Return filters

MPTX 116

Maximum working pressure up to 800 kPa (8 bar) - Flow rate up to 300 l/min
THE CORRECT FILTER SIZING HAVE TO BE BASED ON THE TOTAL PRESSURE DROP DEPENDING BY THE APPLICATION. 

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 \( \Delta p_c \) 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 \( \Delta p_e \) 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

\[ \Delta p = \text{Filter housing pressure drop [bar]} \]
\[ \Delta p_e = \text{Filter element pressure drop [bar]} \]
\[ Y = \text{Corrective factor Y (see correspondent table), depending on the filter type, on the filter element size, on the filter element length and on the filter media} \]

\[ Q = \text{flow rate [l/min]} \]
\[ V_1 = \text{reference oil viscosity = 30 mm²/s (cSt)} \]
\[ V_2 = \text{operating oil viscosity in mm²/s (cSt)} \]

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

\[ \Delta p_e = (2.50 : 1000) \times 120 \times (46 : 30) = 0.46 \text{ bar} \]

\[ \Delta p = 0.03 \text{ bar} \]

Filter housings \( \Delta p \) pressure drop.

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.

\[ \Delta p_e = (250 : 1000) \times 120 \times (46 : 30) = 0.46 \text{ bar} \]

MPTX corrective factor

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

<table>
<thead>
<tr>
<th>Filter element</th>
<th>Absolute filtration</th>
<th>Nominal filtration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H series</td>
<td>N Series</td>
</tr>
<tr>
<td>Type</td>
<td>A03</td>
<td>A06</td>
</tr>
<tr>
<td>MFX 100</td>
<td>1</td>
<td>29.20</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>17.83</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10.25</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6.10</td>
</tr>
</tbody>
</table>

\[ \Delta p Tot. = 0.03 + 0.46 = 0.49 \text{ bar} \]

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

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

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>MPTX 116</td>
<td></td>
<td>M25</td>
<td>M09</td>
</tr>
<tr>
<td>1</td>
<td>18</td>
<td>20</td>
<td>53</td>
</tr>
<tr>
<td>2</td>
<td>28</td>
<td>38</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>48</td>
<td>55</td>
<td>125</td>
</tr>
<tr>
<td>4</td>
<td>79</td>
<td>89</td>
<td>180</td>
</tr>
</tbody>
</table>

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

Connections of filter under test: G 1 1/4”

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.
Technical data

Return filter

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

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

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

Common applications:
- Light industrial equipment
- Mobile application

Filter housing materials
- Head: Aluminium
- Cover: Nylon
- Bowl: Nylon

Bypass valve
- Opening pressure 175 kPa (1.75 bar) ±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
MPTX filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

<table>
<thead>
<tr>
<th></th>
<th>Weights [kg]</th>
<th>Volumes [dm³]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length 1 2 3 4</td>
<td>Length 1 2 3 4</td>
</tr>
<tr>
<td>MPTX 116</td>
<td>1.10 1.15 1.25 1.50</td>
<td>0.72 0.93 1.28 1.74</td>
</tr>
</tbody>
</table>

Hydraulic symbols

Filter series Style 1 connection

Pressure drop

Filter housings Δp pressure drop

Bypass valve pressure drop

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

#### Series and size

<table>
<thead>
<tr>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPTX116</td>
<td>MPTX116</td>
</tr>
<tr>
<td>1 S A G1 M90 E P01</td>
<td>2 S Z G9 A03 B P01</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>B</th>
<th>C</th>
<th>Pxx</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBR</td>
<td>$E$</td>
<td>$V$</td>
<td>Pxx</td>
</tr>
<tr>
<td>PPM</td>
<td>$W$</td>
<td>$Z$</td>
<td>Pxx</td>
</tr>
</tbody>
</table>

#### Filtration rating

| 1 | 2 | 3 | 4 |

#### Connections

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

<table>
<thead>
<tr>
<th>G6</th>
<th>G7</th>
<th>G8</th>
<th>G9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/4&quot; NPT</td>
<td>SAE 12 - 1 1/16&quot; - 12 UN</td>
<td>SAE 16 - 1 5/16&quot; - 12 UN</td>
<td>SAE 20 - 1 5/8&quot; - 12 UN</td>
</tr>
</tbody>
</table>

#### Filtration rating (filter media)

| 1 2 3 4 |

- Inorganic microfiber Wire mesh 3 µm 25 µm
- Inorganic microfiber Wire mesh 6 µm 60 µm
- Inorganic microfiber Wire mesh 10 µm 90 µm
- Inorganic microfiber Resin impregnated paper 16 µm 10 µm
- Inorganic microfiber Resin impregnated paper 25 µm 25 µm

### FILTER ELEMENT

#### Series and size

<table>
<thead>
<tr>
<th>Configuration example 1:</th>
<th>Configuration example 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPX100</td>
<td>MPX100</td>
</tr>
<tr>
<td>1 M90 N B E P01</td>
<td>2 A03 W V P01</td>
</tr>
</tbody>
</table>

#### Element length

| 1 | 2 | 3 | 4 |

#### Filtration rating (filter media)

| 1 | 2 | 3 | 4 |

- Inorganic microfiber Wire mesh 3 µm 25 µm
- Inorganic microfiber Wire mesh 6 µm 60 µm
- Inorganic microfiber Wire mesh 10 µm 90 µm
- Inorganic microfiber Resin impregnated paper 16 µm 10 µm
- Inorganic microfiber Resin impregnated paper 25 µm 25 µm

#### Filter media

| 1 2 3 4 |

#### 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

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**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

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**Execution**

| 1 2 3 4 |

- **E** 3 bar
- **B** 1.75 bar
- **Pxx** Customized

**Bypass valve**

- **E** 3 bar
- **B** 1.75 bar
- **Pxx** Customized

**Seals**

- **B** NBR
- **E** FPM

**Series and size**

- **MPX** 116 Filter element with private spigot

**Element series and size**

- **MPX** 116 Filter element with private spigot

**Filtration rating**

| 1 | 2 | 3 | 4 |

**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
MPTX 116

Dimensions

<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>120</td>
</tr>
<tr>
<td>2</td>
<td>146</td>
<td>170</td>
</tr>
<tr>
<td>3</td>
<td>224</td>
<td>250</td>
</tr>
<tr>
<td>4</td>
<td>326</td>
<td>350</td>
</tr>
</tbody>
</table>

Connections

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

- G 1/8”
- 1/8” NPT

IN

OUT

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

O-Ring seal

Holes on the tank

IN

OUT

O-Ring seal

Holes on the tank

IN

OUT

- Option for 2 and 4 screws
- M10 - 3/8" UNC
- Nr. 4 holes at 90°
- Nr. 2 holes
Item: Filter series

Filter element: See order table

Seal Kit code number

NBR: 02050737

FPM: 02050738

Q.ty: 1 pc.
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