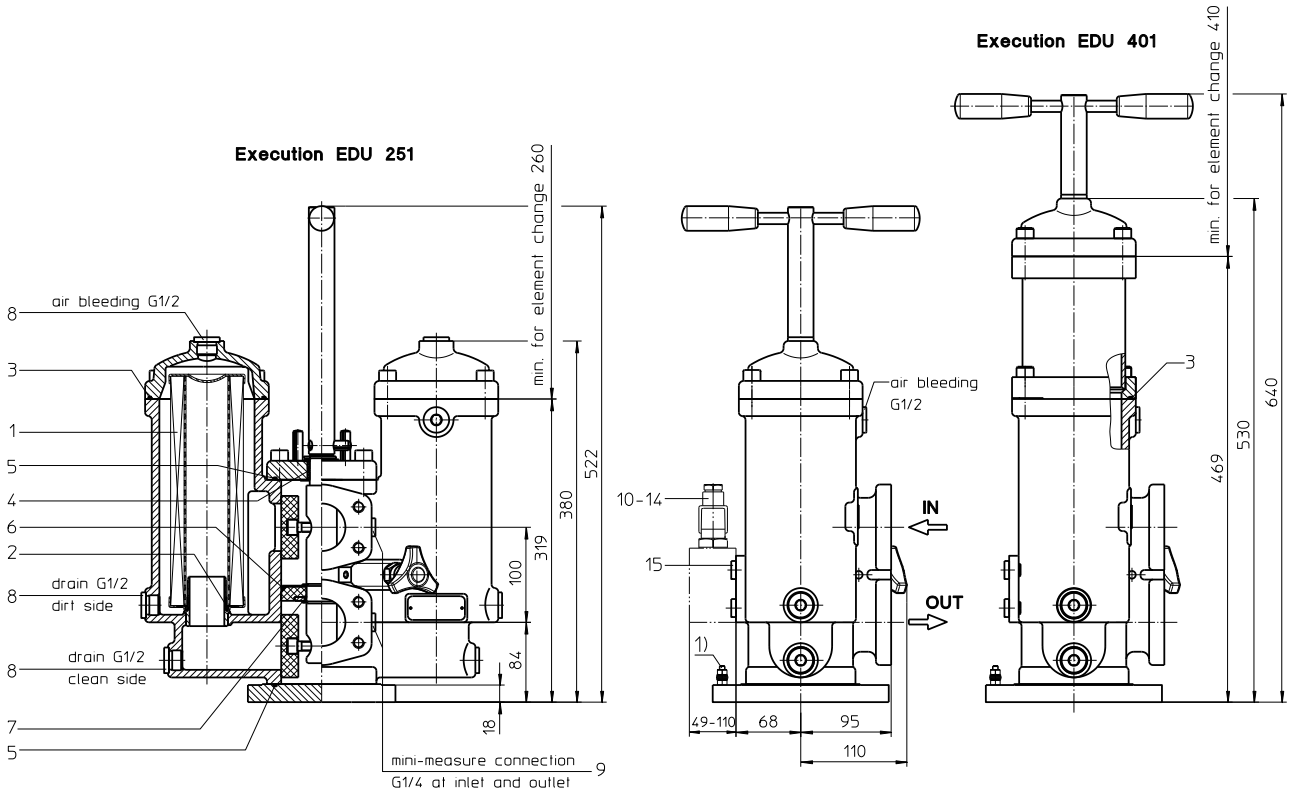
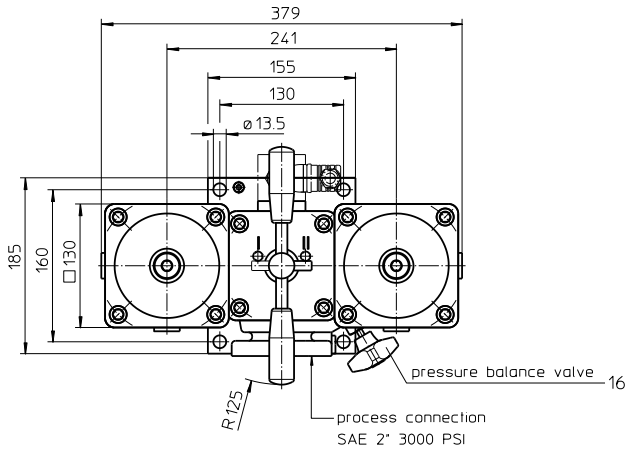
# Series EDU 251-401
# DN50 PN32




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

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

Weight EDU251: approx. 41 kg
Weight EDU401: approx. 51 kg

Dimensions: mm

Designs and performance values are subject to change.

Powering Business Worldwide

# Pressure Filter, change over
# Series EDU 251-401
# DN50 PN32

## Description:

Stainless steel-pressure filter changeover series EDU 251-401 have a working pressure up to 32 bar. Pressure peaks can be absorbed with a sufficient safety margin.

A rotary slide 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 (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 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 = $\Delta$p 30 bar

5 **filter element design:**
E = single end open
S = with bypass valve $\Delta$p 2,0 bar
S1 = with bypass valve $\Delta$p 3,5 bar

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 (PED 2014/68/EU)
IS20 = ASME VIII Div.1 with ASME equivalent material, see sheet-no. 55217 (max. operating pressure 16 bar)

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:

| | |
|---|---|
| operating temperature: | -10 °C to +100 °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 |
| process connection: | SAE-flange connection 3000 PSI |
| housing material: | EN10213-1.4581, EN10028-1.4301 (tube extension EDU 401) |
| 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 EDU251: | 2x 2,5 l |
| EDU401: | 2x 3,7 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 ∆p and the element ∆p and is calculated as follows:

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

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

$$\Delta p_{Element}\,(mbar) = Q\left(\frac{l}{min}\right) x \frac{MSK}{10}\left(\frac{mbar}{l/min}\right) x\, \nu\left(\frac{mm^2}{s}\right) x \frac{p}{0{,}876}\left(\frac{kg}{dm^3}\right)$$

For ease of calculation our Filter Selection tool is available online at www.eaton.com/hydraulic-filter-evaluation

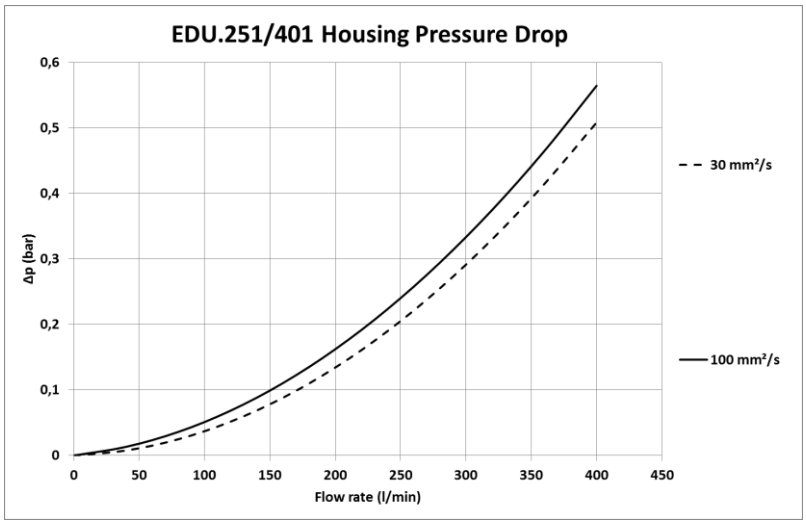
## Material gradient coefficients (MSK) for filter elements

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.

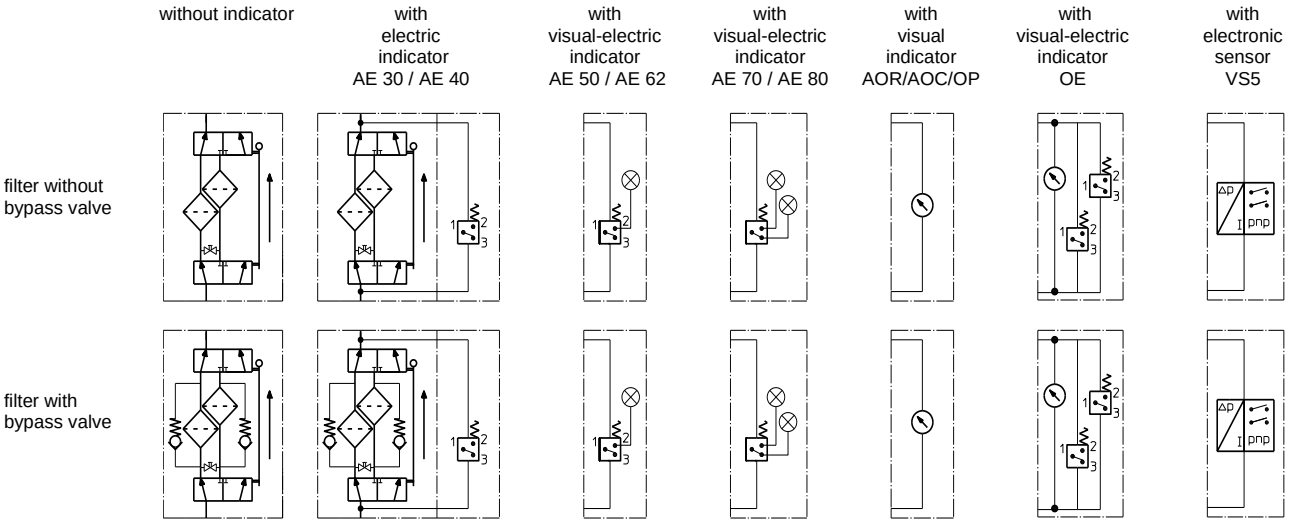
| EDU | VG | | | | | G | | | P | API | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3VG | 6VG | 10VG | 16VG | 25VG | 25G | 40G | 80G | 10P | 10API | 25API |
| **251** | 0,931 | 0,646 | 0,414 | 0,360 | 0,246 | 0,0277 | 0,0258 | 0,0177 | 0,189 | 0,212 | 0,097 |
| **401** | 0,571 | 0,397 | 0,254 | 0,221 | 0,151 | 0,0169 | 0,0158 | 0,0108 | 0,099 | 0,130 | 0,059 |

## ∆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.



## Symbols:




## Spare parts:

| item | qty. | designation | dimension | | article-no. | |
|---|---|---|---|---|---|---|
| | | | EDU 251 | EDU 401 | | |
| 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 | G ½ | | 306966 | |
| 9 | 2 | screw plug | G 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 | G ¼ | | 306968 | |
| 16 | 1 | pressure balance valve | DN10 | | 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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