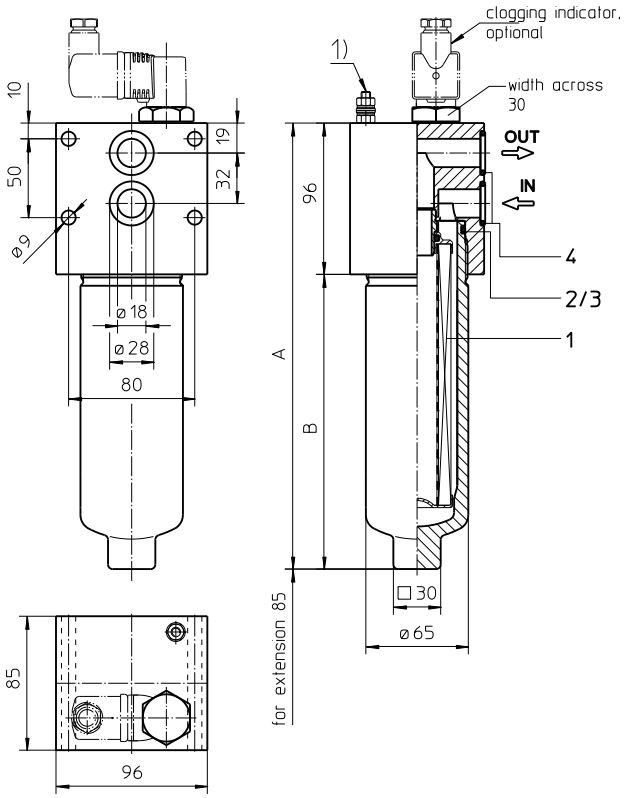
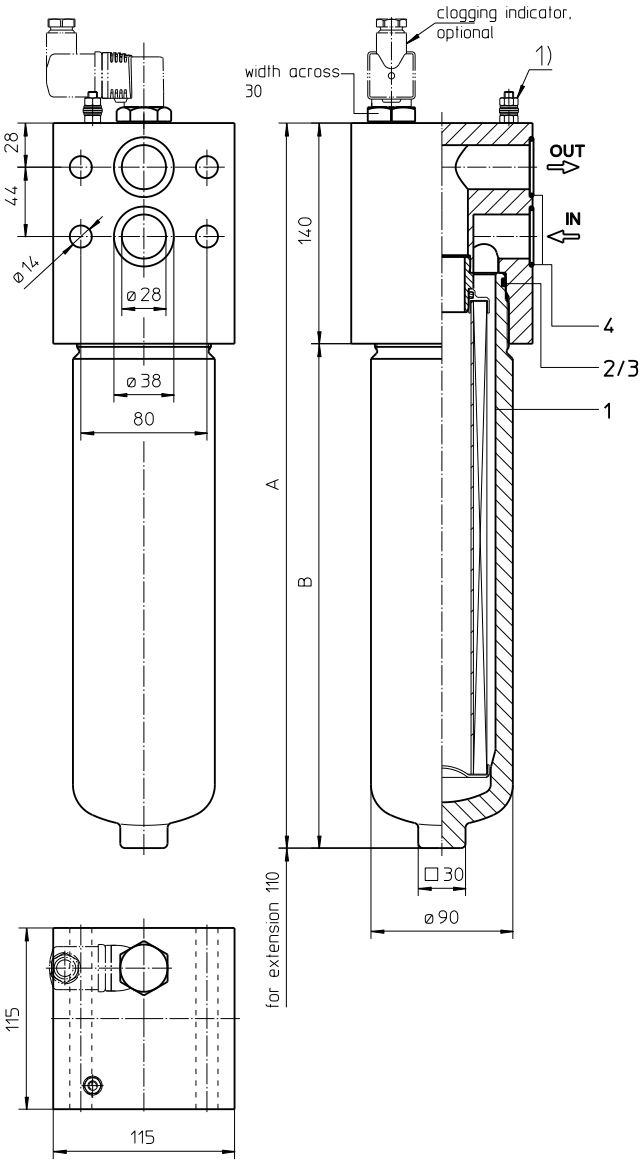
Series HPF 60-450
DN18-28 PN315

Execution HPF 60–150



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

Execution HPF 170–450



Dimensions:

type	connection	A	B	weight	volume tank
HPF 60	DN18	218	122	5,5 kg	0,3 l
HPF 90		283	187	6 kg	0,4 l
HPF 150		392	296	7 kg	0,6 l
HPF 170	DN28	330	190	17 kg	0,7 l
HPF 240		380	240	18 kg	0,9 l
HPF 360		460	320	20 kg	1,2 l
HPF 450		565	425	23 kg	1,6 l

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter
Series HPF 60-450
DN18-28 PN315

Description:

Pressure filter series HPF 60-450 have a working pressure up to 315 bar. Pressure peaks can be absorbed with a sufficient safety margin. The HPF-filters are flanged to the mounting-surface.

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 $\mu m_{(c)}$. Finer filtration is available upon request.

For cleaning the stainless steel mesh element (see special leaflets 21070-4 and 39448-4) or changing the filter element, remove the filter bowl and take out the element. The mesh elements are not guaranteed to maintain 100% performance after cleaning.

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 can be used for petroleum-based fluids, HW emulsions, water glycols, most synthetic fluids and lubrication fluids. Consult factory for specific fluid applications.

Eaton filter elements are available up to a pressure resistance of Δp 160 bar and a rupture strength of Δp 250 bar.

The internal valves are integrated into the centering pivot for the filter element. After reaching the opening pressure the by-pass valve causes that an unfiltered partial flow passes the filter.

With the reverse valve a protection of the filter element is given when having a reverse flow inside the filter. The reverse flow will not be filtered.

Type index:

Complete filter: (ordering example)

HPF. 90. 10VG. HR. E. P. -. F. 4. -. -. AE

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

1 **series:**
HPF = pressure filter, manifold mounted

2 **nominal size:** 60, 90, 150, 170, 240, 360, 450

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
IS06 = for HFC applications, see sheet-no. 31601

8 **process connection:**
F = manifold mounted

9 **process connection size:**
4 = DN18 (HPF 60-150)
5 = DN28 (HPF 170-450)

10 **filter housing specification:**
- = standard
IS06 = for HFC applications, see sheet-no. 31605

11 **internal valve:**
- = without
S1 = with by-pass valve Δp 3,5 bar
S2 = with by-pass valve Δp 7,0 bar
R = reversing valve, Q $\leq$ 70,06 l/min (HPF 60-150)
Q $\leq$ 211,008 l/min (HPF 170-450)

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)

01E. 90. 10VG. HR. E. P. -

1	2	3	4	5	6	7

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

2 **nominal size:** 60, 90, 150, 170, 240, 360, 450

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:	315 bar
test pressure:	450 bar
process connection:	manifold mounted
housing material:	C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

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)*

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

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

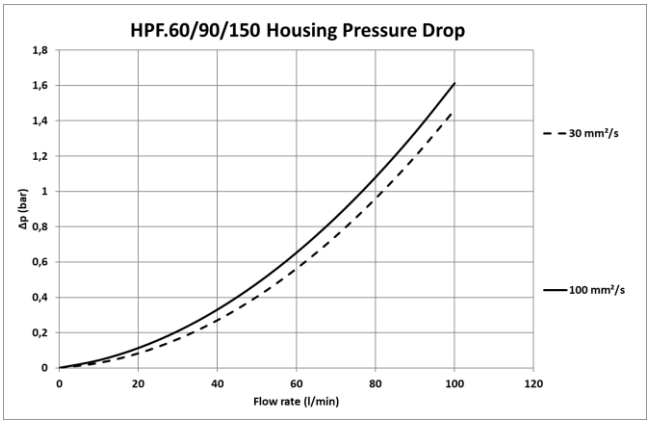
Material gradient coefficients (MSK) for filter elements

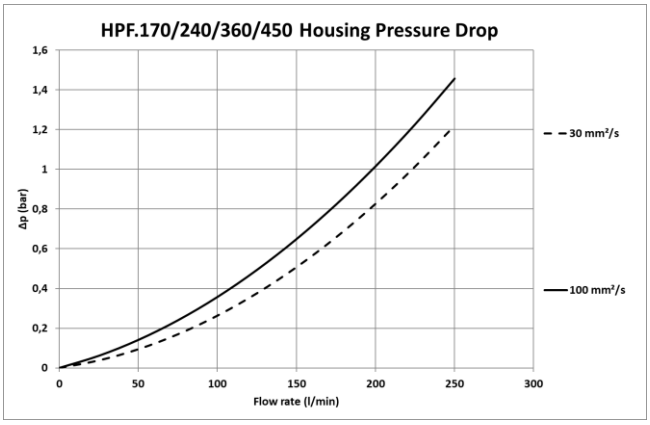
The material gradient coefficients in mbar/(l/min) apply to mineral oil (HLP) with a density of 0,876 kg/dm³ and a kinematic viscosity of 30 mm²/s (139 SUS). The pressure drop changes proportionally to the change in kinematic viscosity and density.

HPF	VG					G		
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G
60	5,438	3,775	2,417	2,104	1,438	0,2205	0,1635	0,1526
90	3,271	2,271	1,454	1,266	0,865	0,1333	0,0988	0,0922
150	1,952	1,355	0,867	0,755	0,516	0,0796	0,0590	0,0551
170	2,187	1,518	0,972	0,846	0,578	0,0685	0,0640	0,0438
240	1,685	1,170	0,749	0,652	0,446	0,0531	0,0496	0,0340
360	1,233	0,856	0,548	0,477	0,326	0,0388	0,0362	0,0248
450	0,907	0,630	0,403	0,351	0,240	0,0285	0,0266	0,0182

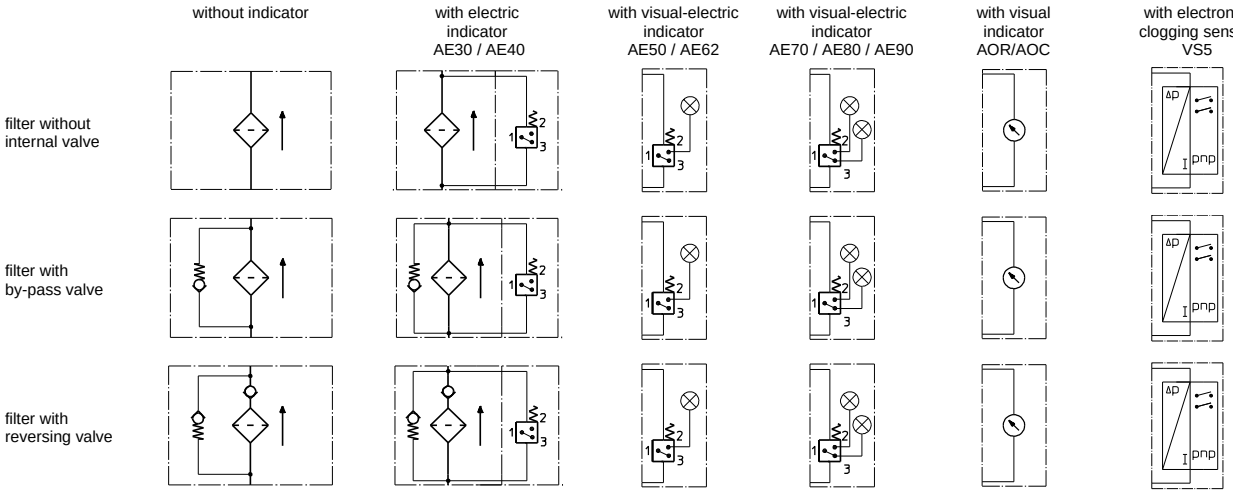
Δp = f(Q) – characteristics according to ISO 3968

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:



Spare parts:

item	qty.	designation	dimensions and article no.						
			HPF 60	HPF 90	HPF 150	HPF 170	HPF 240	HPF 360	HPF 450
1	1	filter element	01E.60…	01E.90…	01E.150…	01E.170…	01E.240…	01E.360…	01E.450…
2	1	O-ring	54 x 3	304657 (NBR) 304720 (FPM)		75 x 3	302215 (NBR) 304729 (FPM)		
3	1	support ring	61 x 2,6 x 1	304660		81 x 2,6 x 1	304581		
4	2	O-ring	22 x 3	304387 (NBR) 304931 (FPM)		33,3 x 2,4	304380 (NBR) 314706 (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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