Series DU 1050-2050
DN100 PN32

Position I: Left filter-side in operation
Position II: Right filter-side in operation

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

Weight DU1050: approx. 155 kg
Weight DU2050: approx. 195 kg

Dimensions: mm
Designs and performance values are subject to change.
Description:
Pressure filter change over series DU 1050-2050 have a working pressure up to 32 bar. Pressure peaks can be absorbed with a sufficient safety margin.

A changeover ball valve between the two filter housings makes it possible to switch from the dirty filter side to the clean filter side without interrupting operation. These filters can be installed as suction filters.

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 filter 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.

The internal valves are integrated in the filter cover. After reaching the bypass pressure setting, the bypass valve will send unfiltered partial flow around the filter.

Ship classifications available upon request.

<table>
<thead>
<tr>
<th>Filter element: (ordering example)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01NR. 1000. 10VG. 10. B. P. -</td>
</tr>
</tbody>
</table>

- Gauge port and bleeder connection, see sheet-no. 1650
- Drain- and bleeder connection, see sheet-no. 1651
- SAE-counter flanges, see sheet-no. 1652
- Shut-off valve, see sheet-no. 1655

Type index:

Complete filter: (ordering example)

DU.1050. 10VG. 10. B. P. -. FS. B. -. -. -. AE

- series: DU = pressure filter, change over
- nominal size: 1050, 2050
- filter-material:
  - 80G, 40G, 25G stainless steel wire mesh
  - 25VG, 16VG, 10VG, 6VG, 3VG microglass
  - 25API, 10API microglass according to API
  - 10P paper
- filter element collapse rating:
  - 10 = Δp 10 bar
- filter element design:
  - B = both sides open
- sealing material:
  - P = Nitrile (NBR)
  - V = Viton (FPM)
- filter element specification:
  - = standard
  - VA = stainless steel
  - IS06 = for HFC application, see sheet-no. 31601
  - IS07 = for oil/ammonia mixtures (NH3), see sheet-no. 31602
- process connection:
  - FS = SAE-flange connection 3000 PSI
- process connection size:
  - B = 4”
  - A = 3” (with counter flange BFS.B,E,8.9.3.2, …)
- housing specification:
  - = standard
  - IS12 = internal parts of change over armature stainless steel, see sheet-no. 41028
- 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)
  - IS14 = pressure vessel parts are calculated acc. to EN 13445
  - IS10 = ASME VIII Div.2 with ASME equivalent material, see sheet-no. 69828 (max. operating pressure 10 bar)
- internal valve:
  - = without
  - S = with bypass valve Δp 2,0 bar
  - S1 = with bypass valve Δp 3,5 bar
- clogging indicator or clogging sensor:
  - = without
  - AOR = visual, see sheet-no. 1606
  - AOC = visual, see sheet-no. 1606
  - 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.

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
- shut-off valve, see sheet-no. 1655

Pressure Filter, change over Series DU 1050-2050
DN100 PN32
**Technical data:**
- **operating temperature:** -10°C to +10°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
- **max. operating pressure with IS14:** 10 bar
- **test pressure with IS14:** 20 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 DU1050:** 2x 13.7 l
- **volume tank DU2050:** 2x 23.9 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:

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

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

$$\Delta p_{\text{Element}} \text{ (mbar)} = Q \left( \frac{l}{\text{min}} \right) \times \frac{\text{MSK}}{10} \left( \frac{\text{mbar}}{l/\text{min}} \right) \times \frac{V}{\text{s}} \times \frac{p}{0.0876} \left( \frac{\text{kg}}{\text{dm}^3} \right)$$

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>DU</th>
<th>VG</th>
<th>G</th>
<th>P</th>
<th>API</th>
</tr>
</thead>
<tbody>
<tr>
<td>1050</td>
<td>3VG</td>
<td>0.197</td>
<td>0.137</td>
<td>0.087</td>
</tr>
<tr>
<td>2050</td>
<td>0.098</td>
<td>0.068</td>
<td>0.044</td>
<td>0.038</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.

![DU.1050/2050 Housing Pressure Drop](image-url)
Symbols:

without indicator with bypass valve with electric indicator with visual-electric indicator with visual-electric indicator with visual-electric indicator with electronic sensor

AE 30 and AE 40 AE 50 and AE 62 AE 70 and AE 80 AOR/AOC/OP OE VS5

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>2</td>
<td>filter element (DU1050)</td>
<td>DU 1050 01NR.1000</td>
<td>306941 (NBR) 307031 (FPM)</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>O-ring (DU1050)</td>
<td>90 x 4</td>
<td>305593 (NBR) 306309 (FPM)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>O-ring (DU1050)</td>
<td>185 x 4</td>
<td>305593 (NBR) 306309 (FPM)</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>O-ring (DU2050)</td>
<td>185 x 4</td>
<td>305593 (NBR) 306309 (FPM)</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>O-ring</td>
<td>114 x 6</td>
<td>314419 (NBR) 316531 (FPM)</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>O-ring</td>
<td>140 x 4</td>
<td>305145 (NBR) 305201 (FPM)</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>O-ring</td>
<td>38 x 3</td>
<td>304340 (NBR) 317013 (FPM)</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>O-ring</td>
<td>8 x 2</td>
<td>310004 (NBR) 316530 (FPM)</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>O-ring</td>
<td>85.32 x 3.53</td>
<td>305590 (NBR) 306308 (FPM)</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>screw plug</td>
<td>G ¼</td>
<td>305030</td>
</tr>
<tr>
<td>11</td>
<td>8</td>
<td>screw plug (DU1050)</td>
<td>G ½</td>
<td>304678</td>
</tr>
<tr>
<td>12</td>
<td>10</td>
<td>screw plug (DU2050)</td>
<td>G ¼</td>
<td>304678</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>connecting pipe (DU2050)</td>
<td>Ø 90</td>
<td>313233</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>clogging indicator, visual</td>
<td>AOR or AOC</td>
<td>see sheet no. 1606</td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>clogging indicator, visual-electric</td>
<td>OE</td>
<td>see sheet no. 1628</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>clogging indicator, visual-electric</td>
<td>AE</td>
<td>see sheet no. 1609</td>
</tr>
<tr>
<td>17</td>
<td>1</td>
<td>clogging sensor, electronic</td>
<td>VS5</td>
<td>see sheet no. 1641</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>screw plug</td>
<td>G ¼</td>
<td>305030</td>
</tr>
<tr>
<td>19</td>
<td>1</td>
<td>pressure balance valve</td>
<td>DN10</td>
<td>305000</td>
</tr>
</tbody>
</table>

Item 18 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

For more information, please email us at filtration@eaton.com or visit www.eaton.com/filtration

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