Series EH 31
DN15 PN420

67

20

38

153

min for element change 180

OUT

IN

5 - 7

width across 30   8

G 1/2   ø 30

3 / 4

2

1

width across 22

ø 49

NPT 1/2"

1)

76

20

20

M 8 x 12 deep
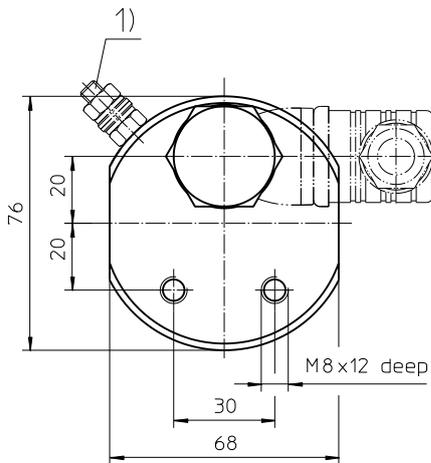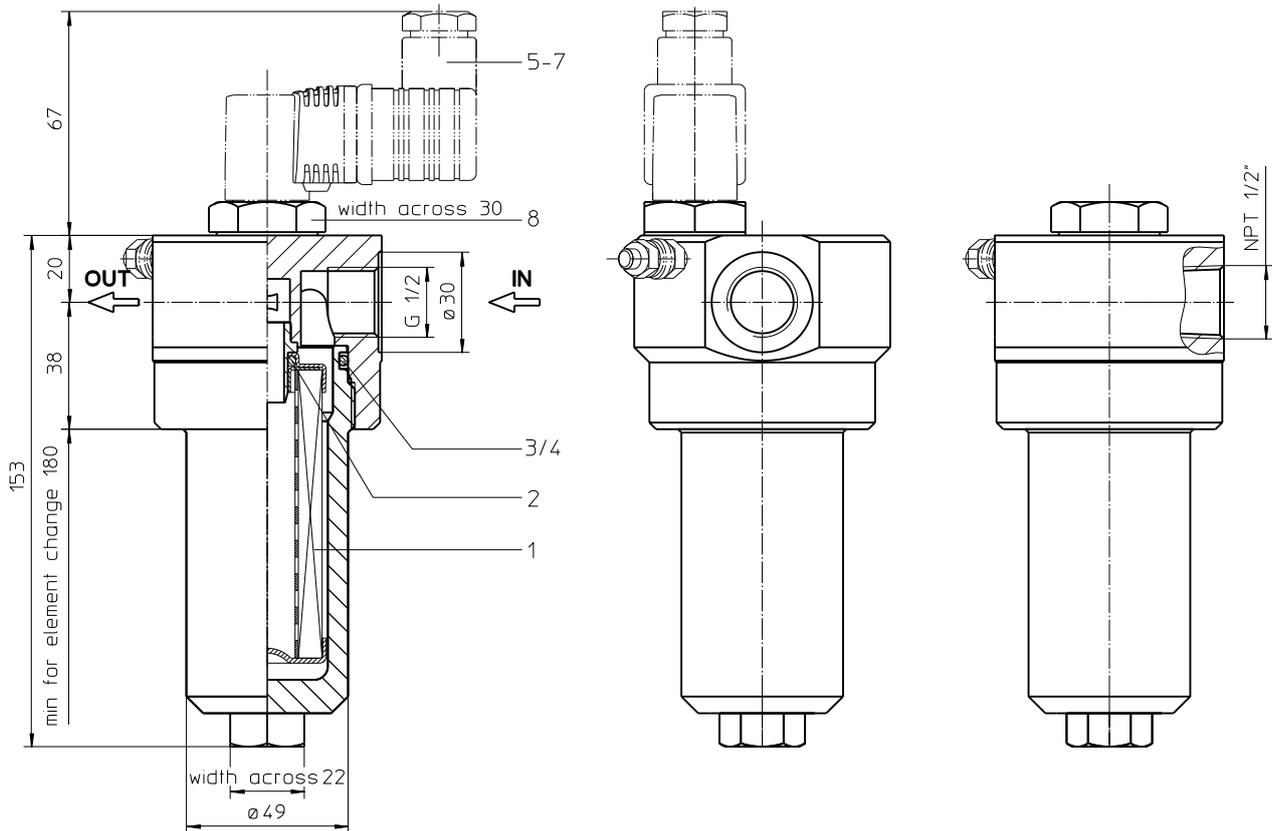
30

68

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

Weight: approx. 3 kg

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter
Series EH 31
DN15 PN420

Description:

Stainless steel pressure filter series EH 31 have a working pressure up 420 bar. Pressure peaks can be absorbed with a sufficient safety margin. The EH-filter is in-line mounted.

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. Filter elements are available down to 5 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 are available up to a pressure resistance of Δp 160 bar and a rupture strength of Δp 250 bar.

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.

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)

EH.	31.	10VG.	HR.	E.	P.	VA.	G.	3.	VA.	-.	-.	AE
1	2	3	4	5	6	7	8	9	10	11	12	13

1 | **series:**
EH = stainless steel-pressure filter

2 | **nominal size:** 31

3 | **filter-material:**
80G, 40G, 25G , stainless steel wire mesh
25VG, 16VG, 10VG, 6VG, 3VG microglass

4 | **filter element collapse rating:**
30 = Δp 30 bar
HR = Δp 160 bar (rupture strength Δp 250 bar)

5 | **filter element design:**
E = single-end open

6 | **sealing material:**
P = Nitrile (NBR)
V = Viton (FPM)

7 | **filter element specification:**
- = standard
VA = stainless steel

8 | **process connection:**
G = thread connection according to ISO 228
NPT = thread connection according to ANSI B1.20.1

9 | **process connection size:**
3 = ½"

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

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 280 bar)

12 | **internal valve:**
- = without
S1 = with by-pass valve Δp 3,5 bar
S2 = with by-pass valve Δp 7,0 bar

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. 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.

1.2. Filter element: (ordering example)

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

1 | **series:**
01E. = filter element according to company standard

2 | **nominal size:** 30

3 - **7** | see type index-complete filter

Technical data:

operating temperature:	-10°C to +100°C
operating medium	mineral oil, other media on request
max. operating pressure:	420 bar
test pressure:	600 bar
max. operating pressure at IS20:	280 bar
test pressure at IS20:	364 bar
process connection:	thread connection
housing material:	EN10088-1.4571 (320 S 18, 320 S 31 according to B.S.)
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical
volume tank:	0,12 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 Δp and the element Δp and is calculated as follows:

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

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

For ease of calculation our Filter Selection tool is available online at www.eatonpowersource.com/calculators/filtration/
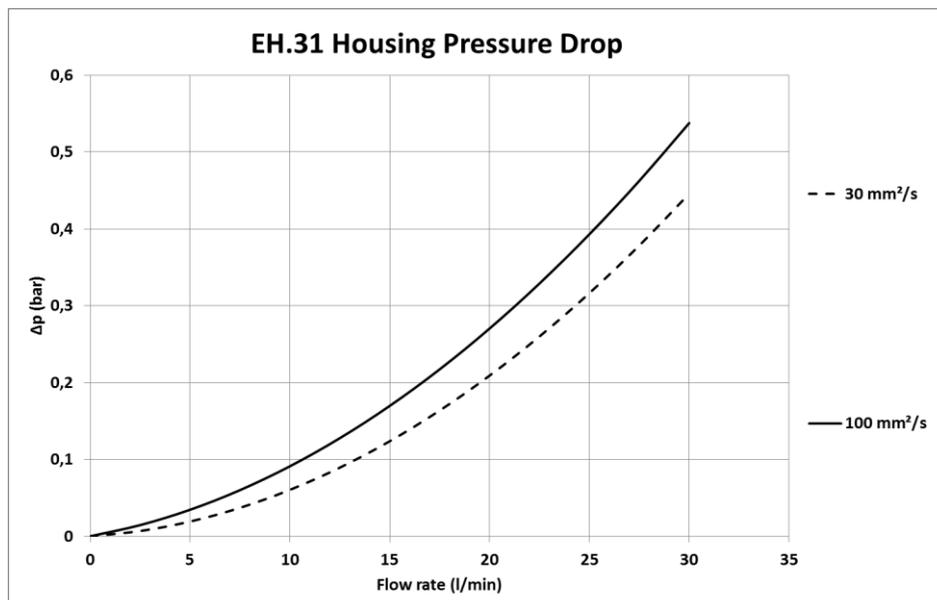
Material gradient coefficients (MSK) for filter elements

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.
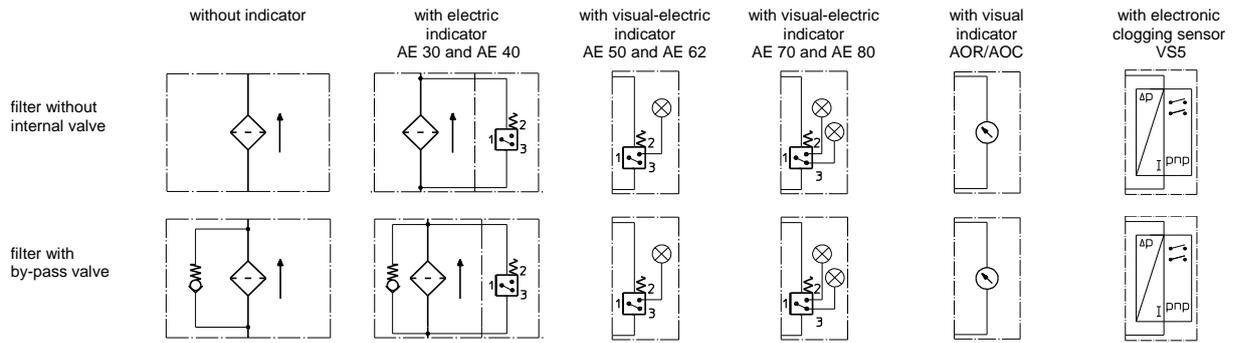
EH	VG					G		
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G
31	10,116	7,023	4,496	3,915	2,674	0,2073	0,1935	0,1325

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	with electronic clogging sensor VS5
filter without internal valve						
filter with by-pass valve						

Spare parts:

item	qty.	designation	dimension	article-no.	
1	1	filter element	01E.30….		
2	1	O-ring	11 x 3	312603 (NBR)	312727 (FPM)
3	1	O-ring	42 x 3,5	329381 (NBR)	338204 (FPM)
4	1	support ring	48 x 2,6 x 1	305391	
5	1	clogging indicator, visual	AOR or AOC	see sheet-no. 1606	
6	1	clogging indicator, visual-electric	AE	see sheet-no. 1615	
7	1	clogging sensor, electronic	VS5	see sheet-no. 1619	
8	1	screw plug	20913-4	314442	

item 8 only with execution without clogging indicator and 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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