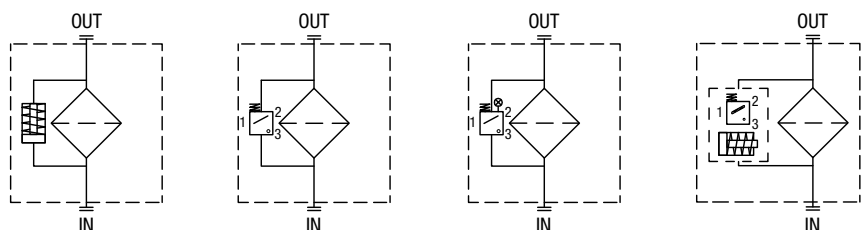
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

These type of devices can be provided with a visual, electrical or both signals.

### Suitable indicator types

#### DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficiency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure). Standard items are produced with special connection G 1/2" size. Also available in Stainless Steel models.

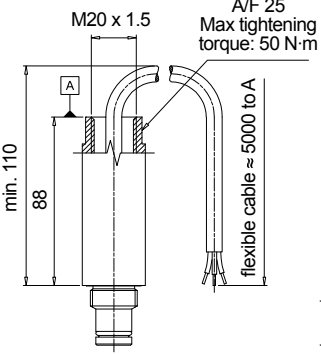

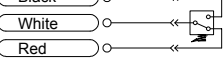
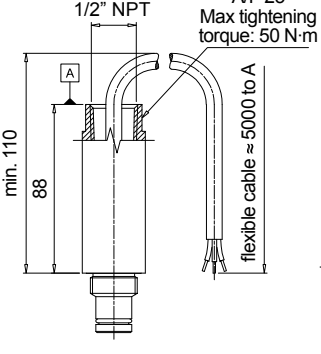

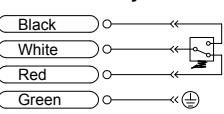
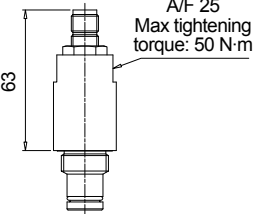

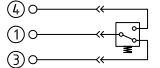


### Quick reference guide

	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Hazardous area electronic indicator <span style="background-color: yellow; border: 1px solid black; padding: 2px;">NEW</span>
With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01

# DIFFERENTIAL INDICATORS

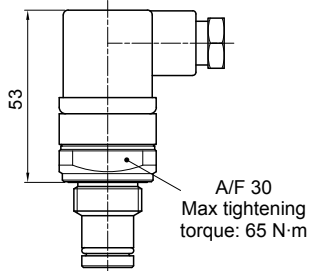
## Dimensions

<p><b>DEH*48</b></p> <p><b>Hazardous Area Electronic Differential Indicator</b></p> <table border="1"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>5.0 bar <math>\pm 10\%</math></td> <td>DE H 50 x A 48 P01</td> </tr> <tr> <td>7.0 bar <math>\pm 10\%</math></td> <td>DE H 70 x A 48 P01</td> </tr> </tbody> </table>  <p>Hydraulic symbol: </p> <p>Electrical symbol: </p> <p>Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO - Certification included as standard</p>	Settings	Ordering code	5.0 bar $\pm 10\%$	DE H 50 x A 48 P01	7.0 bar $\pm 10\%$	DE H 70 x A 48 P01	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: AISI 316L</li> <li>- Contacts: Rhodium</li> <li>- Seal: FPM - MFQ</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -60 °C to +125 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 EX ia IIC T4/T6: Intrinsically safe</li> <li>- Protection class: T4 (135 °C) and T6 (85 °C)</li> <li>- Degree of protection: IP 66/67/68 according to EN 60529</li> <li>- Connection type: Three-core cable - fitting M20x1.5</li> <li>- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac</li> <li>- Electrical Ratings: Ui = 30 Vdc Ii = 250 mA Pi = 1.3 W</li> </ul>
Settings	Ordering code						
5.0 bar $\pm 10\%$	DE H 50 x A 48 P01						
7.0 bar $\pm 10\%$	DE H 70 x A 48 P01						
<p><b>DEH*49</b></p> <p><b>Hazardous Area Electronic Differential Indicator</b></p> <table border="1"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>5.0 bar <math>\pm 10\%</math></td> <td>DE H 50 x A 49 P01</td> </tr> <tr> <td>7.0 bar <math>\pm 10\%</math></td> <td>DE H 70 x A 49 P01</td> </tr> </tbody> </table>  <p>Hydraulic symbol: </p> <p>Electrical symbol: </p> <p>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</p>	Settings	Ordering code	5.0 bar $\pm 10\%$	DE H 50 x A 49 P01	7.0 bar $\pm 10\%$	DE H 70 x A 49 P01	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: AISI 316L</li> <li>- Contacts: Rhodium</li> <li>- Seal: FPM - MFQ</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -60 °C to +120 °C : ATEX, IECEx, EAC TR CU, INMETRO From -60 °C to +105 °C : UL/CSA</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 Ex d IIC T4/T6: Flameproof</li> <li>- Protection class: T4 (135 °C) and T6 (85 °C)</li> <li>- Degree of protection: IP 66/67/68 according to EN 60529</li> <li>- Connection type: Four core-cable - fitting 1/2" NPT</li> <li>- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vac</li> <li>- Max voltage: 150 Vac/dc</li> <li>- Power: 20 W</li> </ul>
Settings	Ordering code						
5.0 bar $\pm 10\%$	DE H 50 x A 49 P01						
7.0 bar $\pm 10\%$	DE H 70 x A 49 P01						
<p><b>DEH*70</b></p> <p><b>Hazardous Area Electronic Differential Indicator</b></p> <table border="1"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>5.0 bar <math>\pm 10\%</math></td> <td>DE H 50 x A 70 P01</td> </tr> <tr> <td>7.0 bar <math>\pm 10\%</math></td> <td>DE H 70 x A 70 P01</td> </tr> </tbody> </table>  <p>Hydraulic symbol: </p> <p>Electrical symbol: </p> <p>Certification / Approvals: ATEX, IECEx, EAC TR CU, INMETRO - Certification included as standard</p>	Settings	Ordering code	5.0 bar $\pm 10\%$	DE H 50 x A 70 P01	7.0 bar $\pm 10\%$	DE H 70 x A 70 P01	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: AISI 316L with internal engineered resin switch</li> <li>- Contacts: Rhodium</li> <li>- Seal: FPM - MFQ</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -60 °C to +80 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943 EX ia IIC T6: Intrinsically safe</li> <li>- Protection class: T6 (85 °C)</li> <li>- Degree of protection: IP 66/67 according to EN 60529</li> <li>- Connection type: IEC 61076-2-101 D (M12)</li> <li>- Contact type: SPCO/SPDT (Hermetically sealed - Volt-free contacts)</li> </ul> <p><b>Electrical data</b></p> <ul style="list-style-type: none"> <li>- Resistive Load: 830 mA / 24 Vdc - 180 mA / 110 Vdc</li> <li>- Electrical Ratings: Ui = 30 Vdc Ii = 250 mA Pi = 1.3 W</li> </ul>
Settings	Ordering code						
5.0 bar $\pm 10\%$	DE H 50 x A 70 P01						
7.0 bar $\pm 10\%$	DE H 70 x A 70 P01						

# DIFFERENTIAL INDICATORS

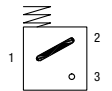
## Dimensions

DEX*50	
<b>Electrical Differential Indicator</b>	
Settings	Ordering code
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

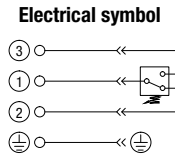


A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: AISI 316L
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

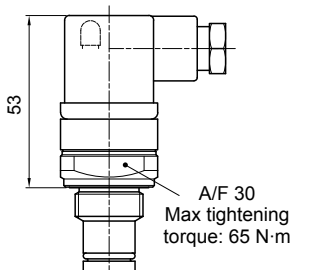
**Technical data**

- 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  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529  
IP69K according to ISO 20653

**Electrical data**

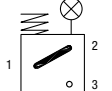
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

DLX*51 - DLX*52	
<b>Electrical/Visual Differential Indicator</b>	
Settings	Ordering code
5.0 bar $\pm 10\%$	DL X 50 x A x x P01
7.0 bar $\pm 10\%$	DL X 70 x A x x P01
9.5 bar $\pm 10\%$	DL X 95 x A x x P01

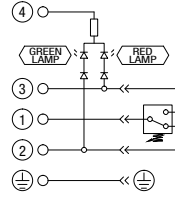


A/F 30  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Electrical symbol**



**Materials**

- Body: AISI 316L
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

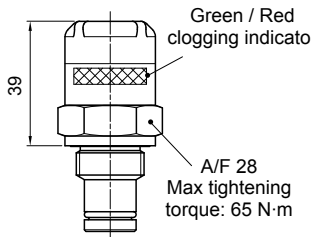
**Technical data**

- 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  
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
- Type: 51                      52
- Lamps: 24 Vdc              110 Vdc
- Resistive load: 1 A / 24 Vdc      1 A / 110 Vdc

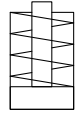
DVX	
<b>Visual Differential Indicator</b>	
Settings	Ordering code
5.0 bar $\pm 10\%$	DV X 50 x P01
7.0 bar $\pm 10\%$	DV X 70 x P01
9.5 bar $\pm 10\%$	DV X 95 x P01



Green / Red  
clogging indicator

A/F 28  
Max tightening torque: 65 N·m

**Hydraulic symbol**



**Materials**

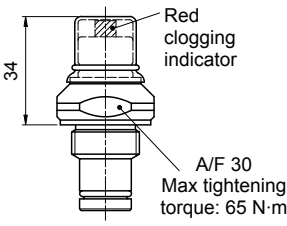
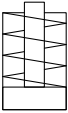
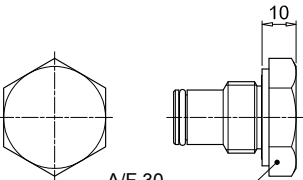
- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

**Technical data**

- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids  
HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

## DIFFERENTIAL INDICATORS

### Dimensions

<p style="text-align: center;"><b>DVY</b></p> <p style="text-align: center;"><b>Visual Differential Indicator</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Settings</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>5.0 bar ±10%</td> <td>DVY 50 x P01</td> </tr> <tr> <td>7.0 bar ±10%</td> <td>DVY 70 x P01</td> </tr> <tr> <td>9.5 bar ±10%</td> <td>DVY 95 x P01</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 30 Max tightening torque: 65 N·m</p>	Settings	Ordering code	5.0 bar ±10%	DVY 50 x P01	7.0 bar ±10%	DVY 70 x P01	9.5 bar ±10%	DVY 95 x P01	<p style="text-align: center;"><b>Hydraulic symbol</b></p> 	<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: AISI 316L</li> <li>- Internal parts: AISI 316L - Nylon</li> <li>- Contacts: Silver</li> <li>- Seal: HNBR - MFQ</li> </ul> <p><b>Technical data</b></p> <ul style="list-style-type: none"> <li>- Reset: Manual reset</li> <li>- Max working pressure: 420 bar</li> <li>- Proof pressure: 630 bar</li> <li>- Burst pressure: 1260 bar</li> <li>- Working temperature: From -25 °C to +110 °C</li> <li>- Compatibility with fluids: Mineral oils, Synthetic fluids HFA, HFB, HFC according to ISO 2943</li> <li>- Degree protection: IP65 according to EN 60529</li> </ul>
Settings	Ordering code									
5.0 bar ±10%	DVY 50 x P01									
7.0 bar ±10%	DVY 70 x P01									
9.5 bar ±10%	DVY 95 x P01									
<p style="text-align: center;"><b>X2</b></p> <p style="text-align: center;"><b>Indicator plug</b></p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Seal</th> <th>Ordering code</th> </tr> </thead> <tbody> <tr> <td>HNBR</td> <td>X2 H</td> </tr> <tr> <td>MFQ</td> <td>X2 F</td> </tr> </tbody> </table>  <p style="text-align: center;">A/F 30 Max tightening torque: 50 N·m</p>	Seal	Ordering code	HNBR	X2 H	MFQ	X2 F		<p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- Body: AISI 316L</li> <li>- Seal: HNBR / MFQ</li> </ul>		
Seal	Ordering code									
HNBR	X2 H									
MFQ	X2 F									



# DIFFERENTIAL INDICATORS

Designation & Ordering code

## DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Series	Configuration example 1:						
<b>DE</b> Electrical differential indicator	DE	H	50	F	A	48	P01
<b>DL</b> Electrical / Visual differential indicator	Configuration example 2:						
<b>DV</b> Visual differential indicator	DL	X	50	H	A	51	P01
	Configuration example 3:						
	DV	Y	70	V			P01

Type	DE	DL	DV
<b>H</b> Hazardous area	•		
<b>X</b> Standard type	•	•	•
<b>Y</b> Optional type			•

Pressure setting	DEH	DEX	DL	DV
<b>50</b> 5.0 bar	•	•	•	•
<b>70</b> 7.0 bar	•	•	•	•
<b>95</b> 9.5 bar		•	•	•

Seals	DEH	DEX	DL	DV
<b>H</b> HNBR		•	•	•
<b>V</b> FPM	•	•	•	•
<b>F</b> MFQ	•			

Thermostat	DEH	DEX	DL	DV
<b>A</b> Without	•	•	•	

Electrical connections	DEH	DEX	DL	DV
<b>48</b> Connection via three-core cable - fitting M20x1.5	•			
<b>49</b> Connection via four-core cable - fitting 1/2" NPT	•			
<b>50</b> Connection EN 175301-803		•		
<b>51</b> Connection EN 175301-803, transparent base with lamps 24 Vdc			•	
<b>52</b> Connection EN 175301-803, transparent base with lamps 110 Vdc			•	
<b>70</b> Connection IEC 61076-2-101 D (M12)	•			

Option
<b>P01</b> MP Filtri standard
<b>Pxx</b> Customized

## DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Series	Configuration example	
<b>X2</b> Indicator plug	X2	H

Seals
<b>H</b> HNBR
<b>V</b> FPM
<b>F</b> MFQ

**Clogging indicators are devices that check the life time of the filter elements. They measure the pressure drop through the filter element directly connected to the filter housing.**

**These devices trip when the clogging of the filter element causes a pressure drop increasing across the filter element.**

**Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators. The indicator is set to alarm before the element becomes fully clogged.**

**MP Filtri can supply indicators of the following designs:**

- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

**These type of devices can be provided with a visual, electrical or both signals. The electronic differential pressure clogging indicator is also available. It provides both analogical 4-20 mA output and digital warning (75% of clogging) and alarm (clogging) outputs.**



# Clogging Indicators





Clogging indicators

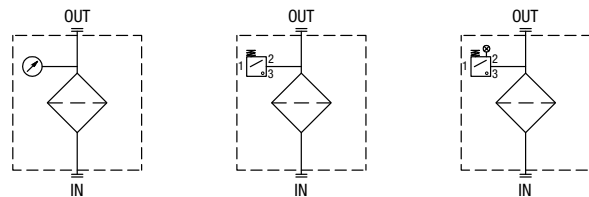
# Clogging indicators



## Suitable indicator types

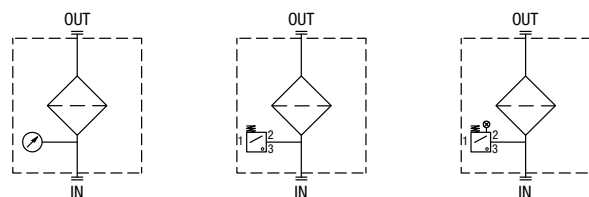
### VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficiency of the filter element.  
They measure the pressure downstream of the filter element.  
Standard items are produced with R 1/4" EN 10226 connection.  
Available products with R 1/8" EN 10226 to be fitted on MPS series.



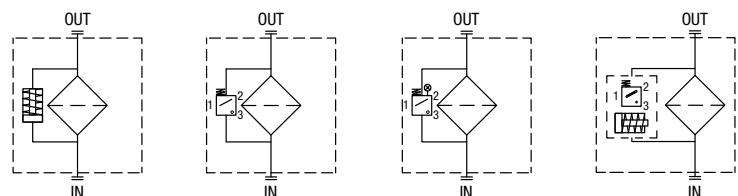
### BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficiency of the filter element.  
They measure the pressure upstream of the filter element.  
Standard items are produced with R 1/8" EN 10226 connection.



### DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficiency of the filter element.  
They measure the pressure upstream and downstream of the filter element (differential pressure).  
Standard items are produced with special connection G 1/2" size.  
Also available in Stainless Steel models.




## QUICK REFERENCE GUIDE

## CLOGGING INDICATORS

Filter family	Filter series	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Visual indicator
SUCTION FILTERS	ELIXIR® SFEX060-080-110-160	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01		VVA16P01 VVR16P01
RETURN FILTERS	With bypass valve ELIXIR® RFEX060-080-110-160	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01
	Without bypass valve ELIXIR® RFEX060-080-110-160	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
	With bypass valve MPFX-MPTX-MPF-MPT - bypass 1.75 bar MPH - bypass 1.75 bar RF2250 - RF2350 - bypass 1.75 bar	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP15HP01 BVQ15HP01
	With bypass valve MPFX-MPTX-MPF-MPT - bypass 3 bar MPH - bypass 2.5 bar FRI 255 RF2250 - RF2350 - bypass 3 bar	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
MPLX FRI 025 - 040 - 100 - 250 - 630 - 850	DEA20xA50P01 DEM20xA10P01 DEM20xA20P01 DEM20xA30P01 DEM20xA35P01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	DVA20xP01 DVM20xP01	
RETURN / SUCTION FILTERS	Suction line MRSX 116 - 165 - 166	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	Return line MRSX 116 - 165 - 166 LMP 124 MULTIPORT	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01
SPIN-ON FILTERS	Suction line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01		VVB16P01 VVS16P01
	Return line MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01		BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01
	In-line MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01 DLE20xF50P01 DLE20xF50P01	DTA12xA70P01 DTA12xF70P01 DTA20xA70P01 DTA20xF70P01	DVA12xP01 DVM12xP01

## CLOGGING INDICATORS

## QUICK REFERENCE GUIDE

Filter family	Filter series	Electrical indicator	Electrical / Visual indicator	Electronic indicator	Visual indicator	Hazardous area electronic indicator 		
LOW & MEDIUM PRESSURE FILTERS	With bypass valve <b>ELIXIR</b> LFEX060-080-110-160	DES25HA10P01 DES25HA30P01 DES25HA80P01				DVS25HP01		
	Without bypass valve <b>ELIXIR</b> LFEX060-080-110-160	DES40HA10P01 DES40HA30P01 DES40HA80P01				DVS40HP01		
		LMP 110 - 112 - 116 - 118 - 119 MULTIPOINT LMP 120 - 122 - 123 MULTIPOINT LMP 210 - 211 - LDP				DVS25HP01 DVS40HP01		
	With bypass valve	LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01	DVA20xP01 DVM20xP01		
	Without bypass valve	LMP 110 - 112 - 116 - 118 - 119 MULTIPOINT LMP 120 - 122 - 123 MULTIPOINT LMP 210 - 211 - LDP LMP 400 - 401 & 430 - 431 LMP 900 - 901 LMP 902 - 903 LMP 950 - 951 LMP 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DVA50xP01 DVM50xP01		
	HIGH PRESSURE FILTERS	With bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 065 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01	DVA50xP01 DVM50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
		Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 350 - 500 FMM 050 - 150 FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 065 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DEA70xA50P01 DEM70xAxxP01 DEA95xA50P01 DEM95xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01 DLA95xA51P01 DLA95xA52P01 DLE95xA50P01 DLE95xF50P01	DTA70xF70P01 DTA95xF70P01	DVA70xP01 DVM70xP01 DVA95xP01 DVM95xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
		With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01		DVX50xP01 DVS50xP01	DEH50xA48P01 DEH50xA49P01 DEH50xA70P01 DEH70xA48P01 DEH70xA49P01 DEH70xA70P01
			Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DEX70xA50P01 DEX95xA50P01	DLX70xA51P01 DLX70xA52P01 DLX95xA51P01		DVX70xP01 DVS70xP01 DVS95xP01 DVS95xP01















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