Series SPH 100-180
35 BAR
25 BAR for SPH 180

Dimensions:

<table>
<thead>
<tr>
<th>typ</th>
<th>eA</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>L</th>
<th>M (O4)</th>
<th>M (E12)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPH 100</td>
<td>¾&quot;</td>
<td>34</td>
<td>185</td>
<td>219</td>
<td>95</td>
<td>95</td>
<td>M8</td>
<td>38</td>
<td>38</td>
<td>99</td>
<td>112</td>
<td>25</td>
</tr>
<tr>
<td>SPH 140</td>
<td>1&quot;</td>
<td>34</td>
<td>260</td>
<td>294</td>
<td>95</td>
<td>95</td>
<td>M8</td>
<td>38</td>
<td>38</td>
<td>99</td>
<td>112</td>
<td>25</td>
</tr>
<tr>
<td>SPH 180</td>
<td>1 ¼&quot;</td>
<td>39</td>
<td>330</td>
<td>369</td>
<td>121</td>
<td>117</td>
<td>M10</td>
<td>48</td>
<td>48</td>
<td>130</td>
<td>135</td>
<td>30</td>
</tr>
</tbody>
</table>

Dimensions: mm

Designs and performance values are subject to change.
Spin-On Filter
Series SPH 100-180
35 BAR
25 BAR for SPH 180

Description:
Eaton’s spin-on filters are designed to provide one of the highest cleanliness levels for hydraulic systems, featuring cartridges that are engineered to fit into many leading filter systems on the market.

Series SPH filters are available with the following features:

• Compatible with a variety of mediums such as oils, fuels, emulsions, glycol water and synthetic fluids
• Cartridge pressure is 35 bar & 25 bar for SPH180 size
• Cartridge replacement does not require any tooling or equipment to optimize maintenance efficiency
• Other configurations are available upon request

Eaton’s spin-on filters are manufactured and tested according to ISO 2941, ISO 3723 and ISO 2942.

1. Type index:
1.1. Complete filter: (ordering example)

**SPH. 100. 10VG. G. 4. R. -**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>series:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPH = high pressure spin-on filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nominal size:</strong></td>
<td>100, 140, 180</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>filter-material:</strong></td>
<td>25VG, 10VG, 6VG, 3VG microglass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>connection:</strong></td>
<td>G = BSPP thread connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPT = NPT thread connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>connection size:</strong></td>
<td>4 = ¾” (SPH 100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 = 1” (SPH 140)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 = 1 ¼” (SPH 180)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>bypass valve:</strong></td>
<td>- = without</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R = bypass valve filter Δp 1,75 bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>clogging indicator:</strong></td>
<td>- = without</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O4 = visual differential 1,5 bar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E12,1,5 = electrical differential 1,5 bar</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

1.2. Filter element: (ordering example)

**01SH. 100. 10VG**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>series</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01SH = spin-on cartridge for high pressure filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>nominal size:</strong></td>
<td>100, 140, 180</td>
<td></td>
</tr>
<tr>
<td><strong>filter-material:</strong></td>
<td>25VG, 10VG, 6VG, 3VG microglass</td>
<td></td>
</tr>
</tbody>
</table>
Technical data:
operating temperature: -25°C to +110°C
operating medium: mineral oil, other media on request
max. operating pressure: 35 bar, 25 bar for SPH 180
opening pressure bypass valve: \( \Delta p \) 1.75 bar
gasket: Nitrile (NBR)

Classified under the Pressure Equipment Directive 2014/68/EC for mineral oil (fluid group 2), Article 4, Para. 3.
Classified under ATEX Directive 2014/34/EC according to specific application (see questionnaire sheet-no. 34279-4).

Pressure drop flow curves:
Curves are calculated in accordance with ISO 3968 and are valid for clean filtering elements.
\( \Delta p \) changes along with the density in presence of an eddy flow, and along with the dynamic viscosity in presence of a laminar flux.
Curves are valid for mineral oils with density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/sec (cSt).
When choosing the filtering medium consider the pressure losses deriving from the flow rate:
Between 0.3-0.5 bar for filters fitted on return line.
Between 1-1.5 bar for filters fitted on pressure line.
(The total pressure drop of assembly is to be calculated by sum of housing \( \Delta p \) and the element \( \Delta p \))

Housing:

Element:
Clogging Indicator:

Type: O4 (visual differential)
Case: Trogramit
Gaskets: O-ring NBR (viton on request)
Max working temperature: 110°C
Setting: 1,5 bar

Type: E12 (electrical differential)
Case: brass
Gasket: O-ring
Max switched power: 3W
Electric contact type: N.A.
Protection rate: IP65
Max working pressure: 250 bar
Setting: 1,5 bar

Symbols:

- filter without bypass valve
- filter with bypass valve

Test methods:

Filter elements are tested according to the following ISO standards:

- ISO 2941: Verification of collapse/burst resistance
- ISO 2942: Verification of fabrication integrity
- ISO 2943: Verification of material compatibility with fluids
- ISO 3723: Method for end load test
- ISO 3724: Verification of flow fatigue characteristics
- ISO 3968: Evaluation of pressure drop versus flow characteristics
- ISO 16889: Multi-pass method for evaluating filtration performance