Series LF 2005-4005
DN125 PN32

Assignment of connections and functions
A: air bleeding G1/2
B: air bleeding G1/2
C: mini-measuring connection G1/4 dirt side
D: mini-measuring connection G1/4 clean side
E: drain G1/2 dirt side

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

Weight LF 2005: approx. 81 kg
Weight LF 3005: approx. 113 kg
Weight LF 4005: approx. 129 kg

Dimensions: mm
Designs and performance values are subject to change.
Pressure Filter
Series LF 2005-4005
DN125 PN32

Description:
In-line filters of the type LF 2005-4005 are suitable for a working pressure up to 32 bar. Pressure peaks are absorbed with a sufficient margin of safety. It can be used as suction filter, pressure filter and return-line filter.
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.
For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the cover and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.
For filtration finer than 40 μm, use the disposable elements made of microglass. Filter elements as fine as 5 μm(c) are available; finer filter elements are available upon request.
Eaton filter elements are known for a 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.
Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

<p>| | | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. series:
   - LF = in-line filter
2. nominal size: 2005, 3005, 4005
3. filter-material:
   - 80G, 40G, 25G stainless steel wire mesh
   - 25VG, 16VG, 10VG, 6VG, 3VG microglass
   - 25API, 10API microglass according to API
4. filter element collapse rating:
   - 10 = Δp 10 bar
5. filter element design:
   - E = without bypass valve
   - S = with bypass valve Δp 2.0 bar
6. sealing material:
   - P = Nitrile (NBR)
   - V = Viton (FPM)
7. filter element specification:
   - - = standard
   - VA = stainless steel
   - IS06 = for HFC application, see sheet-no. 31601
8. process connection:
   - FS = SAE-flange connection 3000 PSI
9. process connection size:
   - C = 5"
10. filter housing specification:
    - - = standard
11. pressure vessel specification:
    - - = standard (PED 2014/68/EU)
    - IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 16 bar)
12. internal valve:
    - - = without
13. clogging indicator or clogging sensor:
    - - = without
    - AE = visual-electric, see sheet-no.1609
    - OP = visual, see sheet-no.1628
    - OE = visual-electric, see sheet-no.1628
    - VS5 = electronic, see sheet-no.1641
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.

Filter element: (ordering example)

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</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: 2001, 3001, 4001
3. - 7 see type index complete filter

Accessories:
- gauge port and bleeder connection, see sheet-no. 1650
- drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flanges, see sheet-no. 1652
Technical data:

- **Operating temperature:** -10 °C to +100 °C
- **Operating medium:** mineral oil, other media on request
- **Max. operating pressure:** 32 bar
- **Test pressure:** 64 bar
- **Max. operating pressure with IS20:** 16 bar
- **Test pressure with IS20:** 32 bar
- **Process connection:** SAE-flange connection 3000 PSI
- **Housing material:** EN-GJS-400-18-LT
- **Sealing material:** Nitrile (NBR) or Viton (FPM), other materials on request
- **Installation position:** vertical
- **Measuring connections:** G ¼
- **Drain- and bleeder connections:** G ½
- **Volume tank LF 2005:** 23 l
- **Volume tank LF 3005:** 32 l
- **Volume tank LF 4005:** 40 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:

$$\Delta p_{assembly} = \Delta p_{housing} + \Delta p_{element}$$

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

$$\Delta p_{Element} (\text{mbar}) = Q \left( \frac{1}{\text{min}} \right) \times \frac{\text{MSK}}{10} \left( \frac{\text{mbar}}{\text{l/min}} \right) \times V \left( \frac{\text{mm}^2}{s} \right) \times p \left( \frac{\text{kg}}{\text{dm}^3} \right)$$

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>LF</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>
<th>10API</th>
<th>25API</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>0.147</td>
<td>0.102</td>
<td>0.065</td>
<td>0.057</td>
<td>0.039</td>
<td>0.0048</td>
<td>0.0045</td>
<td>0.0031</td>
<td>0.033</td>
<td>0.015</td>
</tr>
<tr>
<td>3005</td>
<td>0.098</td>
<td>0.068</td>
<td>0.043</td>
<td>0.038</td>
<td>0.026</td>
<td>0.0032</td>
<td>0.0030</td>
<td>0.0021</td>
<td>0.022</td>
<td>0.010</td>
</tr>
<tr>
<td>4005</td>
<td>0.073</td>
<td>0.051</td>
<td>0.033</td>
<td>0.028</td>
<td>0.019</td>
<td>0.0024</td>
<td>0.0023</td>
<td>0.0015</td>
<td>0.016</td>
<td>0.007</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  
- bypass valve  
- with electric indicator AE 30 and AE 40  
- with visual-electric indicator AE 50 and AE 62  
- with visual-electric indicator AE 70 and AE 80  
- with electric indicator OP  
- with visual-electric indicator OE  
- with electronic sensor VS 5

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.2001</td>
<td>LF 2005</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>O-ring</td>
<td>135 x 10</td>
<td>LF 3005</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>O-ring</td>
<td>125 x 10</td>
<td>LF 4005</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>O-ring LF2005</td>
<td>240 x 5</td>
<td>LF 3005 / 4005</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>O-ring</td>
<td>136.12 x 3.53</td>
<td>LF 4005</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>screw plug LF2005</td>
<td>G ½</td>
<td>LF 2005</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>screw plug</td>
<td>G ½</td>
<td>LF 3005 / 4005</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>clogging indicator, visual</td>
<td>OP</td>
<td>LF 4005</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>clogging indicator, visual-electric</td>
<td>OE</td>
<td>LF 4005</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>clogging indicator, visual-electric</td>
<td>AE</td>
<td>LF 4005</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>clogging sensor, electronic</td>
<td>VS 5</td>
<td>LF 4005</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>screw plug</td>
<td>G ¼</td>
<td>LF 4005</td>
</tr>
</tbody>
</table>

Item 12 execution only without clogging indicator or 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