Stainless steel-high pressure filter
Pi 480

Nominal pressure 450/250 bar (6425/3570 psi), nominal size 40 up to 250

1. Features

High performance filters for modern hydraulic systems

- Modular system
- Compact design
- Minimal pressure drop through optimal flow design
- Visual/electrical/electronic maintenance indicator
- Threaded connections
- Quality filters, easy to service
- Equipped with highly efficient glass fibre PS filter elements according to DIN 24550
- Beta rated elements according to ISO 16889 multipass test
- Elements with high differential pressure stability and dirt holding capacity
- NPT- and SAE-connections on request
- Worldwide distribution
2. Flow rate/pressure drop curve complete filter

\[ y = \Delta p \text{ [bar]} \]
\[ x = \text{flow rate } V \text{ [l/min]} \]
3. Separation grade characteristics

4. Filter performance data

tested according to ISO 16889 (multipass test)

PS vst elements with max. $\Delta p \leq 210$ bar

<table>
<thead>
<tr>
<th>PS vst</th>
<th>$\beta_{5(C)}$</th>
<th>$\beta_{10(C)}$</th>
<th>$\beta_{15(C)}$</th>
<th>$\beta_{20(C)}$</th>
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</thead>
<tbody>
<tr>
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<td>$\geq 200$</td>
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<tr>
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<td>$\geq 200$</td>
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<td>$\geq 200$</td>
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<td>$\geq 200$</td>
<td>$\geq 200$</td>
</tr>
</tbody>
</table>

values guaranteed up to 20 bar differential pressure

determined by multipass tests (ISO 16889)
calibration according to ISO 11171 (NIST)

5. Quality assurance

Filtration Group filters and filter elements are produced according to the following international standards:

<table>
<thead>
<tr>
<th>Norm</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN ISO 2941</td>
<td>Hydraulic fluid power filter elements; verification of collapse/burst resistance</td>
</tr>
<tr>
<td>DIN ISO 2942</td>
<td>Hydraulic fluid power filter elements; verification of fabrication integrity</td>
</tr>
<tr>
<td>DIN ISO 2943</td>
<td>Hydraulic fluid power filter elements; verification of material compatibility with fluids</td>
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<tr>
<td>DIN ISO 3723</td>
<td>Hydraulic fluid power filter elements; method for end load test</td>
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<tr>
<td>DIN ISO 3724</td>
<td>Hydraulic fluid power filter elements; verification of flow fatigue characteristics</td>
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<tr>
<td>ISO 3968</td>
<td>Hydraulic fluid power-filters-evaluation of pressure drop versus flow characteristics</td>
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<tr>
<td>ISO 10771.1</td>
<td>Fatigue pressure testing of metal containing envelopes in hydraulic fluid applications</td>
</tr>
<tr>
<td>ISO 16889</td>
<td>Hydraulic fluid power filters-multi-pass method for evaluationfiltration performance of a filter element</td>
</tr>
</tbody>
</table>

6. Symbols

\[ y = \text{beta-value} \]
\[ x = \text{particle size [µm]} \]
7. Order numbers

Example for ordering filters:

<table>
<thead>
<tr>
<th>1. Filter housing</th>
<th>2. Filter element</th>
</tr>
</thead>
<tbody>
<tr>
<td>V = 100 l/min and electrical maintenance indicator</td>
<td>PS vst 6</td>
</tr>
<tr>
<td>Type: Pi 48010-015</td>
<td>Type: Pi 71010 DN PS vst 6</td>
</tr>
<tr>
<td>Order number: 79324583</td>
<td>Order number: 77960131</td>
</tr>
</tbody>
</table>

### 7.1 Housing design

<table>
<thead>
<tr>
<th>Nominal size NG [l/min]</th>
<th>Order number</th>
<th>Type</th>
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<th>☐ with visual indicator</th>
<th>☐ with electrical indicator</th>
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<td>78397556</td>
<td>Pi 48004-060</td>
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<td></td>
<td>78306607</td>
<td>Pi 48004-014</td>
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<td></td>
<td>79343351</td>
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<td>79762295</td>
<td>Pi 48006-060</td>
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<td>78308660</td>
<td>Pi 48010-060</td>
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<td>160</td>
<td>70368297</td>
<td>Pi 48016-060</td>
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<td></td>
<td>70368298</td>
<td>Pi 48016-014</td>
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<td>79353160</td>
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<td>250</td>
<td>70368299</td>
<td>Pi 48025-060</td>
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<td>Pi 48025-014</td>
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<td></td>
<td>76109284</td>
<td>Pi 48025-015</td>
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</table>
### 7.2 Filter elements*

<table>
<thead>
<tr>
<th>Nominal size NG [l/min]</th>
<th>Order number</th>
<th>Type</th>
<th>Filter material</th>
<th>max. ( \Delta p ) [bar]</th>
<th>Filter surface [cm²]</th>
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<tr>
<td>40</td>
<td>78216079</td>
<td>Pi 71004 DN PS vst 3</td>
<td>PS vst 3</td>
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<tr>
<td></td>
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<td>445</td>
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<td>77925654</td>
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<tr>
<td></td>
<td>78216087</td>
<td>Pi 74004 DN PS vst 16</td>
<td>PS vst 16</td>
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<td>Pi 75025 DN PS vst 25</td>
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</tbody>
</table>

*a wider range of element types is available on request*
8. Technical specifications

Design: in-line filter
Nominal pressure:
- 2x 10^6 load changes 450 bar (6425 psi)
- 250 bar (3570 psi)
Test pressure:
- NG 40 up to 100: 700 bar (10000 psi)
- NG 160 and 250: 325 bar (4640 psi)
Connections:
- NG 40 up to 100: G1
- NG 160 and 250: G1½
Temperature range:
- NG 40 up to 100: -10 °C to +120 °C
- NG 160 and 250: 700 bar (10000 psi)
Filter head and housing material:
- NG 40 up to 100: TP 316/TP 316 L
- NG 160 and 250: (1.4401/1.4404)
Sealing material:
- NG 40 up to 100: NBR/PTFE
- NG 160 and 250: (other materials on request)
Maintenance indicator setting:
- NG 40 up to 100: Δ p 5 bar ± 10 %
Electrical data of maintenance indicator:
- Maximum voltage: 250 V AC/200 V DC
- Maximum current: 1 A
- Contact load: 70 W
- Type of protection: IP 65 in inserted and secured status
- Contact: normally open/closed
Cable sleave: M20x1.5
The switching function can be changed by turning the electric upper part by 180° (normally closed contact or normally open contact). The state on delivery is a normally closed contact. By inductivity in the direct current circuit the use of suitable protection circuit should be considered. Further maintenance indicator details and designs are available in the maintenance indicator data sheet.

We draw attention to the fact that all values indicated are average values and not always occur in specific cases of application. Our products are continually being further developed. Values, dimensions and weights can change as a result of this. Our specialized department will be pleased to offer you advice.

We recommend to contact us concerning applications of our filters in areas governed by the EU Directive 94/9 EG (ATEX 95). The standard version can be used for liquids based on mineral oil (corresponding to the fluids in Group 2 of Directive 97/23 EG Article 9). If you consider to use other fluids please contact us for additional support.

Subject to technical alteration without prior notice.

9. Dimensions

All dimensions in mm.

<table>
<thead>
<tr>
<th>Type</th>
<th>A</th>
<th>B</th>
<th>C ± 5</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O (SW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pi 48004</td>
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<td>M8</td>
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<td>150</td>
<td>M10</td>
<td>135</td>
<td>145</td>
<td>-</td>
<td>35.5</td>
<td>36</td>
</tr>
</tbody>
</table>
10. Installation, operating and maintenance instructions

10.1 Filter installation
When installing the filter make sure that sufficient space is available to remove filter element and filter housing. Preferably the filter should be installed with the filter housing pointing downwards. The maintenance indicator must be visible.

10.2 Connecting the electrical maintenance indicator
The electrical indicator is connected via a 2-pole appliance plug according to DIN EN 175301-803 with poles marked 1 and 2. The electrical section can be inverted to change from normally open position to normally closed position or vice versa.

10.3 When should the filter element be replaced?
1. Filters equipped with visual and electrical maintenance indicator:
   During cold starts, the indicator may give a warning signal. Press the red button of the visual indicator once again only after operating temperature has been reached. If the red button immediately pops up again and/or the electrical signal has not switched off after reaching operating temperature, the filter element must be replaced after the end of the shift.
2. Filters without maintenance indicator:
   The filter element should be replaced after the trial run or flushing of the system. Afterwards follow instructions of the manufacturer.
3. Please always ensure that you have original Filtration Group spare elements in stock: Disposable elements (PS) cannot be cleaned.

10.4 Element replacement
1. Stop system and relieve filter from pressure.
2. Unscrew the filter housing by turning counter-clockwise. Clean the housing using a suitable cleaning solvent.
3. Remove element by pulling down carefully.
4. Check o-ring and spigot for damage. Replace, if necessary.
5. Make sure that the order number on the spare element corresponds to the order number of the filter name-plate. To ensure no contamination occurs during the exchange of the element first open the plastic bag and push the element over the spigot in the filter head. Now remove plastic bag.
6. Lightly lubricate the threads of the filter housing a little bit and screw into the filter head. Maximum tightening torque for NG 50 to 110 = 60 Nm, for NG 150 to 450 = 100 Nm.

11. Spare parts list

<table>
<thead>
<tr>
<th>Seal kit</th>
<th>Order number</th>
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<tbody>
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<td>Pi 48004 - 48010</td>
<td></td>
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<tr>
<td>NBR</td>
<td>79767443</td>
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<tr>
<td>FPM</td>
<td>70315096</td>
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<td>EPDM</td>
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<table>
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<tr>
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<th>Order number</th>
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<tr>
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</tr>
<tr>
<td>Electrical PiS 3192</td>
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<td>Electrical upper section only</td>
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<table>
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<th>Order number</th>
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<td>EPDM</td>
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