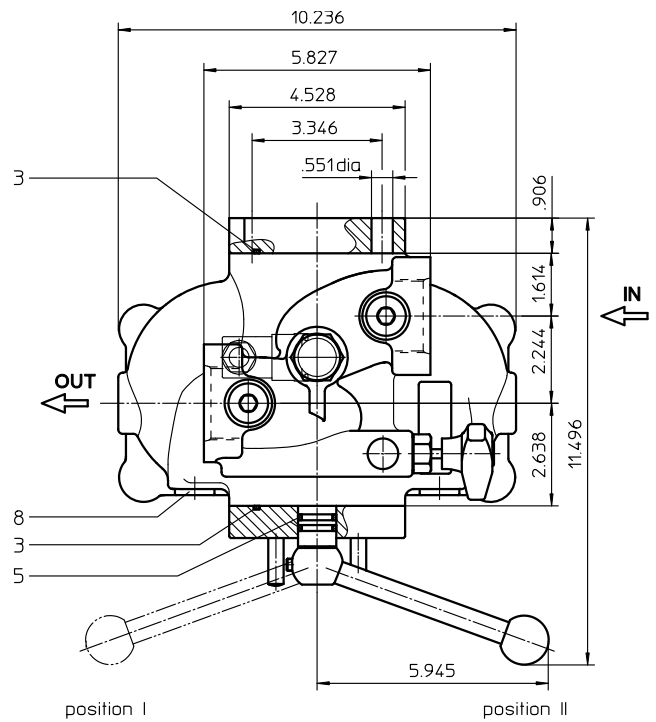


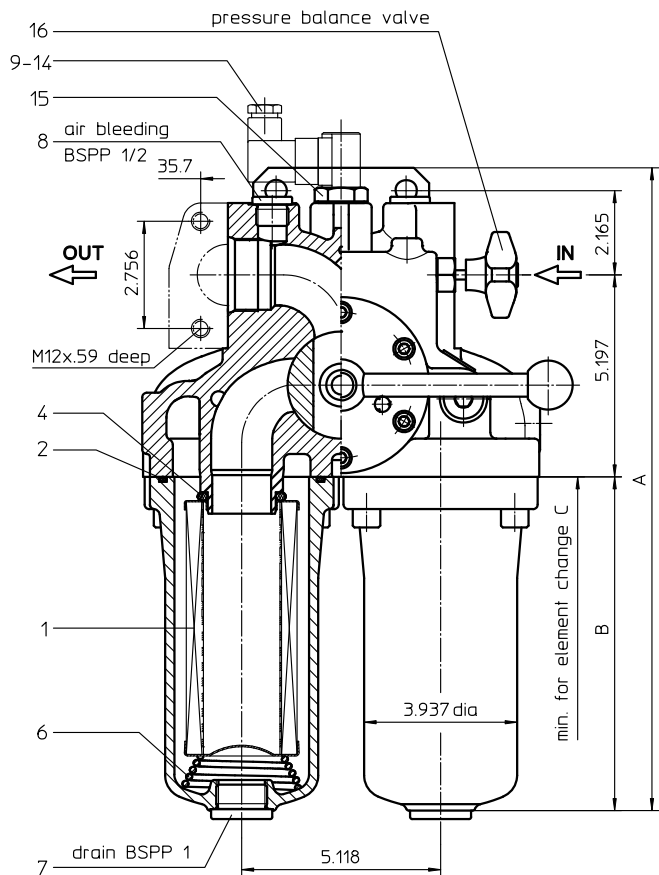
# Series DSF 176-331 363 PSI



Position. I: left filter-side in operation  
Position. II: right filter-side in operation

**Dimensions:**

type	DSF 176	DSF 331
A	16.35	21.85
B	8.58	13.89
C	9.84	15.35
weight approx.	79 lbs.	84 lbs.
volume tank	2x .31 Gal.	2x .52 Gal.



Dimensions: inches

Designs and performance values are subject to change.

# Pressure Filter

## Series DSF 176-331

### 363 PSI

#### Description:

Duplex pressure filter series DSF 176-331 are suitable for a working pressure up to 363 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A three-way-change-over valve integrated in the middle of the housing makes it possible to switch from the dirty filter-side to the clean filter-side without interrupting operation. The filters can be installed as a suction filter, pressure filter or return-line filter. Filter elements are available down to a filter fineness of 4 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 elements can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

Eaton filter elements are available up to a pressure resistance of Δp 2320 PSI and a rupture strength of Δp 3625 PSI.

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)

<b>DSF.</b>	<b>176.</b>	<b>10VG.</b>	<b>16.</b>	<b>E.</b>	<b>P.</b>	<b>-.</b>	<b>FS.</b>	<b>7.</b>	<b>-.</b>	<b>-.</b>	<b>AE</b>
1	2	3	4	5	6	7	8	9	10	11	12

- |    |  |
|----|--|
| 1  | <b>series:</b><br>DSF = duplex filter, change-over   |
| 2  | <b>nominal size:</b> 176, 331  |
| 3  | <b>filter-material and filter-fineness:</b><br>80G, 40G, 25G stainless steel wire mesh<br>25VG, 16VG, 10VG, 6VG, 3VG microglass<br>25API, 10API microglass according to API<br>10P paper                                 |
| 4  | <b>filter element collapse rating:</b><br>16 = Δp 232 PSI  |
| 5  | <b>filter element design:</b><br>E = single-end open   |
| 6  | <b>sealing material:</b><br>P = Nitrile (NBR)<br>V = Viton (FPM)   |
| 7  | <b>filter element specification:</b><br>- = standard<br>VA = stainless steel   |
| 8  | <b>process connection:</b><br>FS = SAE-flange 3000 PSI<br>UG = thread connection   |
| 9  | <b>process connection size:</b><br>7 = 1 ½"  |
| 10 | <b>filter housing specification:</b><br>- = standard   |
| 11 | <b>internal valve:</b><br>- = without<br>S1 = with by-pass valve Δp 51 PSI<br>S2 = with by-pass valve Δp 102 PSI   |
| 12 | <b>clogging indicator or clogging sensor:</b><br>- = without<br>AOR = visual, see sheet-no. 1606<br>AOC = visual, see sheet-no. 1606<br>AE = visual-electric, see sheet-no. 1615<br>VS5 = electronic, see sheet-no. 1619 |

To add an indicator 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)

<b>01E.</b>	<b>175.</b>	<b>10VG.</b>	<b>16.</b>	<b>E.</b>	<b>P.</b>	<b>-</b>
1	2	3	4	5	6	7

- |   |   |
|---|---|
| 1 | <b>series:</b><br>01E. = filter element according to company standard |
| 2 | <b>nominal size:</b> 175, 330   |
| 3 | - 7   see type index-complete filter                                  |

#### Accessories:

- SAE-counter flange, see sheet-no. 1652

## Technical data:

design temperature:	14 °F to +212 °F
operating temperature:	14 °F to +176 °F
operating medium	mineral oil, other media on request
max. operating pressure:	363PSI
test pressure:	725 PSI
process connection:	SAE-flange 3000 PSI or thread
housing material:	EN-GJS-400-18-LT
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

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:

### 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:

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

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

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

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

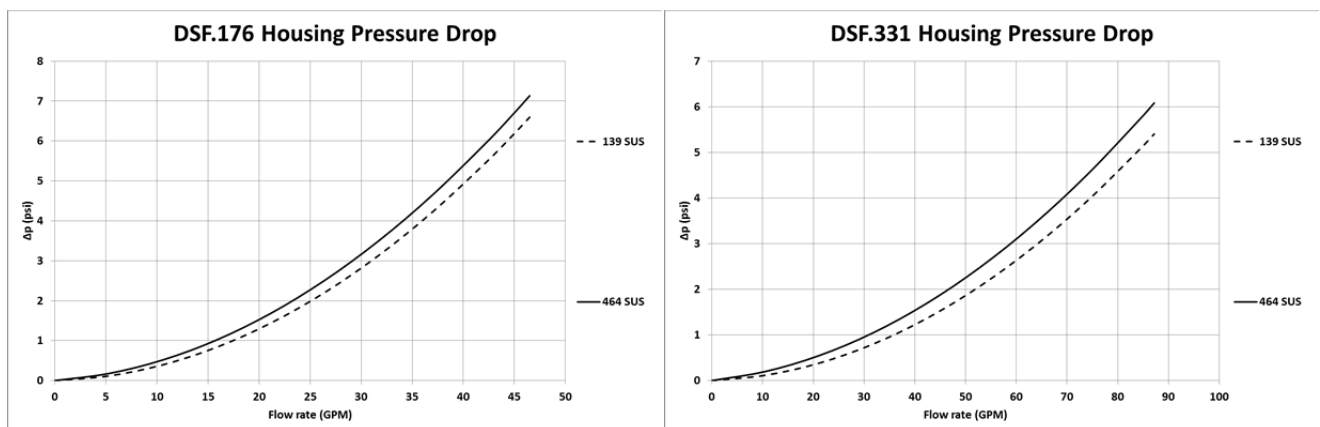
### Material gradient coefficients (MSK) for filter elements

The material gradient coefficients in PSI/GPM apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup> and a kinematic viscosity of 139 SUS (30 mm<sup>2</sup>/s). The pressure drop changes proportionally to the change in kinematic viscosity and density.

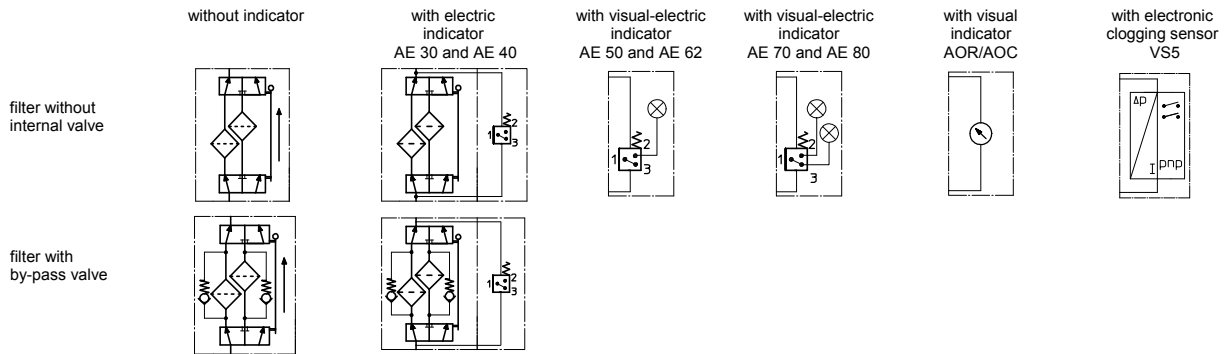
DSF	VG					G			P
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P
176	2.078	1.443	0.923	0.804	0.549	0.0743	0.0694	0.0475	0.446
331	1.152	0.800	0.512	0.446	0.305	0.0421	0.0393	0.0269	0.247

### $\Delta p = f(Q)$ – characteristics according to ISO 3968

The pressure drop characteristics apply to mineral oil (HLP) with a density of 0.876 kg/dm<sup>3</sup>. The pressure drop changes proportionally to the density.



## Symbols:



## Spare parts:

item	qty.	designation	dimension		article-no.	
			DSF 176 01E.175...	DSF 331 01E.330...		
1	2	filter element				
2	2	O-ring	100 x 4		320540 (NBR)	332740 (FPM)
3	2	O-ring	75 x 3		302215 (NBR)	304729 (FPM)
4	2	O-ring	44 x 6		302222 (NBR)	304384 (FPM)
5	2	O-ring	18 x 3		304359 (NBR)	304399 (FPM)
6	2	spring	Da = 52		304989	
7	2	screw plug	1 BSPP		305303	
8	4	screw plug	½ BSPP		304678	
9	1	clogging indicator, visual	AOR or AOC		see sheet-no.1606	
10	1	clogging indicator, visual-electric	AE		see sheet-no.1615	
11	1	clogging sensor, electronic	VS5		see sheet-no.1619	
12	1	O-ring	15 x 1,5		315357 (NBR)	315427 (FPM)
13	1	O-ring	22 x 2		304708 (NBR)	304721 (FPM)
14	1	O-ring	14 x 2		304342 (NBR)	304722 (FPM)
15	1	screw plug	20913-4		309817	
16	1	pressure balance valve	3/8"		305000	

item 15 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

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