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.
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
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).
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.
Flow rates up to 3000 l/min
Pressure up to 20 bar
Mounting:
- In-Line
- Tank top
- In single and duplex designs

Flow rates up to 300 l/min
Pressure up to 80 bar
Mounting:
- In-Line
- Tank top

Flow rates up to 875 l/min
Mounting:
- Tank immersed
- In-Line
- In tank with shut off valve
- In tank with flooded suction

Flow rates up to 3000 l/min
Pressure up to 80 bar
Mounting:
- In-Line
- Parallel manifold version
- In single and duplex designs

Flow rates up to 365 l/min
Pressure up to 35 bar
Mounting:
- In-Line
- Tank top

Flow rates up to 3000 l/min
Pressure up to 110 bar
Mounting:
- In-Line
- Manifold
- In single and duplex designs

Flow rates up to 750 l/min
Pressure from 110 bar up to 560 bar
Mounting:
- In-Line
- Parallel manifold version
- In single and duplex designs

SUCTION FILTERS
RETURN FILTERS
RETURN / SUCTION FILTERS
SPIN-ON FILTERS
LOW & MEDIUM PRESSURE FILTERS
HIGH PRESSURE FILTERS

Introduction
PRODUCT RANGE

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

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

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

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

STAINLESS STEEL HIGH PRESSURE FILTERS
Flow rates up to 150 l/min
Pressure from 320 bar up to 1000 bar
Mounting:
- In-Line
- Manifold
- In single and duplex designs

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

MOBILE FILTRATION UNITS
Flow rates from 15 l/min up to 200 l/min

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

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

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## SUCTION FILTERS

| STR & MPA - MPM | Submerged suction filter, with bypass or magnetic column | 875 | 231 |
| SF2 250 - 350 | Semi-submerged positive head suction filter, low flow rate | 160 | 42 |
| SF2 500 | Semi-submerged positive head suction filter, high flow rate | 800 | 211 |

## RETURN FILTERS

| MPFX | Tank top semi-immersed filter, standard filter element disassembly | 8 | 116 | 750 | 198 |
| MPLX | Tank top semi-immersed filter, standard filter element disassembly | 10 | 145 | 1800 | 476 |
| MPTX | Tank top semi-immersed filter, easy filter element disassembly | 8 | 116 | 300 | 79 |
| MFBX | Bowl assembly | 8 | 116 | 500 | 132 |
| MFF | Tank top semi-immersed filter, standard filter element disassembly | 8 | 116 | 750 | 198 |
| MFT | Tank top semi-immersed filter, easy filter element disassembly | 8 | 116 | 300 | 79 |
| MFB | Bowl assembly | 8 | 116 | 500 | 132 |
| MFP | Tank top semi-immersed filter, standard filter element disassembly | 8 | 116 | 750 | 198 |
| MPT | Tank top semi-immersed filter, easy filter element disassembly | 8 | 116 | 300 | 79 |
| MFB | Bowl assembly | 8 | 116 | 500 | 132 |
| MPH | Tank top semi-immersed filter, standard filter element disassembly | 10 | 145 | 3000 | 793 |
| MPI | Tank top semi-immersed filter, easy filter element disassembly | 10 | 145 | 3000 | 793 |
| FRI | Tank top semi-immersed filter, easy filter element disassembly, it can be used also as in-line filter | 20 | 290 | 1500 | 396 |
| RF2 | Semi-immersed under-head filter, easy filter element disassembly | 20 | 290 | 350 | 92 |

## RETURN / SUCTION FILTERS

| MRSX | Unique TANK TOP filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit | 10 | 145 | 300 | 79 |
| LMP 124 MULTIPORT | Unique IN-LINE filter for mobile machinery, with combined filtration on return and suction to the inlet at the hydrostatic transmissions in closed circuit | 80 | 1160 | 200 | 53 |

## SPIN-ON FILTERS

| MPS | Low pressure filter, available with single cartridge (CS) for in-line or flange mounting or with two cartridge on the same axis on the opposite sides | 12 | 174 | 365 | 96 |
| MSH | In-line low and medium pressure filter available with single cartridge (CH) | 35 | 508 | 195 | 52 |

## CLOGGING INDICATORS

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LOW & MEDIUM PRESSURE FILTERS

<table>
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<td>LMP 400 - 401 &amp; 430 - 431</td>
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<td>2400</td>
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<td>407</td>
<td>LMD 951</td>
<td>16</td>
<td>1200</td>
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415 Filter elements designed according to DIN 24550

417 LDP - LDD | In-line and duplex medium pressure filter | 60 | 870 | 3000 | 793 |

427 LMP 900 - 901 | In-line low pressure filter | 30 | 2000 | 528 |

435 LMP 902 - 903 | In-line filter specifically designed to be mounted in series | 20 | 3000 | 793 |

444 CLOGGING INDICATORS

HIGH PRESSURE FILTERS

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<thead>
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<td>473</td>
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<td>Typical high pressure filter for mobile applications, low flow rate</td>
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</tr>
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<td>Typical high pressure filter for mobile applications, high flow rate</td>
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</tr>
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<td>FHF 325</td>
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627 CLOGGING INDICATORS

Quick Reference Guide

Introduction
## Contamination Management

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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.

- COMPRESSION 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.

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.

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 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, stem performance, failures.

- **MODIFICATION OF FLUID PROPERTIES**
  (COMPRESSIBILITY MODULE, DENSITY, VISCOSITY)
  Cause of system's reduction of efficiency and of control.
  It is easy to understand how a system without proper contamination management is subject to higher costs than a system that is provided.

- **MAINTENANCE**
  Maintenance activities, spare parts, machine stop costs

- **ENERGY AND EFFICIENCY**
  Efficiency and performance reduction due to friction, drainage, cavitation.

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

**Dissolved Water**

- **INCREASING FLUID ACIDITY**
  Cause of surface corrosion and premature fluid oxidation.

- **GALVANIC COUPLE AT HIGH TEMPERATURES**
  Cause of corrosion.

**Free Water - Additional Effects**

- **DECAY OF LUBRICANT PERFORMANCE**
  Cause of rust and sludge formation, metal corrosion and increased solid contamination.

- **BATTERY COLONY CREATION**
  Cause of worsening in the filterability feature.

- **ICE CREATION AT LOW TEMPERATURES**
  Cause damage to the surface.

- **ADDITIVE DEPLETION**
  Free water retains polar additives.

Gaseous contamination mainly results in decay of system performance.

- **CUSHION SUSPENSION**
  Cause of increased noise and cavitation.

- **FLUID OXIDATION**
  Cause of corrosion acceleration of metal parts.

**Measuring the solid contamination level**

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

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

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

- **Gravimetric Level - ISO 4405**
  The level of contamination is defined by checking the weight of particles collected by a laboratory membrane. The membrane must be cleaned, dried and desiccated, with fluid and conditions defined by the Standard. The volume of fluid is filtered through the membrane by using a suitable suction system. The weight of the contaminant is determined by checking the weight of the membrane before and after the fluid filtration.
The level of contamination is defined by counting the number of particles of certain dimensions per unit of volume of fluid. Measurement is performed by Automatic Particle Counters (APC).

Following the count, the contamination classes are determined, corresponding to the number of particles detected in the unit of fluid. The most common classification methods follow ISO 4406 and SAE AS 4059 (Aerospace Sector) regulations. NAS 1638 is still used although obsolete.

Classification example according to ISO 4406

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

<table>
<thead>
<tr>
<th>Class</th>
<th>Number of particles per ml</th>
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<tbody>
<tr>
<td></td>
<td>Over</td>
</tr>
<tr>
<td>28</td>
<td>1,300,000</td>
</tr>
<tr>
<td>27</td>
<td>640,000</td>
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<td>0.02</td>
</tr>
<tr>
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</tbody>
</table>

> 4 μm<sub>93</sub> = 350 particles
> 6 μm<sub>93</sub> = 100 particles
> 14 μm<sub>93</sub> = 25 particles

ISO 4406:2017 Cleanliness Code System

Microscope counting examines the particles differently to APCs and the code is given with two scale numbers only. These are at 5 μm and 15 μm equivalent to the 6 μm<sub>93</sub> and 14 μm<sub>93</sub> of APCs.
- **CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - SAE AS 4059-1 and SAE AS 4059-2**

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

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

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

### Table 1 - Class for differential measurement

<table>
<thead>
<tr>
<th>Class</th>
<th>Dimension of contaminant</th>
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<tbody>
<tr>
<td>00</td>
<td>125 22 8 2 0</td>
</tr>
<tr>
<td>0</td>
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<td>512 000 91 200 16 200 2 880 512</td>
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<tr>
<td>12</td>
<td>1 024 000 182 400 32 400 5 760 1 024</td>
</tr>
</tbody>
</table>

### Table 2 - Class for cumulative measurement

<table>
<thead>
<tr>
<th>Class</th>
<th>Dimension of contaminant</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>105 76 14 3 1 0</td>
</tr>
<tr>
<td>0</td>
<td>3 90 152 27 5 1 0</td>
</tr>
<tr>
<td>1</td>
<td>780 904 54 10 2 0</td>
</tr>
<tr>
<td>2</td>
<td>1 560 699 109 20 4 1</td>
</tr>
<tr>
<td>3</td>
<td>3 120 1 217 217 39 7 1</td>
</tr>
<tr>
<td>4</td>
<td>6 250 2 432 432 76 13 2</td>
</tr>
<tr>
<td>5</td>
<td>12 500 4 864 864 152 26 4</td>
</tr>
<tr>
<td>6</td>
<td>25 000 9 737 1737 306 55 5</td>
</tr>
<tr>
<td>7</td>
<td>50 000 18 492 3 462 612 106 16</td>
</tr>
<tr>
<td>8</td>
<td>100 000 38 924 6 924 1 224 212 32</td>
</tr>
<tr>
<td>9</td>
<td>200 000 77 849 13 849 2 449 424 64</td>
</tr>
<tr>
<td>10</td>
<td>400 000 155 698 27 698 4 888 848 128</td>
</tr>
<tr>
<td>11</td>
<td>800 000 311 396 55 396 9 796 1 696 256</td>
</tr>
<tr>
<td>12</td>
<td>1 600 000 622 792 110 792 19 592 3 932 512</td>
</tr>
<tr>
<td>12</td>
<td>3 200 000 1 245 584 221 584 39 184 6 784 1 024</td>
</tr>
</tbody>
</table>

- **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.

<table>
<thead>
<tr>
<th>Size Range Classes (in microns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Contamination Limits per 100 ml</td>
</tr>
<tr>
<td>Class</td>
</tr>
<tr>
<td>00</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>11</td>
</tr>
<tr>
<td>12</td>
</tr>
</tbody>
</table>

- **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.
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.

<table>
<thead>
<tr>
<th>ISO 4406:2017</th>
<th>SAE AS4059 Table 2</th>
<th>SAE AS4059 Table 1</th>
<th>NAS 1638</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 4 µm(c)</td>
<td>&gt; 4 µm(c)</td>
<td>4-6</td>
<td>5-15</td>
</tr>
<tr>
<td>6 µm(c)</td>
<td>6 µm(c)</td>
<td>14-21</td>
<td>15-25</td>
</tr>
<tr>
<td>14 µm(c)</td>
<td>14 µm(c)</td>
<td>21-38</td>
<td>25-50</td>
</tr>
<tr>
<td>23 / 21 / 18</td>
<td>23 / 21 / 18</td>
<td>30-70</td>
<td>50-100</td>
</tr>
<tr>
<td>22 / 20 / 17</td>
<td>22 / 20 / 17</td>
<td>&gt;70</td>
<td>&gt;100</td>
</tr>
<tr>
<td>21 / 19 / 16</td>
<td>11A / 10B / 10C</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>20 / 18 / 15</td>
<td>10A / 9B / 9B</td>
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<td>19 / 17 / 14</td>
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</tr>
<tr>
<td>14 / 12 / 09</td>
<td>4A / 3B / 3C</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

5 FIlTRATION TECHNOLOGIES

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

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

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

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

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

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

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

Upstream particles number > X µm(c) = βx(c)

Downstream particles number > X µm(c)

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

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

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

<table>
<thead>
<tr>
<th>Types of Filters</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piston pumps</td>
<td>B&lt;sub&gt;20&lt;/sub&gt;</td>
</tr>
<tr>
<td>Piston pumps</td>
<td>B&lt;sub&gt;15&lt;/sub&gt;</td>
</tr>
<tr>
<td>Vane pumps</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Vane pumps</td>
<td>B&lt;sub&gt;7&lt;/sub&gt;</td>
</tr>
<tr>
<td>Engines</td>
<td>B&lt;sub&gt;5&lt;/sub&gt;</td>
</tr>
<tr>
<td>Hydraulic cylinders</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Actuators</td>
<td>B&lt;sub&gt;5&lt;/sub&gt;</td>
</tr>
<tr>
<td>Test benches</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Directional valves</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Flow regulating valves</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Proportional valves</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Serve-valves</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Flat bearings</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
<tr>
<td>Ball bearings</td>
<td>B&lt;sub&gt;10&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

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

TYPES OF FILTERS

Suction filters

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

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

They are mainly produced with gross grade surface filtrations, mainly 60 ± 125 μm.

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

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

There are two types of suction filters:

- **IMMERSION FILTERS**
  
  Simple filter element screwed on the suction pipe

- **FILTERS WITH CONTAINER**
  
  Container filters that are more bulky, but provide easier maintenance of the tank

Delivery (or Pressure) filters

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

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

They are mainly produced with filtering depths of 3 ± 25 μm.

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

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

Return filters

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

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

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

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

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

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

Combined filters

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

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

Only excess fluid returns to the tank through the valve.

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

Off-line filters

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

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

Venting filters

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

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

The venting filter function, positioned on the tank, is to filter the air that enters the tank to compensate for fluid level variations.
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 COMPONENTS SENSITIVE TO 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 FAILURES**
- **REDUCTION OF STOP TIME**
- **REDUCTION OF FAILURE CASUALTIES**

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

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

- **MAXIMUM WORKING PRESSURE** (P_max)
The maximum working pressure of the filter must be greater than or equal to the pressure of the circuit section in which it will be installed.

- **PRESSURE DROP** (ΔP)
The pressure drop depends on a number of factors, such as the working circuit temperature, the fluid viscosity, the filter element cleaning condition.

- **WORKING TEMPERATURE** (T)
The working temperature deeply affect the choice of materials. Excessively high or low temperatures may adversely affect the strength of the materials or the characteristics of the seals.

- **FILTRATION EFFICIENCY** (% / FILTRATION RATIO (β_{50}))
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.

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

**ISO 2941**
*Hydraulic fluid power -- Filter elements -- Verification of collapse/burst pressure rating*
This Standard describes the method for testing the collapse / burst resistance of the filter elements. The test is performed by crossing the contaminated fluid filter element at a predefined flow rate. The progressive clogging of the filter element, determined by contamination, causes an increase in differential pressure.

**ISO 2942**
*Hydraulic fluid power -- Filter elements -- Verification of fabrication integrity and determination of the first bubble point*
This Standard describes the method to verify the integrity of the assembled filter elements. It can be used to verify the quality of the production process or the quality of the materials by verifying the pressure value of the first bubble point.

**ISO 2943**
*Hydraulic fluid power -- Filter elements -- Verification of material compatibility with fluids*
This Standard describes the method to verify the compatibility of materials with certain hydraulic fluids. The test is carried out by keeping the element (the material sample) immersed in the fluid under high or low temperature conditions for a given period of time and verifying the retention of the characteristics.

**ISO 3723**
*Hydraulic fluid power -- Filter elements -- Method for end load test*
This Standard describes the method for verifying the axial load resistance of the filter elements. After performing the procedure described in ISO 2943, the designed axial load is applied to the filter element. To verify the test results, then the test described in ISO 2941 is performed.

**ISO 3968**
*Hydraulic fluid power -- Filters -- Evaluation of differential pressure versus flow characteristics*
This Standard describes the method for checking the pressure drop across the filter. The test is carried out by crossing the filter from a given fluid and by detecting upstream and downstream pressures. Some of the parameters defined by the Standard are the fluid, the test temperature, the size of the tubes, the position of the pressure detection points.

**ISO 16889**
*Hydraulic fluid power -- Filters -- Multi-pass method for evaluating filtration performance of a filter element*
This Standard describes the method to check the filtration characteristics of the filter elements. The test is performed by constant introduction of contaminant (ISO MTD). The characteristics observed during the test are the filtration efficiency and the dirty holding capacity related to the differential pressure.
ISO 23181
Hydraulic fluid power -- Filter elements -- Determination of resistance to flow fatigue using high viscosity fluid
This Standard describes the method for testing the fatigue resistance of the filter elements.
The test is carried out by subjecting the filter to continuous flow variations, thus differential pressure, using a high viscosity fluid.

ISO 11170
Hydraulic fluid power -- Sequence of tests for verifying performance characteristics of filter elements
The Standard describes the method for testing the performance of filter elements. The protocol described by the regulations provides the sequence of all the tests described above in order to verify all the working characteristics (mechanical, hydraulic and filtration).

ISO 10771-1
Hydraulic fluid power -- Fatigue pressure testing of metal pressure-containing envelopes -- Test method
This Standard describes the method to check the resistance of the hydraulic components with pulsing pressure.
It can be applied to all metal components (excluding tubes) subject to cyclic pressure used in the hydraulic field.

10. WATER IN HYDRAULIC AND LUBRICATING FLUIDS

Water Content
In mineral oils and non aqueous resistant fluids water is undesirable. Mineral oil usually has a water content of 50-300 ppm (@40°C) which it can support without adverse consequences.
Once the water content exceeds about 300ppm the oil starts to appear hazy. Above this level there is a danger of free water accumulating in the system in areas of low flow. This can lead to corrosion and accelerated wear.
Similarly, fire resistant fluids have a natural water which may be different to mineral oil.

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

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

TYPICAL WATER SATURATION LEVEL FOR NEW OILS
Examples:
- Hydraulic oil @ 30°C = 200ppm = 100% saturation
- Hydraulic oil @ 65°C = 500ppm = 100% saturation

![Water Saturation Levels Graph](image-url)
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 \( \beta_{100} = 1000 \)). Absorbent media is made by water absorbent fibres which increase in size during the absorption process. Free water is thus bonded to the filter media and completely removed from the system (it cannot even be squeezed out).

By removing water from your fluid power system, you can prevent such key problems as:
- corrosion (metal etching)
- loss of lubricant power
- accelerated abrasive wear in hydraulic components
- valve-locking
- bearing fatigue
- viscosity variance (reduction in lubricating properties)
- additive precipitation and oil oxidation
- increase in acidity level
- increased electrical conductivity (loss of dielectric strength)
- slow/weak response of control systems

Product availability:
LOW & MEDIUM PRESSURE FILTERS - LMP Series

<table>
<thead>
<tr>
<th>Filter</th>
<th>Media Type</th>
<th>Pressure Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMP 210</td>
<td>LMP 900</td>
<td></td>
</tr>
<tr>
<td>LMP 211</td>
<td>LMP 901</td>
<td></td>
</tr>
<tr>
<td>LMP 400</td>
<td>LMP 902</td>
<td></td>
</tr>
<tr>
<td>LMP 401</td>
<td>LMP 903</td>
<td></td>
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<tr>
<td>LMP 430</td>
<td>LMP 950</td>
<td></td>
</tr>
<tr>
<td>LMP 431</td>
<td>LMP 951</td>
<td></td>
</tr>
</tbody>
</table>
Introduction
FILTER SIZING

INDEX

<table>
<thead>
<tr>
<th>TITLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
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<td>CALCULATION</td>
<td>23</td>
</tr>
<tr>
<td>CORRECTIVE FACTOR</td>
<td>24</td>
</tr>
</tbody>
</table>
**THE CORRECT FILTER SIZING HAVE TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING BY THE APPLICATION.**

For example, the maximum total pressure drop allowed by a new and clean return filter have to be in the range 0.4 ÷ 0.6 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop ∆pc of the housing is proportional to the fluid density (kg/dm³); all the graphs in the catalogue are referred to mineral oil with density of 0.86 kg/dm³. The filter element pressure drop ∆pe is proportional to its viscosity (mm²/s), the corrective factor Y have to be used in case of an oil viscosity different than 30 mm²/s (cSt).

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

- ∆pc = Filter housing pressure drop [bar]
- ∆pe = Filter element pressure drop [bar]
- Y = Corrective factor Y (see correspondent table), depending on the filter type, on the filter element size, on the filter element length and on the filter media
- Q = flow rate (l/min)
- V1 reference oil viscosity = 30 mm²/s (cSt)
- V2 = operating oil viscosity in mm²/s (cSt)

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

\[ ∆pe = \frac{Y}{1000} \times Q \times \frac{V2}{V1} \]

**Verification formula**

\[ ∆p \text{ Tot.} = ∆pc + ∆pe \]

**Maximum total pressure drop (∆p max) allow by a new and clean filter**

<table>
<thead>
<tr>
<th>Application</th>
<th>Range (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suction filters</td>
<td>0.08 ÷ 0.10</td>
</tr>
<tr>
<td>Return filters</td>
<td>0.4 ÷ 0.6</td>
</tr>
<tr>
<td>Low &amp; Medium Pressure filters</td>
<td>0.3 ÷ 0.6</td>
</tr>
<tr>
<td>High Pressure filters</td>
<td>0.8 ÷ 1.5</td>
</tr>
<tr>
<td>Stainless Steel filters</td>
<td>0.8 ÷ 1.5</td>
</tr>
</tbody>
</table>

**Generic filter calculation example**

Application data:
- Tank top return filter
- Pressure Pmax = 10 bar
- Flow rate Q = 120 l/min
- Viscosity V2 = 46 mm²/s (cSt)
- Oil density = 0.86 kg/dm³
- Required filtration efficiency = 25 μm with absolute filtration
- With bypass valve and G 1 1/4" inlet connection

\[ ∆pc = 0.03 \text{ bar} \]

\[ ∆pe = \left( \frac{2.00}{1000} \right) \times 120 \times \frac{46}{30} = 0.37 \text{ bar} \]

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

\[ ∆pe = \frac{Y}{1000} \times Q \times \frac{V2}{V1} \]

**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.
### Return filters

<table>
<thead>
<tr>
<th>Filter element</th>
<th>Absolute filtration</th>
<th>Nominal filtration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>A03</td>
<td>A06</td>
</tr>
<tr>
<td>MF 020</td>
<td>74.00</td>
<td>50.08</td>
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<tr>
<td>MF 030</td>
<td>29.20</td>
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<tr>
<td>MF 100</td>
<td>22.00</td>
<td>19.00</td>
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</table>

### Return / Suction filters

<table>
<thead>
<tr>
<th>Filter element</th>
<th>Absolute filtration</th>
<th>Nominal filtration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>A03</td>
<td>A06</td>
</tr>
<tr>
<td>RSX 110</td>
<td>5.12</td>
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<td>RSX 165</td>
<td>2.06</td>
<td>1.75</td>
</tr>
</tbody>
</table>

### Low & Medium pressure filters

<table>
<thead>
<tr>
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<th>Absolute filtration</th>
<th>Nominal filtration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>A03</td>
<td>A06</td>
</tr>
<tr>
<td>CU 110</td>
<td>16.25</td>
<td>15.16</td>
</tr>
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### Stainless steel high pressure filters

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### Suction filters

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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 Data sheet “Report.aspx” pushing the button “Drawing”
Return filters are used as process and safety filters to protect pumps and hydraulic circuits from contamination as per ISO 4406.

They are available in 8 styles:
- MPFX-MPF tank top semi-immersed filter with external / internal oil flow; standard filter element disassembly
- MPLX tank top semi-immersed filter completely interchangeable with Pall 8420 & 8520, with external / internal oil flow; easy filter element disassembly
- MPTX-MPT tank top semi-immersed filter with external / internal oil flow; easy filter element disassembly without any specific tool
- MFBX-MFB element and bowl assembly with optional cover and hold-down spring for dirtbox or molded tank applications
- MPH tank top semi-immersed filter with internal / external oil flow, therefore keeping the dirt inside the bowl and not on the filter element; standard filter element disassembly, magnetic column as option
- MPI semi-immersed filter element specifically designed to be mounted directly on the oil tank; magnetic column as option
- FRI, the oldest tank top semi-immersed return filter manufactured by MP FILTRI, with external / internal oil flow; available in the single or duplex versions with outlet connection, it can be used also as in-line filter
- RF2 semi-immersed filter with shut-off valve for side tank mounting, with external / internal oil flow; easy filter element disassembly without any specific tool.
Return filters

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

MPH   page 179
MPI    203
FRI    215
RF2    231
INDICATORS  238
ACCESSORIES  248
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 original filter elements.

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

- European Patent Pending: n° 16181725.9
- US Patent Pending: n° 15/224,337
- Canadian Patent Pending: n° 2,937,258
MPFX series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 750 l/min
MPFX is a range of return filters for protection of the reservoir against the system contamination. They are directly fixed to the reservoir, in immersed or semi-immersed position. The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

**Available features:**
- Female threaded connections up to 2” and flanged connections up to 2”, for a maximum flow rate of 750 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to meet any reservoir surface flatness and roughness
- O-ring or Flat seal, to meet any reservoir surface flatness and roughness
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Filter 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

**Weights [kg] and volumes [dm³]**

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<th>Weights [kg]</th>
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**Filter housing materials**
- **Head:** Aluminium
- **Cover**
  - Nylon: MPFX 030-100-104-110
- **Bowl:** Nylon

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

**Δp element type**
- Microfilter 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.
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.
Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.

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

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

Please, contact our Sales Department for further additional information.

### Hydraulic symbols

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GENERAL INFORMATION

Multiport

- Standard - Single IN port
- Double IN port - Drain port
  Option: indicator port
- Double IN port - Double drain port
- Double IN port
  Option: double indicator port
### COMPLETE FILTER

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<th>Element series and size</th>
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<th>Length</th>
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**Seals and treatments**

- **A**: NBR
- **V**: FPM
- **W**: NBR, head anodized
- **Z**: FPM, head anodized

**Connections**

- **G1**: G 1/2"
- **G4**: 1/2" NPT
- **G7**: SAE 8 - 3/4" - 16 UNF

**Filtration rating (filter media)**

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<td>H 10 bar</td>
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<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
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**Filter media**

- **M25**: Wire mesh
- **M60**: Wire mesh
- **M90**: Wire mesh
- **P10**: Resin impregnated paper 10 µm
- **P25**: Resin impregnated paper

**Bypass valve**

- **E**: 3 bar
- **B**: 1.75 bar

**Execution**

- **P01**: MP Filtri standard
- **PxX**: Customized

### FILTER ELEMENT

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<th>Element series and size</th>
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**Filtration rating (filter media)**

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>AxN</th>
<th>Max</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>

**Filter media**

- **M25**: Wire mesh 25 µm
- **M60**: Wire mesh 60 µm
- **M90**: Wire mesh 90 µm
- **P10**: Resin impregnated paper 10 µm
- **P25**: Resin impregnated paper 25 µm

**Seals**

- **B**: NBR
- **V**: FPM

**Bypass valve**

- **E**: 3 bar
- **B**: 1.75 bar

**Execution**

- **P01**: MP Filtri standard
- **PxX**: Customized

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>240</td>
</tr>
<tr>
<td>BVR</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
</tr>
<tr>
<td>TE</td>
<td>248</td>
</tr>
<tr>
<td>T5</td>
<td>249</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEA</td>
<td>239</td>
</tr>
<tr>
<td>BEM</td>
<td>239</td>
</tr>
<tr>
<td>BLA</td>
<td>239-240</td>
</tr>
</tbody>
</table>

### Return filters
IN ➜ OUT

G 1/8” Connection for clogging indicator

O-Ring seal

Total length immersed in the tank

Recommended clearance space for maintenance

M6 - 1/4” UNC Nr. 2 holes

Holes on the tank

IN ➜ OUT

Return filters

Dimensions
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPFX100</td>
<td>MPFX104</td>
</tr>
</tbody>
</table>

#### Series and size

- **MPFX100** | **MPFX104** Filter element with private spigot

#### Length

- 1 | 2 | 3 | 4 |

#### Seals and treatments

- A NBR
- V FPM
- W NBR, head anodized
- Z FPM, head anodized

#### Connections

<table>
<thead>
<tr>
<th>Connections</th>
<th>Size 100</th>
<th>Size 104</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 1/2&quot;</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>G2 3/4&quot;</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>G3 1&quot;</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>G4 1/2&quot; NPT</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>G5 3/4&quot; NPT</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>G6 1&quot; NPT</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

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

#### Filter media

<table>
<thead>
<tr>
<th>Filter media</th>
<th>Axx</th>
<th>Max</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>

### FILTER ELEMENT

#### Element series and size

- **MPFX100** Filter element with private spigot

#### Element length

- 1 | 2 | 3 | 4 |

#### Filtration rating (filter media)

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

#### Filter media

<table>
<thead>
<tr>
<th>Filter media</th>
<th>Axx</th>
<th>Max</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>

### ACCESSORIES

#### Indicators

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
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<tr>
<td>BVR</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
</tr>
</tbody>
</table>

#### Additional features

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>248</td>
</tr>
<tr>
<td>DFS</td>
<td>249</td>
</tr>
</tbody>
</table>

#### Bypass valve

- E 3 bar
- B 1.75 bar

#### Execution

- P01 MP Filtri standard
- Pxx Customized
### MPFX100 - MPFX104 Dimensions

#### MPFX100

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102</td>
<td>120</td>
</tr>
<tr>
<td>2</td>
<td>147</td>
<td>170</td>
</tr>
<tr>
<td>3</td>
<td>225</td>
<td>250</td>
</tr>
<tr>
<td>4</td>
<td>327</td>
<td>350</td>
</tr>
</tbody>
</table>

- **IN** → **OUT**
- **H1** - Total length immersed in the tank
- **H2** - Recommended clearance space for maintenance
- **Holes on the tank**
- **T** - Optional connection for clogging indicator
- **G 1/8" Connection for clogging indicator**
- **M8 - 5/16" UNC Nr. 2 holes**

#### MPFX104

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>120</td>
</tr>
<tr>
<td>2</td>
<td>145</td>
<td>170</td>
</tr>
<tr>
<td>3</td>
<td>223</td>
<td>250</td>
</tr>
<tr>
<td>4</td>
<td>325</td>
<td>350</td>
</tr>
</tbody>
</table>

- **IN** → **OUT**
- **H1** - Total length immersed in the tank
- **H2** - Recommended clearance space for maintenance
- **Holes on the tank**
- **T** - Optional connection for clogging indicator
- **G 1/8" Connection for clogging indicator**
- **M8 - 5/16" UNC Nr. 4 holes**

---

**Return filters**
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1: MPFX110</th>
<th>3</th>
<th>Z</th>
<th>G4</th>
<th>2</th>
<th>M25</th>
<th>W</th>
<th>B</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPFX110 Filter element with private spigot</td>
<td>Configuration example 2: MPFX110</td>
<td>4</td>
<td>A</td>
<td>G8</td>
<td>1</td>
<td>P10</td>
<td>N</td>
<td>E</td>
<td>P01</td>
</tr>
</tbody>
</table>

#### Length

| 1 | 2 | 3 | 4 |

#### Seals and treatments

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

#### Main Connections

<table>
<thead>
<tr>
<th>Aux size 1</th>
<th>Aux size 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>G 1/2&quot;</td>
</tr>
<tr>
<td>G2</td>
<td>G 3/8&quot;</td>
</tr>
<tr>
<td>G3</td>
<td>G 1&quot;</td>
</tr>
<tr>
<td>G4</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>G5</td>
<td>3/8&quot; NPT</td>
</tr>
<tr>
<td>G6</td>
<td>1&quot; NPT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aux size 1</th>
<th>Aux size 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>G7</td>
<td>SAE 8 - 34/&quot; - 16 UNF</td>
</tr>
<tr>
<td>G8</td>
<td>SAE 12 - 1 1/16&quot; - 12 UN</td>
</tr>
<tr>
<td>G9</td>
<td>SAE 16 - 1 5/16&quot; - 12 UN</td>
</tr>
<tr>
<td>G10</td>
<td>G 1 1/4&quot;</td>
</tr>
<tr>
<td>G11</td>
<td>1 1/4&quot; NPT</td>
</tr>
<tr>
<td>G12</td>
<td>SAE 20 - 1 5/8&quot; - 12 UN</td>
</tr>
</tbody>
</table>

#### Aux connection - see previous table

| 1 | Aux size 1 | 2 | Aux size 2 |

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>Filter media</th>
<th>Inorganic microfiber</th>
<th>Wire mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03</td>
<td>3 µm</td>
<td>25 µm</td>
</tr>
<tr>
<td>A06</td>
<td>6 µm</td>
<td>60 µm</td>
</tr>
<tr>
<td>A10</td>
<td>10 µm</td>
<td>90 µm</td>
</tr>
<tr>
<td>A16</td>
<td>16 µm</td>
<td>10 µm</td>
</tr>
<tr>
<td>A25</td>
<td>25 µm</td>
<td>25 µm</td>
</tr>
</tbody>
</table>

#### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1: MFX100</th>
<th>3</th>
<th>M25</th>
<th>W</th>
<th>V</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>MFX100 Filter element with private spigot</td>
<td>Configuration example 2: MFX100</td>
<td>4</td>
<td>P10</td>
<td>N</td>
<td>B</td>
<td>E</td>
</tr>
</tbody>
</table>

#### Element length

| 1 | 2 | 3 | 4 |

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>Filter media</th>
<th>Inorganic microfiber</th>
<th>Wire mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03</td>
<td>3 µm</td>
<td>25 µm</td>
</tr>
<tr>
<td>A06</td>
<td>6 µm</td>
<td>60 µm</td>
</tr>
<tr>
<td>A10</td>
<td>10 µm</td>
<td>90 µm</td>
</tr>
<tr>
<td>A16</td>
<td>16 µm</td>
<td>10 µm</td>
</tr>
<tr>
<td>A25</td>
<td>25 µm</td>
<td>25 µm</td>
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</tbody>
</table>

#### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>Extension tube</td>
</tr>
<tr>
<td>DFS</td>
<td>Diffuser with fast lock connection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEA</td>
<td>Electrical pressure indicator</td>
</tr>
<tr>
<td>BEM</td>
<td>Electrical pressure indicator</td>
</tr>
<tr>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5</td>
<td>Filler plug M30x1.5</td>
</tr>
<tr>
<td>OPT</td>
<td>Dipstick</td>
</tr>
</tbody>
</table>
### MPFX110 Dimensions

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

**Connections**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G1-G2-G3</td>
<td>G1/8”</td>
</tr>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8” NPT</td>
</tr>
<tr>
<td>G10</td>
<td>G1/8”</td>
</tr>
<tr>
<td>G11-G12</td>
<td>1/8” NPT</td>
</tr>
</tbody>
</table>

**Symbols and Notes**

- **H1**: Total length immersed in the tank
- **H2**: Recommended clearance space for maintenance
- **OUT**: Connection for clogging indicator
- **O-Ring seal**: Connector type
- **G 1/8”**: Connection for clogging indicator
- **M8 - 5/16” UNC**: Thread size
- **Nr. 2 holes**: Number of holes on the tank

---

**Legend**

- IN: Inlet
- OUT: Outlet
- T: Connection for clogging indicator
- Ø47: Inner diameter
- Ø88: Outer diameter
- Ø114-116: Diameter of the tank opening
### Designation & Ordering code

#### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Configuration example 1:</th>
<th>MFX180</th>
<th>1</th>
<th>A25</th>
<th>H</th>
<th>B</th>
<th>E</th>
<th>P01</th>
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</thead>
<tbody>
<tr>
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<td>MFX180</td>
<td>Filter element with private spigot</td>
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<tr>
<td>Element length</td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Configuration example 2:</th>
<th>MFX180</th>
<th>2</th>
<th>P10</th>
<th>N</th>
<th>V</th>
<th>B</th>
<th>P01</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>A03 Inorganic microfiber 3 µm</th>
<th>M25 Wire mesh 25 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promax S25</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
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<th>Element Δp</th>
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<th>Mxx</th>
<th>Pxx</th>
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</table>

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>A06 Inorganic microfiber 6 µm</th>
<th>M60 Wire mesh 60 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promax S60</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>A10 Inorganic microfiber 10 µm</th>
<th>M90 Wire mesh 90 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promax S90</td>
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</table>

<table>
<thead>
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<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>A16 Inorganic microfiber 16 µm</th>
<th>P10 Resin impregnated paper 10 µm</th>
</tr>
</thead>
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<tr>
<td>Promax S10</td>
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</tbody>
</table>

<table>
<thead>
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<th>Element Δp</th>
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<th>Mxx</th>
<th>Pxx</th>
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<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>A25 Inorganic microfiber 25 µm</th>
<th>P25 Resin impregnated paper 25 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promax S25</td>
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</tbody>
</table>

<table>
<thead>
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<th>Element Δp</th>
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<th>Mxx</th>
<th>Pxx</th>
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</table>

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
</table>

#### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Configuration example 1:</th>
<th>MPFX181</th>
<th>1</th>
<th>A</th>
<th>G1</th>
<th>A25</th>
<th>H</th>
<th>E</th>
<th>P01</th>
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</thead>
<tbody>
<tr>
<td>Series and size</td>
<td>MPFX181</td>
<td>Filter element with private spigot</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Length</td>
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<th>B</th>
<th>NBR</th>
<th>B</th>
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<td>M</td>
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<th>G5</th>
<th>1 1/2&quot; NPT</th>
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<td>G 1 1/2&quot;</td>
<td>G7</td>
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<th>M25 Wire mesh 25 µm</th>
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<th>M60 Wire mesh 60 µm</th>
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<tr>
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<th>A25 Inorganic microfiber 25 µm</th>
<th>P25 Resin impregnated paper 25 µm</th>
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<td>Promax S25</td>
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#### ACCESSORIES

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<td>Axial pressure gauge</td>
<td>240</td>
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<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
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<table>
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<tr>
<th>Additional features</th>
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<tbody>
<tr>
<td>TE</td>
<td>Extension tube</td>
</tr>
<tr>
<td>T5</td>
<td>Filter plug M30x1.5</td>
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**MPFX181 - MPFX191 MPFX**

### Dimensions

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<th>H1 [mm]</th>
<th>H2 [mm]</th>
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<table>
<thead>
<tr>
<th>Connections</th>
<th>H3 [mm]</th>
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<tr>
<td>G1 - G4 - G7</td>
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</tr>
<tr>
<td>G2 - G5 - G8</td>
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</table>

**MPFX181**

**IN**

- **O-Ring seal**
- **T - Optional connection for clogging indicator**

**OUT**

- **G 1/8” Connection for clogging indicator**
- **T - Optional connection for clogging indicator**

**Holes on the tank**

- **Option for 3 and 4 screws**

**Recommendation**

- **Total length immersed in the tank**

**Return filters**

**MPFX191**

**IN**

- **O-Ring seal**
- **T - Optional connection for clogging indicator**

**OUT**

- **G 1/8” Connection for clogging indicator**
- **T - Optional connection for clogging indicator**

**Holes on the tank**

- **Option for 3 and 4 screws**

**Recommendation**

- **Total length immersed in the tank**

**Return filters**
**COMPLETE FILTER**

<table>
<thead>
<tr>
<th>Series and size</th>
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<th>Configuration example 2:</th>
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<tr>
<td><strong>MPFX182</strong></td>
<td><strong>A</strong></td>
<td><strong>G1</strong></td>
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<tr>
<td><strong>MPFX192</strong></td>
<td><strong>V</strong></td>
<td><strong>G4</strong></td>
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**Length**

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<td>•</td>
</tr>
<tr>
<td>2</td>
<td>•</td>
</tr>
</tbody>
</table>

**Seals and treatments**

- **A**: NBR flat seal on head
- **B**: NBR flat seal on head
- **V**: FPM flat seal on head
- **W**: NBR head anodized, flat seal on head
- **Z**: FPM head anodized, flat seal on head

**Main Connections**

<table>
<thead>
<tr>
<th>Aux size 1</th>
<th>Aux size 2</th>
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<tbody>
<tr>
<td>G1</td>
<td>G 1 1/4&quot;</td>
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<tr>
<td>G4</td>
<td>1 1/4&quot; NPT</td>
</tr>
<tr>
<td>G7</td>
<td>G 3/4&quot;</td>
</tr>
</tbody>
</table>

**Aux connection**

- 1 Aux size 1
- 2 Aux size 2

**Filtration rating (filter media)**

- **A03**: Inorganic microfiber, 3 µm, M25, Wire mesh, 25 µm
- **A06**: Inorganic microfiber, 6 µm, M60, Wire mesh, 60 µm
- **A10**: Inorganic microfiber, 10 µm, M90, Wire mesh, 90 µm
- **A16**: Inorganic microfiber, 16 µm, P10, Resin impregnated paper, 10 µm
- **A25**: Inorganic microfiber, 25 µm, P25, Resin impregnated paper, 25 µm

**FILTER ELEMENT**

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
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<td><strong>A25</strong></td>
<td><strong>H</strong></td>
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<tr>
<td><strong>MFX180</strong></td>
<td><strong>P10</strong></td>
<td><strong>N</strong></td>
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</table>

**Element length**

| 1 | 2 |

**Filtration rating (filter media)**

- **A03**: Inorganic microfiber, 3 µm, M25, Wire mesh, 25 µm
- **A06**: Inorganic microfiber, 6 µm, M60, Wire mesh, 60 µm
- **A10**: Inorganic microfiber, 10 µm, M90, Wire mesh, 90 µm
- **A16**: Inorganic microfiber, 16 µm, P10, Resin impregnated paper, 10 µm
- **A25**: Inorganic microfiber, 25 µm, P25, Resin impregnated paper, 25 µm

**ACCESSORIES**

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

- **Additional features**
  - **TE**: Extension tube, 248
  - **T5**: Filter plug M30x1.5, 249
**MPFX182 - MPFX192**

### Dimensions

<table>
<thead>
<tr>
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<td>255</td>
</tr>
<tr>
<td>2</td>
<td>448</td>
<td>475</td>
</tr>
</tbody>
</table>

- **H1** - Total length immersed in the tank
- **H2** - Recommended clearance space for maintenance

**O-Ring seal**

**T** - Optional connection for clogging indicator

**G 1/8” Connection for clogging indicator**

**Nr. 3 holes at 120°**

**Nr. 4 holes at 90°**

**Holes on the tank**

**Option for 3 and 4 screws**

**Holes on the tank**

**Return filters**
### Designation & Ordering code

#### FILTER ELEMENT

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<th>A06</th>
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<td>M60</td>
<td>M90</td>
<td>P10</td>
<td>P25</td>
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<td>Inorganic microfiber 10 µm</td>
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</tr>
<tr>
<td>Resin impregnated paper 10 µm</td>
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<tr>
<td>Resin impregnated paper 25 µm</td>
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<tr>
<td>H</td>
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</tr>
<tr>
<td>W</td>
<td>10 bar, compatible with fluids HFA, HFB and HFC</td>
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<td>Inorganic microfiber 10 µm</td>
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<td>Resin impregnated paper 10 µm</td>
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<td>Resin impregnated paper 25 µm</td>
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<tr>
<td>H</td>
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<tr>
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<tr>
<td>T5</td>
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<th>B</th>
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<th>G3</th>
<th>G4</th>
<th>G5</th>
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<th>3 bar</th>
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<td>H</td>
<td>10 bar</td>
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</tr>
<tr>
<td>W</td>
<td>10 bar, compatible with fluids HFA, HFB and HFC</td>
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<tr>
<td>V</td>
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<tr>
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<tr>
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<tr>
<td>BVP</td>
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</tr>
<tr>
<td>BVQ</td>
<td>241</td>
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<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
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<tbody>
<tr>
<td>TE</td>
<td>248</td>
</tr>
<tr>
<td>T5</td>
<td>249</td>
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Return filters
MPFX MPFX184 - MPFX194

Dimensions

**MPFX194**

<table>
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<th>Connections</th>
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<tbody>
<tr>
<td>G1</td>
<td>G 1/8&quot;</td>
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<td>G4 - G7 - G10</td>
<td>1/8&quot; NPT</td>
</tr>
<tr>
<td>G13</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G15 - F1 - F2</td>
<td>1/8&quot; NPT</td>
</tr>
</tbody>
</table>

**Recommended clearance space for maintenance**

- **Total length immersed in the tank**
- **Holes on the tank**

**Nr. 4 holes**

**O-Ring seal**

**T - Connection for clogging indicator**

**IN** ➔ **OUT**

**M10 - 3/8" UNC**

**Nr. 4 holes**

**Total length immersed in the tank**

**Holes on the tank**

**IN** ➔ **OUT**

**Recommended clearance space for maintenance**

**Total length immersed in the tank**

**Holes on the tank**

**M10 - 3/8" UNC**

**Nr. 4 holes**

**Return filters**
**MPFX400**

**Designation & Ordering code**

**COMPLETE FILTER**

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPFX400</td>
<td>MPFX400</td>
<td>MPFX400</td>
</tr>
<tr>
<td>Filter element with private spigot</td>
<td>1 A G9 A25 H B P01</td>
<td>2 V G4 P10 N E P01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length</th>
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<td>1</td>
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<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Seals and treatments</th>
<th>Filter media</th>
</tr>
</thead>
<tbody>
<tr>
<td>A NBR</td>
<td>M25 Wire mesh 25 µm</td>
</tr>
<tr>
<td>V FPM</td>
<td>M60 Wire mesh 60 µm</td>
</tr>
<tr>
<td>W NBR head anodized</td>
<td>M90 Wire mesh 90 µm</td>
</tr>
<tr>
<td>Z FPM head anodized</td>
<td>P10 Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td></td>
<td>P25 Resin impregnated paper 25 µm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connections</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 G 1 1/4&quot;</td>
<td>G6 2&quot; NPT</td>
</tr>
<tr>
<td>G2 G 1 1/2&quot;</td>
<td>G7 SAE 20 - 1 5/8&quot; - 12 UN</td>
</tr>
<tr>
<td>G3 G 2&quot;</td>
<td>G8 SAE 24 - 1 7/8&quot; - 12 UN</td>
</tr>
<tr>
<td>G4 1 1/4&quot; NPT</td>
<td>G9 SAE 32 - 2 1/2&quot; - 12 UN</td>
</tr>
<tr>
<td>G5 1 1/2&quot; NPT</td>
<td></td>
</tr>
</tbody>
</table>

**FILTER ELEMENT**

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPFX400</td>
<td>MPFX400</td>
<td>MPFX400</td>
</tr>
<tr>
<td>Filter element with private spigot</td>
<td>1 A25 H B P01</td>
<td>2 P10 N E P01</td>
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<table>
<thead>
<tr>
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<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>Filter media</th>
</tr>
</thead>
<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>

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Max</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>

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>240</td>
<td>BEA</td>
<td>239</td>
</tr>
<tr>
<td>BR</td>
<td>240</td>
<td>BEM</td>
<td>239</td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
<td>BLA</td>
<td>239-240</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5 Filler plug M30x1.5</td>
<td>249</td>
</tr>
</tbody>
</table>
**Dimensons**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>187</td>
<td>210</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>252</td>
<td>270</td>
<td>63</td>
</tr>
<tr>
<td>3</td>
<td>300</td>
<td>315</td>
<td>63</td>
</tr>
</tbody>
</table>

- **H1**: Total length immersed in the tank
- **H2**: Recommended clearance space for maintenance

**O-Ring seal**
- Holes on the tank
- G 1/8" Connection for clogging indicator
- OUT
- IN
- Ø174
- Ø174.5
- 30°
- 4 holes

**M10 - 3/8” UNC**

---

**Return filters**
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Designation &amp; Ordering code</th>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPFX410</td>
<td>Filter element with private spigot</td>
<td>MPFX410 1 T V G4 1 P10 N E P01</td>
<td>MPFX410 1 T A G1 1 A25 H B P10</td>
</tr>
</tbody>
</table>

#### Length

| 1 | 2 | 3 |

#### Seals and treatments

| A | NBR |
| V | FPM |

#### Main Connections

| G1 | G 1/4" |
| G4 | 1/4" NPT |
| G7 | SAE 20 - 1 5/8" - 12 UN |

#### Aux connection - see previous table

| 1 | Aux size 1 |

#### Filtration rating (filter media)

- A03 Inorganic microfiber 3 µm: M25 Wire mesh 25 µm
- A06 Inorganic microfiber 6 µm: M60 Wire mesh 60 µm
- A10 Inorganic microfiber 10 µm: M90 Wire mesh 90 µm
- A16 Inorganic microfiber 16 µm: P10 Resin impregnated paper 10 µm

#### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Designation &amp; Ordering code</th>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
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<tbody>
<tr>
<td>MPFX400</td>
<td>Filter element with private spigot</td>
<td>MPFX400 1 P10 N V E P01</td>
<td>MPFX400 1 A25 H B P10</td>
</tr>
</tbody>
</table>

#### Element length

| 1 | 2 | 3 |

#### Filtration rating (filter media)

- A03 Inorganic microfiber 3 µm: M25 Wire mesh 25 µm
- A06 Inorganic microfiber 6 µm: M60 Wire mesh 60 µm
- A10 Inorganic microfiber 10 µm: M90 Wire mesh 90 µm
- A16 Inorganic microfiber 16 µm: P10 Resin impregnated paper 10 µm

#### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
<td>240</td>
<td>T5</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>BEA</td>
<td>Electrical pressure indicator</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>BEM</td>
<td>Electrical pressure indicator</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
<td>239-240</td>
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</table>
**MPFX410**

**Dimensions**

<table>
<thead>
<tr>
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<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
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<tbody>
<tr>
<td>1</td>
<td>187</td>
<td>210</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>252</td>
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</tr>
<tr>
<td>3</td>
<td>300</td>
<td>315</td>
<td>63</td>
</tr>
</tbody>
</table>

**In:**
- **H1 - Total length immersed in the tank**

**Out:**
- **H2 - Recommended clearance space for maintenance**

**IN**
- O-Ring seal

**OUT**
- G 1/8" Connection for clogging indicator

**Holes on the tank**
- M10 - 3/8" UNC Nr. 4 holes

**Return filters**
- OUT
- IN

**Nr. 4 holes**
### Complete Filter

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MPFX450</strong> MPFX451 MPFX750</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Filter element with private spigot</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Configuration example 1:</strong></td>
<td><strong>MPFX450</strong></td>
<td>1</td>
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<tr>
<td></td>
<td><strong>MPFX451</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td><strong>MPFX450</strong></td>
<td>MPFX451</td>
</tr>
<tr>
<td>1</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>2</td>
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<td>•</td>
</tr>
<tr>
<td>3</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td><strong>Seals and treatments</strong></td>
<td>A</td>
<td>NBR</td>
</tr>
<tr>
<td><strong>Connections</strong></td>
<td>G1</td>
<td>G 2”</td>
</tr>
<tr>
<td><strong>Filtration rating (filter media)</strong></td>
<td><strong>A03</strong> Inorganic microfiber</td>
<td>3 µm</td>
</tr>
<tr>
<td><strong>Element ∆p</strong></td>
<td>N</td>
<td>10 bar</td>
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### Filter Element

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MPFX400</strong> MPFX750</td>
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</tr>
<tr>
<td><strong>Filter element with private spigot</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Configuration example 1:</strong></td>
<td><strong>MPFX400</strong></td>
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<tr>
<td></td>
<td><strong>MPFX750</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Element length</strong></td>
<td><strong>MPFX450</strong></td>
<td>MPFX451</td>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>3</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td><strong>Filtration rating (filter media)</strong></td>
<td><strong>A03</strong> Inorganic microfiber</td>
<td>3 µm</td>
</tr>
<tr>
<td><strong>Element ∆p</strong></td>
<td>N</td>
<td>10 bar</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>BEA</th>
<th>Electrical pressure indicator</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
<td>240</td>
<td>239</td>
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<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>240</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>241</td>
<td>239-240</td>
<td></td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
<td>241</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional features</td>
<td>page</td>
<td></td>
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</tr>
<tr>
<td>T5</td>
<td>Filler plug M30x1.5</td>
<td>249</td>
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</tbody>
</table>
### MPFX450 - MPFX451 - MPFX750 MPFX

#### Dimensions

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
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<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>3</td>
<td>300</td>
<td>315</td>
<td>63</td>
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</table>

#### Connections

<table>
<thead>
<tr>
<th>T</th>
<th>G1</th>
<th>G4 - G7</th>
<th>F1</th>
<th>F2</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>G 1/8”</td>
<td>1/8” NPT</td>
<td>G 1/8”</td>
<td>1/8” NPT</td>
</tr>
</tbody>
</table>

**IN** → **OUT**

- **O-Ring seal**
- **H1 - Total length immersed in the tank**
- **H2 - Recommended clearance space for maintenance**
- **Holes on the tank**
- **M10 - 3/8” UNC Nr. 4 holes**

**T - Connection for clogging indicator**

**Nr. 4 holes**

**Holes on the tank**

**G 1/8” Connection for clogging indicator**

**G 1/8” Connection for clogging indicator**

**Return filters**
Dimensions

MPFX450 - MPFX451 - MPFX750

IN

OUT

O-Ring seal

Recommended clearance space for maintenance

Total length immersed in the tank

M10 - 3/8" UNC
Nr. 4 holes

Holes on the tank

G 1/8" Connection for clogging indicator

Return filters

Page 58
### O-RING SEAL

<table>
<thead>
<tr>
<th>Item: Filter series</th>
<th>Seal Kit code number</th>
<th>Q.ty: 1 pc.</th>
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</thead>
<tbody>
<tr>
<td>MPFX 030</td>
<td>02050675</td>
<td>2</td>
</tr>
<tr>
<td>MPFX 100-110</td>
<td>02050681</td>
<td>3 (3a ÷ 3d)</td>
</tr>
<tr>
<td>MPFX 181-182</td>
<td>02050683</td>
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</tr>
<tr>
<td>MPFX 184</td>
<td>02050684</td>
<td></td>
</tr>
<tr>
<td>MPFX 191-192</td>
<td>02050685</td>
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</tr>
<tr>
<td>MPFX 194</td>
<td>02050686</td>
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</tr>
<tr>
<td>MPFX 400-410</td>
<td>02050687</td>
<td></td>
</tr>
<tr>
<td>MPFX 450-451</td>
<td>02050688</td>
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<tr>
<td>MPFX 750</td>
<td>02050689</td>
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</table>

### FLAT SEAL

<table>
<thead>
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<th>Item: Filter series</th>
<th>Seal Kit code number</th>
<th>Q.ty: 1 pc.</th>
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</thead>
<tbody>
<tr>
<td>MPFX 104</td>
<td>02050677</td>
<td>3</td>
</tr>
<tr>
<td>MPFX 181-182</td>
<td>02050680</td>
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<tr>
<td>MPFX 191-192</td>
<td>02050681</td>
<td></td>
</tr>
</tbody>
</table>

See order table for additional information.
MPLX series

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

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

**Flow rate up to 1800 l/min**

MPLX is a range of return filters for protection of the reservoir against the system contamination. Completely interchangeable with Pall 8420 & 8520, they are directly fixed to the reservoir, in immersed or semi-immersed position.

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

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

**Available features:**
- Flanged connections up to 3”, for a maximum flow rate of 1800 l/min
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- 6 fixing holes for installation, to meet any reservoir surface flatness and roughness
- Diffuser, to reduce the risk of aeration, foaming and noise
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic differential clogging indicators

**Common applications:**
- Heavy duty industrial equipment
- Heavy duty mobile equipment

---

### Filter housing materials

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

### Bypass valve

- Opening pressure 450 kPa (4.5 bar) ±10%

### Δp element type

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

### Seals

- Standard NBR series A
- Optional FPM series V

### Temperature

From -25 °C to +110 °C

### Note

MPLX filters are provided for vertical mounting

---

### Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length 2</td>
<td>Length 2</td>
</tr>
<tr>
<td>MPLX 250</td>
<td>8.95</td>
<td>2.90</td>
</tr>
<tr>
<td>MPLX 660</td>
<td>20.20</td>
<td>11.00</td>
</tr>
</tbody>
</table>
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. ∆p varies proportionally with density.

### Flow rates [l/min]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
<th>M25</th>
<th>M80</th>
<th>M90</th>
<th>P10</th>
<th>P25</th>
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</thead>
<tbody>
<tr>
<td>MPLX 250</td>
<td>2</td>
<td>157</td>
<td>155</td>
<td>281</td>
<td>312</td>
<td>325</td>
<td>583</td>
<td>820</td>
<td>925</td>
<td>1018</td>
<td>1732</td>
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<td>MPLX 660</td>
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<td>376</td>
<td>384</td>
<td>820</td>
<td>925</td>
<td>1018</td>
<td>1732</td>
<td>1852</td>
<td>2018</td>
<td>2125</td>
<td>3332</td>
</tr>
</tbody>
</table>

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

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

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

Please, contact our Sales Department for further additional information.

### Hydraulic symbols

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Style 1 connection + Diff. indic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPLX 250</td>
<td><img src="symbol1.png" alt="Symbol" /></td>
</tr>
<tr>
<td>MPLX 660</td>
<td><img src="symbol2.png" alt="Symbol" /></td>
</tr>
</tbody>
</table>
**COMPLETE FILTER**

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>MPLX250</th>
<th>2</th>
<th>D</th>
<th>S</th>
<th>W</th>
<th>A</th>
<th>6</th>
<th>M25</th>
<th>P01</th>
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</thead>
<tbody>
<tr>
<td>MPLX250</td>
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<td></td>
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<tr>
<td>MPLX660</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Length**

| 2

**By-pass valve**

| D | 4.5 bar

**Diffuser**

| S | Without diffuser
| D | With standard diffuser

**Seals and treatments**

| A | NBR • • •
| V | FPM • • •
| W | NBR filter element compatible with fluids HFA-HFB-HFC • •
| Z | FPM • • •

**Connections**

| A | 2" SAE 3000 psi/M |
| B | 2" SAE 3000 psi/UNC |

**Connection for differential indicator**

| 6 | With plugged connection

**Filtration rating**

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

**Execution**

| P01 | MP Filtri standard |
| Pxx | Customized |

**FILTER ELEMENT**

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>MLX250</th>
<th>2</th>
<th>M25</th>
<th>W</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLX250</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>MLX660</td>
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<td></td>
</tr>
</tbody>
</table>

**Element length**

| 2

**Filtration rating**

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

**Seals and treatments**

| A | NBR • • •
| V | FPM • • •
| W | NBR filter element compatible with fluids HFA-HFB-HFC • •
| Z | FPM • • •

**Execution**

| P01 | MP Filtri standard |
| Pxx | Customized |

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Return filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA Electrical differential indicator</td>
<td>242</td>
</tr>
<tr>
<td>DEM Electrical differential indicator</td>
<td>242-243</td>
</tr>
<tr>
<td>DLA Electrical / visual differential indicator</td>
<td>243-244</td>
</tr>
<tr>
<td>DLE Electrical / visual differential indicator</td>
<td>244</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Return filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTA Electronic differential indicator</td>
<td>245</td>
</tr>
<tr>
<td>DVA Visual differential indicator</td>
<td>245</td>
</tr>
<tr>
<td>DVM Visual differential indicator</td>
<td>245</td>
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</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>Return filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2 Plug</td>
<td>246</td>
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</tbody>
</table>
MPLX660

Dimensions

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H3 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>563</td>
<td>445</td>
</tr>
</tbody>
</table>

**MPLX660 with diffuser**

- **O-Ring seal**
- **Drain plug**
- **A/F 95**
- **A/F 100**
- **Holes on the tank**
- **H1 - Total length immersed in the tank**
- **H3 - Recommended clearance space for maintenance**

**MPLX660 without diffuser**

- **O-Ring seal**
- **Drain plug**
- **A/F 95**
- **G 3″**
- **Holes on the tank**
- **M10 - 3/8" UNC Nr. 6 holes**
- **H1 - Total length immersed in the tank**
- **H3 - Recommended clearance space for maintenance**
### Spare Parts MPLX

#### Order number for spare parts

<table>
<thead>
<tr>
<th>Item:</th>
<th>Filter series</th>
<th>Filter element</th>
<th>Seal Kit code number</th>
<th>Indicator connection plug</th>
<th>Diffuser</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MPLX 250</td>
<td>See order table</td>
<td>02050745 02050746</td>
<td>T2H  T2V</td>
<td>STD 100 C 115 P01</td>
</tr>
<tr>
<td></td>
<td>MPLX 660</td>
<td></td>
<td>02050747 02050748</td>
<td></td>
<td>STD 150 E 155 P01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q.ty: 1 pc.</th>
<th>Q.ty: 1 pc.</th>
<th>Q.ty: 1 pc.</th>
<th>Q.ty: 1 pc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3 (3a + 3b)</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

- **Q.ty:** Quantity, **STD:** Standard.
MPTX series

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

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

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

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

Common applications:
- Light industrial equipment
- Mobile application

Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
<td></td>
</tr>
<tr>
<td>MPTX 025</td>
<td>0.41</td>
<td>0.45 0.50</td>
<td></td>
</tr>
<tr>
<td>MPTX 027</td>
<td>0.44</td>
<td>0.48 0.55</td>
<td></td>
</tr>
<tr>
<td>MPTX 110</td>
<td>1.00</td>
<td>1.05 1.15</td>
<td></td>
</tr>
<tr>
<td>MPTX 114</td>
<td>1.10</td>
<td>1.15 1.25</td>
<td></td>
</tr>
<tr>
<td>MPTX 116</td>
<td>1.10</td>
<td>1.15 1.25</td>
<td></td>
</tr>
<tr>
<td>MPTX 120</td>
<td>1.00</td>
<td>1.05 1.15</td>
<td></td>
</tr>
</tbody>
</table>
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.
Flow rates [l/min]

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

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

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

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

Please, contact our Sales Department for further additional information.

Hydraulic symbols

- **Style 1 connection**
- **Style 2 connections**
- **Style 3 connections**

**Filter series**

- MPTX 025
- MPTX 027
- MPTX 110
- MPTX 114
- MPTX 116
- MPTX 120

- Return filters
## MPTX GENERAL INFORMATION

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

![MPTX 025 -027](image1)

### MPTX 110
- **Standard - Single IN Port**
- **Double IN Port - Double indicator port**

![MPTX 110](image2)

- **Double IN Port**
  - Option: double drain port
- **Double IN Port - Indicator port**
  - Option: drain port

![MPTX 110](image3)

### MPTX 120
- **Triple IN port**
  - Option: double drain port

![MPTX 120](image4)
# MPTX MPTX025 - MPTX027

## Designation & Ordering code

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1: MPTX025</th>
<th>Configuration example 2: MPTX027</th>
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<tbody>
<tr>
<td>MPTX025 MPTX027</td>
<td>1 S A G3 A10 E P01</td>
<td>3 C W G6 A03 B P01</td>
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</tbody>
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###-Length

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

### Air breather

<table>
<thead>
<tr>
<th></th>
<th>Without air breather</th>
<th>With air breather 10 µm</th>
<th>With anti-splash and air breather SAP050 10 µm</th>
<th>With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

### Seals and treatments

<table>
<thead>
<tr>
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<th>Axx</th>
<th>NBR</th>
<th>FPM</th>
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<tbody>
<tr>
<td>W NBR</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Z FPM</td>
<td></td>
<td></td>
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### Filtration rating

<table>
<thead>
<tr>
<th>Filter media</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic microfiber</td>
<td>3 µm</td>
<td>25 µm</td>
<td></td>
</tr>
<tr>
<td>Wire mesh</td>
<td>60 µm</td>
<td>60 µm</td>
<td></td>
</tr>
<tr>
<td>Resin impregnated paper</td>
<td>10 µm</td>
<td>25 µm</td>
<td></td>
</tr>
</tbody>
</table>

### Connections

<table>
<thead>
<tr>
<th>Hose diameter</th>
<th>G1 3/8&quot;</th>
<th>G2 G1/2&quot;</th>
<th>G3 G3/4&quot;</th>
<th>G4 3/8&quot; NPT</th>
<th>G5 1/2&quot; NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G6 3/4&quot; NPT</td>
<td>G7 SAE 6 - 9/16&quot; - 16 UNF</td>
<td>G8 SAE 8 - 3/4&quot; - 16 UNF</td>
<td>G9 SAE 12 - 1 1/16&quot; - 12 UN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bypass valve

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>3 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1.75 bar</td>
<td></td>
</tr>
</tbody>
</table>

### Execution

<table>
<thead>
<tr>
<th></th>
<th>Pxx</th>
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</thead>
<tbody>
<tr>
<td>P01</td>
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</table>

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1: MFX020</th>
<th>Configuration example 2: MFX020</th>
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<tbody>
<tr>
<td>MFX020</td>
<td>1 A10 H B E P01</td>
<td>3 A03 W B E P01</td>
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</tbody>
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### Element length

<table>
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<tr>
<th>1</th>
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<th>3</th>
</tr>
</thead>
</table>

### Filtration rating (filter media)

<table>
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<th>Element number</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03 Inorganic microfiber</td>
<td>3 µm</td>
<td>25 µm</td>
<td></td>
</tr>
<tr>
<td>A06 Inorganic microfiber</td>
<td>6 µm</td>
<td>60 µm</td>
<td></td>
</tr>
<tr>
<td>A10 Inorganic microfiber</td>
<td>10 µm</td>
<td>90 µm</td>
<td></td>
</tr>
<tr>
<td>A16 Inorganic microfiber</td>
<td>16 µm</td>
<td>10 µm</td>
<td></td>
</tr>
<tr>
<td>A25 Inorganic microfiber</td>
<td>25 µm</td>
<td>25 µm</td>
<td></td>
</tr>
</tbody>
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### Filter media

<table>
<thead>
<tr>
<th>Media</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic microfiber</td>
<td>3 µm</td>
<td>25 µm</td>
<td></td>
</tr>
<tr>
<td>Wire mesh</td>
<td>10 µm</td>
<td>90 µm</td>
<td></td>
</tr>
<tr>
<td>Inorganic microfiber</td>
<td>6 µm</td>
<td>60 µm</td>
<td></td>
</tr>
<tr>
<td>Resin impregnated paper</td>
<td>10 µm</td>
<td>25 µm</td>
<td></td>
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</tbody>
</table>

### Element aS

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>10 bar</th>
<th>H</th>
<th>10 bar</th>
<th>W</th>
<th>10 bar, compatible with fluids HFA, HFB and HFC</th>
</tr>
</thead>
</table>

### Bypass valve

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>3 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1.75 bar</td>
<td></td>
</tr>
</tbody>
</table>

### Execution

<table>
<thead>
<tr>
<th></th>
<th>Pxx</th>
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<tbody>
<tr>
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### ACCESSORIES

<table>
<thead>
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<th>Indicators</th>
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<tr>
<td>BVA</td>
<td>240</td>
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<tr>
<td>BVR</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
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<tr>
<td>BVQ</td>
<td>241</td>
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</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>248</td>
</tr>
<tr>
<td>DPT</td>
<td>249</td>
</tr>
<tr>
<td>Versions</td>
<td>D/P</td>
</tr>
<tr>
<td>----------</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MPTX025**

**Dimensions**

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

**M10 - 3/8" UNC**

**Nr. 2 holes**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>99</td>
<td>130</td>
</tr>
<tr>
<td>2</td>
<td>163</td>
<td>195</td>
</tr>
<tr>
<td>3</td>
<td>202</td>
<td>230</td>
</tr>
</tbody>
</table>

**MPTX027**

**Dimensions**

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

**M10 - 3/8" UNC**

**Nr. 4 holes**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>99</td>
<td>130</td>
</tr>
<tr>
<td>2</td>
<td>163</td>
<td>195</td>
</tr>
<tr>
<td>3</td>
<td>202</td>
<td>230</td>
</tr>
</tbody>
</table>

**Connections T**

- G 1/8" NPT
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
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<tbody>
<tr>
<td>MPTX110</td>
<td>MPTX110</td>
<td>MPTX110</td>
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<tr>
<td>Designation &amp; Ordering code</td>
<td>Configuration example 1:</td>
<td>Configuration example 2:</td>
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<tr>
<td>MPTX109</td>
<td>1 S A G1 0 A06 E P01</td>
<td>3 P V G4 1 M25 B P01</td>
</tr>
</tbody>
</table>

**Length**
- 1
- 2
- 3
- 4

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

**Seals and treatments**
- Axx: Filter element compatible with fluids HFA-HFB-HFC
- Mxx: Head anodized
- Pxx: Filter media head anodized

**Main Connections**
- G1: G 3/4”
- G2: G 1”
- G3: G 1 1/4”
- G4: G 3/4” NPT
- G5: G 1” NPT

**Filtration rating**
- 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

**Additional features**
- TE: Extension tube 248
- DFS: Diffuser with fast lock connection 249

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
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</thead>
<tbody>
<tr>
<td>MFX100</td>
<td>MFX100</td>
<td>MFX100</td>
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</table>

**Element length**
- 1
- 2
- 3
- 4

**Filtration rating**
- A03: Inorganic microfiber 3 µm
- A06: Inorganic microfiber 6 µm
- A10: Inorganic microfiber 10 µm
- A16: Inorganic microfiber 16 µm
- A25: Inorganic microfiber 25 µm

**Element 0µ**
- N: 10 bar
- H: 10 bar
- W: 10 bar, compatible with fluids HFA, HFB and HFC

### ACCESSORIES

**Indicators**
- BVA: Axial pressure gauge 240
- BVR: Radial pressure gauge 240
- BVF: Visual pressure indicator with automatic reset 241
- BVQ: Visual pressure indicator with manual reset 241

**Additional features**
- TE: Extension tube 248
- DFS: Diffuser with fast lock connection 249

**Seals and Bypass valve**
- B: NBR
- V: FPM

**Execution**
- P01: MP Filtri standard
- Pxx: Customized
**MPTX110 Dimensions**

### Filter Length

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
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<td>1</td>
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<td>4</td>
<td>324</td>
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</tbody>
</table>

### Connections

- **G1-G2-G3**
- **G4-G5-G6-G7-G8-G9**

**G 1/8” 1/8” NPT**

#### Holes on the tank

- **Ø69-90**
- **Ø114-116**

#### Versions

- **D/P**
- **C**
- **S**

**T - Connection for clogging indicator**

**H1 - Total length immersed in the tank**

**H2 - Recommended clearance space for maintenance**

**IN**

**OUT**

**Flat seal**

**M10 - 3/8” UNC Nr. 2 holes**
### Dimensions MPTX114

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
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<tbody>
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<td>1</td>
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**Connections**

<table>
<thead>
<tr>
<th>T</th>
<th>G1-G2-G3</th>
<th>1/8&quot; NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8&quot; NPT</td>
<td></td>
</tr>
</tbody>
</table>

**Holes on the tank**

- H2 - Recommended clearance space for maintenance
- H1 - Total length immersed in the tank

**Versions**

- D/P
- C
- S

**Connections**

- G1-G2-G3
- G4-G5-G6-G7-G8-G9

**Connections**

- 1/8" NPT

**Flat seal**

- T - Connection for clogging indicator

**Holes on the tank**

- M10 - 3/8" UNC
- Nr. 4 holes
### Designation & Ordering code

#### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1: MPTX116 1 S A G1 M90 E P01</th>
<th>Configuration example 2: MPTX116 2 S Z G9 A03 B P01</th>
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</thead>
<tbody>
<tr>
<td>Length</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Air breather</td>
<td>S</td>
<td>Without air breather</td>
</tr>
<tr>
<td>Seals and treatments</td>
<td>Axx</td>
<td>Mxx</td>
</tr>
<tr>
<td>Connections</td>
<td>G1 G 3/4&quot;</td>
<td>G6 1 1/4&quot; NPT</td>
</tr>
<tr>
<td>Filtration rating</td>
<td>A03 Inorganic microfiber 3 µm</td>
<td>M25 Wire mesh 25 µm</td>
</tr>
<tr>
<td>Bypass valve</td>
<td>E 3 bar</td>
<td>Execution</td>
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#### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 2: MF100 1 M90 N B E P01</th>
<th>Configuration example 1: MF100 2 A03 W V P01</th>
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<tbody>
<tr>
<td>Element length</td>
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<td>2</td>
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<tr>
<td>Filtration rating (filter media)</td>
<td>A03 Inorganic microfiber 3 µm</td>
<td>M25 Wire mesh 25 µm</td>
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<tr>
<td>Filter media</td>
<td>N 10 bar</td>
<td>•</td>
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#### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
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<tbody>
<tr>
<td>BVA</td>
<td>240</td>
<td>BEA</td>
</tr>
<tr>
<td>BVR</td>
<td>240</td>
<td>BEM</td>
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<tr>
<td>BVP</td>
<td>241</td>
<td>BLA</td>
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<tr>
<td>BVQ</td>
<td>241</td>
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<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
<th>page</th>
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<tbody>
<tr>
<td>TE</td>
<td>248</td>
<td>DPT</td>
</tr>
<tr>
<td>DFS</td>
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</tbody>
</table>
**Dimensions**

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<th>H1 [mm]</th>
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<td>4</td>
<td>326</td>
<td>350</td>
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</tbody>
</table>

**Connections**

- G1-G2-G3
- G4-G5-G6-G7-G8-G9

- G 1/8" NPT

**IN**

**OUT**

- O-Ring seal

- H1 - Total length immersed in the tank

- H2 - Recommended clearance space for maintenance

- T - Connection for clogging indicator

- Holes on the tank
  - Option for 2 and 4 screws
  - M10 - 3/8" UNC
  - Nr. 4 holes at 90°
  - Nr. 2 holes

- Return filters

- MPTX116
## COMPLETE FILTER

<table>
<thead>
<tr>
<th>Designation &amp; Ordering code</th>
<th>FILTER ELEMENT</th>
<th>FILTER ELEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPTX120 Filter element with private spigot</td>
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<td></td>
</tr>
<tr>
<td><strong>Series and size</strong></td>
<td><strong>Configuration example 1:</strong></td>
<td><strong>Configuration example 2:</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td><strong>MPTX120</strong></td>
<td><strong>MPTX120</strong></td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td>G2</td>
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<tr>
<td>3</td>
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<td>G2</td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>G2</td>
</tr>
<tr>
<td><strong>Seals and treatments</strong></td>
<td><strong>Execution</strong></td>
<td><strong>Execution</strong></td>
</tr>
<tr>
<td></td>
<td><strong>P01</strong></td>
<td><strong>P01</strong></td>
</tr>
<tr>
<td>A NBR</td>
<td>Mxx</td>
<td>Pxx</td>
</tr>
<tr>
<td>V FPM</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>W NBR head anodized</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Z FPM head anodized</td>
<td>•</td>
<td>•</td>
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<tr>
<td><strong>Main Connections</strong></td>
<td><strong>Rear connections</strong></td>
<td><strong>Aux size 1</strong></td>
</tr>
<tr>
<td>G1 G 3/4”</td>
<td>G 3/4”</td>
<td>3/8” NPT</td>
</tr>
<tr>
<td>G2 G 1”</td>
<td>G 1”</td>
<td>3/4” NPT</td>
</tr>
<tr>
<td>G3 G 1 1/4”</td>
<td>G 3/4”</td>
<td>3/8” NPT</td>
</tr>
<tr>
<td>G4 3/4” NPT</td>
<td>3/4” NPT</td>
<td>3/4” NPT</td>
</tr>
<tr>
<td>G5 1” NPT</td>
<td>1” NPT</td>
<td>3/8” NPT</td>
</tr>
<tr>
<td>G6 1 1/4” NPT</td>
<td>1 1/4” NPT</td>
<td>SAE 6 - 9/16” - 18 UN</td>
</tr>
<tr>
<td>G7 SAE 12 - 1 1/4” - 12 UN</td>
<td>SAE 12 - 1 1/16” - 12 UN</td>
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</tr>
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<td>G8 SAE 16 - 1 5/8” - 12 UN</td>
<td>SAE 16 - 1 1/4” - 12 UN</td>
<td></td>
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<tr>
<td>G9 SAE 20 - 1 5/8” - 12 UN</td>
<td>SAE 12 - 1 1/16” - 12 UN</td>
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<tr>
<td><strong>Aux connection</strong></td>
<td><strong>Bypass valve</strong></td>
<td><strong>Execution</strong></td>
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<tr>
<td>0 Not machined</td>
<td>E 3 bar</td>
<td>P01 MP Filtri standard</td>
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<tr>
<td>1 Aux size 1</td>
<td>B 1.75 bar</td>
<td>Pxx Customized</td>
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<tr>
<td>2 Aux size 2</td>
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## FILTER ELEMENT

<table>
<thead>
<tr>
<th>Designation &amp; Ordering code</th>
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<th>FILTER ELEMENT</th>
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<tbody>
<tr>
<td>MFX100 Filter element with private spigot</td>
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<tr>
<td><strong>Series and size</strong></td>
<td><strong>Configuration example 1:</strong></td>
<td><strong>Configuration example 2:</strong></td>
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<td><strong>MFX100</strong></td>
<td><strong>MFX100</strong></td>
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<tr>
<td>1</td>
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<td>H</td>
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<td>2</td>
<td>A06</td>
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<td>3</td>
<td>M90</td>
<td>E</td>
</tr>
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<td>4</td>
<td>M90</td>
<td>P01 MP Filtri standard</td>
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<tr>
<td><strong>Filtration rating (filter media)</strong></td>
<td><strong>Bypass valve</strong></td>
<td><strong>Execution</strong></td>
</tr>
<tr>
<td>A03 Inorganic microfiber</td>
<td>3 µm</td>
<td>M25 Wire mesh 25 µm</td>
</tr>
<tr>
<td>A06 Inorganic microfiber</td>
<td>6 µm</td>
<td>M60 Wire mesh 60 µm</td>
</tr>
<tr>
<td>A10 Inorganic microfiber</td>
<td>10 µm</td>
<td>M90 Wire mesh 90 µm</td>
</tr>
<tr>
<td>A16 Inorganic microfiber</td>
<td>16 µm</td>
<td>P10 Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>A25 Inorganic microfiber</td>
<td>25 µm</td>
<td>P25 Resin impregnated paper 25 µm</td>
</tr>
<tr>
<td><strong>Element Øp</strong></td>
<td><strong>Execution</strong></td>
<td><strong>Execution</strong></td>
</tr>
<tr>
<td>N 10 bar</td>
<td></td>
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</tr>
<tr>
<td>H 10 bar</td>
<td></td>
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<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
<td></td>
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<tr>
<td><strong>Seals</strong></td>
<td><strong>Bypass valve</strong></td>
<td><strong>Execution</strong></td>
</tr>
<tr>
<td>B NBR</td>
<td>E 3 bar</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td>V FPM</td>
<td>1.75 bar</td>
<td>Pxx Customized</td>
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## ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>Additional features</th>
<th>page</th>
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<tbody>
<tr>
<td>BVA Axial pressure gauge</td>
<td>240</td>
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</tr>
<tr>
<td>BVR Radial pressure gauge</td>
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<tr>
<td>BVP Visual pressure indicator with automatic reset</td>
<td>241</td>
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<tr>
<td>BVQ Visual pressure indicator with manual reset</td>
<td>241</td>
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<tr>
<td>BEA Electrical pressure indicator</td>
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<tr>
<td>BEM Electrical pressure indicator</td>
<td>239</td>
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<tr>
<td>BLA Electrical / visual pressure indicator</td>
<td>239-240</td>
<td></td>
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<tr>
<td>TE Extension tube</td>
<td>248</td>
<td>DPT Dipstick</td>
<td>249</td>
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<tr>
<td>DFS Diffuser with fast lock connection</td>
<td>249</td>
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### MPTX120 Dimensions

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
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<tbody>
<tr>
<td>1</td>
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#### Connections

<table>
<thead>
<tr>
<th>T</th>
<th>G1-G2-G3</th>
<th>G4-G5-G6-G7-G8-G9</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>G 1/8&quot;</td>
<td>1/8&quot; NPT</td>
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</tbody>
</table>

**IN** - Connection for clogging indicator

**OUT** - Flat seal

**H2** - Recommended clearance space for maintenance

**H1** - Total length immersed in the tank

**Holes on the tank**

**M10 - 3/8" UNC**

**Nr. 2 holes**

**T** - Connection for clogging indicator

**IN** - Return filters

**OUT** - Return filters
MPTX SPARE PARTS

Order number for spare parts

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>MPTX 025</td>
<td>See order table</td>
<td>02050701 02050702</td>
<td>10 µm A3L03 10 µm SAP50G3L03A0P01</td>
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<td>MPTX 110</td>
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<td>02050709 02050710</td>
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<table>
<thead>
<tr>
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<th>Filter element</th>
<th>Seal Kit code number</th>
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<tbody>
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<td>Filter element</td>
<td>Seal Kit code number</td>
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<td>SAP50G3L03A1P01</td>
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</table>

Return filters

MPTX 114

MPTX 120
MFBX series
BOWL ASSEMBLY

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

**Return filter**

**Bowl assembly**

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

MFBX is a range of return filter kits for protection of the reservoir against the system contamination.
They are directly integrated in the moulded reservoir in immersed or semi-immersed position to save space into the tank.
Treaded or flanged covers can be provided.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

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

**Common applications:**
Mobile machines

**Weights [kg] and volumes [dm³]**

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>MFBX 020</td>
<td>0.25</td>
<td>0.35 0.40 -</td>
<td>0.10</td>
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<tr>
<td>MFBX 030</td>
<td>0.25</td>
<td>- - - -</td>
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<td>MFBX 100</td>
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<td>0.60 0.75 0.95</td>
<td>0.35 0.50 0.80 1.10</td>
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<td>MFBX 190</td>
<td>-</td>
<td>2.40 - -</td>
<td>- 3.00 -</td>
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</table>

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

**Δp element type**
- Microfi bre 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.

Return filters
### Flow rates [l/min]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
<th>M25</th>
<th>M60</th>
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</tbody>
</table>

Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
Please, contact our Sales Department for further additional information.

### Hydraulic symbols

- **MFBX 020**
- **MFBX 030**
- **MFBX 100**
- **MFBX 180**
- **MFBX 190**
### COMPLETE FILTER

**Series and size**

<table>
<thead>
<tr>
<th>MFBX020</th>
<th>MFBX030</th>
<th>MFBX100</th>
<th>MFBX180</th>
<th>MFBX190</th>
</tr>
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<tbody>
<tr>
<td><strong>F</strong></td>
<td><strong>F</strong></td>
<td><strong>F</strong></td>
<td><strong>F</strong></td>
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<table>
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<td>2</td>
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**Seals**

<table>
<thead>
<tr>
<th>A</th>
<th>NBR</th>
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<tbody>
<tr>
<td>V</td>
<td>FPM</td>
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**Version**

<table>
<thead>
<tr>
<th>Without cover</th>
<th>With flanged cover type MPF</th>
<th>With threaded cover type MPF</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Filtration rating (filter media)**

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

**Element Δp**

<table>
<thead>
<tr>
<th>N 10 bar</th>
<th>H 10 bar</th>
</tr>
</thead>
</table>

**Bypass valve**

<table>
<thead>
<tr>
<th>E 3 bar</th>
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</table>

**Execution**

<table>
<thead>
<tr>
<th>P01 MP Filtri standard</th>
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<table>
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<tr>
<th>Configuration example 1:</th>
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<table>
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<th>Configuration example 2:</th>
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<tr>
<td>MFBX180 2 V 1 M25 N B P01</td>
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### FILTER ELEMENT

**Element series and size**

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<td><strong>F</strong></td>
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<td><strong>F</strong></td>
</tr>
</tbody>
</table>

**Element length**

| 1      |
|        |
| 2      |
| 3      |
| 4      |

**Filtration rating (filter media)**

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

**Element Δp**

<table>
<thead>
<tr>
<th>N 10 bar</th>
<th>H 10 bar</th>
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**Seals**

<table>
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<th>B NBR</th>
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**Bypass valve**

<table>
<thead>
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<th>E 3 bar</th>
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**Execution**

<table>
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<th>P01 MP Filtri standard</th>
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### ACCESSORIES

**Additional features**

<table>
<thead>
<tr>
<th>TE Extension tube</th>
<th>MFBX020</th>
<th>MFBX030</th>
<th>MFBX100</th>
<th>MFBX180</th>
<th>MFBX190</th>
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<th>MFBX030</th>
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### Dimensions

#### Filter size

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</tbody>
</table>

**Version 1**

**Version 2**

**Version 3**
### MFBX SPARE PARTS

Order number for spare parts

#### MFBX version 1

![Diagram of MFBX version 1](image)

#### MFBX version 2

![Diagram of MFBX version 2](image)

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty: 1 pc.</th>
<th>Filter series</th>
<th>Seal Kit code number</th>
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<td>MFBX 020</td>
<td>NBR: 02050713 FPM: 02050714</td>
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<td>MFBX 030</td>
<td>NBR: 02050715 FPM: 02050716</td>
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<td>NBR: 02050717 FPM: 02050718</td>
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<td></td>
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<td>MFBX 180-190</td>
<td>NBR: 02050719 FPM: 02050720</td>
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</tbody>
</table>
MPF series

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

Return filters
Return filter

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

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

Available features:
- Female threaded connections up to 2” and flanged connections up to 2”, for a maximum flow rate of 750 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve integrated into the filter element, to relieve excessive pressure drop across the filter media
- 2, 3 or 4 fixing holes for installation, to meet any reservoir surface flatness and roughness
- O-ring or Flat seal, to meet any reservoir surface flatness and roughness
- Oil dipstick, to easily check the level of the fluid into the reservoir (sold as separate item)
- Extension tube, to be used in deep reservoirs (sold as separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise (sold as separate item)
- Filler plug, to fill cleaned fluid into the tank without an additional connection
- Visual, electrical and electronic clogging indicators

Common applications:
- Light industrial equipment
- Mobile application

Filter housing materials
- Head: Aluminium
- Cover: Nylon: MPF 020-030-100-104-110
- 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
MPF filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>MPF 750</td>
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The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. \( \Delta p \) varies proportionally with density.
MPF GENERAL INFORMATION

Flow rates [l/min]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>Filter element design - H series</th>
<th>Filter element design - N series</th>
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<tbody>
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<td>M25 M60 P10 P25</td>
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<td>MPF 181-182-184</td>
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<td>237 252 454 462 589</td>
<td>868 619 645</td>
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<td>248 288 553 609 621</td>
<td>885 680 703</td>
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<tr>
<td>MPF 410</td>
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<td>MPF 750</td>
<td>1</td>
<td>392 465 623 700 769</td>
<td>929 804 819</td>
</tr>
</tbody>
</table>

Maximum flow rate for a complete return filter with a pressure drop ∆p = 0.5 bar.
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
Please, contact our Sales Department for further additional information.

Hydraulic symbols

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Style 1 connection</th>
<th>Style 2 connections</th>
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<td>MPF 110</td>
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</tr>
<tr>
<td>MPF 750</td>
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</tbody>
</table>
MPF GENERAL INFORMATION

Multiport

- Standard - Single IN port
- Double IN port - Drain port
  Option: indicator port
- Double IN port
  Option: double indicator port
- Double IN port - Double drain port
  Option: indicator port

Return filters
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPF020</td>
<td>MPF030</td>
<td>Filter element with standard spigot</td>
</tr>
</tbody>
</table>

**Length**
- 1

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

**Connections**

<table>
<thead>
<tr>
<th>Size 20</th>
<th>Size 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Hose barb ø12</td>
</tr>
</tbody>
</table>

| G1 | 1/2” |
| G4 | 1/2” NPT |
| G7 | SAE 8 - 3/4“ - 16 UNF |

**Filtration rating (filter media)**

| Axx | Mxx | Pxx |
| A03 | Inorganic microfiber | 3 µm | M25 | Wire mesh 25 µm |
| A06 | Inorganic microfiber | 6 µm | M60 | Wire mesh 60 µm |
| A10 | Inorganic microfiber | 10 µm | M90 | Wire mesh 90 µm |
| A16 | Inorganic microfiber | 16 µm | P10 | Resin impregnated paper 10 µm |
| A25 | Inorganic microfiber | 25 µm | P25 | Resin impregnated paper 25 µm |

**Filtration rating (filter media)**

| Axx | Mxx | Pxx |
| A03 | Inorganic microfiber | 3 µm | M25 | Wire mesh 25 µm |
| A06 | Inorganic microfiber | 6 µm | M60 | Wire mesh 60 µm |
| A10 | Inorganic microfiber | 10 µm | M90 | Wire mesh 90 µm |
| A16 | Inorganic microfiber | 16 µm | P10 | Resin impregnated paper 10 µm |
| A25 | Inorganic microfiber | 25 µm | P25 | Resin impregnated paper 25 µm |

**Filter media**

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

**Seals**
- B NBR
- V FPM
- E 3 bar
- B 1.75 bar

**Bypass valve**
- E P01 MP Filtri standard
- B Pxx Customized

**Execution**
- Pxx Customized

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF030</td>
<td>MF030</td>
<td>Filter element with standard spigot</td>
</tr>
</tbody>
</table>

**Element length**
- 1

**Filtration rating (filter media)**

| Axx | Mxx | Pxx |
| A03 | Inorganic microfiber | 3 µm | M25 | Wire mesh 25 µm |
| A06 | Inorganic microfiber | 6 µm | M60 | Wire mesh 60 µm |
| A10 | Inorganic microfiber | 10 µm | M90 | Wire mesh 90 µm |
| A16 | Inorganic microfiber | 16 µm | P10 | Resin impregnated paper 10 µm |
| A25 | Inorganic microfiber | 25 µm | P25 | Resin impregnated paper 25 µm |

**Filter media**

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

**Seals**
- B NBR
- V FPM
- E 3 bar
- B 1.75 bar

**Bypass valve**
- E P01 MP Filtri standard
- B Pxx Customized

**Execution**
- Pxx Customized

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
</tr>
<tr>
<td>TE</td>
<td>Extension tube</td>
</tr>
<tr>
<td>TS</td>
<td>Filter plug M30x1.5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return filters</td>
<td>130</td>
</tr>
</tbody>
</table>
**MPF020 - MPF030**

**Dimensions**

**MPF020**

- **Holes on the tank**
- **M6 - 1/4” UNC**
- **Nr. 3 holes**
- **Flat seal**
- **G 1/8” Connection for clogging indicator**

**Recommended clearance space for maintenance**

- **Total length immersed in the tank**

**MPF030**

- **Holes on the tank**
- **M6 - 1/4” UNC**
- **Nr. 2 holes**

**Recommended clearance space for maintenance**

- **Total length immersed in the tank**

**O-Ring seal**

- **G 1/8” Connection for clogging indicator**
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
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<tbody>
<tr>
<td>MPF100</td>
<td>MPF100</td>
<td>MPF104</td>
</tr>
<tr>
<td>MPF104</td>
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<td></td>
</tr>
</tbody>
</table>

#### Designation & Ordering code

- **MPF100 - MPF104**
- **Filter element with standard spigot**

#### Length

| 1 | 2 | 3 | 4 |

#### Seals and treatments

- A: NBR
- V: FPM
- W: NBR, head anodized
- Z: FPM, head anodized

#### Connections

<table>
<thead>
<tr>
<th>Connections</th>
<th>Size 100</th>
<th>Size 104</th>
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<tbody>
<tr>
<td>G1</td>
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<tr>
<td>G2</td>
<td>G 3/4&quot;</td>
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<td>G3</td>
<td>G 1&quot;</td>
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<tr>
<td>G4</td>
<td>1/2&quot; NPT</td>
<td></td>
</tr>
<tr>
<td>G5</td>
<td>3/4&quot; NPT</td>
<td></td>
</tr>
<tr>
<td>G6</td>
<td>1&quot; NPT</td>
<td></td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

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

#### Element Øp

- N 10 bar
- H 10 bar
- W 10 bar, compatible with fluids HFA, HFB and HFC

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
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<td>MF100</td>
<td>MF104</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Element length

| 1 | 2 | 3 | 4 |

#### Filtration rating (filter media)

- A03 Inorganic microfiber 3 µm
- A06 Inorganic microfiber 6 µm
- A10 Inorganic microfiber 10 µm
- A16 Inorganic microfiber 16 µm
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- P10 Resin impregnated paper 10 µm
- P25 Resin impregnated paper 25 µm

#### Element Øp

- N 10 bar
- H 10 bar
- W 10 bar, compatible with fluids HFA, HFB and HFC

### ACCESSORIES

#### Indicators

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

#### Additional features

- TE Extension tube
- DFS Diffuser with fast lock connection

#### Bypass valve

- E 3 bar
- B 1.75 bar

#### Execution

- P01 MP Filtri standard
- Pxx Customized

####返回过滤器

- 132
**MPF**

**Designation & Ordering code**

### COMPLETE FILTER

<table>
<thead>
<tr>
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<td><strong>MPF110</strong> 2 A G2 1 A16 H E P01</td>
<td><strong>MPF110</strong> 4 V G12 1 M60 N B P01</td>
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**Length**

| 1 | 2 | 3 | 4 |

**Seals and treatments**

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<th>Aux size 2</th>
<th>Main Connections</th>
<th>Aux size 1</th>
<th>Aux size 2</th>
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<td>G1</td>
<td>G 1/2&quot;</td>
<td>G 3/8&quot;</td>
<td>G7</td>
<td>SAE 8 - 3/4&quot; - 16 UNF</td>
<td>SAE 6 - 9/16&quot; - 18 UNF</td>
</tr>
<tr>
<td>G2</td>
<td>G 3/4&quot;</td>
<td>G 1/2&quot;</td>
<td>G8</td>
<td>SAE 12 - 1 1/16&quot; - 12 UN</td>
<td>SAE 8 - 3/4&quot; - 16 UNF</td>
</tr>
<tr>
<td>G3</td>
<td>G 1&quot;</td>
<td>3/8&quot; NPT</td>
<td>G9</td>
<td>SAE 16 - 1 5/16&quot; - 12 UN</td>
<td>SAE 8 - 3/4&quot; - 16 UNF</td>
</tr>
<tr>
<td>G4</td>
<td>1/2&quot; NPT</td>
<td>1/2&quot; NPT</td>
<td>G10</td>
<td>G 1 1/4&quot;</td>
<td>G 3/8&quot;</td>
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<tr>
<td>G5</td>
<td>3/4&quot; NPT</td>
<td>3/8&quot; NPT</td>
<td>G11</td>
<td>1 1/4&quot; NPT</td>
<td>3/8&quot; NPT</td>
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<td>1&quot; NPT</td>
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<td>G12</td>
<td>20 - 1 5/8&quot; - 12 UN</td>
<td>SAE 6 - 9/16&quot; - 18 UNF</td>
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**Filtration rating (filter media)**

<table>
<thead>
<tr>
<th>Element Øp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
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</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>
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</table>

**Filtration rating (filter media)**

<table>
<thead>
<tr>
<th>Element Øp</th>
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<th>Pxx</th>
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<tr>
<td>H 10 bar</td>
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<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
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### FILTER ELEMENT

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<td><strong>MF100</strong> 4 M60 N V P01</td>
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**Element length**

| 1 | 2 | 3 | 4 |

**Filtration rating (filter media)**

<table>
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<tr>
<th>Element Øp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
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<tbody>
<tr>
<td>N 10 bar</td>
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<td>•</td>
</tr>
<tr>
<td>H 10 bar</td>
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<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
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**Filtration rating (filter media)**

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<th>Element Øp</th>
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<th>Mxx</th>
<th>Pxx</th>
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</tr>
<tr>
<td>H 10 bar</td>
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<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
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### ACCESSORIES

**Indicators**

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<th>Indicators</th>
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<tbody>
<tr>
<td>BVA</td>
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<tr>
<td>BVR</td>
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<tr>
<td>BVP</td>
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<tr>
<td>BVQ</td>
<td>241</td>
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</table>

**Bypass valve**

<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 3 bar</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td>B 1.75 bar</td>
<td>Pxx Customized</td>
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</tbody>
</table>

**Seals**

<table>
<thead>
<tr>
<th>Seals</th>
<th>Bypass valve</th>
<th>Execution</th>
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<tbody>
<tr>
<td>B NBR</td>
<td>E 3 bar</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td>V FPM</td>
<td>B 1.75 bar</td>
<td>Pxx Customized</td>
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**Additional features**

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**Return filters**

<table>
<thead>
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<th>page</th>
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<tbody>
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**MPF110**

**Dimensions**

<table>
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<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
<th>I [mm]</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>38</td>
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</tr>
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<td>2</td>
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<td>3</td>
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<tr>
<td>4</td>
<td>327</td>
<td>350</td>
<td>47</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Connections**

| G1-G2-G3      | G 1/8“ NPT |
| G4-G5-G6-G7-G8-G9 | G 1/8“ |
| G10           | 1/8“ NPT   |
| G11-G12       | 1/8“ NPT   |

- **O-Ring seal**
- **H1 - Total length immersed in the tank**
- **H2 - Recommended clearance space for maintenance**
- **Connections T**
  - **T** - Connection for clogging indicator
  - **G 1/8“ Connection for clogging indicator**
  - **Holes on the tank**
  - **IN**
  - **OUT**
  - **Nr. 2 holes**
  - **M8 - 5/16“ UNC**
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>**MPF181</td>
<td>MPF191**</td>
<td>Filter element with standard spigot</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>**Size 181</td>
<td>Size 191**</td>
</tr>
<tr>
<td>1</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

| Seals and treatments | | |
|----------------------|------------------|
| **Seats** | **Treatments** |
| A NBR | B NBR, flat seal on head |
| V FPM | D FPM, flat seal on head |
| W NBR | L NBR, head anodized, flat seal on head |
| Z FPM | M FPM, head anodized, flat seal on head |

<table>
<thead>
<tr>
<th>Connections</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G1</strong> G 1 1/4&quot;</td>
<td><strong>G5</strong> NPT</td>
</tr>
<tr>
<td><strong>G2</strong> G 1 1/2&quot;</td>
<td><strong>G7</strong> SAE 20 - 1 5/8&quot; - 12 UN</td>
</tr>
<tr>
<td><strong>G4</strong> G 1 1/4&quot; NPT</td>
<td><strong>G8</strong> SAE 24 - 1 7/8&quot; - 12 UN</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th></th>
</tr>
</thead>
<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>
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<table>
<thead>
<tr>
<th>Element Δp</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>H 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 3 bar</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td>B 1.75 bar</td>
<td>Pxx Customized</td>
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### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
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<tbody>
<tr>
<td>**MF180</td>
<td>MF190**</td>
<td>Filter element with standard spigot</td>
</tr>
<tr>
<td><strong>Element length</strong></td>
<td>**Size 180</td>
<td>Size 190**</td>
</tr>
<tr>
<td>1</td>
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<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
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</thead>
<tbody>
<tr>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>H 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>E 3 bar</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td>B 1.75 bar</td>
<td>Pxx Customized</td>
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### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
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<tbody>
<tr>
<td>BVA</td>
<td>240</td>
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<tr>
<td>BVR</td>
<td>240</td>
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<td>BVP</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
</tr>
<tr>
<td>Additional features</td>
<td>page</td>
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<tr>
<td>TE</td>
<td>248</td>
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<tr>
<td>SX</td>
<td>248</td>
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<tr>
<td>TS</td>
<td>248</td>
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<table>
<thead>
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<th>Indicators</th>
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<tr>
<td>BEM</td>
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<td>BEA</td>
<td>239</td>
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<tr>
<td>BEM</td>
<td>239</td>
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<tr>
<td>BLA</td>
<td>239-240</td>
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Return filters
**MPF181**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>235</td>
<td>255</td>
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<tr>
<td>2</td>
<td>448</td>
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**Connections**

<table>
<thead>
<tr>
<th>Connections</th>
<th>H3 [mm]</th>
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<tbody>
<tr>
<td>G1 - G4 - G7</td>
<td>35</td>
</tr>
<tr>
<td>G2 - G5 - G8</td>
<td>37</td>
</tr>
</tbody>
</table>

**MPF191**

**Dimensions**

**H1** - Total length immersed in the tank

**H2** - Recommended clearance space for maintenance

**H3** - Recommended clearance space for maintenance

**Holes on the tank**

Option for 3 and 4 screws

**IN** - Optional connection for clogging indicator

**OUT**

**Diameter**

- Ø47
- Ø130
- Ø50
- Ø131
- Ø175

**Return filters**

**Nr. of holes at 120°**

- 3 holes

**Nr. of holes at 90°**

- 4 holes

**G 1/8” Connection**

**Option for 3 and 4 screws**

**O-Ring seal**

**NR. 3 HOLES AT 120°**

**NR. 4 HOLES AT 90°**

**Option for 3 and 4 screws**
## COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>MPF182</th>
<th>1</th>
<th>A</th>
<th>G1</th>
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<th>A25</th>
<th>H</th>
<th>E</th>
<th>P01</th>
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<tbody>
<tr>
<td>MPF182</td>
<td>Filter element with standard spigot</td>
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<tr>
<td>Length</td>
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<td>Size 192</td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Seals and treatments | | | | | | |
|----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| A | NBR | flat seal on head |
| V | FPM | flat seal on head |
| W | NBR | head anodized, flat seal on head |
| Z | FPM | head anodized, flat seal on head |

<table>
<thead>
<tr>
<th>Main Connections</th>
<th>Aux size 1</th>
<th>Aux size 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>G 1 1/4&quot;</td>
<td>G 3/4&quot;</td>
</tr>
<tr>
<td>G4</td>
<td>1 1/4&quot; NPT</td>
<td>3/4&quot; NPT</td>
</tr>
<tr>
<td>G7</td>
<td>SAE 20 - 1 5/8&quot; - 12 UN</td>
<td>SAE 12 - 1 1/16&quot; - 12 UN</td>
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<table>
<thead>
<tr>
<th>Aux connection</th>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>Aux size 2</td>
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</table>

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

<table>
<thead>
<tr>
<th>Element Δp</th>
<th>Axx</th>
<th>Mxx</th>
<th>Px3x</th>
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<tbody>
<tr>
<td>N</td>
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<tr>
<td>H</td>
<td>10 bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>10 bar, compatible with fluids HFA, HFB and HFC</td>
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## FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>MF180</th>
<th>1</th>
<th>A25</th>
<th>H</th>
<th>B</th>
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<th>P01</th>
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<tr>
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<td>Element length</td>
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<td>Size 190</td>
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</table>

| Filtration rating (filter media) | | |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|
| A03 Inorganic microfiber | 3 µm | M25 | Wire mesh 25 µm |
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<tr>
<th>Element Δp</th>
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<th>Mxx</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>10 bar</td>
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<td>10 bar, compatible with fluids HFA, HFB and HFC</td>
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## ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
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<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
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<td>BVR</td>
<td>Radial pressure gauge</td>
<td>240</td>
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</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
<td>241</td>
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<thead>
<tr>
<th>Additional features</th>
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<tbody>
<tr>
<td>TE</td>
<td>Extension tube</td>
<td>248</td>
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<tr>
<td>Sxx</td>
<td>Extension tube</td>
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<tr>
<td>TS</td>
<td>Filter plug M30x1.5</td>
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<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>Execution</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>E</td>
<td>3 bar</td>
<td>P01</td>
</tr>
<tr>
<td>B</td>
<td>1.75 bar</td>
<td>Pxx</td>
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<table>
<thead>
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<th>Indicators</th>
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</thead>
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<td>BEA</td>
<td>Electrical pressure indicator</td>
<td>239</td>
</tr>
<tr>
<td>BEM</td>
<td>Electrical pressure indicator</td>
<td>239</td>
</tr>
<tr>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
<td>239-240</td>
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</table>
MPF182 - MPF192

**MPF182**

<table>
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<tr>
<th>Filter number</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
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<tbody>
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<td>1</td>
<td>235</td>
<td>255</td>
</tr>
<tr>
<td>2</td>
<td>448</td>
<td>475</td>
</tr>
</tbody>
</table>

- **H1** - Total length immersed in the tank
- **H2** - Recommended clearance space for maintenance

**Dimensions**

IN ▼

OUT ▼

O-Ring seal

T - Optional connection for clogging indicator

G 1/8” Connection for clogging indicator

M10 - 3/8” UNC

Nr. 3 holes at 120°

Nr. 4 holes at 90°

T - Optional connection for clogging indicator

**MPF192**

IN ▼

OUT ▼

O-Ring seal

T - Optional connection for clogging indicator

G 1/8” Connection for clogging indicator

T - Optional connection for clogging indicator

M10 - 3/8” UNC

Nr. 3 holes at 120°

Nr. 4 holes at 90°

T - Optional connection for clogging indicator

Holes on the tank Option for 3 and 4 screws

Total length immersed in the tank

Recommended clearance space for maintenance

Holes on the tank Option for 3 and 4 screws

Return filters
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1: MPF184 1 A A25 H E P01</th>
<th>Configuration example 2: MPF194 2 V F3 P10 N B P01</th>
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<tr>
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<td>Filter element with standard spigot</td>
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<td><strong>Length</strong></td>
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<td>2</td>
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</tr>
<tr>
<td><strong>Seals and treatments</strong></td>
<td>A NBR W NBR head anodized</td>
<td>V FPM Z FPM head anodized</td>
</tr>
<tr>
<td><strong>Main Connections</strong></td>
<td><strong>Rear connections</strong></td>
<td><strong>Main Connections</strong></td>
</tr>
<tr>
<td>G1 G 1 1/4&quot;</td>
<td>-</td>
<td>G13 G 1 1/2&quot; -</td>
</tr>
<tr>
<td>G2 G 1 1/4&quot;</td>
<td>G 1 1/4&quot;</td>
<td>G14 G 1 1/2&quot; G 1 1/4&quot;</td>
</tr>
<tr>
<td>G4 1 1/4&quot; NPT</td>
<td>-</td>
<td>G15 1 1/2&quot; NPT -</td>
</tr>
<tr>
<td>G5 1 1/4&quot; NPT</td>
<td>1 1/4&quot; NPT -</td>
<td>G16 1 1/2&quot; NPT 1 1/4&quot; NPT</td>
</tr>
<tr>
<td>G7 SAE 20 - 1 5/8&quot; - 12 UN</td>
<td>-</td>
<td>F1 1 1/2&quot; SAE 3000 psi/M -</td>
</tr>
<tr>
<td>G8 SAE 20 - 1 5/8&quot; - 12 UN</td>
<td>-</td>
<td>F2 1 1/2&quot; SAE 3000 psi/UNC -</td>
</tr>
<tr>
<td>G10 SAE 24 - 1 7/8&quot; - 12 UN</td>
<td>-</td>
<td>F3 1 1/2&quot; SAE 3000 psi/M -</td>
</tr>
<tr>
<td>G11 SAE 24 - 1 7/8&quot; - 12 UN</td>
<td>-</td>
<td>F4 1 1/2&quot; SAE 3000 psi/UNC -</td>
</tr>
<tr>
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<td></td>
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</tr>
<tr>
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<td>P25 Resin impregnated paper 25 µm</td>
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<tr>
<td><strong>Element ∆p</strong></td>
<td>Axx</td>
<td>Bxx</td>
</tr>
<tr>
<td>N 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>H 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
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</table>

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1: MF180 1 A25 H B E P01</th>
<th>Configuration example 2: MF190 2 P10 N V P01</th>
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<tbody>
<tr>
<td><strong>MPF180 - MPF190</strong></td>
<td>Filter element with standard spigot</td>
<td>Filter element with standard spigot</td>
</tr>
<tr>
<td><strong>Element length</strong></td>
<td>Size 180</td>
<td>Size 190</td>
</tr>
<tr>
<td>1</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>2</td>
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<td>•</td>
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<tr>
<td><strong>Element ∆p</strong></td>
<td>Axx</td>
<td>Bxx</td>
</tr>
<tr>
<td>N 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>H 10 bar</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
<td>•</td>
<td>•</td>
</tr>
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</table>

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>240</td>
<td>BEA</td>
</tr>
<tr>
<td>BVR</td>
<td>240</td>
<td>BEM</td>
</tr>
<tr>
<td>BVF</td>
<td>241</td>
<td>BLA</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
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<tr>
<td><strong>Additional features</strong></td>
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<td>page</td>
</tr>
<tr>
<td>TE</td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>Sx</td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>249</td>
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Return filters 140
MPF184 - MPF194

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Filter length</th>
<th>H1 (mm)</th>
<th>H2 (mm)</th>
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<tbody>
<tr>
<td>1</td>
<td>232</td>
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<td>2</td>
<td>445</td>
<td>480</td>
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Connections

<table>
<thead>
<tr>
<th>Connections</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G4 - G7 - G10</td>
<td>1/8&quot; NPT</td>
</tr>
<tr>
<td>G13</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G15 - F1 - F2</td>
<td>1/8&quot; NPT</td>
</tr>
</tbody>
</table>

IN ➔ OUT

O-Ring seal

H1 - Total length immersed in the tank

T - Connection for clogging indicator

H2 - Recommended clearance space for maintenance

Holes on the tank

Nr. 4 holes

T - Connection for clogging indicator

OUT ➔ OUT

O-Ring seal

H1 - Total length immersed in the tank

T - Connection for clogging indicator

H2 - Recommended clearance space for maintenance

Holes on the tank

Nr. 4 holes

T - Connection for clogging indicator

Return filters
**MPF184 - MPF194**

### Dimensions

#### MPF194

**1 connection port**

<table>
<thead>
<tr>
<th>Connections</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G4 - G7 - G10</td>
<td>1/8&quot; NPT</td>
</tr>
<tr>
<td>G13</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G15 - F1 - F2</td>
<td>1/8&quot; NPT</td>
</tr>
</tbody>
</table>

**Recommended clearance space for maintenance**

- Total length immersed in the tank

**Connections**

- T - Connection for clogging indicator

**Holes on the tank**

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

#### MPF194

**2 connection ports**

<table>
<thead>
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<th>Connections</th>
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<tbody>
<tr>
<td>G2</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G5 - G8 - G11</td>
<td>1/8&quot; NPT</td>
</tr>
<tr>
<td>G14</td>
<td>G 1/8&quot;</td>
</tr>
<tr>
<td>G16 - F3 - F4</td>
<td>1/8&quot; NPT</td>
</tr>
</tbody>
</table>

**Recommended clearance space for maintenance**

- Total length immersed in the tank

**Connections**

- T - Connection for clogging indicator

**Holes on the tank**

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

---

**Return filters**

142
### Designation & Ordering code

#### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1: MPF400</th>
<th>1</th>
<th>A</th>
<th>G9</th>
<th>A25</th>
<th>H</th>
<th>B</th>
<th>P01</th>
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<td>MF400</td>
<td>Filter element with standard spigot</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seals and treatments</td>
<td></td>
<td>A</td>
<td>NBR</td>
<td>V</td>
<td>FPM</td>
<td>W</td>
<td>NBR</td>
<td>head anodized</td>
</tr>
<tr>
<td>Connections</td>
<td>G1 G 1 1/4”</td>
<td>G2 G 1 1/2”</td>
<td>G3 G 2”</td>
<td>G4 G 1 1/4” NPT</td>
<td>G5 G 1 1/2” NPT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>G6 2” NPT</td>
<td>G7 SAE 20 - 1 5/8” - 12 UN</td>
<td>G8 SAE 24 - 1 7/8” - 12 UN</td>
<td>G9 SAE 32 - 2 1/2” - 12 UN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtration rating (filter media)</td>
<td>A03 Inorganic microfiber 3 µm</td>
<td>A06 Inorganic microfiber 6 µm</td>
<td>A10 Inorganic microfiber 10 µm</td>
<td>A16 Inorganic microfiber 16 µm</td>
<td>A25 Inorganic microfiber 25 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M25 Wire mesh 25 µm</td>
<td>M60 Wire mesh 60 µm</td>
<td>M90 Wire mesh 90 µm</td>
<td>P10 Resin impregnated paper 10 µm</td>
<td>P25 Resin impregnated paper 25 µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element ∆p</td>
<td>N 10 bar</td>
<td>H 10 bar</td>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bypass valve</td>
<td>E 3 bar</td>
<td>B 1.75 bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execution</td>
<td>P01 MP Filtri standard</td>
<td>Pxx Customized</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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</tbody>
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#### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1: MF400</th>
<th>1</th>
<th>A25</th>
<th>H</th>
<th>B</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF400</td>
<td>Filter element with standard spigot</td>
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<td></td>
<td></td>
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<tr>
<td>Element length</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filtration rating (filter media)</td>
<td>A03 Inorganic microfiber 3 µm</td>
<td>A06 Inorganic microfiber 6 µm</td>
<td>A10 Inorganic microfiber 10 µm</td>
<td>A16 Inorganic microfiber 16 µm</td>
<td>A25 Inorganic microfiber 25 µm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M25 Wire mesh 25 µm</td>
<td>M60 Wire mesh 60 µm</td>
<td>M90 Wire mesh 90 µm</td>
<td>P10 Resin impregnated paper 10 µm</td>
<td>P25 Resin impregnated paper 25 µm</td>
<td></td>
</tr>
<tr>
<td>Element ∆p</td>
<td>N 10 bar</td>
<td>H 10 bar</td>
<td>W 10 bar, compatible with fluids HFA, HFB and HFC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bypass valve</td>
<td>E 3 bar</td>
<td>B 1.75 bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execution</td>
<td>P01 MP Filtri standard</td>
<td>Pxx Customized</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>240</td>
<td>Sxx</td>
<td>248</td>
</tr>
<tr>
<td>BVR</td>
<td>240</td>
<td>T5</td>
<td>249</td>
</tr>
<tr>
<td>BVF</td>
<td>241</td>
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<tr>
<td>BVQ</td>
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<td>BEA</td>
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<td>BEM</td>
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<tr>
<td>BLA</td>
<td>239-240</td>
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</tr>
</tbody>
</table>
H1 - Total length immersed in the tank

H2 - Recommended clearance space for maintenance

IN ➔ OUT

O-Ring seal

G 1/8” Connection for clogging indicator

M10 - 3/8” UNC Nr. 4 holes

Holes on the tank

<table>
<thead>
<tr>
<th>Filter</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>180</td>
<td>210</td>
<td>51</td>
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<tr>
<td>2</td>
<td>240</td>
<td>270</td>
<td>64</td>
</tr>
<tr>
<td>3</td>
<td>290</td>
<td>315</td>
<td>64</td>
</tr>
</tbody>
</table>

Dimensions

MPF400 MPF
**COMPLETE FILTER**

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF410</td>
<td>Filter element with standard spigot</td>
<td>Filter element with standard spigot</td>
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<table>
<thead>
<tr>
<th>Length</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Seals and treatments</th>
<th>A</th>
<th>NBR</th>
<th>V</th>
<th>FPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>NBR</td>
<td>head anodized</td>
<td>Z</td>
<td>FPM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Main Connections</th>
<th>Aux size 1</th>
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</thead>
<tbody>
<tr>
<td>G1</td>
<td>G 1 1/4”</td>
</tr>
<tr>
<td>G4</td>
<td>G 1 1/4” NPT</td>
</tr>
<tr>
<td>G7</td>
<td>SAE 20 - 1 5/8” - 12 UN</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Aux connection</th>
<th>- see previous table</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Aux size 1</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>Filter media</th>
</tr>
</thead>
<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>

**FILTER ELEMENT**

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Filter element with standard spigot</td>
<td>Filter element with standard spigot</td>
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<table>
<thead>
<tr>
<th>Element length</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>Filter media</th>
</tr>
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<tbody>
<tr>
<td>A03 Inorganic microfiber 3 µm</td>
<td>M25 Wire mesh 25 µm</td>
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<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>
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</table>

<table>
<thead>
<tr>
<th>Element ∆p</th>
<th>N</th>
<th>10 bar</th>
<th>H</th>
<th>10 bar</th>
<th>W</th>
<th>10 bar, compatible with fluids HFA, HFB and HFC</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>E</th>
<th>3 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1.75 bar</td>
<td></td>
</tr>
</tbody>
</table>

| Execution | P01 MP Filtri standard | Pxx Customized |

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
<td>240</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
<td>241</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sxx</td>
<td>Extension tube</td>
</tr>
<tr>
<td>T5</td>
<td>Filler plug M30x1.5</td>
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</tbody>
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### Dimensions

<table>
<thead>
<tr>
<th>Filter</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
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<tbody>
<tr>
<td>1</td>
<td>160</td>
<td>210</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>240</td>
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<tr>
<td>3</td>
<td>290</td>
<td>315</td>
<td>64</td>
</tr>
</tbody>
</table>

**IN**

- **H1** - Total length immersed in the tank
- **H2** - Recommended clearance space for maintenance

**OUT**

- **O-Ring seal**

**Holes on the tank**

- **M10 - 3/8˝ UNC Nr. 4 holes**
- **G 1/8˝ Connection for clogging indicator**

**Return filters**
## MPF Designation & Ordering code

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>MF450</th>
<th>MF451</th>
<th>MF750</th>
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<tbody>
<tr>
<td>Configuration example 1:</td>
<td>MF450</td>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>Configuration example 2:</td>
<td>MF750</td>
<td>1</td>
<td>V</td>
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#### Length

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<th>MF450</th>
<th>MF451</th>
<th>MF750</th>
</tr>
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<tbody>
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<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>2</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>3</td>
<td>•</td>
<td>•</td>
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</tbody>
</table>

#### Seals and treatments

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBR</td>
<td>•</td>
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</tr>
<tr>
<td>FPM</td>
<td>•</td>
<td>•</td>
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</tr>
</tbody>
</table>

#### Connections

<table>
<thead>
<tr>
<th></th>
<th>G1</th>
<th>G4</th>
<th>G7</th>
<th>F1</th>
<th>F2</th>
</tr>
</thead>
<tbody>
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<td>2” G2”</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>3/4” NPT</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>SAE 32 - 2 1/2” - 12 UN</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>SAE 12 - 1 1/16” - 12 UN</td>
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<tr>
<td>3/4” NPT</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic microfiber 3 µm</td>
<td>Inorganic microfiber 6 µm</td>
<td>Inorganic microfiber 10 µm</td>
<td>Inorganic microfiber 16 µm</td>
<td>Inorganic microfiber 25 µm</td>
</tr>
<tr>
<td>M25</td>
<td>Wire mesh 25 µm</td>
<td>M60</td>
<td>Wire mesh 60 µm</td>
<td>M90</td>
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### FILTER ELEMENT

<table>
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<tr>
<th>Element series and size</th>
<th>MF400</th>
<th>IM750</th>
</tr>
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<tbody>
<tr>
<td>Configuration example 1:</td>
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</tr>
<tr>
<td>Configuration example 2:</td>
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<th>MF451</th>
<th>MF750</th>
</tr>
</thead>
<tbody>
<tr>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>2</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>3</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic microfiber 3 µm</td>
<td>Inorganic microfiber 6 µm</td>
<td>Inorganic microfiber 10 µm</td>
<td>Inorganic microfiber 16 µm</td>
<td>Inorganic microfiber 25 µm</td>
</tr>
<tr>
<td>M25</td>
<td>Wire mesh 25 µm</td>
<td>M60</td>
<td>Wire mesh 60 µm</td>
<td>M90</td>
</tr>
</tbody>
</table>

#### ACCESSORIES

**Indicators**

<table>
<thead>
<tr>
<th>BVA</th>
<th>Axial pressure gauge</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEA</td>
<td>Electrical pressure indicator</td>
<td>239</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>page</td>
</tr>
<tr>
<td>BEM</td>
<td>Electrical pressure indicator</td>
<td>239</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>page</td>
</tr>
<tr>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
<td>239-240</td>
</tr>
<tr>
<td>BVO</td>
<td>Visual pressure indicator with manual reset</td>
<td>page</td>
</tr>
</tbody>
</table>

**Additional features**

<table>
<thead>
<tr>
<th>Sxx</th>
<th>Extension tube</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>T5</td>
<td>Filler plug M30x1.5</td>
<td>249</td>
</tr>
</tbody>
</table>

**Seals**

| B | NBR | • | • | • |
| E | 3 bar | • | • | • |
| F | 1.75 bar | • | • | • |

**Bypass valve**

<table>
<thead>
<tr>
<th>P01</th>
<th>MP Filtri standard</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pxx</td>
<td>Customized</td>
<td>page</td>
</tr>
</tbody>
</table>
O-RING SEAL

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Filter element</th>
<th>Seal Kit code number NBR</th>
<th>Seal Kit code number FPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPF 030</td>
<td></td>
<td>02050055</td>
<td>02050056</td>
</tr>
<tr>
<td>MPF 100-110</td>
<td></td>
<td>02050057</td>
<td>02050058</td>
</tr>
<tr>
<td>MPF 181-182</td>
<td></td>
<td>02050069</td>
<td>02050060</td>
</tr>
<tr>
<td>MPF 184</td>
<td>See order table</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPF 191-192</td>
<td></td>
<td>02050457</td>
<td>02050458</td>
</tr>
<tr>
<td>MPF 194</td>
<td></td>
<td>02050459</td>
<td>02050460</td>
</tr>
<tr>
<td>MPF 400-410</td>
<td></td>
<td>02050661</td>
<td>02050662</td>
</tr>
<tr>
<td>MPF 450-451</td>
<td></td>
<td>02050461</td>
<td>02050462</td>
</tr>
<tr>
<td>MPF 750</td>
<td></td>
<td>02050106</td>
<td>02050107</td>
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</tbody>
</table>

FLAT SEAL

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Filter element</th>
<th>Seal Kit code number NBR</th>
<th>Seal Kit code number FPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPF 020</td>
<td>See order table</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPF 104</td>
<td></td>
<td>02050438</td>
<td>02050439</td>
</tr>
<tr>
<td>MPF 181-182</td>
<td></td>
<td>02050659</td>
<td>02050660</td>
</tr>
<tr>
<td>MPF 191-192</td>
<td></td>
<td>02050661</td>
<td>02050662</td>
</tr>
</tbody>
</table>

Order number for spare parts

MPF 181
MPF 100
MPF 104
MPF 750
MPF 450-451
MPF 400-410
MPF 194
MPF 191-192
MPF 181-182
MPF 184
MPF 100-110
MPF 030
MPF 020
MPT series

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 300 l/min
MPT is a range of return filters with integrated breather filter, for protection of the reservoir against the system contamination. They are directly fixed to the reservoir, in immersed or semi-immersed position. The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

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

**Common applications:**
- Light industrial equipment
- Mobile application

**Weights [kg] and volumes [dm³]**

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weight [kg]</th>
<th>Volume [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>1</td>
</tr>
<tr>
<td>MPT 025</td>
<td>0.41</td>
<td>0.45</td>
</tr>
<tr>
<td>MPT 027</td>
<td>0.44</td>
<td>0.48</td>
</tr>
<tr>
<td>MPT 110</td>
<td>1.00</td>
<td>1.05</td>
</tr>
<tr>
<td>MPT 114</td>
<td>1.10</td>
<td>1.15</td>
</tr>
<tr>
<td>MPT 116</td>
<td>1.10</td>
<td>1.15</td>
</tr>
<tr>
<td>MPT 120</td>
<td>1.00</td>
<td>1.05</td>
</tr>
</tbody>
</table>
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.
Flow rates [l/min]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>Filter element design - H series</th>
<th>Filter element design - N series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A03</td>
<td>A06</td>
</tr>
<tr>
<td>MPT 025-027</td>
<td>1</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>MPT 110-114</td>
<td>1</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>28</td>
<td>38</td>
</tr>
<tr>
<td>MPT 116-120</td>
<td>3</td>
<td>48</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>79</td>
<td>89</td>
</tr>
</tbody>
</table>

Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
Please, contact our Sales Department for further additional information.

Hydraulic symbols

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Style 1 connection</th>
<th>Style 2 connections</th>
<th>Style 3 connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT 025</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPT 027</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPT 110</td>
<td></td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>MPT 114</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPT 116</td>
<td>•</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPT 120</td>
<td></td>
<td></td>
<td>•</td>
</tr>
</tbody>
</table>
## GENERAL INFORMATION

**MPT**

### Multifunction

<table>
<thead>
<tr>
<th>MPT 025 -027</th>
<th>MPT 110</th>
<th>MPT 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air breather port plugged Indicator port</td>
<td>Air breather standard Indicator port</td>
<td>Anti-splash air breather &amp; pressurized Double indicator port</td>
</tr>
</tbody>
</table>

**Multiport - Multifunction**

<table>
<thead>
<tr>
<th>MPT 110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard - Single IN Port</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Double IN Port</th>
<th>Double IN Port - Indicator port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option: double drain port</td>
<td>Option: drain port</td>
</tr>
</tbody>
</table>

**MPT 120**

<table>
<thead>
<tr>
<th>Triple IN port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option: double drain port</td>
</tr>
</tbody>
</table>
### MPT MPT025 - MPT027

#### Designation & Ordering code

<table>
<thead>
<tr>
<th>MPT025</th>
<th>MPT027</th>
</tr>
</thead>
</table>

#### Filter Element

**Element series and size**

- **MPT025**: Filter element with standard spigot
- **MPT027**: Filter element with bypass valve

**Element length**

- 1
- 2
- 3
- 4

**Filtration rating (filter media)**

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

**Element Øp**

- N: 10 bar
- H: 10 bar
- W: 10 bar, compatible with fluids HFA, HFB and HFC

**Seals**

- B: NBR
- V: FPM

**Execution**

- P01: MP Filtri standard
- Pxx: Customized

**Bypass valve**

- E: 3 bar
- B: 1.75 bar

**Accessories**

- **Indicators**
  - BVA: Axial pressure gauge
  - BVR: Radial pressure gauge
  - BWV: Visual pressure indicator with automatic reset
  - BVQ: Visual pressure indicator with manual reset

- **Additional features**
  - TE: Extension tube
  - DPT: Dipstick

---

**Configuration examples**

1. **Configuration example 1**: MPT025
   - 1
   - S
   - A
   - G3
   - A10
   - E
   - P01

2. **Configuration example 2**: MPT027
   - 3
   - C
   - W
   - G6
   - A03
   - B
   - P01

---

**Tabular data**

<table>
<thead>
<tr>
<th>Designation &amp; Ordering code</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT025</td>
<td>1</td>
<td>S</td>
</tr>
<tr>
<td>MPT027</td>
<td>3</td>
<td>C</td>
</tr>
</tbody>
</table>

**Seals**

- B: NBR
- V: FPM

**Execution**

- P01: MP Filtri standard
- Pxx: Customized

**Bypass valve**

- E: 3 bar
- B: 1.75 bar

**Accessories**

- **Indicators**
  - BVA: Axial pressure gauge
  - BVR: Radial pressure gauge
  - BWV: Visual pressure indicator with automatic reset
  - BVQ: Visual pressure indicator with manual reset

- **Additional features**
  - TE: Extension tube
  - DPT: Dipstick
<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Connections T</th>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT025</td>
<td>G1-G2-G3</td>
<td>1</td>
<td>99</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>G4-G5-G6-G7-G8-G9</td>
<td>2</td>
<td>163</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>202</td>
<td>230</td>
</tr>
<tr>
<td>MPT027</td>
<td>G1-G2-G3</td>
<td>1</td>
<td>99</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>G4-G5-G6-G7-G8-G9</td>
<td>2</td>
<td>163</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>202</td>
<td>230</td>
</tr>
</tbody>
</table>

**MPT025**

- **Filter length H1 [mm]**
  - 1: 99
  - 2: 163
  - 3: 202

- **Connections T**
  - G1-G2-G3
  - G4-G5-G6-G7-G8-G9

**MPT027**

- **Filter length H1 [mm]**
  - 1: 99
  - 2: 163
  - 3: 202

- **Connections T**
  - G1-G2-G3
  - G4-G5-G6-G7-G8-G9

**Versions**

- **D/P**
- **C**
- **S**

**Filter length H1 [mm]**

- 1: 99
- 2: 163
- 3: 202

**Filter length H2 [mm]**

- 1: 130
- 2: 195
- 3: 230

**Connections T**

- G1-G2-G3
- G4-G5-G6-G7-G8-G9

**M10 - 3/8” UNC**

- Nr. 2 holes
- Nr. 4 holes

**T - Connection for clogging indicator**

**IN**

**OUT**

**H1 - Total length immersed in the tank**

**H2 - Recommended clearance space for maintenance**
### Dimensions

**MPT110**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
<th>I [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>97</td>
<td>120</td>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>144</td>
<td>170</td>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>222</td>
<td>250</td>
<td>47</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>324</td>
<td>350</td>
<td>47</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Connections**

- G1-G2-G3
- G4-G5-G6-G7-G8-G9

**Connections**

- G 1/8" NPT

**Holes on the tank**

- Ø88-90
- Ø114+16

**H1 - Total length immersed in the tank**

**H2 - Recommended clearance space for maintenance**

**T - Connection for clogging indicator**

**Version S**

- Version for clogging indicator

**Version C**

- Version for clogging indicator

**Versions**

- D/P

**Diagram**

- Drawing of the MPT110 filter with dimensions and connections labeled.
# MPT MPT114

**Designation & Ordering code**

<table>
<thead>
<tr>
<th><strong>COMPLETE FILTER</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series and size</strong></td>
</tr>
<tr>
<td>MPT114 Filter element with standard spigot</td>
</tr>
<tr>
<td><strong>Length</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td><strong>Air breather</strong></td>
</tr>
<tr>
<td>S Without air breather</td>
</tr>
<tr>
<td>C With air breather 10 µm</td>
</tr>
<tr>
<td>D With anti-splash and air breather SAP050 10 µm</td>
</tr>
<tr>
<td>P With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar</td>
</tr>
<tr>
<td><strong>Seals and treatments</strong></td>
</tr>
<tr>
<td>A NBR</td>
</tr>
<tr>
<td>V FPM</td>
</tr>
<tr>
<td>W NBR head anodized</td>
</tr>
<tr>
<td>Z FPM head anodized</td>
</tr>
<tr>
<td><strong>Connections</strong></td>
</tr>
<tr>
<td>G1 3/4” NPT</td>
</tr>
<tr>
<td>G2 1” SAE 12 - 1 1/16” - 12 UN</td>
</tr>
<tr>
<td>G3 1 1/4” SAE 16 - 1 5/16” - 12 UN</td>
</tr>
<tr>
<td>G4 3/4” NPT</td>
</tr>
<tr>
<td>G5 1” NPT</td>
</tr>
<tr>
<td><strong>Filtration rating (filter media)</strong></td>
</tr>
<tr>
<td>A03 Inorganic microfiber 3 µm M25 Wire mesh 25 µm</td>
</tr>
<tr>
<td>A06 Inorganic microfiber 6 µm M60 Wire mesh 60 µm</td>
</tr>
<tr>
<td>A10 Inorganic microfiber 10 µm M90 Wire mesh 90 µm</td>
</tr>
<tr>
<td>A16 Inorganic microfiber 16 µm P10 Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>A25 Inorganic microfiber 25 µm P25 Resin impregnated paper 25 µm</td>
</tr>
</tbody>
</table>

## FILTER ELEMENT

<table>
<thead>
<tr>
<th><strong>Element series and size</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>MF100 Filter element with standard spigot</td>
</tr>
<tr>
<td><strong>Element length</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td><strong>Filtration rating (filter media)</strong></td>
</tr>
<tr>
<td>A03 Inorganic microfiber 3 µm M25 Wire mesh 25 µm</td>
</tr>
<tr>
<td>A06 Inorganic microfiber 6 µm M60 Wire mesh 60 µm</td>
</tr>
<tr>
<td>A10 Inorganic microfiber 10 µm M90 Wire mesh 90 µm</td>
</tr>
<tr>
<td>A16 Inorganic microfiber 16 µm P10 Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>A25 Inorganic microfiber 25 µm P25 Resin impregnated paper 25 µm</td>
</tr>
</tbody>
</table>

## ACCESSORIES

<table>
<thead>
<tr>
<th><strong>Indicators</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA Axial pressure gauge</td>
</tr>
<tr>
<td>BVR Radial pressure gauge</td>
</tr>
<tr>
<td>BVF Visual pressure indicator with automatic reset</td>
</tr>
<tr>
<td>BVQ Visual pressure indicator with manual reset</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Additional features</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TE Extension tube</td>
</tr>
<tr>
<td>DFS Diffuser with fast lock connection</td>
</tr>
</tbody>
</table>

**Return filters**

![MPT Logo](image-url)
Dimensions

**MPT114**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
<th>I [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>97</td>
<td>120</td>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>144</td>
<td>170</td>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>222</td>
<td>250</td>
<td>47</td>
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</tr>
<tr>
<td>4</td>
<td>324</td>
<td>350</td>
<td>47</td>
<td>2.5</td>
</tr>
</tbody>
</table>

**Connections**

- G1-G2-G3
- G4-G5-G6-G7-G8-G9

**Connections T**

- G 1/8"
- 1/8" NPT

**Holes on the tank**

- 163

**Versions**

- D/P
- Version C
- Version S

**Nr. 4 holes**

**M10 - 3/8" UNC**

**Flat seal**

**H1 - Total length immersed in the tank**

**H2 - Recommended clearance space for maintenance**

**T - Connection for clogging indicator**

**IN**

**OUT**

**Return filters**
**MPT MPT116**

**Designation & Ordering code**

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1</th>
<th>Configuration example 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPT116</td>
<td>MPT116</td>
<td>S G1 M90 E P01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MPT116</td>
</tr>
</tbody>
</table>

#### Length

1  | 2  | 3  | 4  |

#### Air breather

S Without air breather

#### Seals and treatments

<table>
<thead>
<tr>
<th>A</th>
<th>NBR</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>FPM</td>
<td>Mxx</td>
<td>Pxx</td>
</tr>
<tr>
<td>W</td>
<td>NBR</td>
<td>Mxx</td>
<td>Pxx</td>
</tr>
<tr>
<td>Z</td>
<td>FPM</td>
<td>Mxx</td>
<td>Pxx</td>
</tr>
</tbody>
</table>

Flat seal on the head on request

#### Connections

<table>
<thead>
<tr>
<th>G1</th>
<th>G 3/4”</th>
<th>G6</th>
<th>1 1/4” NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G2</td>
<td>G 1”</td>
<td>G7</td>
<td>SAE 12 - 1 1/16” - 12 UN</td>
</tr>
<tr>
<td>G3</td>
<td>G 1 1/4”</td>
<td>G8</td>
<td>SAE 16 - 1 5/16” - 12 UN</td>
</tr>
<tr>
<td>G4</td>
<td>3/4” NPT</td>
<td>G9</td>
<td>SAE 20 - 1 5/8” - 12 UN</td>
</tr>
<tr>
<td>G5</td>
<td>1” NPT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

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

#### Bypass valve

<table>
<thead>
<tr>
<th>E</th>
<th>3 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1.75 bar</td>
</tr>
</tbody>
</table>

#### Execution

<table>
<thead>
<tr>
<th>P01</th>
<th>MP Filtri standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pxx</td>
<td>Customized</td>
</tr>
</tbody>
</table>

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF100</td>
<td>MF100</td>
</tr>
</tbody>
</table>

#### Element length

1  | 2  | 3  | 4  |

#### Filtration rating (filter media)

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

#### Filter media

| N 10 bar | \* | \* |
| H 10 bar |   | \* |
| W 10 bar, compatible with fluids HFA, HFB and HFC | \* | \* |

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>240</td>
</tr>
<tr>
<td>BVR</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE</td>
<td>248</td>
</tr>
<tr>
<td>DFS</td>
<td>249</td>
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<table>
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<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEA</td>
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<tr>
<td>BEM</td>
<td>239</td>
</tr>
<tr>
<td>BLA</td>
<td>239-240</td>
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<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipstick</td>
<td>249</td>
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</table>

Return filters 164
MPT116 MPT

Dimensions

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>D [mm]</th>
<th>I [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>120</td>
<td>38</td>
<td>4</td>
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<tr>
<td>2</td>
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<td>170</td>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>224</td>
<td>250</td>
<td>47</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>326</td>
<td>350</td>
<td>47</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Connections

<table>
<thead>
<tr>
<th>Option</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1-G2-G3</td>
<td>6 1/8”</td>
</tr>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8” NPT</td>
</tr>
</tbody>
</table>

IN → OUT

T - Connection for clogging indicator

H1 - Total length immersed in the tank

H2 - Recommended clearance space for maintenance

O-Ring seal

Holes on the tank
Option for 2 and 4 screws

M10 - 3/8” UNC
Nr. 4 holes at 90°

M10 - 3/8” UNC
Nr. 2 holes

IN

OUT

Nr. 4 holes at 90° Nr. 2 holes

Dimensions

IN

OUT
### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1</th>
<th>Configuration example 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MPT120</strong> Filter element with standard spigot</td>
<td><strong>MPT120</strong> 1</td>
<td>A</td>
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</tbody>
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**Length**

<table>
<thead>
<tr>
<th>1</th>
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<th>3</th>
<th>4</th>
<th></th>
</tr>
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</table>

**Filtration rating**

<table>
<thead>
<tr>
<th>Seals and treatments</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>A NBR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V FPM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W NBR head anodized</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z FPM head anodized</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Main Connections**

| G1 | G3/4" |
| G2 | G1 "   |
| G3 | G 3/4" |
| G4 | G 3/4" |
| G5 | G 3/8" |
| G6 | G 1/2" |

**Rear connections**

| G1 | G 3/4" |
| G2 | G 1/2" |
| G3 | G 3/4" |
| G4 | G 3/4" |
| G5 | 3/8" NPT |
| G6 | 1/2" NPT |

**Aux connections**

| G1 | G 3/4" |
| G2 | G 1/2" |
| G3 | G 3/4" |
| G4 | G 3/4" |
| G5 | 3/8" NPT |
| G6 | 1/2" NPT |

**Filtration rating (filter media)**

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

**Seals and treatments**

<table>
<thead>
<tr>
<th>Seals</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>B NBR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V FPM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Execution**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E 3 bar</td>
<td>B 1.75 bar</td>
<td></td>
</tr>
<tr>
<td>P01 MP Filtri standard</td>
<td>Pxx Customized</td>
<td></td>
</tr>
</tbody>
</table>

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1</th>
<th>Configuration example 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MF100</strong> Filter element with standard spigot</td>
<td><strong>MF100</strong> 1</td>
<td>A06</td>
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</table>

**Element length**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th></th>
</tr>
</thead>
</table>

**Filtration rating (filter media)**

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

**Filter media**

<table>
<thead>
<tr>
<th>Element</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>
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</table>

**Seals**

<table>
<thead>
<tr>
<th>Seals</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>B NBR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V FPM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Execution**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E 3 bar</td>
<td>B 1.75 bar</td>
<td></td>
</tr>
<tr>
<td>P01 MP Filtri standard</td>
<td>Pxx Customized</td>
<td></td>
</tr>
</tbody>
</table>

### ACCESSORIES

**Indicators**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>page</th>
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</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
<td>240</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
<td>241</td>
</tr>
</tbody>
</table>

**Additional features**

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
<th>page</th>
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</thead>
<tbody>
<tr>
<td>TE</td>
<td>Extension tube</td>
<td>248</td>
</tr>
<tr>
<td>DFS</td>
<td>Diffuser with fast lock connection</td>
<td>249</td>
</tr>
</tbody>
</table>
### MPT120 Dimensions

<table>
<thead>
<tr>
<th>Filter</th>
<th>H1 (mm)</th>
<th>H2 (mm)</th>
<th>D (mm)</th>
<th>I (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>97</td>
<td>120</td>
<td>38</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>147</td>
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<td>3</td>
<td>222</td>
<td>250</td>
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<td>-</td>
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<tr>
<td>4</td>
<td>324</td>
<td>350</td>
<td>47</td>
<td>2.5</td>
</tr>
</tbody>
</table>

### Connections

<table>
<thead>
<tr>
<th>G1-G2-G3</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>G 1/8&quot;</td>
<td>1/8&quot; NPT</td>
</tr>
</tbody>
</table>

H1 - Total length immersed in the tank

H2 - Recommended clearance space for maintenance

IN IN

OUT

Holes on the tank

M10 - 3/8" UNC Nr. 2 holes

Connections T

- G1-G2-G3
- G4-G5-G6-G7-G8-G9

Flat seal

IN

OUT

T - Connection for clogging indicator

T - Connection for clogging indicator

Nr. 2 holes
## MPT SPARE PARTS

### MPT 025 - 027 - 110

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Filter series</td>
<td>Filter element</td>
<td>Seal Kit code number</td>
<td>C</td>
<td>D</td>
<td>P</td>
</tr>
<tr>
<td>MPT 025</td>
<td>See order table</td>
<td>02050557</td>
<td>02050558</td>
<td>10 µm A3L03</td>
<td>10 µm</td>
</tr>
<tr>
<td>MPT 027</td>
<td>See order table</td>
<td>02050559</td>
<td>02050560</td>
<td>10 µm A3L03</td>
<td>10 µm</td>
</tr>
<tr>
<td>MPT 110</td>
<td>See order table</td>
<td>02050561</td>
<td>02050562</td>
<td>10 µm A5L03</td>
<td>10 µm</td>
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### MPT 116

<table>
<thead>
<tr>
<th>Item:</th>
<th>Q.ty: 1 pc.</th>
<th>Q.ty: 1 pc.</th>
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</thead>
<tbody>
<tr>
<td>Filter series</td>
<td>Filter element</td>
<td>Seal Kit code number</td>
</tr>
<tr>
<td>MPT 116</td>
<td>See order table</td>
<td>02050466</td>
</tr>
</tbody>
</table>

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Return filters
### MPT 114

<table>
<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Filter series</td>
<td>Filter element</td>
<td>Seal Kit code number</td>
<td>C</td>
<td>Air breather filter element - version:</td>
<td>D</td>
</tr>
<tr>
<td>MPT 114</td>
<td></td>
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<td>02050580</td>
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</table>

### MPT 120

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<thead>
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</thead>
<tbody>
<tr>
<td>Filter series</td>
<td>Filter element</td>
<td>Seal Kit code number</td>
</tr>
<tr>
<td>MPT 120</td>
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<td>02050563</td>
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</table>

Return filters
MFB series
BOWL ASSEMBLY

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

Return filters
MFB GENERAL INFORMATION

Description

Return filter Bowl assembly
Maximum working pressure up to 800 kPa (8 bar)
Flow rate up to 500 l/min

MFB is a range of return filter kits for protection of the reservoir against the system contamination.
They are directly integrated in the moulded reservoir in immersed or semi-immersed position to save space into the tank.
Treaded or flanged covers can be provided.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

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

Common applications:
Mobile machines

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

Δp element type
- Microfi brefilter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Note
MFB filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length 1</td>
<td>2</td>
</tr>
<tr>
<td>MFB 020</td>
<td>0.25</td>
<td>0.35</td>
</tr>
<tr>
<td>MFB 030</td>
<td>0.25</td>
<td>-</td>
</tr>
<tr>
<td>MFB 100</td>
<td>0.50</td>
<td>0.60</td>
</tr>
<tr>
<td>MFB 180</td>
<td>1.60</td>
<td>2.40</td>
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<tr>
<td>MFB 190</td>
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<td>2.40</td>
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</table>
**GENERAL INFORMATION MFB**

**Flow rates [l/min]**

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>Filter element design - H series</th>
<th>Filter element design - N series</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A03</td>
<td>A06</td>
</tr>
<tr>
<td>MFB 020</td>
<td>1</td>
<td>7</td>
<td>10</td>
</tr>
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<td></td>
<td>2</td>
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<td></td>
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<td>21</td>
<td>24</td>
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<tr>
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<td>1</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>MFB 100</td>
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<td>18</td>
<td>20</td>
</tr>
<tr>
<td></td>
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<td>28</td>
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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$^2$/s (cSt) and a density of 0.86 kg/dm$^3$.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltri.com.
Please, contact our Sales Department for further additional information.

**Hydraulic symbols**

- **MFB 020**  
- **MFB 030**  
- **MFB 100**  
- **MFB 180**  
- **MFB 190**
**COMPLETE FILTER**

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Filter element with private spigot

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Seals

- A NBR
- V FPM

Version

- 1 Without cover
- 2 With flanged cover type MPF
- 3 With threaded cover type MPF

Filtration rating (filter media)

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

Filter media

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<tr>
<td>H</td>
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<td>•</td>
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<tr>
<td>W</td>
<td>10 bar, compatible with fluids HFA, HFB and HFC</td>
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**FILTER ELEMENT**

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Filter element with private spigot

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Filtration rating (filter media)

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

Filter media

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Seals

- B NBR
- V FPM

Bypass valve

- E 3 bar
- B 1.75 bar

Execution

- P01 MP Filtri standard
- Pxx Customized

**ACCESSORIES**

Additional features

- TE Extension tube
- DFS Diffuser with fast lock connection

Page 248, 249
### Dimensions

#### Filter size

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#### O-Ring seal

- Version 1
- Version 2
- Version 3
# MFB SPARE PARTS

Order number for spare parts

## MFB version 1 and version 2

![Diagram of MFB version 1 and version 2]

### Filter series

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

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

MPH is a range of return filters for protection of the reservoir against the system contamination. They are directly fixed to the reservoir, in immersed or semi-immersed position. The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir. The filtration from inside to outside allows a cleaner filter element replacement, the dirty remains into the filter element.

Available features:
- Female threaded connections up to 1 1/2” and flanged connections up to 4”, for a maximum flow rate of 3000 l/min
- Multiple connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic column, to hold the ferrous particles
- 2, 3, 4 or 8 fixing holes for installation, to meet any reservoir surface flatness and roughness
- Flat seal, to meet any reservoir surface flatness and roughness
- Oil dipstick, to easily check the level of the fluid into the reservoir (separate item)
- Diffuser, to reduce the risk of aeration, foaming and noise
- Filter 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 guaranty the pressurization into the reservoir (MPH110/114)
- Visual, electrical and electronic clogging indicators

Common applications:
Heavy duty industrial equipment

Filter housing materials
- Head
  Aluminium: MPH 110-114-116-120-250
  Anodized Aluminium: MPH 630-850
  Painted Aluminium: MPH 660
- Cover
  Nylon: MPH 110-114-116-120
  Aluminium: MPH 250
  Anodized Aluminium: MPH 630
  Painted Aluminium: MPH 660
  Steel: MPH 850
- Insert assembly
  Nylon: MPH 110-114-116-120
  Aluminium: MPH 250-630-660-850
- Diffuser: Tinned Steel
- Valve: Phosphatized Steel

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

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

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Note
MPH filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

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<th>3</th>
<th>4</th>
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The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.
**MPH GENERAL INFORMATION**

**Flow rates [l/min]**

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</table>

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\(^2\)/s (cSt) and a density of 0.86 kg/dm\(^3\).

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

Please, contact our Sales Department for further additional information.

**Hydraulic symbols**

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Style 1 connection</th>
<th>Style 2 connections</th>
<th>Style 3 connections</th>
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<td>MPH 850</td>
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![Hydraulic symbols diagram]
### COMPLETE FILTER

**Series and size**

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<thead>
<tr>
<th>MPH110</th>
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**Length**

| 1 | 2 | 3 | 4 | 5 |

**Bypass valve**

- S: Without bypass
- C: 1.75 bar
- E: 2.5 bar

**Diffuser and magnetic column**

- D: With diffuser, with magnetic column
- F: With diffuser, without magnetic column
- O: Without diffuser, with magnetic column
- E: Without diffuser, without magnetic column

**Air breather**

- S: Without air breather
- C: With 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**

- A: NBR
- V: FPM
- W: NBR head anodized
- Z: FPM head anodized

**Main Connections**

<table>
<thead>
<tr>
<th>Aux size 1</th>
<th>Aux size 2</th>
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<tbody>
<tr>
<td>G1 3/4&quot;</td>
<td>G 3/8&quot;</td>
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<tr>
<td>G2 1&quot;</td>
<td>G 1/2&quot;</td>
</tr>
<tr>
<td>G3 1 1/4&quot;</td>
<td></td>
</tr>
<tr>
<td>G4 3/4&quot; NPT</td>
<td></td>
</tr>
<tr>
<td>G5 1&quot; NPT</td>
<td>3/8&quot; NPT</td>
</tr>
<tr>
<td>G6 1 1/4&quot; NPT</td>
<td></td>
</tr>
</tbody>
</table>

**Aux connection**

- 0: Not machined
- 1: Aux size 1
- 2: Aux size 2

**Filtration rating (filter media)**

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

**Execution**

- P01: MP Filtri standard
- Pxx: Customized

### FILTER ELEMENT

**Element series and size**

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<thead>
<tr>
<th>MR100</th>
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**Element length**

| 1 | 2 | 3 | 4 | 5 |

**Filtration rating (filter media)**

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<tr>
<td>A06 6 µm</td>
<td>M60 Wire mesh 60 µm</td>
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<tr>
<td>A10 10 µm</td>
<td>M90 Wire mesh 90 µm</td>
</tr>
<tr>
<td>A16 16 µm</td>
<td>P10 Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>A25 25 µm</td>
<td>P25 Resin impregnated paper 25 µm</td>
</tr>
</tbody>
</table>

**Seals**

- A: NBR
- V: FPM

**Execution**

- P01: MP Filtri standard
- Pxx: Customized

### ACCESSORIES

**Indicators**

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

**Page**

- BVA: 240
- BVR: 240
- BVP: 241
- BVQ: 241

**Additional features**

- DPT: Dipstick

**Page**

- DPT: 249
### Dimensions

#### MPH110

<table>
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<tr>
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<th>H1 [mm]</th>
<th>H2 [mm]</th>
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<td>338</td>
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**Connections**

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</thead>
<tbody>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8&quot;, NPT</td>
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</tbody>
</table>

**Holes on the tank**

H2 - Recommended clearance space for maintenance

**H1 - Total length immersed in the tank**

**Version C**

**Version S**

**Versions D / P**

**MPH110**

**with diffuser**

**Return filters**


clogging indicator

**Connections**

<table>
<thead>
<tr>
<th>G1-G2-G3</th>
<th>1/8&quot;</th>
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<tbody>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8&quot;, NPT</td>
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**Holes on the tank**

H1 - Total length immersed in the tank
**MPH MPH114**

**Designation & Ordering code**

### COMPLETE FILTER

<table>
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<tr>
<th>Series and size</th>
<th>Configuration example: MPH114 3 C E C Z G6 M60 P01</th>
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<td>Length</td>
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<tr>
<td>Bypass valve</td>
<td>S Without bypass</td>
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<tr>
<td>Diffuser and magnetic column</td>
<td>D With diffuser, with magnetic column</td>
</tr>
<tr>
<td></td>
<td>F With diffuser, without magnetic column</td>
</tr>
<tr>
<td></td>
<td>O Without diffuser, with magnetic column</td>
</tr>
<tr>
<td></td>
<td>E Without diffuser, without magnetic column</td>
</tr>
<tr>
<td>Air breather</td>
<td>S Without air breather</td>
</tr>
<tr>
<td></td>
<td>C With air breather 10 µm</td>
</tr>
<tr>
<td></td>
<td>D With anti-splash and air breather SAP050 10 µm</td>
</tr>
<tr>
<td></td>
<td>P With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar</td>
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**Seals and treatments**

<table>
<thead>
<tr>
<th>A NBR</th>
<th>V FPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Filtration rating**

| 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 |

**Connections**

| G1 G 3/4” | G6 1 1/4” NPT |
| G2 G 1” | G7 SAE 12 - 1 1/16” - 12 UN |
| G3 G 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 | |

**FILTER ELEMENT**

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**Filtration rating (filter media)**

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

**ACCESSORIES**

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<tr>
<td>BVR Radial pressure gauge</td>
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<tr>
<td>BVP Visual pressure indicator with automatic reset</td>
<td>241</td>
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<tr>
<td>BVQ Visual pressure indicator with manual reset</td>
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<table>
<thead>
<tr>
<th>Additional features</th>
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**Indicators**

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### COMPLETE FILTER

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<td>S Without bypass C 1.75 bar E 2.5 bar</td>
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</tr>
<tr>
<td>Diffuser and magnetic column</td>
<td>D With diffuser, with magnetic column F With diffuser, without magnetic column O Without diffuser, with magnetic column E Without diffuser, without magnetic column</td>
<td></td>
</tr>
<tr>
<td>Air breather</td>
<td>S Without air breather</td>
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#### Seals and treatments

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<th>Mxx</th>
<th>Pxx</th>
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<tbody>
<tr>
<td>A NBR</td>
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<td>•</td>
<td>•</td>
</tr>
<tr>
<td>V FPM</td>
<td>•</td>
<td>•</td>
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<td>W NBR head anodized</td>
<td>filter element compatible with fluids HFA-HFB-HFC</td>
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<td>Z FPM head anodized</td>
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Flat seal on the head on request

#### Connections

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<th>G2 1&quot;</th>
<th>G3 1 1/4&quot;</th>
<th>G4 3/4&quot; NPT</th>
<th>G5 1&quot; NPT</th>
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<tbody>
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<td>G6 1 1/4&quot; NPT</td>
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<tr>
<td>G7 SAE 12 - 1 1/16&quot; - 12 UN</td>
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<tr>
<td>G8 SAE 16 - 1 5/16&quot; - 12 UN</td>
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<td></td>
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#### Filtration rating (filter media)

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

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<td>A03 Inorganic microfiber 3 µm M25 Wire mesh 25 µm</td>
<td>A06 Inorganic microfiber 6 µm M60 Wire mesh 60 µm</td>
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<tr>
<td>Seals</td>
<td>A NBR</td>
<td>P01 MP Filtri standard</td>
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<tr>
<td>Execution</td>
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</tbody>
</table>

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>BEA Electrical pressure indicator</th>
<th>page</th>
</tr>
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<tbody>
<tr>
<td>BVA Axial pressure gauge</td>
<td>240</td>
<td>EEM Electrical pressure indicator</td>
<td>239</td>
</tr>
<tr>
<td>BVR Radial pressure gauge</td>
<td>240</td>
<td>EEM Electrical pressure indicator</td>
<td>239</td>
</tr>
<tr>
<td>BVP Visual pressure indicator with automatic reset</td>
<td>241</td>
<td>EEM Electrical pressure indicator</td>
<td>239-240</td>
</tr>
<tr>
<td>BVQ Visual pressure indicator with manual reset</td>
<td>241</td>
<td>EEM Electrical pressure indicator</td>
<td>239-240</td>
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<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPT Dipstick</td>
<td>249</td>
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</tbody>
</table>
**Dimensions**

**MPH116**

**with diffuser**

<table>
<thead>
<tr>
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<th>H1 [mm]</th>
<th>H2 [mm]</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>190</td>
<td>255</td>
</tr>
<tr>
<td>2</td>
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<td>305</td>
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<tr>
<td>3</td>
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<td>405</td>
</tr>
<tr>
<td>4</td>
<td>440</td>
<td>505</td>
</tr>
</tbody>
</table>

**Connections**

| G1-G2-G3       | G 1/8” | 1/8” NPT |

**without diffuser**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>131</td>
<td>190</td>
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<td>2</td>
<td>175</td>
<td>235</td>
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<tr>
<td>3</td>
<td>225</td>
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<td>4</td>
<td>325</td>
<td>385</td>
</tr>
<tr>
<td>5</td>
<td>425</td>
<td>485</td>
</tr>
</tbody>
</table>

**Connections**

| G1-G2-G3       | G 1/8” | 1/8” NPT |

**Holes on the tank**

Option for 2 and 4 screws

**T - Connection for clogging indicator**

**H1 - Total length immersed in the tank**

**H2 - Recommended clearance space for maintenance**

**IN**

**O-Ring seal**

**Nr. 2 holes**

**Nr. 4 holes at 90°**

**Return filters**
### COMPLET FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example</th>
<th>MPH120</th>
<th>S</th>
<th>D</th>
<th>A</th>
<th>G1</th>
<th>1</th>
<th>A10</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH120</td>
<td></td>
<td></td>
<td></td>
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#### Length

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

#### Bypass valve

- **S** Without bypass
  - **C** 1.75 bar
  - **E** 2.5 bar

#### Diffuser and magnetic column

- **D** With diffuser, with magnetic column
- **F** With diffuser, without magnetic column
- **O** Without diffuser, with magnetic column
- **E** Without diffuser, without magnetic column

#### Seals and treatments

<table>
<thead>
<tr>
<th>Seals</th>
<th>NBR</th>
<th>FPM</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Main Connections

| G1  | 2  |
| G2  | 1  |
| G3  | 1  |
| G4  | 1  |
| G5  | 1  |
| G6  | 1  |
| G7  | 1  |
| G8  | 1  |
| G9  | 1  |

#### Rear connections

| G3/4" | 3/4" | 3/8" | 1/2" |
| G1"   | 1"   | 3/8" | 1/2" |
| 3/4"NPT | 3/8"NPT | 1/2"NPT |

#### Aux size 1

<table>
<thead>
<tr>
<th>Aux size 1</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
</table>

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
</tr>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
</tr>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
</tr>
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<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
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### FILTER ELEMENT

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<th>Configuration example</th>
<th>MR100</th>
<th>1</th>
<th>A</th>
<th>P01</th>
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<tr>
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#### Element length

<table>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
</tr>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
</tr>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
</tr>
<tr>
<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
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<td>Inorganic microfiber</td>
<td>3 μm</td>
<td>6 μm</td>
<td>10 μm</td>
<td>16 μm</td>
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#### Seals

<table>
<thead>
<tr>
<th>Seals</th>
<th>NBR</th>
<th>FPM</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

#### Execution

<table>
<thead>
<tr>
<th>Execution</th>
<th>P01</th>
<th>MP Filtri standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### ACCESSORIES

#### Indicators

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Page</th>
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<tbody>
<tr>
<td>BVA</td>
<td>240</td>
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<tr>
<td>BVR</td>
<td>240</td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
</tr>
<tr>
<td>BEM</td>
<td>239</td>
</tr>
</tbody>
</table>

#### Electrical pressure indicator

<table>
<thead>
<tr>
<th>BEA</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>239-240</td>
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</tbody>
</table>

#### Electrical / visual pressure indicator

<table>
<thead>
<tr>
<th>BLA</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>239-240</td>
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</tbody>
</table>

#### Additional features

<table>
<thead>
<tr>
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<th>Page</th>
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<tbody>
<tr>
<td>249</td>
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</tbody>
</table>
MPH120

Dimensions

**MPH120 with diffuser**

<table>
<thead>
<tr>
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<th>H1 [mm]</th>
<th>H2 [mm]</th>
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<tbody>
<tr>
<td>1</td>
<td>188</td>
<td>255</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
<td>338</td>
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<td>438</td>
<td>505</td>
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</table>

**Connections**

<table>
<thead>
<tr>
<th>T</th>
<th>G1-G2-G3</th>
<th>1/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8” NPT</td>
<td></td>
</tr>
</tbody>
</table>

**MPH120 without diffuser**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>129</td>
<td>190</td>
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<tr>
<td>2</td>
<td>173</td>
<td>235</td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
<td>323</td>
<td>385</td>
</tr>
<tr>
<td>5</td>
<td>423</td>
<td>485</td>
</tr>
</tbody>
</table>

**Connections**

<table>
<thead>
<tr>
<th>T</th>
<th>G1-G2-G3</th>
<th>1/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8” NPT</td>
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</tbody>
</table>

**Holes on the tank**

<table>
<thead>
<tr>
<th>Nr. 2 holes</th>
</tr>
</thead>
</table>

**H2 - Recommended clearance space for maintenance**

**H1 - Total length immersed in the tank**

**T - Connection for clogging indicator**

**IN**

**Flat seal**

**Return filters**
## MPH MPH250

**Designation & Ordering code**

<table>
<thead>
<tr>
<th>Configuration example: MPH250</th>
<th>1</th>
<th>C</th>
<th>D</th>
<th>S</th>
<th>A</th>
<th>G1</th>
<th>A10</th>
<th>P01</th>
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### COMPLETE FILTER

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<tr>
<td>Length</td>
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<table>
<thead>
<tr>
<th>Bypass valve</th>
<th></th>
<th>C</th>
<th>1.75 bar</th>
<th>E</th>
<th>2.5 bar</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Diffuser and magnetic column</th>
<th></th>
<th>D</th>
<th>With diffuser, with magnetic column</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>With diffuser, without magnetic column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Without diffuser, with magnetic column</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Without diffuser, without magnetic column</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air breather</th>
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<th>S</th>
<th>Without air breather</th>
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</table>

<table>
<thead>
<tr>
<th>Seals and treatments</th>
<th></th>
<th>A</th>
<th>NBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>FPM</td>
<td></td>
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<table>
<thead>
<tr>
<th>Execution</th>
<th>MP Filtri standard</th>
<th>Customized</th>
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<table>
<thead>
<tr>
<th>Main Connections</th>
<th>Rear connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 1 1/2&quot;</td>
<td>G 1 1/4&quot;</td>
</tr>
<tr>
<td>G2 1 1/2&quot; NPT</td>
<td>1 1/4&quot; NPT</td>
</tr>
<tr>
<td>G4 1 1/2&quot; NPT</td>
<td>SAE 20 - 1 5/8&quot; - 12 UN</td>
</tr>
<tr>
<td>G5 1 1/2&quot; NPT</td>
<td>SAE 24 - 1 7/8&quot; - 12 UN</td>
</tr>
<tr>
<td>G7 1 1/2&quot; SAE 3000 psi/M</td>
<td>1 1/4&quot; SAE 3000 psi/M</td>
</tr>
<tr>
<td>G8 SAE 24 - 1 7/8&quot; - 12 UN</td>
<td>1 1/4&quot; SAE 3000 psi/M</td>
</tr>
<tr>
<td>F1 1 1/2&quot; SAE 3000 psi/M</td>
<td>1 1/4&quot; SAE 3000 psi/UNC</td>
</tr>
<tr>
<td>F2 1 1/2&quot; SAE 3000 psi/M</td>
<td>1 1/4&quot; SAE 3000 psi/UNC</td>
</tr>
<tr>
<td>F3 1 1/2&quot; SAE 3000 psi/UNC</td>
<td>1 1/4&quot; SAE 3000 psi/UNC</td>
</tr>
<tr>
<td>F4 1 1/2&quot; SAE 3000 psi/UNC</td>
<td>1 1/4&quot; SAE 3000 psi/UNC</td>
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### FILTER ELEMENT

<table>
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<tr>
<th>Element series and size</th>
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<table>
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<th>3</th>
<th>4</th>
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</thead>
</table>

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

<table>
<thead>
<tr>
<th>Seals</th>
<th>A</th>
<th>NBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>FPM</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Execution</th>
<th>MP Filtri standard</th>
<th>Customized</th>
</tr>
</thead>
</table>

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th></th>
<th>BVA</th>
<th>Axial pressure gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BEA</th>
<th>Electrical pressure indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEM</td>
<td>Electrical pressure indicator</td>
</tr>
<tr>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>page</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td></td>
</tr>
<tr>
<td>241</td>
<td></td>
</tr>
</tbody>
</table>
### MPH250 MPH

#### Dimensions

<table>
<thead>
<tr>
<th>Filter</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>H3 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>182</td>
<td>247</td>
<td>255</td>
</tr>
<tr>
<td>2</td>
<td>231</td>
<td>247</td>
<td>305</td>
</tr>
<tr>
<td>3</td>
<td>302</td>
<td>317</td>
<td>375</td>
</tr>
<tr>
<td>4</td>
<td>502</td>
<td>507</td>
<td>580</td>
</tr>
</tbody>
</table>

#### Connections

<table>
<thead>
<tr>
<th>Connections</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1-G2-G3</td>
<td>G 1/8”</td>
</tr>
<tr>
<td>G4-G5-G6-G7-G8-G9</td>
<td>1/8” NPT</td>
</tr>
</tbody>
</table>

#### Filter Lengths

<table>
<thead>
<tr>
<th>Filter</th>
<th>Length</th>
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</thead>
<tbody>
<tr>
<td>H1</td>
<td>Total长度浸没在储罐中</td>
</tr>
<tr>
<td>H2</td>
<td>Total长度浸没在储罐中</td>
</tr>
<tr>
<td>H3</td>
<td>推荐维护间隙</td>
</tr>
</tbody>
</table>

#### Holes on the Tank

Nr. 4 holes

#### T - Connection for Clogging Indicator

- 1 connection port
- 2 connection ports
**COMPLETE FILTER**

<table>
<thead>
<tr>
<th>Series and size</th>
<th>MPH630</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Length</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>Without bypass</th>
<th>C</th>
<th>1.75 bar</th>
<th>E</th>
<th>2.5 bar</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Diffuser and magnetic column</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>D With diffuser, with magnetic column</td>
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</tr>
<tr>
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</tr>
<tr>
<td>O Without diffuser, with magnetic column</td>
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<tr>
<td>E Without diffuser, without magnetic column</td>
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<table>
<thead>
<tr>
<th>Air breather</th>
<th>Without air breather</th>
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</tr>
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<table>
<thead>
<tr>
<th>Seals and treatments</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>A NBR</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>V FPM</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>W NBR head anodized</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Z FPM head anodized</td>
<td>•</td>
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<table>
<thead>
<tr>
<th>Main Connections</th>
<th>Rear connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 2 1/2&quot; SAE 3000 ps/M</td>
<td>-</td>
</tr>
<tr>
<td>F2 2 1/2&quot; SAE 3000 ps/M</td>
<td>2&quot; SAE 3000 ps/M</td>
</tr>
<tr>
<td>F3 2 1/2&quot; SAE 3000 ps/UNC</td>
<td>-</td>
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<tr>
<td>F4 2 1/2&quot; SAE 3000 ps/UNC</td>
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<thead>
<tr>
<th>Filtration rating (filter media)</th>
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<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>
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| FILTER ELEMENT |

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<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>
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<th>Seals</th>
<th>Execution</th>
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</thead>
<tbody>
<tr>
<td>A NBR</td>
<td>P01 MP Filtri standard</td>
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<tr>
<td>V FPM</td>
<td>Pxx Customized</td>
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**ACCESSORIES**

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<th>BEA Electrical pressure indicator</th>
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<tr>
<td>BVR</td>
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<td></td>
</tr>
<tr>
<td>BVP</td>
<td>241</td>
<td></td>
</tr>
<tr>
<td>BVQ</td>
<td>241</td>
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<table>
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<th>page</th>
<th>BEA Electrical pressure indicator</th>
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<tbody>
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**Return filters**
**Dimensions**

**MPH630**

1 connection port

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<th>H2 [mm]</th>
<th>H3 [mm]</th>
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<tbody>
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<td>260</td>
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<td>330</td>
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<td>340</td>
<td>358</td>
<td>410</td>
</tr>
<tr>
<td>3</td>
<td>440</td>
<td>458</td>
<td>510</td>
</tr>
<tr>
<td>4</td>
<td>528</td>
<td>548</td>
<td>600</td>
</tr>
<tr>
<td>5</td>
<td>829</td>
<td>848</td>
<td>900</td>
</tr>
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Connections

- **T**: G 1/8" NPT

**MPH630**

2 connection ports

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<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>H3 [mm]</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>260</td>
<td>278</td>
<td>330</td>
</tr>
<tr>
<td>2</td>
<td>340</td>
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<td>410</td>
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<tr>
<td>3</td>
<td>440</td>
<td>458</td>
<td>510</td>
</tr>
<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>829</td>
<td>848</td>
<td>900</td>
</tr>
</tbody>
</table>

Connections

- **T**: G 1/8" NPT

**Holes on the tank**

- NR. 4 holes with diffuser
- NR. 4 holes without diffuser

**T - Connection for clogging indicator**

**IN**

**Return filters**
### MPH MPH660

**Designation & Ordering code**

#### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>MPH660</th>
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<td>Length</td>
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<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>S</th>
<th>Without bypass</th>
<th>C</th>
<th>1.75 bar</th>
<th>E</th>
<th>2.5 bar</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Diffuser and magnetic column</th>
<th>D</th>
<th>With diffuser, with magnetic column</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>With diffuser, without magnetic column</td>
</tr>
<tr>
<td></td>
<td>O</td>
<td>Without diffuser, with magnetic column</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Without diffuser, without magnetic column</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air breather</th>
<th>S</th>
<th>Without air breather</th>
</tr>
</thead>
</table>

| Seals and treatments | A | NBR | | V | FPM | | W | NBR | head anodized | filter element compatible with fluids HFA-HFB-HFC | | Z | FPM | head anodized | |
|----------------------|---|-----|---|---|-----|---|-----|-----|----------------|-----------------|---|-----|-----|---|

<table>
<thead>
<tr>
<th>Main Connections</th>
<th>F1</th>
<th>3” SAE 3000 psi/M</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>F2</td>
<td>4” SAE 3000 psi/M</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Execution</th>
<th>P01</th>
<th>MP Filtri standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pxx</td>
<td>Customized</td>
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</tbody>
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### FILTER ELEMENT

<table>
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<td>Element length</td>
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<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>A03</th>
<th>Inorganic microfiber 3 µm</th>
<th>M25</th>
<th>Wire mesh 25 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A06</td>
<td>Inorganic microfiber 6 µm</td>
<td>M60</td>
<td>Wire mesh 60 µm</td>
</tr>
<tr>
<td></td>
<td>A10</td>
<td>Inorganic microfiber 10 µm</td>
<td>M90</td>
<td>Wire mesh 90 µm</td>
</tr>
<tr>
<td></td>
<td>A16</td>
<td>Inorganic microfiber 16 µm</td>
<td>P10</td>
<td>Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td></td>
<td>A25</td>
<td>Inorganic microfiber 25 µm</td>
<td>P25</td>
<td>Resin impregnated paper 25 µm</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Seals</th>
<th>A</th>
<th>NBR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>FPM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Execution</th>
<th>P01</th>
<th>MP Filtri standard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pxx</td>
<td>Customized</td>
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</tbody>
</table>

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVA</td>
<td>Axial pressure gauge</td>
</tr>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
</tr>
<tr>
<td>BVQ</td>
<td>Visual pressure indicator with manual reset</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEA</td>
<td>Electrical pressure indicator</td>
</tr>
<tr>
<td>BEM</td>
<td>Electrical pressure indicator</td>
</tr>
<tr>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
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</tbody>
</table>
### Dimensions

<table>
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<th>Filter length</th>
<th>H1 [mm]</th>
<th>H2 [mm]</th>
<th>H3 [mm]</th>
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<tbody>
<tr>
<td>4</td>
<td>538</td>
<td>548</td>
<td>610</td>
</tr>
<tr>
<td>5</td>
<td>838</td>
<td>848</td>
<td>910</td>
</tr>
</tbody>
</table>

- **MPH660**
- **IN**
- Holes on the tank
- G 1/8" Connection for clogging indicator
- G 1/8" Connection for clogging indicator
- G 1/8" Connection for clogging indicator
- M12 - 1/2" UNC Nr. 4 holes
- Ø163
- Ø165
- Ø168.5
- 120
- 95
- 125
- 110
- 105
- 228
- 3
- H1
- H2
- H3
- Flat seal
- without diffuser
- with diffuser
**COMPLETE FILTER**

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example</th>
<th>MPH850</th>
<th>1</th>
<th>C</th>
<th>D</th>
<th>S</th>
<th>A</th>
<th>F1</th>
<th>A10</th>
<th>P01</th>
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<tbody>
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</table>

- **Series and size**
- **Configuration example**
- **Seals**
- **Execution**
- **Element series and size**
- **Parameter**
- **Value**
- **Seals and treatments**
- **Filtration rating**
- **Filter element compatible**
- **With fluids HFA-HFB-HFC**
- **Main Connections**
- **Rear connections**
- **Filtration rating (filter media)**
- **Execution**
- **FILTER ELEMENT**
- **Element series and size**
- **Configuration example**
- **Element series and size**
- **Element length**
- **Filter element compatible**
- **With fluids HFA-HFB-HFC**
- **Seals**
- **Execution**
- **Indicators**
- **Return filters**
- **ACCESSORIES**
- **Parameters**
- **Values**
- **Fabric**
- **Execution**
- **Page**
- **Return filters**

**Seal**

- **A**
- **V**

**Filtration rating**

- **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

**Filtration rating (filter media)**

- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **P10** Resin impregnated paper 10 µm
- **P25** Resin impregnated paper 25 µm

**Execution**

- **P01** MP Filtri standard
- **Pxx** Customized

**Seal**

- **A** NBR
- **V** FPM

**Execution**

- **P01** MP Filtri standard
- **Pxx** Customized

**Indicators**

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

**Electrical pressure indicator**

- **BEA** Electrical pressure indicator
- **BEM** Electrical pressure indicator
- **BLA** Electrical / visual pressure indicator
### MPH850 Dimensions

**Connections UNI / SAE**

<table>
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**Connections SAE / SAE**

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</table>
## MPH Spare Parts

### Order number for spare parts

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<th>Filter element</th>
<th>Seal Kit code number NBR</th>
<th>Filter element</th>
<th>Seal Kit code number FPM</th>
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<tbody>
<tr>
<td>4</td>
<td>5</td>
<td>MPH 110</td>
<td>NBR</td>
<td>02050565</td>
<td>FPM</td>
<td>02050566</td>
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<td>5</td>
<td>6</td>
<td>MPH 114</td>
<td>NBR</td>
<td>02050582</td>
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<td>02050583</td>
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### MPH 110 - 114

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### MPH 116

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### MPH 120

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<tbody>
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<td>3</td>
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MPH SPARE PARTS

MPH 250 - 630

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<th>Filter element</th>
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<td></td>
<td></td>
<td>MPH 630</td>
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<td>02050154</td>
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MPH 660

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<th>Filter element</th>
<th>Seal Kit code number</th>
<th>NBR</th>
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</tr>
</thead>
<tbody>
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</table>

MPH 850

Q.ty: 1 pc. 2 (3a + 3e)

Q.ty: 1 pc. 3

See order table

Return filters 201
MPI series

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

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

MPI is a range of return filter kits for protection of the reservoir against the system contamination. They are directly integrated in the reservoir in immersed or semi-immersed position to save space into the tank. The use of the diffuser is recommended, to place the filter output always immersed into the fluid to avoid aeration or foam generation into the reservoir. The filtration from inside to outside allows a cleaner filter element replacement, the dirty remains into the filter element.

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

Common applications:
Heavy duty industrial equipment

Filter housing materials
- Insert assembly
  Polyamide, GF reinforced: MPI 100
  Aluminium: MPI 250-630-850
- Diffuser: Tinned Steel
- Valve: Steel

Bypass valve
- Opening pressure 175 kPa (1.75 bar) ±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 [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length 1 2 3 4 5</td>
<td>Length 1 2 3 4 5</td>
</tr>
<tr>
<td>MPI 100</td>
<td>0.90 1.00 1.20 1.50 1.80</td>
<td>0.90 0.90 1.20 1.60 1.80</td>
</tr>
<tr>
<td>MPI 250</td>
<td>2.20 2.50 2.90 4.30 -</td>
<td>3.50 3.50 4.50 7.00 -</td>
</tr>
<tr>
<td>MPI 630</td>
<td>3.40 3.90 4.30 5.40 6.60</td>
<td>5.80 7.40 9.50 11.40 13.50</td>
</tr>
<tr>
<td>MPI 850</td>
<td>15.20 18.20 21.20 25.20 -</td>
<td>8.80 12.20 16.70 20.80 -</td>
</tr>
</tbody>
</table>
### General Information

**Flow rates [l/min]**

<table>
<thead>
<tr>
<th>Filters series</th>
<th>Length</th>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
<th>M25</th>
<th>M60</th>
<th>M90</th>
<th>P10</th>
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<td>775</td>
<td>1041</td>
<td>1246</td>
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<td>1914</td>
<td>1995</td>
<td>2014</td>
<td>3035</td>
<td>3405</td>
<td>3144</td>
<td>3220</td>
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<td>2088</td>
<td>2305</td>
<td>2363</td>
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<td>3517</td>
<td>3272</td>
<td>3378</td>
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</tr>
</tbody>
</table>

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

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

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

Please, contact our Sales Department for further additional information.

### Hydraulic Symbol

![Hydraulic symbol](image)
# MPI MPI100 - MPI250 - MPI630 - MPI850

## Designation & Ordering code

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
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</thead>
<tbody>
<tr>
<td>MPI100</td>
<td>MPI100</td>
<td>MPI630</td>
</tr>
<tr>
<td>MPI250</td>
<td>1</td>
<td>5</td>
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<tr>
<td>MPI630</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>MPI850</td>
<td>D</td>
<td>D</td>
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<table>
<thead>
<tr>
<th>Length</th>
<th>MPI100</th>
<th>MPI250</th>
<th>MPI630</th>
<th>MPI850</th>
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<tbody>
<tr>
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<td>●</td>
<td>●</td>
<td>●</td>
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</tr>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
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<td>●</td>
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<table>
<thead>
<tr>
<th>Bypass valve</th>
<th>MPI100</th>
<th>MPI250</th>
<th>MPI630</th>
<th>MPI850</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>1.75 bar</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>2.5 bar</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Diffuser and magnetic column</th>
<th>Filtration rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>D With diffuser, with magnetic column</td>
<td>A03 Inorganic microfiber 3 µm M25 Wire mesh 25 µm</td>
</tr>
<tr>
<td>F With diffuser, without magnetic column</td>
<td>A06 Inorganic microfiber 6 µm M60 Wire mesh 60 µm</td>
</tr>
<tr>
<td>O Without diffuser, with magnetic column</td>
<td>A10 Inorganic microfiber 10 µm M90 Wire mesh 90 µm</td>
</tr>
<tr>
<td>E Without diffuser, without magnetic column</td>
<td>A16 Inorganic microfiber 16 µm P10 Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>A25 Inorganic microfiber 25 µm P25 Resin impregnated paper 25 µm</td>
<td></td>
</tr>
<tr>
<td>Execution</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td></td>
<td>Pxx Customized</td>
</tr>
</tbody>
</table>

## FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR100</td>
<td>MR100</td>
<td>MR630</td>
</tr>
<tr>
<td>MR250</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>MR630</td>
<td>A10</td>
<td>M25</td>
</tr>
<tr>
<td>MR850</td>
<td>P01</td>
<td>P01</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Element length</th>
<th>Size 100</th>
<th>Size 250</th>
<th>Size 630</th>
<th>Size 850</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>2</td>
<td>●</td>
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<tr>
<td>3</td>
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</tr>
<tr>
<td>5</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Filtration rating (filter media)</th>
<th>Seals</th>
<th>Execution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03 Inorganic microfiber 3 µm M25 Wire mesh 25 µm</td>
<td>A NBR</td>
<td>P01 MP Filtri standard</td>
</tr>
<tr>
<td>A06 Inorganic microfiber 6 µm M60 Wire mesh 60 µm</td>
<td>V FPM</td>
<td>Pxx Customized</td>
</tr>
<tr>
<td>A10 Inorganic microfiber 10 µm M90 Wire mesh 90 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A16 Inorganic microfiber 16 µm P10 Resin impregnated paper 10 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A25 Inorganic microfiber 25 µm P25 Resin impregnated paper 25 µm</td>
<td></td>
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</tbody>
</table>
### Dimensions

#### MPI100

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>198</td>
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<tr>
<td>2</td>
<td>198</td>
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<tr>
<td>3</td>
<td>248</td>
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<tr>
<td>4</td>
<td>348</td>
</tr>
<tr>
<td>5</td>
<td>448</td>
</tr>
</tbody>
</table>

**O-Ring seal**

**Filter seat**

**Return filters**

- **H1** - Total length immersed in the tank

#### MPI100

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>141</td>
</tr>
<tr>
<td>2</td>
<td>185</td>
</tr>
<tr>
<td>3</td>
<td>235</td>
</tr>
<tr>
<td>4</td>
<td>335</td>
</tr>
<tr>
<td>5</td>
<td>435</td>
</tr>
</tbody>
</table>

**O-Ring seal**

**Filter seat**

**Return filters**

- **H1** - Total length immersed in the tank

---

**O-Ring seal**

**Filter seat**

**Return filters**

- **H1** - Total length immersed in the tank
**Dimensions**

**MPI850**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 (mm)</th>
<th>H2 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>427</td>
<td>150</td>
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<td>642</td>
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<td>3</td>
<td>922</td>
<td>250</td>
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<tr>
<td>4</td>
<td>1187</td>
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</tbody>
</table>

**O-Ring seal**

**Filter seat**

**MPI850**

**with diffuser**

**O-Ring seal**

**Filter seat**

**MPI850**

**without diffuser**

<table>
<thead>
<tr>
<th>Filter length</th>
<th>H1 (mm)</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>405</td>
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<td>3</td>
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<td>4</td>
<td>1165</td>
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</table>

**O-Ring seal**

**Filter seat**

**Return filters**

**210**
### Order number for spare parts

#### MPI 100

<table>
<thead>
<tr>
<th>Item:</th>
<th>Q.ty: 1 pc.</th>
<th>Q.ty: 1 pc.</th>
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</thead>
<tbody>
<tr>
<td>Filter series</td>
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<td>3 (3a + 3d)</td>
</tr>
<tr>
<td>Filter element</td>
<td>See order table</td>
<td>02050146</td>
</tr>
<tr>
<td>Seal Kit code number</td>
<td>NBR: 02050146</td>
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</tr>
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</table>

#### MPI 250 - 630

<table>
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<tr>
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<th>Q.ty: 1 pc.</th>
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<tbody>
<tr>
<td>Filter series</td>
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<td>3 (3a + 3d)</td>
</tr>
<tr>
<td>Filter element</td>
<td>See order table</td>
<td>02050147</td>
</tr>
<tr>
<td>Seal Kit code number</td>
<td>NBR: 02050148</td>
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---

*Return filters*
Order number for spare parts

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Filter element</th>
<th>Seal Kit code number NBR</th>
<th>Seal Kit code number FPM</th>
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<tbody>
<tr>
<td>MPI 850</td>
<td>See order table</td>
<td>02050114</td>
<td>02050115</td>
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</tbody>
</table>

Return filters
Return filter

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

FRI is a range of return filters for protection of the reservoir against the system contamination.
They could be directly fixed to the reservoir in immersed or semi-immersed position or connected to the lines of the system through the hydraulic fittings.
The filter output must be always immersed into the fluid to avoid aeration or foam generation into the reservoir.

Available features:
- Female threaded connections up to 2 1/2" and flanged connections up to 3 1/2", for a maximum flow rate of 1500 l/min
- Double input connections, to connect several return lines or drains
- Fine filtration rating, to get a good cleanliness level into the reservoir
- Bypass valve, to relieve excessive pressure drop across the filter media
- Visual, electrical and electronic differential clogging indicators

Common applications:
Heavy duty industrial equipment

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

Bypass valve
Opening pressure 240 kPa (2.4 bar) ±10%

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

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Note
FRI filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>T</td>
</tr>
<tr>
<td>FRI 025</td>
<td>1.0</td>
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<tr>
<td>FRI 040</td>
<td>2.0</td>
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</tr>
<tr>
<td>FRI 100</td>
<td>3.8</td>
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</tr>
<tr>
<td>FRI 250</td>
<td>6.3</td>
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</tr>
<tr>
<td>FRI 255</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>FRI 630</td>
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<td></td>
</tr>
<tr>
<td>FRI 850</td>
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</table>
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. 
\( \Delta p \) varies proportionally with density.
FRI 025
FRI 040
FRI 100
FRI 250
FRI 255
FRI 630
FRI 850

Filter element design - N Series

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
<th>M25</th>
<th>M60</th>
<th>P10</th>
<th>P25</th>
</tr>
</thead>
<tbody>
<tr>
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<td>FRI 040</td>
<td>1</td>
<td>19</td>
<td>23</td>
<td>43</td>
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<td>FRI 100</td>
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<td>FRI 250</td>
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<td>271</td>
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<tr>
<td>FRI 255</td>
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<td>FRI 630</td>
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<td>FRI 850</td>
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</table>

Maximum flow rate for a complete return filter with a pressure drop $\Delta p = 0.5$ bar.
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltrri.com.
Please, contact our Sales Department for further additional information.

Hydraulic symbols

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Style 1 connection + Diff. indic.</th>
<th>Style 2 connections + Diff. indic.</th>
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</thead>
<tbody>
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<td>FRI 250</td>
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<td>FRI 630</td>
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<tr>
<td>FRI 850</td>
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</table>
FRI FRI025 - FRI040

Designation & Ordering code

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
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<tr>
<td>FRI025</td>
<td>FRI025</td>
<td>B A G1 A25 N P01</td>
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<tr>
<td>FRI040</td>
<td>FRI040</td>
<td>S W G2 M25 N P01</td>
</tr>
</tbody>
</table>

#### Bypass valve
- B With bypass
- S Without bypass

#### Filtration rating

<table>
<thead>
<tr>
<th>Filtration rating</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03 Inorganic microfiber 3 µm</td>
<td>M25 Wire mesh 25 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A06 Inorganic microfiber 6 µm</td>
<td>M60 Wire mesh 60 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A10 Inorganic microfiber 10 µm</td>
<td>M90 Wire mesh 90 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A16 Inorganic microfiber 16 µm</td>
<td>P10 Resin impregnated paper 10 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A25 Inorganic microfiber 25 µm</td>
<td>P25 Resin impregnated paper 25 µm</td>
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</tr>
</tbody>
</table>

#### Seals and treatments

<table>
<thead>
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<th>Seals and treatments</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
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<tbody>
<tr>
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<td></td>
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<tr>
<td>V FPM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W NBR head anodized</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Z FPM head anodized</td>
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</table>

#### Connections for FRI025
- G1 1/2”
- G2 1/2” NPT
- G3 SAE 8 - 3/4" - 16 UNF

#### Connections for FRI040
- G 3/4”
- 3/4” NPT
- SAE 12 - 1 1/16” - 12 UN

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
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<td>CU025</td>
<td>A25 N P01</td>
</tr>
<tr>
<td>CU040</td>
<td>CU040</td>
<td>M25 W P01</td>
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</table>

#### Filtration rating (filter media)

<table>
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<tr>
<th>Filtration rating</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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<td>M90 Wire mesh 90 µm</td>
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<tr>
<td>A16 Inorganic microfiber 16 µm</td>
<td>P10 Resin impregnated paper 10 µm</td>
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<tr>
<td>A25 Inorganic microfiber 25 µm</td>
<td>P25 Resin impregnated paper 25 µm</td>
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</table>

#### Seals and treatments

<table>
<thead>
<tr>
<th>Seals and treatments</th>
<th>Axx</th>
<th>Mxx</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>N NBR</td>
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<td></td>
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<tr>
<td>V FPM</td>
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<tr>
<td>W NBR</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Z FPM</td>
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</table>

#### Connections for FRI025
- G1 1/2”
- G2 1/2” NPT
- G3 SAE 8 - 3/4" - 16 UNF

#### Connections for FRI040
- G 3/4”
- 3/4” NPT
- SAE 12 - 1 1/16” - 12 UN

### ACCESSORIES

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA Electrical differential indicator</td>
<td>242</td>
<td></td>
</tr>
<tr>
<td>DEM Electrical differential indicator</td>
<td>242-243</td>
<td></td>
</tr>
<tr>
<td>DLA Electrical / visual differential indicator</td>
<td>243-244</td>
<td></td>
</tr>
<tr>
<td>DLE Electrical / visual differential indicator</td>
<td>244</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional features</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2 Plug</td>
<td>246</td>
</tr>
</tbody>
</table>
Dimensions

**FRI025**

- **Holes on the tank**
- **M5 - #10-24 UNC**
- **Nr. 4 holes**

**Recommended clearance space for maintenance**

- **Total length immersed in the tank**

**Connection for differential indicator**

- **T2 plug not included**

**Flat seal**

**IN**

**OUT**

- **Plug**

---

**FRI040**

- **Holes on the tank**
- **M6 - 1/4-20 UNC**
- **Nr. 4 holes**

**Recommended clearance space for maintenance**

- **Total length immersed in the tank**

**Connection for differential indicator**

- **T2 plug not included**

**Flat seal**

**IN**

**OUT**

- **Plug**
**FRI100 - FRI250 - FRI630**

**Designation & Ordering code**

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>FRI100</th>
<th>Configuration example 1:</th>
<th>FRI250</th>
<th>Configuration example 2:</th>
<th>FRI630</th>
<th>Configuration example 2:</th>
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<tr>
<td></td>
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<td>FRI100 B A G1 A25 N P01</td>
<td></td>
<td>FRI250 S W F2 M25 N P01</td>
<td></td>
<td>FRI630 S W F2 M25 N P01</td>
</tr>
</tbody>
</table>

**Bypass valve**
- B: With bypass
- S: Without bypass

**Filtration rating**

<table>
<thead>
<tr>
<th>Connections for FRI100</th>
<th>Connections for FRI250</th>
<th>Connections for FRI630</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 1&quot; NPT</td>
<td>G 1 1/2&quot;</td>
<td>2 1/2&quot; NPT</td>
</tr>
<tr>
<td>G2 1&quot; NPT</td>
<td>1 1/2&quot; NPT</td>
<td>SAE 24 - 1 7/8&quot; - 12 UN</td>
</tr>
<tr>
<td>G3 SAE 16 - 1 5/16&quot; - 12 UN</td>
<td>SAE 32 - 2 1/2&quot; - 12 UN</td>
<td></td>
</tr>
<tr>
<td>F1 1&quot; SAE 3000 psi/M</td>
<td>1 1/2&quot; SAE 3000 psi/M</td>
<td>2 1/2&quot; SAE 3000 psi/M</td>
</tr>
<tr>
<td>F2 1&quot; SAE 3000 psi/UNC</td>
<td>1 1/2&quot; SAE 3000 psi/UNC</td>
<td>2 1/2&quot; SAE 3000 psi/UNC</td>
</tr>
</tbody>
</table>

**Seals and treatments**
- NBR
- FPM
- head anodized

**Connections for FRI100**
- G2 1" NPT
- G3 SAE 16 - 1 5/16" - 12 UN

**Connections for FRI250**
- G 1 1/2"

**Connections for FRI630**
- G 1 1/2"
  - SAE 32 - 2 1/2" - 12 UN

**FILTER ELEMENT**

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>CU100</th>
<th>CU250</th>
<th>CU630</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>CU100</td>
<td>CU250</td>
<td>CU630</td>
</tr>
</tbody>
</table>

**Filtration rating (filter media)**

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

**Seals and treatments**
- NBR
- FPM
- head anodized

**Connections for CU100**
- G 1 1/2"

**Connections for CU250**
- G 1"

**Connections for CU630**
- G 1"

**ACCESSORIES**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>page</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA Electrical differential indicator</td>
<td>242</td>
<td></td>
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<tr>
<td>DEM Electrical differential indicator</td>
<td>242-243</td>
<td></td>
</tr>
<tr>
<td>DLA Electrical / visual differential indicator</td>
<td>243-244</td>
<td></td>
</tr>
<tr>
<td>DLE Electrical / visual differential indicator</td>
<td>244</td>
<td></td>
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<tr>
<td>Additional features</td>
<td></td>
<td>246</td>
</tr>
<tr>
<td>T2 Plug</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**FRI100 - FRI250 - FRI630**

**Dimensions**

**FR100**

- Threaded connections "G"
- Flange connections "F"
- Holes on the tank
- Nr. 4 holes
- OUT
- Connection for differential indicator
- T2 plug not included
- Total length immersed in the tank
- Recommended clearance space for maintenance

**FR100**

- Flat seal
- Plug
- IN
- Blind flange
- OUT
- Connection for differential indicator
- T2 plug not included
- Total length immersed in the tank
- Recommended clearance space for maintenance

**FR100**

- M8 - 1/4" UNC
- Nr. 4 holes
- Holes on the tank
- Ø135
- Ø145
- 67
- 71
- 91
- 1.5
- 8
- 175
- 51
- 90
- 140
- 100
- 39
Dimensions

**FRI250**

Threaded connections “G”

- Recommended clearance space for maintenance
- Total length immersed in the tank

- Connection for differential indicator
- T2 plug not included

**FRI250**

Flange connections “F”

- Recommended clearance space for maintenance
- Total length immersed in the tank

- Connection for differential indicator
- T2 plug not included

IN

OUT

Plug

Flat seal

IN

Blind flange

OUT

IN

IN

IN

IN

OUT

OUT
Dimensions

**FRI630**

**Threaded connections “G”**

IN  
116  
OUT

**Flange connections “F”**

IN  
122  
OUT

**Holes on the tank**

- Total length immersed in the tank
- Recommended clearance space for maintenance

**Total length not included**

**Connection for differential indicator**

**T2 plug not included**

**Recommended clearance space for maintenance**

**IN**

**OUT**

**Flat seal**

**M10 - 3/8” UNC**

**Nr. 4 holes**

**Blind flange**

**IN**

**OUT**

**Flat seal**

**M10 - 3/8” UNC**

**Nr. 4 holes**

**Recommended clearance space for maintenance**

**IN**

**OUT**

**Flat seal**

**M10 - 3/8” UNC**

**Nr. 4 holes**

**Recommended clearance space for maintenance**

**IN**

**OUT**

**Flat seal**

**M10 - 3/8” UNC**

**Nr. 4 holes**

**Recommended clearance space for maintenance**
**FRI FRI255 - FRI850**

**Designation & Ordering code**

### COMPLETE FILTER

#### Series and size

<table>
<thead>
<tr>
<th>FRI255</th>
<th>FRI850</th>
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</table>

#### Bypass valve

<table>
<thead>
<tr>
<th>B</th>
<th>With bypass</th>
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</thead>
<tbody>
<tr>
<td>S</td>
<td>Without bypass</td>
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#### Seals and treatments

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<tr>
<th>A</th>
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<tbody>
<tr>
<td>V</td>
<td>FPM</td>
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#### Connections for FRI255

<table>
<thead>
<tr>
<th>G1</th>
<th>1 1/2” NPT</th>
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</thead>
<tbody>
<tr>
<td>G2</td>
<td>1 1/2” NPT</td>
</tr>
<tr>
<td>G3</td>
<td>SAE 24 - 1 7/8” - 12 UN</td>
</tr>
<tr>
<td>G4</td>
<td>G 1 1/4”</td>
</tr>
<tr>
<td>G5</td>
<td>1 1/4” NPT</td>
</tr>
<tr>
<td>G6</td>
<td>SAE 20 - 1 5/8” - 12 UN</td>
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<tr>
<td>F1</td>
<td>1 1/2” SAE 3000 psi/M</td>
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<tr>
<td>F2</td>
<td>1 1/2” SAE 3000 psi/UNC</td>
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</table>

#### Filtration rating (filter media)

<table>
<thead>
<tr>
<th>A03</th>
<th>Inorganic microfiber 3 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A06</td>
<td>Inorganic microfiber 6 µm</td>
</tr>
<tr>
<td>A10</td>
<td>Inorganic microfiber 10 µm</td>
</tr>
<tr>
<td>A16</td>
<td>Inorganic microfiber 16 µm</td>
</tr>
<tr>
<td>A25</td>
<td>Inorganic microfiber 25 µm</td>
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</table>

#### Filtration rating (head)

<table>
<thead>
<tr>
<th>M25</th>
<th>Wire mesh 25 µm</th>
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<tbody>
<tr>
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<td>Wire mesh 60 µm</td>
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<tr>
<td>M90</td>
<td>Wire mesh 90 µm</td>
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<tr>
<td>P10</td>
<td>Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>P25</td>
<td>Resin impregnated paper 25 µm</td>
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#### Connections for FRI850

<table>
<thead>
<tr>
<th>F1</th>
<th>3 1/2” SAE 3000 psi/M</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2</td>
<td>3 1/2” SAE 3000 psi/UNC</td>
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### FILTER ELEMENT

#### Element series and size

<table>
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<tr>
<th>CU250</th>
<th>CU850</th>
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#### Filtration rating (filter media)

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</tr>
</thead>
<tbody>
<tr>
<td>A06</td>
<td>Inorganic microfiber 6 µm</td>
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<tr>
<td>A10</td>
<td>Inorganic microfiber 10 µm</td>
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<td>Inorganic microfiber 16 µm</td>
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<tr>
<td>A25</td>
<td>Inorganic microfiber 25 µm</td>
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#### Filtration rating (head)

<table>
<thead>
<tr>
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<th>Wire mesh 25 µm</th>
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<tbody>
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<td>M90</td>
<td>Wire mesh 90 µm</td>
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<td>P10</td>
<td>Resin impregnated paper 10 µm</td>
</tr>
<tr>
<td>P25</td>
<td>Resin impregnated paper 25 µm</td>
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</table>

#### Seals and treatments

<table>
<thead>
<tr>
<th>N</th>
<th>NBR</th>
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<th>•</th>
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<tr>
<td>V</td>
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### FRI255 ACCESSORIES

#### Indicators

<table>
<thead>
<tr>
<th>BVA</th>
<th>Avial pressure gauge</th>
<th>page 240</th>
<th>BEA</th>
<th>Electrical pressure indicator</th>
<th>page 239</th>
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<tbody>
<tr>
<td>BVR</td>
<td>Radial pressure gauge</td>
<td>page 240</td>
<td>BEM</td>
<td>Electrical pressure indicator</td>
<td>page 239</td>
</tr>
<tr>
<td>BVP</td>
<td>Visual pressure indicator with automatic reset</td>
<td>page 241</td>
<td>BLA</td>
<td>Electrical / visual pressure indicator</td>
<td>page 239-240</td>
</tr>
<tr>
<td>BVO</td>
<td>Visual pressure indicator with manual reset</td>
<td>page 241</td>
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### FRI850 ACCESSORIES

#### Indicators

<table>
<thead>
<tr>
<th>DEA</th>
<th>Electrical differential indicator</th>
<th>page 242</th>
<th>DTA</th>
<th>Electronic differential indicator</th>
<th>page 245</th>
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<tr>
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<td>Electrical differential indicator</td>
<td>page 242-243</td>
<td>DVA</td>
<td>Visual differential indicator</td>
<td>page 245</td>
</tr>
<tr>
<td>DLA</td>
<td>Electrical / visual differential indicator</td>
<td>page 243-244</td>
<td>DVM</td>
<td>Visual differential indicator</td>
<td>page 245</td>
</tr>
<tr>
<td>DLE</td>
<td>Electrical / visual differential indicator</td>
<td>page 244</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Additional features

| T2 | Plug | page 246 |
**FRI255 - FRI850**

**Dimensions**

**FRI255**

- **IN**
- **OUT**
- **O-Ring seal**
- **Total length immersed in the tank**
- **Recommended clearance space for maintenance**
- **Nr. 4 holes**
- **G 1/8” Connection for clogging indicator**

**FRI850**

- **IN**
- **OUT**
- **Flat seal**
- **Total length immersed in the tank**
- **Recommended clearance space for maintenance**
- **M14 - 1/2” UNC Nr. 4 holes**
- **Connection for differential indicator**
- **T2 plug not included**

**Recommended clearance space for maintenance**

**Holes on the tank**

**Return filters**
Order number for spare parts

**FRI 025 - 040**

<table>
<thead>
<tr>
<th>Item:</th>
<th>Q.ty: 1 pc.</th>
<th>Seal Kit code number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter series</td>
<td>Filter element</td>
<td>NBR</td>
</tr>
<tr>
<td>FRI 025</td>
<td>See order table</td>
<td>02050213</td>
</tr>
<tr>
<td>FRI 040</td>
<td>See order table</td>
<td>02050214</td>
</tr>
</tbody>
</table>

**FRI 100 - 250 - 630**

<table>
<thead>
<tr>
<th>Item:</th>
<th>Q.ty: 1 pc.</th>
<th>Seal Kit code number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter series</td>
<td>Filter element</td>
<td>NBR</td>
</tr>
<tr>
<td>FRI 100</td>
<td>See order table</td>
<td>02050215</td>
</tr>
<tr>
<td>FRI 250</td>
<td>See order table</td>
<td>02050216</td>
</tr>
<tr>
<td>FRI 630</td>
<td>See order table</td>
<td>02050217</td>
</tr>
</tbody>
</table>
**SPARE PARTS**

**FRI 255**

- **Item:** 2
- **Q.ty.:** 1 pc.
- **Filter series:** FRI 255
- **Filter element:** See order table
- **Seal Kit code number:** 02050013
- **Contamination retainer binder:** 01060301
- **Q.ty.:** 1 pc.

**FRI 850**

- **Item:** 2
- **Q.ty.:** 1 pc.
- **Filter series:** FRI 850
- **Filter element:** See order table
- **Seal Kit code number:** 02050213
- **Contamination retainer binder:** 01060301
- **Q.ty.:** 1 pc.

**Order number for spare parts**

- **FRI 850**
  - **Q.ty.:** 1 pc.
  - **Filter series:** FRI 850
  - **Filter element:** See order table
  - **Seal Kit code number:** 02050218
  - **Contamination retainer binder:** 02050225
  - **Q.ty.:** 1 pc.
RF2 series

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

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

RF2250 and RF2350 are ranges of return filters for side tank mounting with integrated shut-off valve for protection of the reservoir against the system contamination. They are placed below the minimum oil level, directly connected to the return line of the system. The shut-off valve closes automatically when the cover is removed, allowing the filter element replacement without the fluid drop.

Available features:
- Female threaded connections up to 1” and flanged connections up to 1 1/2”, for a maximum flow rate of 350 l/min
- Bypass valve, to relieve excessive pressure drop across the filter media
- Magnetic column, to hold the ferrous particles
- Visual, electrical and electronic clogging indicators

Common applications:
- Compact mobile machines
- Compact industrial equipment

Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length 1</td>
<td>Length 1</td>
</tr>
<tr>
<td>RF2 250</td>
<td>2.6</td>
<td>2.0</td>
</tr>
<tr>
<td>RF2 350</td>
<td>2.8</td>
<td>2.0</td>
</tr>
</tbody>
</table>

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

Bypass valve
Opening pressure 175 kPa (1.75 bar) ±10%

Δp element type
- Microfi bre 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
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. \( \Delta p \) varies proportionally with density.

### Flow rates [l/min]

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Length</th>
<th>A03</th>
<th>A06</th>
<th>A10</th>
<th>A16</th>
<th>A25</th>
<th>M25</th>
<th>M60</th>
<th>M90</th>
<th>P10</th>
<th>P25</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF2 250</td>
<td>1</td>
<td>148</td>
<td>184</td>
<td>278</td>
<td>307</td>
<td>447</td>
<td>615</td>
<td>447</td>
<td>485</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF2 350</td>
<td>1</td>
<td>148</td>
<td>184</td>
<td>278</td>
<td>307</td>
<td>447</td>
<td>615</td>
<td>447</td>
<td>485</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximum flow rate for a complete return filter with a pressure drop \( \Delta p = 0.5 \) bar.
The reference fluid has a kinematic viscosity of 30 mm²/s (cSt) and a density of 0.86 kg/dm³.
For different pressure drop or fluid viscosity we recommend to use our selection software available on www.mpfiltrti.com.
Please, contact our Sales Department for further additional information.

### Hydraulic symbols

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Style B - E</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF2 250</td>
<td>✶</td>
</tr>
<tr>
<td>RF2 350</td>
<td>✶</td>
</tr>
</tbody>
</table>
RF2250 - RF2350

**Designation & Ordering code**

### COMPLETE FILTER

<table>
<thead>
<tr>
<th>Series and size</th>
<th>Configuration example 1:</th>
<th>RF2250</th>
<th>W</th>
<th>F2</th>
<th>E</th>
<th>M25</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF2250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF2350</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Seals and treatments

| A | NBR
| V | FPM
| W | NBR compatible with fluids HFA-HFB-HFC
| Z | FPM compatible with fluids HFA-HFB-HFC

#### Connections

| G1 | G 1/2”
| G2 | 1 1/2” NPT
| G3 | SAE 24 - 1 7/8” - 12 UN
| G4 | G 1 1/4”
| G5 | 1 1/4” NPT
| G6 | SAE 20 - 1 5/8” - 12 UN
| 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

#### Filtration rating (filter media)

- **A03 Inorganic microfiber** 3 µm: M25 Wire mesh 25 µm
- **A06 Inorganic microfiber** 6 µm: M60 Wire mesh 60 µm
- **A10 Inorganic microfiber** 10 µm: M90 Wire mesh 90 µm
- **A16 Inorganic microfiber** 16 µm: P10 Resin impregnated paper 10 µm
- **A25 Inorganic microfiber** 25 µm: P25 Resin impregnated paper 25 µm

### FILTER ELEMENT

<table>
<thead>
<tr>
<th>Element series and size</th>
<th>Configuration example 1:</th>
<th>CU250</th>
<th>M25</th>
<th>W</th>
<th>P01</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF2250</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF2350</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

- **A03 Inorganic microfiber** 3 µm: M25 Wire mesh 25 µm
- **A06 Inorganic microfiber** 6 µm: M60 Wire mesh 60 µm
- **A10 Inorganic microfiber** 10 µm: M90 Wire mesh 90 µm
- **A16 Inorganic microfiber** 16 µm: P10 Resin impregnated paper 10 µm
- **A25 Inorganic microfiber** 25 µm: P25 Resin impregnated paper 25 µm

#### Seals and treatments

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

#### Execution

- P01 MP Filtri standard
- Pxx Customized
**RF2250 - RF2350**

**Dimensions**

**RF2250**
- **Threaded connections “G”**
  - Recommended clearance space for maintenance
  - Total length immersed in the tank
  - Holes on the tank
  - M10 - 3/8’’ UNC
  - Nr. 4 holes
- **G 1/4” Connection for clogging indicator**
- **Flat seal**

**RF2250**
- **Flange connections “F”**
  - Recommended clearance space for maintenance
  - Total length immersed in the tank
  - Holes on the tank
  - M10 - 3/8’’ UNC
  - Nr. 4 holes
- **G 1/4” Connection for clogging indicator**
- **Flat seal**

**IN**
- Total length immersed in the tank

**Return filters**

---

*Note: The diagram includes dimensions and connections for RF2250 and RF2350 filters, focusing on threaded and flange connections.*
Dimensions

**RF2**

**RF2250 - RF2350**

- **IN**
- **Aux**
- **G 1/4” Connection for clogging indicator**
- **M10 - 3/8” UNC Nr. 4 holes**
- **Flat seal**
- **Total length immersed in the tank**
- **Recommended clearance space for maintenance**
- **Holes on the tank**
- **IN**
- **Aux**

**Recommended clearance space for maintenance**

**Total length immersed in the tank**

**Holes on the tank**

**IN**

**Aux**

**G 1/4” Connection for clogging indicator**

**M10 - 3/8” UNC Nr. 4 holes**

**Flat seal**

**Total length immersed in the tank**

**Recommended clearance space for maintenance**

**Holes on the tank**

**IN**

**Aux**

**G 1/4” Connection for clogging indicator**

**M10 - 3/8” UNC Nr. 4 holes**

**Flat seal**

**Total length immersed in the tank**

**Recommended clearance space for maintenance**

**Holes on the tank**
Order number for spare parts

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Filter element</th>
<th>Seal Kit code number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF2 250</td>
<td>See order table</td>
<td>02050586</td>
</tr>
<tr>
<td>RF2 350</td>
<td></td>
<td>02050587</td>
</tr>
</tbody>
</table>

RF2 250 - 350
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.

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

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPFX-MPTX-MPF-MPT with bypass 1.75 bar MPH with bypass 1.75 bar FRI 255</td>
<td>BVA14P01 BVR14P01 BVP20HP01 BVG20HP01</td>
<td>BEA15HA50P01 BEM15HA41P01</td>
<td>BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01</td>
<td></td>
</tr>
<tr>
<td>MPFX-MPTX-MPF-MPT with bypass 3 bar MPH with bypass 2.5 bar FRI 255</td>
<td>BVA25P01 BVR25P01 BVP20HP01 BVG20HP01</td>
<td>BEA20HA50P01 BEM20HA41P01</td>
<td>BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01</td>
<td></td>
</tr>
<tr>
<td>MPLX FRI 025 - 040 - 100 - 250 - 630 - 850</td>
<td>DVA20xP01 DVM20xP01</td>
<td>DEA20xA50P01 DEM20xAxxP01</td>
<td>DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01 DTA20xF70P01</td>
<td></td>
</tr>
</tbody>
</table>
### BEA*50
#### Electrical Pressure Indicator

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 bar ±10%</td>
<td>BE A 15 H A 50 P01</td>
</tr>
<tr>
<td>2 bar ±10%</td>
<td>BE A 20 H A 50 P01</td>
</tr>
</tbody>
</table>

**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

####液压符号

![Hydraulic Symbol]

#### 电气符号

![Electrical Symbol]

**订购代码**

- A/F 27
  - 最大紧固扭矩: 25 N·m

**EN 10226 - R1/8”**

---

### BEM*41
#### Electrical Pressure Indicator

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 bar ±10%</td>
<td>BE M 15 H A 41 P01</td>
</tr>
<tr>
<td>2 bar ±10%</td>
<td>BE M 20 H A 41 P01</td>
</tr>
</tbody>
</table>

**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
- 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

**订购代码**

- A/F 27
  - 最大紧固扭矩: 25 N·m

**EN 10226 - R1/8”**

---

### BL*51 - BL*52 - BL*53
#### Electrical/Visual Pressure Indicator

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 bar ±10%</td>
<td>BL A 15 H A xx P01</td>
</tr>
<tr>
<td>2 bar ±10%</td>
<td>BL A 20 H A xx P01</td>
</tr>
</tbody>
</table>

**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
- 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 Vdc
- Resistive load: 1 A / 24 Vdc 1 A / 110 Vdc 1 A / 230 Vac
- CE certification

**订购代码**

- A/F 27
  - 最大紧固扭矩: 25 N·m

**EN 10226 - R1/8”**

---
## BAROMETRIC INDICATORS

### Dimensions

#### BL71

**Electrical/Visual Pressure Indicator**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 bar ±10%</td>
<td>BL A 15 H A 71 P01</td>
</tr>
<tr>
<td>2 bar ±10%</td>
<td>BL A 20 H A 71 P01</td>
</tr>
</tbody>
</table>

**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

**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

**Ordering code**
- A/F 11
- A/F 27

**Max tightening torque: 25 N·m**

**EN 10226 - R1/8”**

### BVA

**Axial Pressure Gauge**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4 bar ±10%</td>
<td>BV A 14 P01</td>
</tr>
<tr>
<td>2.5 bar ±10%</td>
<td>BV A 25 P01</td>
</tr>
</tbody>
</table>

**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

**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

**Ordering code**
- A/F 11
- A/F 27

**Max tightening torque: 25 N·m**

**EN 10226 - R1/8”**

### BVR

**Radial Pressure Gauge**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4 bar ±10%</td>
<td>BV R 14 P01</td>
</tr>
<tr>
<td>2.5 bar ±10%</td>
<td>BV R 25 P01</td>
</tr>
</tbody>
</table>

**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

**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

**Ordering code**
- A/F 11
- A/F 27

**Max tightening torque: 25 N·m**

**EN 10226 - R1/8”**
**BAROMETRIC INDICATORS**

### Dimensions

**BVP - BVQ**

**Visual Pressure Indicator**

<table>
<thead>
<tr>
<th>Setting</th>
<th>OA</th>
<th>OB</th>
<th>OC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 bar</td>
<td>14</td>
<td>1.5H</td>
<td>20H</td>
</tr>
<tr>
<td>2.0 bar</td>
<td>14 H</td>
<td>20H</td>
<td></td>
</tr>
</tbody>
</table>

**Hydraulic symbol**

- **Materials**
  - Body: Brass
  - Cover / internal parts: Nylon
  - Caps: VMQ
  - Seal: HNBR

**Technical data**

- Reset: BVP - Automatic reset
  - BVQ - Manual reset
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
  - HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP45 according to EN 60529

**Designation & Ordering Code**

<table>
<thead>
<tr>
<th>Series</th>
<th>BEA-BEM</th>
<th>BLA</th>
<th>BVA-BVR</th>
<th>BVP-BVQ</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>BV</td>
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</table>

**Pressure setting**

<table>
<thead>
<tr>
<th>Setting</th>
<th>BEA-BEM</th>
<th>BLA</th>
<th>BVA-BVR</th>
<th>BVP-BVQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>1.4 bar</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15</td>
<td>1.5 bar</td>
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<tr>
<td>20</td>
<td>2.0 bar</td>
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<tr>
<td>25</td>
<td>2.5 bar</td>
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**Seals**

<table>
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<th>BLA</th>
<th>BVA-BVR</th>
<th>BVP-BVQ</th>
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</thead>
<tbody>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBR</td>
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**Thermostat**

<table>
<thead>
<tr>
<th>Setting</th>
<th>BEA-BEM</th>
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<th>BV</th>
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<td>A</td>
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<tr>
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**Electrical connections**

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</tr>
<tr>
<td>71</td>
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</tr>
</tbody>
</table>

**Options**

- P01 MP Filtri standard
- Pxx Customized

**Signals**

- Absence of pressure (no indicator)
- Presence of pressure (green button rises gradually)
- Clogged filter element (red button risen)

**Materials**

- Body: Brass
- Cover / internal parts: Nylon
- Caps: VMQ
- Seal: HNBR

**Technical data**

- Reset: BVP - Automatic reset
  - BVQ - Manual reset
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oils, Synthetic fluids
  - HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP45 according to EN 60529

**Designation & Ordering Code**

<table>
<thead>
<tr>
<th>Series</th>
<th>BEA-BEM</th>
<th>BLA</th>
<th>BVA-BVR</th>
<th>BVP-BVQ</th>
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**Pressure setting**

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<tbody>
<tr>
<td>14</td>
<td>1.4 bar</td>
<td></td>
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<tr>
<td>15</td>
<td>1.5 bar</td>
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<tr>
<td>25</td>
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**Seals**

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<tr>
<td>NBR</td>
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**Thermostat**

<table>
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<th>BV</th>
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**Electrical connections**

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<tbody>
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<td>71</td>
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**Options**

- P01 MP Filtri standard
- Pxx Customized
## Dimensions

<table>
<thead>
<tr>
<th>DEA*50</th>
<th>DEM*10</th>
<th>DEM*20</th>
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<tbody>
<tr>
<td><strong>Electrical Differential Indicator</strong></td>
<td><strong>Electrical Differential Indicator</strong></td>
<td><strong>Electrical Differential Indicator</strong></td>
</tr>
<tr>
<td><strong>Settings</strong></td>
<td><strong>Settings</strong></td>
<td><strong>Settings</strong></td>
</tr>
<tr>
<td>2 bar ±10%</td>
<td>2 bar ±10%</td>
<td>2 bar ±10%</td>
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<tr>
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<td><strong>Ordering code</strong></td>
<td><strong>Ordering code</strong></td>
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<tr>
<td>DEA 20 x A 50 P01</td>
<td>DEM 20 xx 10 P01</td>
<td>DEM20xx20P01</td>
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<tr>
<td>53</td>
<td>30 A/F 30 Max tightening torque: 65 N·m</td>
<td>60 A/F 28 Max tightening torque: 65 N·m</td>
</tr>
</tbody>
</table>

### 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:** 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”)

### Return Filters
- **Max tightening torque:** 65 N·m
DIFFERENTIAL INDICATORS

DE M 20 xx 30 P01

DE M 20 xx 35 P01

DL A 20 x A xx P01

### DEM*30

**Electrical Differential Indicator**

**Dimensions**

**Ordering code:** DE M 20 xx 30 P01

**Materials**
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**
- Max working pressure: 2 bar
- Proof pressure: ±10%
- 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**

**Dimensions**

**Ordering code:** DE M 20 xx 35 P01

**Materials**
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

**Technical data**
- Max working pressure: 2 bar
- Proof pressure: ±10%
- 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**

**Dimensions**

**Ordering code:** DL A 20 x A xx P01

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

**Technical data**
- Max working pressure: 2 bar
- Proof pressure: ±10%
- 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
- Degree protection: IP69K according to ISO 20653

**Electrical data**
- Electrical connection: EN 175301-803
- Lamp: 24 Vdc
- Resistor load: 1 A / 110 Vdc

---

**Return filters**
DIFFERENTIAL INDICATORS

Dimensions

### DLA*71

**Electrical/Visual Differential Indicator**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
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</thead>
<tbody>
<tr>
<td>2 bar ±10%</td>
<td>DL A 20 x A 71 P01</td>
</tr>
</tbody>
</table>

**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
  - 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

![Hydraulic symbol](image1)

![Electrical symbol](image2)

---

### DLE*A50

**Electrical/Visual Differential Indicator**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 bar ±10%</td>
<td>DL E 20 x A 50 P01</td>
</tr>
</tbody>
</table>

**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
  - Available the connector with lamps

**Electrical data**
- Electrical connection: EN 175301-803
- Resistive load: 5 A / 250 Vac

![Hydraulic symbol](image3)

![Electrical symbol](image4)

---

### DLE*F50

**Electrical/Visual Differential Indicator**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Ordering code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 bar ±10%</td>
<td>DL E 20 x F 50 P01</td>
</tr>
</tbody>
</table>

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

![Hydraulic symbol](image5)

![Electrical symbol](image6)
### Differential Indicators

**DTA*70**

**Electronic Differential Indicator**

**Settings**

<table>
<thead>
<tr>
<th></th>
<th>Ordering code</th>
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</thead>
<tbody>
<tr>
<td>2 bar ±10%</td>
<td>DT A 20 x 70 P01</td>
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</tbody>
</table>

**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)

**A/F 30**

Max tightening torque: 50 N·m

**Hydraulic symbol**

**DVA**

**Visual Differential Indicator**

**Settings**

<table>
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<tr>
<th></th>
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<tbody>
<tr>
<td>2 bar ±10%</td>
<td>DV A 20 x P01</td>
</tr>
</tbody>
</table>

**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

**Green / Red clogging indicator**

**A/F 28**

Max tightening torque: 65 N·m

**DVM**

**Visual Differential Indicator**

**Settings**

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>2 bar ±10%</td>
<td>DV M 20 x P01</td>
</tr>
</tbody>
</table>

**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

**Red clogging indicator**

**A/F 30**

Max tightening torque: 65 N·m

**Hydraulic symbol**
### DIFFERENTIAL INDICATORS

#### Configuration examples

**Configuration example 1:**
- **Series:** DE
- **Option:** P01
- **Type:** T2
- **Seal:** HNBR
- **Indicator plug:** T2 H

**Configuration example 2:**
- **Series:** DL
- **Option:** P01
- **Type:** T2
- **Seal:** HNBR
- **Indicator plug:** T2 H

**Configuration example 3:**
- **Series:** DT
- **Option:** P01
- **Type:** T2
- **Seal:** HNBR
- **Indicator plug:** T2 H

**Configuration example 4:**
- **Series:** DV
- **Option:** P01
- **Type:** T2
- **Seal:** HNBR
- **Indicator plug:** T2 H

---

#### Designation & Ordering Code - Differential Indicators

<table>
<thead>
<tr>
<th>Series</th>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
<th>Configuration example 3:</th>
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<tbody>
<tr>
<td>DE</td>
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#### Designation & Ordering Code - Differential Indicator Plug

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<tbody>
<tr>
<td>T2</td>
<td>Indicator plug</td>
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<td></td>
</tr>
</tbody>
</table>

#### Materials
- **Body:** Phosphatized steel
- **Seal:** HNBR / FPM

#### Seals
- HNBR
- FPM

#### Electrical connections
- Connection AMP Superseal series 1.5
- Connection AMP Timer Junior
- Connection Deutsch DT-04-2-P
- Connection Deutsch DT-04-3-P
- Connection EN 175301-803
- Connection EN 175301-803, transparent base with lamps 24 Vdc
- Connection EN 175301-803, transparent base with lamps 110 Vdc
- Connection IEC 61076-2-101 D (M12)
- Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc

#### Option
- P01 MP Filtri standard
- Pxx Customized

---

**Return filters**
STEEL EXTENSION TUBE

Configuration example:
MPF191 2 A F1 A10 H B S60

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NYLON EXTENSION TUBE

Configuration example:
TE 40 A 250

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<td>324</td>
<td>374</td>
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<td>324</td>
<td>374</td>
<td>424</td>
<td>474</td>
<td>524</td>
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COMPATIBILITY TABLE

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<tr>
<th>Filter series</th>
<th>Filter size</th>
<th>Filter Length</th>
<th>MPF</th>
<th>MPFX</th>
<th>MPT</th>
<th>MPTX</th>
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</thead>
<tbody>
<tr>
<td>MPF - MPFX</td>
<td>191 192 194</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MPT - MPTX</td>
<td>101 104 110 114 120</td>
<td>2 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H1 - Total length immersed in the tank
**ACCESSORIES**

**FILLER PLUG**

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

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

![Filler plug diagram]

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

**DIFFUSER WITH FAST LOCK CONNECTION**

![Diffuser diagram]

**DIPSTICK**

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

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

![Dipstick diagram]

### Configuration example:

```
<table>
<thead>
<tr>
<th>Series</th>
<th>Length</th>
<th>Size</th>
<th>Version</th>
<th>DFS</th>
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<th>A</th>
<th>250</th>
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<td>A</td>
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<td>25</td>
<td>234</td>
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<td>DFS</td>
<td>32</td>
<td>A</td>
<td>250</td>
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<td>30</td>
<td>284</td>
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<td>334</td>
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<td>Standard</td>
<td>DFS</td>
<td>32</td>
<td>A</td>
<td>250</td>
</tr>
</tbody>
</table>
```

For any further information, please, contact our commercial dept.
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
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.
### Clogging Indicators

#### Filter family

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF2 250 - 350</td>
<td>WR16P01</td>
<td>VEA21A50P01</td>
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<tr>
<td>SF2 500 - 501 - 503 - 504 - 505</td>
<td>WR16P01</td>
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<td>VLA21A41P01</td>
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<tr>
<td>SF2 510 - 535 - 540</td>
<td>WR16P01</td>
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</tbody>
</table>

#### Stainless Steel Filters

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAINLESS STEEL SUCTION FILTERS</td>
<td>VEA16P01</td>
<td>VEA21A50P01</td>
<td></td>
<td>VLA21A41P01</td>
</tr>
<tr>
<td>STAINLESS STEEL HIGH PRESSURE FILTERS</td>
<td>VEA16P01</td>
<td>VEA21A50P01</td>
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<td>VLA21A41P01</td>
</tr>
<tr>
<td>STAINLESS STEEL LOW &amp; MEDIUM PRESSURE FILTERS</td>
<td>VEA16P01</td>
<td>VEA21A50P01</td>
<td></td>
<td>VLA21A41P01</td>
</tr>
<tr>
<td>STAINLESS STEEL SPIN-ON FILTERS</td>
<td>VEA16P01</td>
<td>VEA21A50P01</td>
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<td>VLA21A41P01</td>
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</tbody>
</table>

#### Suction Filters

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
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</thead>
<tbody>
<tr>
<td>MRSX 116 - 165 - 166</td>
<td>WVB16P01</td>
<td>VEB21AA50P01</td>
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<td>VLA21A41P01</td>
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<tr>
<td>LMP 124 MULTIPORT</td>
<td>BVA25P01</td>
<td>BEM25HA50P01</td>
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<td>VLA21A41P01</td>
</tr>
<tr>
<td>LMP 124 MULTIPORT</td>
<td>BVR25P01</td>
<td>BEM25HA50P01</td>
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<td>VLA21A41P01</td>
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<tr>
<td>LMP 124 MULTIPORT</td>
<td>BVP20HP01</td>
<td>BEM20HA50P01</td>
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</tr>
<tr>
<td>LMP 124 MULTIPORT</td>
<td>BVQ20HP01</td>
<td>BEM20HA50P01</td>
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<td>VLA21A41P01</td>
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</table>

#### Return Suction Filters

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
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<tbody>
<tr>
<td>MRSX 116 - 165 - 166</td>
<td>WVB16P01</td>
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<tr>
<td>LMP 124 MULTIPORT</td>
<td>BVA25P01</td>
<td>BEM25HA50P01</td>
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<tr>
<td>LMP 124 MULTIPORT</td>
<td>BVR25P01</td>
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<td>VLA21A41P01</td>
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<td>LMP 124 MULTIPORT</td>
<td>BVP20HP01</td>
<td>BEM20HA50P01</td>
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<td>LMP 124 MULTIPORT</td>
<td>BVQ20HP01</td>
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<td>VLA21A41P01</td>
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</table>

#### Spin-on Filters

<table>
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<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPS 050 - 070 - 100 - 150</td>
<td>WVB16P01</td>
<td>VEB21AA50P01</td>
<td></td>
<td>VLA21A41P01</td>
</tr>
<tr>
<td>MPS 050 - 070 - 100 - 150</td>
<td>WSM 050 - 070 - 100 - 150</td>
<td>VEB21AA50P01</td>
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#### In-line Filters

<table>
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<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
<th>Electronic indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPS 050 - 070 - 100 - 150</td>
<td>WVB16P01</td>
<td>VEB21AA50P01</td>
<td></td>
<td>VLA21A41P01</td>
</tr>
<tr>
<td>MPS 050 - 070 - 100 - 150</td>
<td>WSM 050 - 070 - 100 - 150</td>
<td>VEB21AA50P01</td>
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<td>VLA21A41P01</td>
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</table>

#### Low & Medium Pressure Filters

<table>
<thead>
<tr>
<th>Filter series</th>
<th>Visual indicator</th>
<th>Electrical indicator</th>
<th>Electrical / Visual indicator</th>
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</thead>
<tbody>
<tr>
<td>LMP 110 - 112 - 116 - 118 - 119 MULTIPORT</td>
<td>DVA20xP01</td>
<td>DVA20x50P01</td>
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<td>VLA21A41P01</td>
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<tr>
<td>LMP 210 - 211 - LDP</td>
<td>DVA20xP01</td>
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<tr>
<td>LMP 400 - 401 &amp; 430 - 431</td>
<td>DVA20xP01</td>
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<td>LMP 900 - 901</td>
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<td>LMP 900 - 901</td>
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<td>LMP 900 - 901</td>
<td>DVM20xP01</td>
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#### High Pressure Filters

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<tbody>
<tr>
<td>FMP 039 - 065 - 135 - 320</td>
<td>DVA50xP01</td>
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<tr>
<td>FMP 039 - 065 - 135 - 320</td>
<td>DVM50xP01</td>
<td>DVM50x50P01</td>
<td></td>
<td>VLA21A41P01</td>
</tr>
</tbody>
</table>

#### Hazardous area electronic indicator

- **Visual indicator**: VEB21AA50P01
- **Electrical indicator**: DVA20x50P01
- **Electronic indicator**: DLE20x50P01

**NFPA**

- **Standard**: Classification of Fire Hazards
- **Classification**: Class I, Div. I, Groups A, B, C, D, E, F, G
- **Approval**: UL/cUL, FM, CSA, CE

**International**

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- **Classification**: Class I, Div. I, Groups A, B, C, D, E, F, G
- **Approval**: UL/cUL, FM, CSA, CE
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