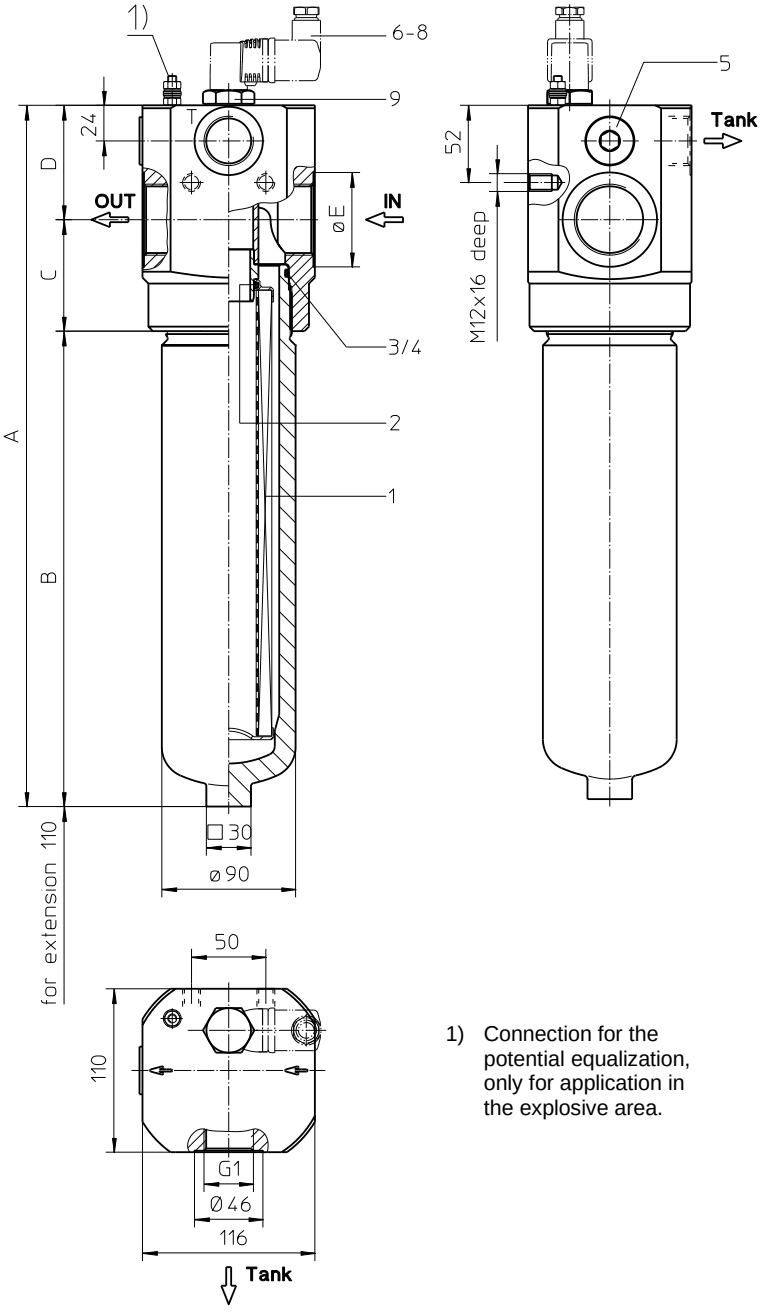
Series HPV 170-450
DN25-40 PN420

Dimensions:

Type	HPV 170		
connection	G 1	G 1 ¼	G 1 ½
A	337	337	342
B	190		
C	73	73	75
D	74	74	77
E	46	57	63,5
weight	15 kg	16 kg	16,5 kg
volume tank	0,7 l		
Type	**HPV 240**		
connection	G 1	G 1 ¼	G 1 ½
A	387	387	392
B	240		
C	73	73	75
D	74	74	77
E	46	57	63,5
weight	16 kg	17 kg	17,5 kg
volume tank	0,9 l		
Type	**HPV 360**		
connection	G 1	G 1 ¼	G 1 ½
A	467	467	472
B	320		
C	73	73	75
D	74	74	77
E	46	57	63,5
weight	18 kg	19 kg	19,5 kg
volume tank	1,2 l		
Type	**HPV 450**		
connection	G 1	G 1 ¼	G 1 ½
A	572	572	577
B	425		
C	73	73	75
D	74	74	77
E	46	57	63,5
weight	21 kg	22 kg	22,5 kg
volume tank	1,6 l		



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

Dimensions: mm

Designs and performance values are subject to change.

Pressure Filter
Series HPV 170-450
DN25-40 PN420

Description:

Pressure filter series HPV 170-450 have a working pressure up to 420 bar. Pressure peaks can be absorbed with a sufficient safety margin. The HPV-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 $\mu m_{(c)}$. 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 differential pressure-valve opens independently of the operating pressure at a chosen differential pressure-valve between IN and OUT and leaves an unfiltered partial-flow flowing from „IN“ to the tank.

Type index:

Complete filter: (ordering example)

HPV.	360.	10VG.	HR.	E.	P.	-.	G.	7.	-.	D2.	AE
1	2	3	4	5	6	7	8	9	10	11	12

1 **series:**
HPV = pressure filter with differential pressure-valve

2 **nominal size:** 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

8 **process connection:**
G = thread according to ISO 228

9 **process connection size:**
5 = G1
6 = G1 ¼
7 = G1 ½

10 **filter housing specification:**
- = standard

11 **internal valve:**
D1 = differential pressure-valve Δp 3,5 bar
D2 = differential pressure-valve Δp 7,0 bar

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.	360.	10VG.	HR.	E.	P.	-
1	2	3	4	5	6	7

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

2 **nominal size:** 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:	420 bar
test pressure:	600 bar
process connection:	thread according to ISO 228
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

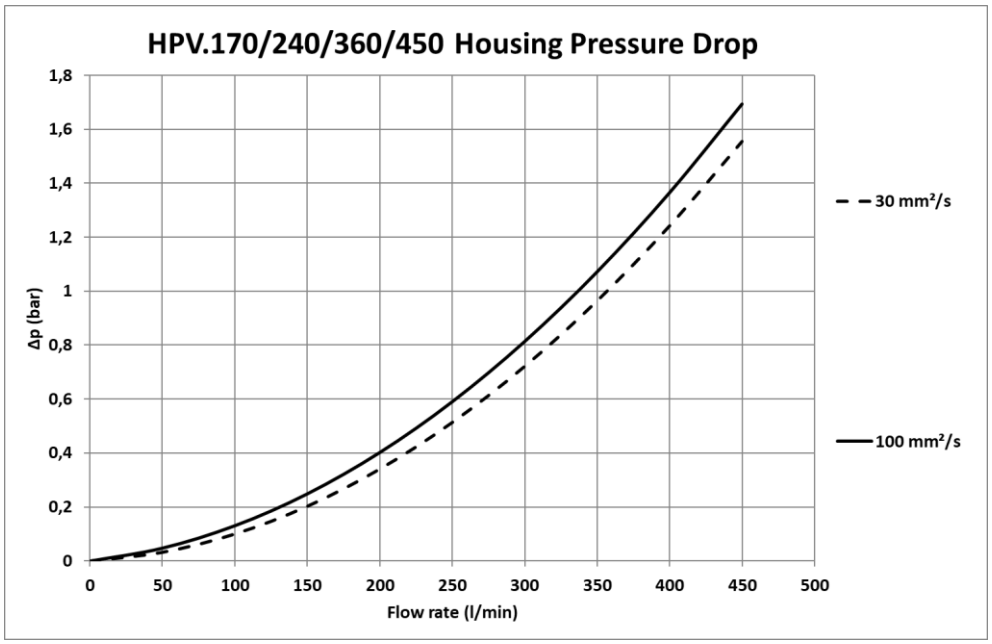
Material gradient coefficients (MSK) for filter elements

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.

HPV	VG					G		
	3VG	6VG	10VG	16VG	25VG	25G	40G	80G
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

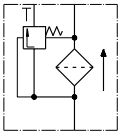
The pressure drop characteristics apply to mineral oil (HLP) with a density of 0,876 kg/dm³. The pressure drop changes proportionally to the density.



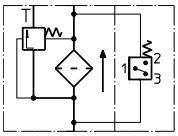
Symbols:

filter with
differential pressure valve

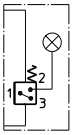
without indicator



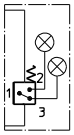
with electric
indicator
AE30 / AE40



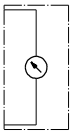
with visual-electric
indicator
AE50 / AE62



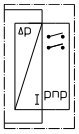
with visual-electric
indicator
AE70 / AE80 / AE90



with visual
indicator
AOR/AOC



with electronic
clogging sensor
VS5



Spare parts:

item	qty.	Designation	dimension				article-no.	
			HPV 170	HPV 240	HPV 360	HPV 450		
1	1	filter element	01E.170…	01E.240…	01E.360…	01.E450…		
2	1	O-ring	34 x 3,5				304338 (NBR)	304730 (FPM)
3	1	O-ring	75 x 3				302215 (NBR)	304729 (FPM)
4	1	support ring	81 x 2,6 x 1				304581	
5	1	screw plug	G ¾				308529	
6	1	clogging indicator visual	AOR or AOC				see sheet-no. 1606	
7	1	clogging indicator visual-electric	AE				see sheet-no. 1615	
8	1	clogging sensor electronic	VS5				see sheet-no. 1619	
9	1	screw plug	20913-4				309817	

item 9 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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