Series DA 253
NPS 2" CLASS 150-300 PSI

Switch lever standard in the front.
2) On request
   The switch lever can be moved to backside of the changeover valve, opposite to the inlet and outlet.
   Please specify this configuration on the order.

Position I: Filter 1 in operation
Position II: Filter 2 in operation

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

Weight: approx. 243 lbs.
Dimensions: inches
Designs and performance values are subject to change.
Pressure Filter, changeover
Series DA 253
NPS 2” CLASS 150-300 PSI

Description:
Pressure filter series DA 253 have a working pressure up to 580 PSI. 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.

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 mesh element 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 disposable elements made of microglass. Filter elements as fine as 5 μm 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 elements are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

Ship classifications available upon request.

Type index:

Complete filter: (ordering example)

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>KH.</td>
<td>OE</td>
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<td>13</td>
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</table>

1 series:
DA = pressure filter changeover, according to ASME-code
2 nominal size: 253
3 filter material:
80G, 40G, 25G, 10G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
4 filter element collapse rating:
30 = Δp 435 PSI
5 filter element design:
E = single-end open
S = with by-pass valve Δp 29 PSI
S1 = with by-pass valve Δp 51 PSI
6 sealing material:
P = Nitrile (NBR)
V = Viton (FPM)
7 filter element specification:
- = standard
VA = stainless steel
8 process connection:
FS = flange SAE 3000 PSI
FA1 = flange ANSI CLASS 300 PSI,
     sealing surface rough grind 1600-3600 μin
FA2 = flange ANSI CLASS 300 PSI,
     sealing surface rough grind < 640 μin
FA11 = flange ANSI CLASS 150 PSI,
       sealing surface rough grind 1600-3600 μin
FA12 = flange ANSI CLASS 150 PSI,
       sealing surface rough grind < 640 μin
9 process connection size:
8 = 2“
10 filter housing specification:
- = standard
IS12 = internal parts of changeover armature stainless steel, see sheet-no. 41028
11 specification pressure vessel:
IS21 = ASME VIII Div.1 with U-stamp, see sheet-no. 43415
IS23 = ASME VIII Div.1 without U-stamp, see sheet-no. 55218
12 shut-off:
- = without
KH = with shut-off ball valve
13 clogging indicator or clogging sensor:
- = without
AE = visual-electrical, see sheet-no. 1609
OP = visual, see sheet-no. 1614
OE = visual-electrical, see sheet-no. 1614
VS5 = sensor, 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)

<table>
<thead>
<tr>
<th>01NL.</th>
<th>250.</th>
<th>10VG.</th>
<th>30.</th>
<th>E.</th>
<th>P.</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 series:</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>01NL = standard filter element according to DIN 24550, T3</td>
<td></td>
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</tr>
<tr>
<td>2 nominal size: 250</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 - 7 see type index-complete filter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories:
- SAE-counter flanges, see sheet-no. 1652
- drain- and bleeder connection, see sheet-no. 1659
- adapter for ANSI-connection B16.5 CLASS 150/300 PSI, see sheet-no. 1658
Technical data:

- **operating temperature:** +14°F to +212°F
- **operating medium:** mineral oil, other media on request
- **max. operating pressure (pressure vessel):** 580 PSI
- **test pressure acc. to ASME VIII Div. 1:** 1.3 x operating pressure = 754 PSI
- **test pressure acc. to API 614, Chapter 1:** 1.5 x operating pressure = 870 PSI
- **housing material:** carbon steel (ASTM), see sheet-no. 55050
- **sealing material:** Nitrile (NBR) or Viton (FPM), other materials on request
- **installation position:** vertical
- **bleeder connection:** NPT ½” and SAE ¾” 3000 PSI
- **drain connection dirt side:** NPT ½” and SAE ¾” 3000 PSI
- **drain connection clean side:** NPT ½”
- **volume tank:** 2x 0.79 Gal.
- **operating pressure adapter flanges:** according to B16.5 CLASS 150/300 PSI

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:

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

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

$$\Delta p_{\text{element}} = (Q \text{ GPM}) \times \frac{\text{MSK}}{1000} \times (\text{PSI/gpm}) \times \sqrt{\text{V SUS}} \times \frac{\rho}{0.876} \left(\frac{\text{kg}}{\text{dm}^3}\right)$$

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 psi/gpm apply to mineral oil (HLP) with a density of 0.876 kg/dm³ and a kinematic viscosity of 139 SUS (30 mm²/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

<table>
<thead>
<tr>
<th>DA</th>
<th>3VG</th>
<th>6VG</th>
<th>10VG</th>
<th>16VG</th>
<th>25VG</th>
<th>10G</th>
<th>25G</th>
<th>40G</th>
<th>80G</th>
<th>10 API</th>
<th>25 API</th>
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</thead>
<tbody>
<tr>
<td>253</td>
<td>1.140</td>
<td>0.792</td>
<td>0.507</td>
<td>0.441</td>
<td>0.301</td>
<td>0.0457</td>
<td>0.0339</td>
<td>0.0316</td>
<td>0.0217</td>
<td>0.260</td>
<td>0.119</td>
</tr>
</tbody>
</table>

$\Delta p = f(Q)$ – characteristic according 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.

![DA.253 Housing Pressure Drop](image)
Symbols:

- without indicator
- with shut-off ball valve
- with electric indicator: AE 30 and AE 40
- with visual-electric indicator: AE 50 and AE 60
- with visual-electric indicator: AE 70 and AE 80

Spare parts:

<table>
<thead>
<tr>
<th>item</th>
<th>qty.</th>
<th>designation</th>
<th>dimension</th>
<th>article-no.</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>filter element</td>
<td>Ø1NL.250</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>gasket kit of changeover</td>
<td>2”</td>
<td>350656 (NBR) 350657 (FPM)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>O-ring</td>
<td>40 x 3</td>
<td>304389 (NBR) 304391 (FPM)</td>
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<tr>
<td>4</td>
<td>4</td>
<td>O-ring</td>
<td>115 x 3.55</td>
<td>350198 (NBR) 350197 (FPM)</td>
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<tr>
<td>5</td>
<td>2</td>
<td>O-ring</td>
<td>100 x 5</td>
<td>327063 (NBR) 327064 (FPM)</td>
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<tr>
<td>6</td>
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<td>O-ring</td>
<td>56.75 x 3.53</td>
<td>306035 (NBR) 310284 (FPM)</td>
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<td>7</td>
<td>6</td>
<td>screw plug</td>
<td>NPT ½”</td>
<td>307766</td>
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<tr>
<td>8</td>
<td>1</td>
<td>clogging indicator, visual electric</td>
<td>OE</td>
<td>see sheet-no. 1614</td>
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<tr>
<td>9</td>
<td>1</td>
<td>clogging indicator, visual</td>
<td>OP</td>
<td>see sheet-no. 1614</td>
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<tr>
<td>10</td>
<td>1</td>
<td>clogging indicator, visual electric</td>
<td>AE</td>
<td>see sheet-no. 1609</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>clogging sensor, electronic</td>
<td>VS5</td>
<td>see sheet-no. 1641</td>
</tr>
</tbody>
</table>

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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