



# Pressure Filter

## Series DU 40

### 914 PSI

#### Description:

Pressure filters changeover series DU 40 are suitable for operating pressure up to 914 PSI. The pressure peaks are absorbed by a sufficient margin of safety.

Duplex filters can be serviced without interruption of operation. The upper part has a three-way-changeover valve which allows to change-over the flow from the dirty filter-side to the clean filter-side without interrupting the operation. The changeover procedure does not lead to a cross sectional contraction. The closed filter-side has to be air-bleed by vent III respectively by vent IV. Then change filter element.

For cleaning the stainless steel mesh element or changing the filter element, filter bowl has to be disassembled. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

For filtration finer than 25 µm, use the disposable elements made of microglass. Filter elements as fine as 3 µm are available; finer filter elements are available upon request.

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 are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

#### Type index:

**Complete filter:** (ordering example)

**DU. 40. 10VG. 30. E. P. -. UG. 4. -. -. AE**

1	2	3	4	5	6	7	8	9	10	11	12
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- 1 series:**  
DU = pressure filter change over
- 2 nominal size:** 40
- 3 filter material:**  
80G, 40G, 25G, 10G stainless steel wire mesh  
25VG, 16VG, 10VG, 6VG, 3VG microglass
- 4 filter element collapse rating:**  
30 = Δp 435 PSI
- 5 filter element design:**  
E = single-end open
- 6 sealing material:**  
P = Nitrile (NBR)  
V = Viton (FPM)
- 7 filter element specification:**  
- = standard  
IS06 = for HFC application, see sheet-no. 31601
- 8 process connection:**  
UG = thread connection
- 9 process connection size:**  
3 = -10 SAE  
4 = -12 SAE
- 10 filter housing specification:**  
- = standard  
IS06 = for HFC application, see sheet-no. 31605
- 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 232 PSI)
- 12 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  
VS5 = 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.

**Filter element:** (ordering example)

**01NL. 40. 10VG. 30. E. P. -**

1	2	3	4	5	6	7
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- 1 series:**  
01NL = standard filter element according to DIN 24550, T3
- 2 nominal size:** 40
- 3 - 7** see type index-complete filter

#### Accessories:

- gauge port- and bleeder connections, see sheet-no. 1650

## Technical data:

max. operating temperature:	+14°F to +212°F
operating medium:	mineral oil, other media on request
max. operating pressure:	914 PSI
test pressure:	1300 PSI
max. operating pressure IS20:	232 PSI
test pressure IS20:	334 PSI
standard process connection:	thread connection
housing material:	AL, carbon steel (filter bowl)
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measure- and bleeder connections	BSPP ¼
volume tank:	2x .05 Gal.

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:

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

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

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

For ease of calculation our Filter Selection tool is available online at [www.eaton.com/hydraulic-filter-evaluation](http://www.eaton.com/hydraulic-filter-evaluation)

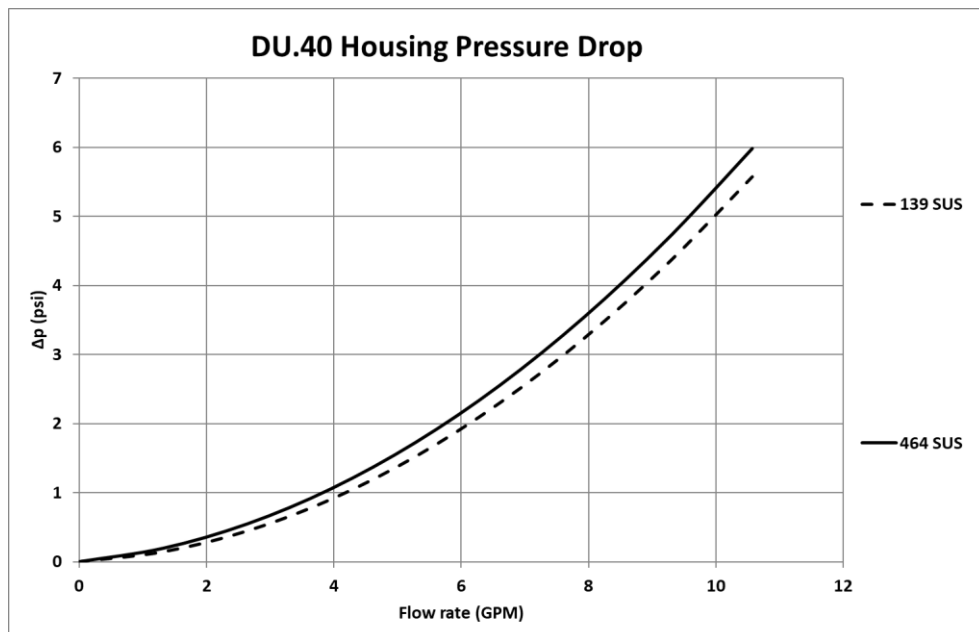
### Material gradient coefficients (MSK) for filter elements

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.

DU	VG					G			
	3VG	6VG	10VG	16VG	25VG	10G	25G	40G	80G
40	9.591	6.991	4.853	3.107	2.705	0.2553	0.1893	0.1766	0.1210

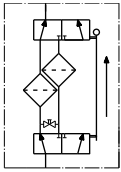
### $\Delta p = f(Q)$ – characteristics according to ISO 3968

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.

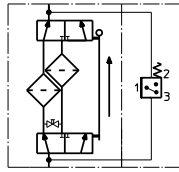


## Symbols:

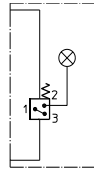
without indicator



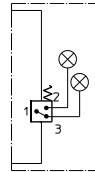
with electric indicator  
AE30 / AE40



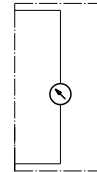
with visual-electric indicator  
AE50 / AE62



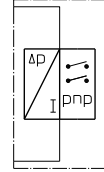
with visual-electric indicator  
AE70 / AE80 / AE90



with visual indicator  
AOR/AOC



with electronic sensor  
VS5



## Spare parts:

item	qty.	designation	dimension	article-no.	
1	2	filter element	01NL.40...		
2	2	O-ring	54 x 3	304657 (NBR)	304720 (FPM)
3	2	support ring	60 x 2,6 x 1	311779	
4	1	O-ring	23 x 3	307285 (NBR)	311019 (FPM)
5	1	support ring	28 x 23,6 x 1	350525	
6	1	O-ring	32,9 x 3,53	318850 (NBR)	338231 (FPM)

## 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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