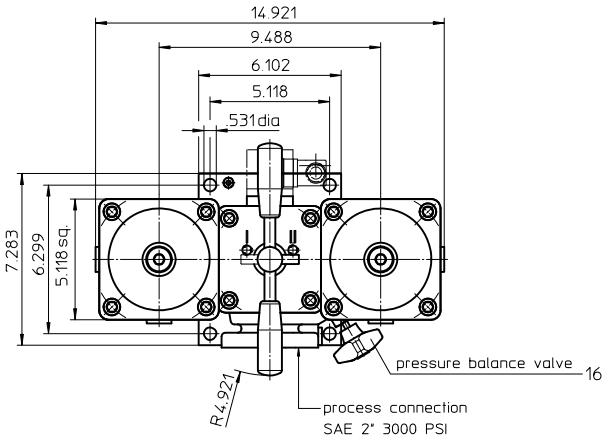
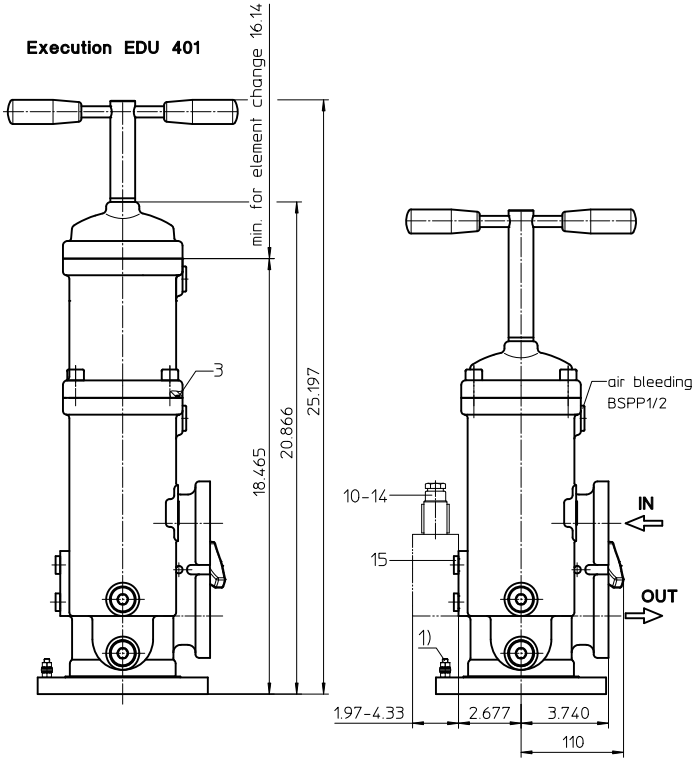
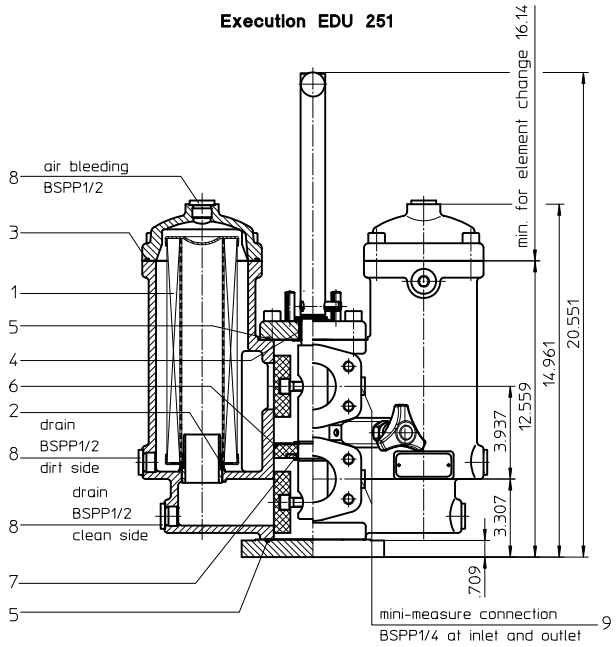
Series EDU 251-401
464 PSI

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 EDU251: approx. 90 lbs.
Weight EDU401: approx. 117 lbs.

Dimensions: inches

Designs and performance values are subject to change.

Powering Business Worldwide

Pressure Filter, change over
Series EDU 251-401
464 PSI

Description:

Stainless steel-pressure filter changeover series EDU 251-401 have a working pressure up to 464 PSI. Pressure peaks can be absorbed with a sufficient safety margin.

A three-way-change-over valve which is 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. 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 or changing the filterer 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)

EDU.	251.	10VG.	30.	E.	P.	VA.	FS.	8.	VA.	-.	-.	AE
1	2	3	4	5	6	7	8	9	10	11	12	13

1 **series:**
EDU = stainless steel-pressure filter, change over

2 **nominal size:** 251, 401

3 **filter-material:**
80G, 40G, 25G stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass
25API, 10API microglass according to API
10P paper

4 **filter element collapse rating:**
30 = ∆p 435 PSI

5 **filter element design:**
E = single end open
S = with bypass valve ∆p 29 PSI
S1 = with bypass valve ∆p 51 PSI

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:**
8 = 2“

10 **filter housing specification:**
VA = stainless steel

11 **pressure vessel specification:**
- = standard (DGRL 2014/68/EU)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 232 PSI)

12 **internal valve:**
- = without

13 **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.

Filter element: (ordering example)

01NL.	250.	10VG.	30.	E.	P.	VA
1	2	3	4	5	6	7

1 **series:**
01NL = standard filter element according to DIN 24550, T3

2 **nominal size:** 250, 400

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

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:	464 PSI
test pressure:	900 PSI
max. operating pressure with IS20:	232 PSI
test pressure with IS20:	464 PSI
process connection:	SAE-flange connection 3000 PSI
housing material:	EN10213-1.4581
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
measuring connections:	BSPP ¼
drain- and bleeder connections:	BSPP ½
volume tank EDU251:	2x .66 Gal.
EDU401:	2x .97 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 Δp and the element Δp and is calculated as follows:

$\Delta p_{assembly} = \Delta p_{housing} + \Delta p_{element}$
$\Delta p_{housing}$ = *(see Δp = f (Q) - characteristics)*

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

For ease of calculation our Filter Selection tool is available online at
www.eatonpowersource.com/calculators/filtration/

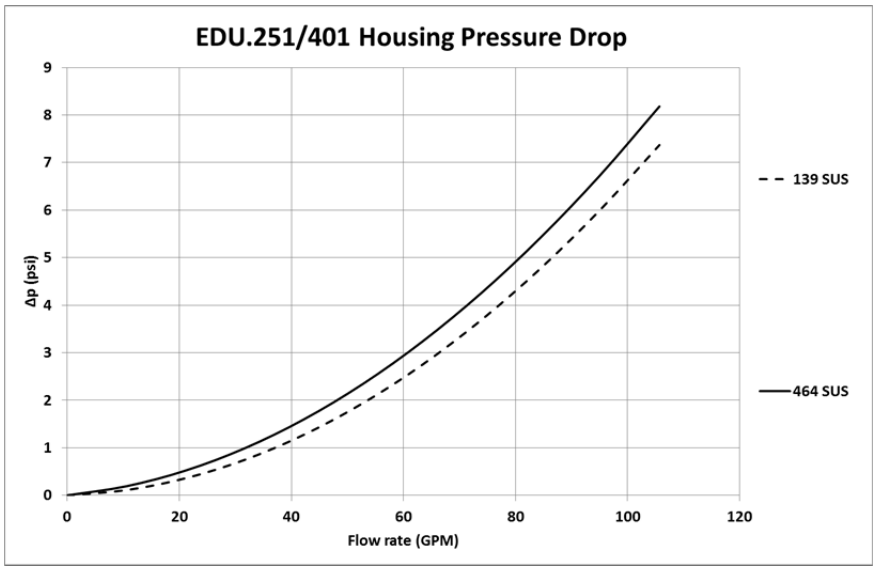
Material gradient coefficients (MSK) for filter elements

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.

EDU	VG					G			P	API	
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G	10P	10API	25API
251	1.140	0.792	0.507	0.441	0.301	0.0339	0.0316	0.0217	0.231	0.260	0.119
401	0.700	0.486	0.311	0.271	0.185	0.0207	0.0194	0.0133	0.121	0.159	0.073

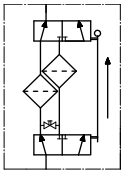
Δp = f(Q) – characteristics according to ISO 3968

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.

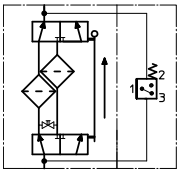


Symbols:

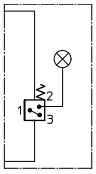
without indicator



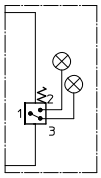
with electric indicator
AE 30 and AE 40



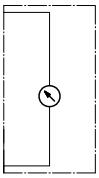
with visual-electric indicator
AE 50 and AE 62



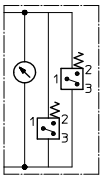
with visual-electric indicator
AE 70 and AE 80



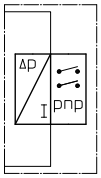
with visual indicator
AOR/AOC/OP



with visual-electric indicator
OE



with electronic sensor
VS5



Spare parts:

item	qty.	designation	dimension EDU 251	dimension EDU 401	article-no.	
1	2	filter element	01NL250…	01NL.400…		
2	2	O-ring	40 x 3		304389 (NBR)	304391 (FPM)
3	2	O-ring (EDU251)	115 x 3		303963 (NBR)	307762 (FPM)
	4	O-ring (EDU401)	115 x 3		303963 (NBR)	307762 (FPM)
4	1	O-ring	24 x 3		303038 (NBR)	304397 (FPM)
5	2	O-ring	95 x 3		305808 (NBR)	304828 (FPM)
6	1	O-ring	76 x 4		305599 (NBR)	310291 (FPM)
7	1	O-ring	32 x 2,5		306843 (NBR)	308268 (FPM)
8	8	screw plug (EDU251)	BSPP ½		306966	
	10	screw plug (EDU401)	BSPP ½		306866	
9	2	screw plug	BSPP ¼		306968	
10	1	clogging indicator, visual	AOR or AOC		see sheet-no. 1606	
11	1	clogging indicator, visual	OP		see sheet-no. 1628	
12	1	clogging indicator, visual-electric	OE		see sheet-no. 1628	
13	1	clogging indicator, visual-electric	AE		see sheet-no. 1609	
14	1	clogging sensor, electronic	VS5		see sheet-no. 1641	
15	2	screw plug	BSPP ¼		306968	
16	1	pressure balance valve	3/8“		310316	

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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