Series EH 31
DN15 PN420

1) Connection for the potential equalization, only for application in the explosive area.

Weight: approx. 3 kg

Dimensions: mm

Designs and performance values are subject to change.
Pressure Filter
Series EH 31
DN15 PN420

Description:
Stainless steel pressure filter series EH 31 have a working pressure up 420 bar. Pressure peaks can be absorbed with a sufficient safety margin. The EH-filter is in-line mounted.
The filter element consists of star-shaped, pleated filter material, which is supported on the inside by a perforated core tube and is bonded to the end caps with a high-quality adhesive. The flow direction is from outside to inside. Filter elements are available down to 5 µm (c).
Eaton filter elements are known for high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.
Eaton filter can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.
The internal valve is integrated into the filter head. After reaching the bypass pressure setting, the bypass valve will send unfiltered partial flow around the filter.

1. Type index:

1.1. Complete filter: (ordering example)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH</td>
<td>31. 10VG. HR. E. P. G. 3. VA. - - - AE</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
| 1 | series:  
EH = stainless-steel-pressure filter |
| 2 | nominal size: 31 |
| 3 | filter-material:  
80G, 40G, 25G, stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass |
| 4 | filter element collapse rating:  
30 = Δp 30 bar  
HR = Δp 160 bar (rupture strength Δp 250 bar) |
| 5 | filter element design:  
E = single-end open |
| 6 | sealing material:  
P = Nitrile (NBR)  
V = Viton (FPM) |
| 7 | filter element specification:  
- = standard  
VA = stainless steel |
| 8 | process connection:  
G = thread connection according to ISO 228  
NPT = thread connection according to ANSI B1.20.1 |
| 9 | process connection size:  
3 = ½" |
| 10 | filter housing specification:  
VA = stainless steel |
| 11 | specification pressure vessel:  
- = standard (PED 2014/68/EU)  
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 280 bar) |
| 12 | Internal valve:  
- = without  
S1 = with by-pass valve Δp 3.5 bar  
S2 = with by-pass valve Δp 7.0 bar |
| 13 | clogging indicator or clogging sensor:  
- = without  
AOR = visual, see sheet-no. 1606  
AOC = visual, see sheet-no. 1606  
AE = visual-electric, see sheet-no. 1615  
VSS = electronic, see sheet-no. 1619 |

To add an indicator/sensor to your filter, use the corresponding indicator data sheet to find the indicator details and add them to the filter assembly model code.

1.2. Filter element: (ordering example)

<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>01E. 30. 10VG. HR. E. P. VA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 1 | series:  
01E. = filter element according to company standard |
| 2 | nominal size: 30 |
| 3 | - 7 | see type index-complete filter |
Technical data:
operating temperature: -10°C to +100°C
operating medium: mineral oil, other media on request
max. operating pressure: 420 bar
test pressure: 600 bar
max. operating pressure at ISO20: 280 bar
test pressure at ISO20: 364 bar
process connection: thread connection
housing material: EN10088-1.4571 (320 S 18, 320 S 31 according to B.S.)
sealing material: Nitrile (NBR) or Viton (FPM), other materials on request
installation position: vertical
volume tank: 0.12 l

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

Pressure drop flow curves:
Filter calculation/sizing
The pressure drop of the assembly at a given flow rate Q is the sum of the housing \( \Delta p \) and the element \( \Delta p \) and is calculated as follows:

\[
\Delta p_{\text{assembly}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}
\]

\[
\Delta p_{\text{housing}} = \text{(see } \Delta p = f(Q) \text{) - characteristics}
\]

\[
\Delta p_{\text{Element}} \text{(mbar)} = Q \left( \frac{1}{\text{min}} \right) \times \text{MSK} \left( \frac{\text{m}}{\text{s}} \right) \times \nu \left( \frac{\text{m}^3}{\text{s} \cdot \text{mm}^2} \right) \times \frac{\rho}{0.876} \left( \frac{\text{kg}}{\text{dm}^3} \right)
\]

For ease of calculation our Filter Selection tool is available online at [www.eatonpowersource.com/calculators/filtration/](http://www.eatonpowersource.com/calculators/filtration/)

Material gradient coefficients (MSK) for filter elements
The material gradient coefficients in mbar/[(l/min) apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

<table>
<thead>
<tr>
<th>EH</th>
<th>3VG</th>
<th>6VG</th>
<th>10VG</th>
<th>16VG</th>
<th>25VG</th>
<th>25G</th>
<th>40G</th>
<th>80G</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>10,116</td>
<td>7,023</td>
<td>4,496</td>
<td>3,915</td>
<td>2,674</td>
<td>0,2073</td>
<td>0,1935</td>
<td>0,1325</td>
</tr>
</tbody>
</table>

\( \Delta p = f(Q) \) – characteristics according to ISO 3968
The pressure drop characteristics apply to mineral oil (HLP) with a density of 0.876 kg/dm³. The pressure drop changes proportionally to the density.
Symbols:

- without indicator
- with electric indicator
- with visual-electric indicator
- with visual indicator
- with electronic clogging sensor

Spare parts:

<table>
<thead>
<tr>
<th>item</th>
<th>qty.</th>
<th>designation</th>
<th>dimension</th>
<th>article-no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>filter element</td>
<td>01E.30...</td>
<td>312603 (NBR) 312727 (FPM)</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>O-ring</td>
<td>11 x 3</td>
<td>329381 (NBR) 338204 (FPM)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>O-ring</td>
<td>42 x 3.5</td>
<td>305391</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>support ring</td>
<td>48 x 2.6 x 1</td>
<td>see sheet-no. 1606</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>clogging indicator, visual</td>
<td>AOR or AOC</td>
<td>see sheet-no. 1615</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>clogging indicator, visual-electric</td>
<td>AE</td>
<td>see sheet-no. 1619</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>clogging sensor, electronic</td>
<td>V55</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>screw plug</td>
<td>20913-4</td>
<td>314442</td>
</tr>
</tbody>
</table>

Item 8 only with execution without clogging indicator and clogging sensor.

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