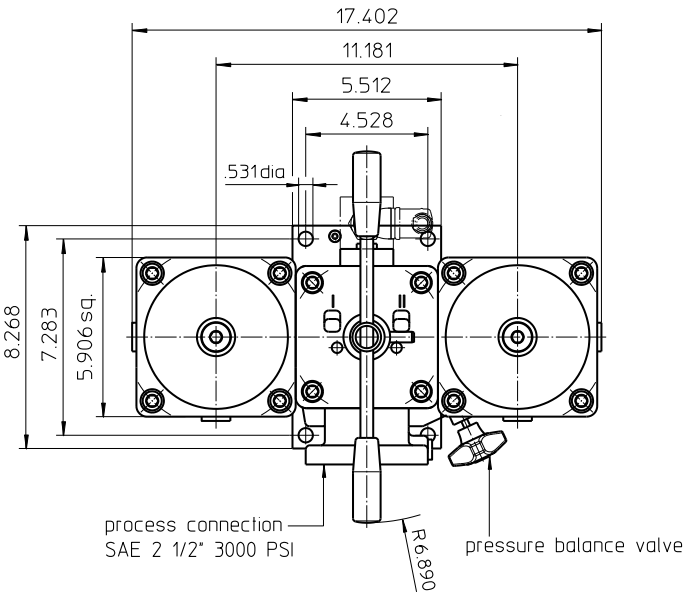
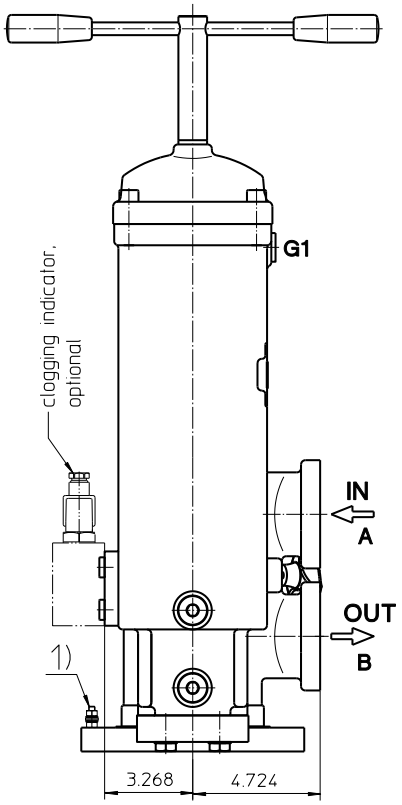
# Series DU 631
# 464 PSI

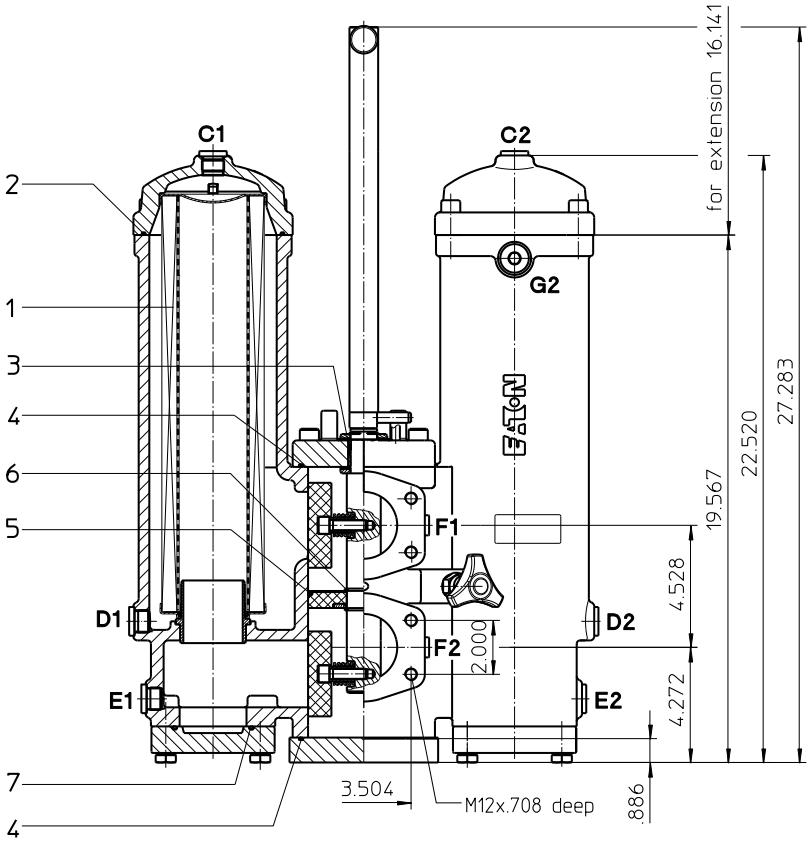
Position I: Left filter-side in operation
Position II: Right filter-side in operation

**Assignment of connections and functions:**

**A:** process inlet SAE 2 ½" 3000 PSI
**B:** process outlet SAE 2 ½" 3000 PSI
**C1/C2:** air bleeding BSPP ½
**D1/D2:** drain BSPP ½, dirt side
**E1/E2:** drain BSPP ½, clean side
**F1:** measuring connection BSPP ¼, dirt side
**F2:** measuring connection BSPP ¼, clean side
**G1/G2:** air bleeding BSPP ½




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

weight: approx. 168 lbs.

Dimensions: inches

Designs and performance values are subject to change.

# Pressure Filter, changeover
# Series DU 631
# 464 PSI

## Description:

Pressure filte,r change over series DU 631 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)

**DU. 631. 10VG. 30. E. P. -. FS. 9. -. -. -. AE**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

1 **series:**
DU = pressure filter, changeover

2 **nominal size:** 631

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 = Δp 435 PSI

5 **filter element design:**
E = single end open
S = with bypass valve Δp 29 PSI
S1 = with bypass valve Δp 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
IS07 = for oil/amonia mixtures ($NH_3$), see sheet-no. 31602

8 **process connection:**
FS = SAE-flange connection 3000 PSI

9 **process connection size:**
9 = 2 ½”

10 **filter housing specification:**
- = standard
IS12 = internal parts of change over armature stainless steel, see sheet-no. 41028

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 232 PSI)
IS14 = pressure vessel parts are calculated acc. to EN 13445 see sheet-no. 69828 (max. operating pressure 145 PSI)
IS63 = for operating pressure to 914 PSI, see sheet-no. 68796

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. 630. 10VG. 30. E. P. -**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|

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

2 **nominal size:** 630

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: | +14°F to +212°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 |
| max. operating pressure with IS14: | 145 PSI |
| test pressure with IS14: | 290 PSI |
| max. operating pressure with IS63: | 914 PSI |
| test pressure with IS63: | 1827 PSI |
| process connection: | SAE-flange connection 3000 PSI |
| housing material: | EN-GJS-400-18-LT |
| 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: | 2x 1.50 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.eaton.com/hydraulic-filter-evaluation

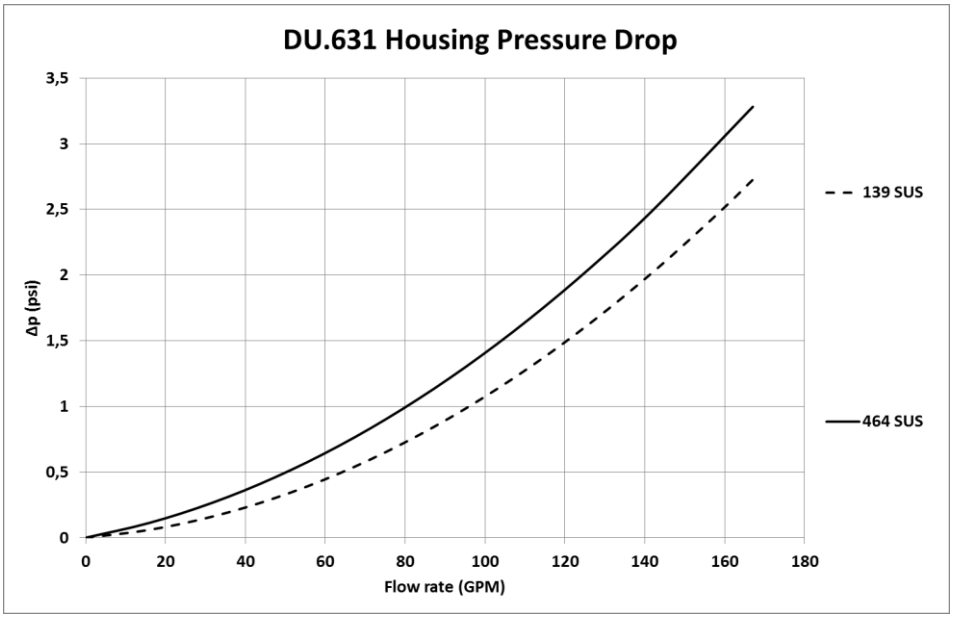
### Material gradient coefficients (MSK) for filter elements

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

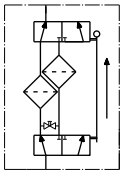
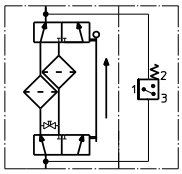
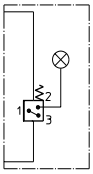
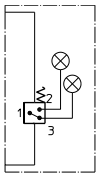
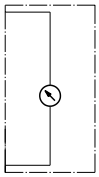
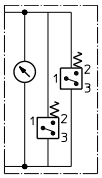
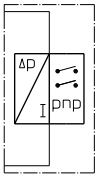
| DU | VG | | | | | G | | | P | API | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3VG | 6VG | 10VG | 16VG | 25VG | 25G | 40G | 80G | 10P | 10API | 25API |
| 631 | 0.534 | 0.3714 | 0.237 | 0.207 | 0.141 | 0.0173 | 0.0162 | 0.0111 | 0.112 | 0.121 | 0.056 |

### 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 AE30 / AE40 | with visual-electric indicator AE50 / AE62 | with visual-electric indicator AE70 / AE 80 / AE90 | with visual indicator AOR/AOC/OP | with visual-electric indicator OE | with electronic sensor VS5 |
|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |

## Spare parts:

| item | qty. | designation | dimension | article-no. | |
|---|---|---|---|---|---|
| 1 | 2 | filter element | 01NL.630… | | |
| 2 | 2 | O-ring | 125 x 3 | 306025 (NBR) | 307358 (FPM) |
| 3 | 1 | O-ring | 24 x 3 | 303038 (NBR) | 304397 (FPM) |
| 4 | 2 | O-ring | 115 x 3 | 303963 (NBR) | 307762 (FPM) |
| 5 | 1 | O-ring | 96 x 4 | 305190 (NBR) | 308148 (FPM) |
| 6 | 1 | O-ring | 32 x 2,5 | 306843 (NBR) | 308268 (FPM) |
| 7 | 2 | O-ring | 69,45 x 3,53 | 305868 (NBR) | 307357 (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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