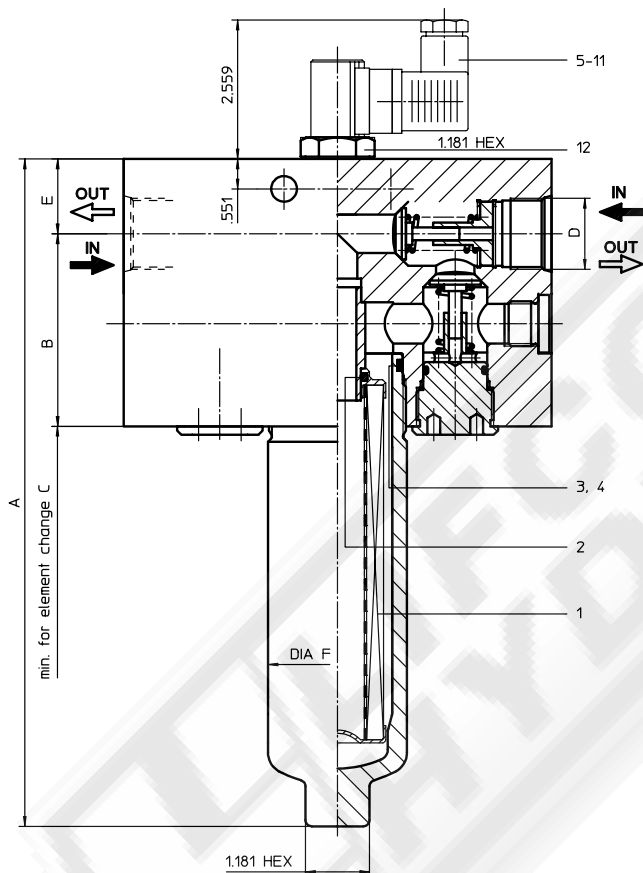
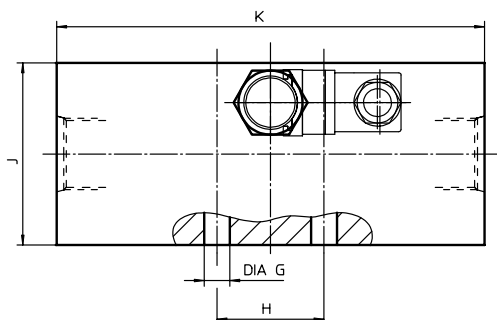


PRESSURE FILTER for reversable filtration

Series HPW 60 - 450 4568 PSI

Sheet No.
1481 H



1. Type index:

1.1. Complete filter: (ordering example)

HPW. 170. 10VG. HR. E. P. -. UG. 7. -. -. AE

1	2	3	4	5	6	7	8	9	10	11	12
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- 1 **series:**
HPW = pressure filter for reversable filtration
- 2 **nominal size:** 60, 90, 150, 170, 240, 360, 450
- 3 **filter-material and filter-fineness:**
25 VG = 20 $\mu\text{m}_{(c)}$, 16 VG = 15 $\mu\text{m}_{(c)}$, 10 VG = 10 $\mu\text{m}_{(c)}$,
6 VG = 7 $\mu\text{m}_{(c)}$, 3 VG = 5 $\mu\text{m}_{(c)}$ Interpor fleece (glass fiber)
- 4 **resistance of pressure difference for filter element:**
30 = Δp 435 PSI
HR = Δp 2320 PSI (rupture strength Δp 3625 PSI)
- 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 **connection:**
UG = thread connection
- 9 **connection size:**
5 = -16 SAE HPW 60-150
7 = -24 SAE HPW 170-450
- 10 **filter housing specification:**
- = standard
- 11 **internal valve:**
- = without
S1 = with by-pass valve Δp 51 PSI
S2 = with by-pass valve Δp 102 PSI
- 12 **clogging indicator or clogging sensor:**
- = without
AOR = visual, see sheet-no. 1606
AOC = visual, see sheet-no. 1606
AE = visual-electrical, see sheet-no. 1615
VS1 = electrical, see sheet-no. 1617
VS2 = electrical, see sheet-no. 1618

2. Dimensions: inch

type	HPW 60	HPW 90	HPW 150	HPW 170	HPW 240	HPW 360	HPW 450
A	9.72	12.28	16.58	13.78	15.75	18.90	23.03
B	3.54	3.54	3.54	4.72	4.72	4.72	4.72
C	10.63	13.19	17.52	13.80	15.75	18.90	13.03
D	-16SAE	-16SAE	-16SAE	-24SAE	-24SAE	-24SAE	-24SAE
E	1.38	1.38	1.38	1.58	1.58	1.58	1.58
F	2.56	2.56	2.56	3.55	3.55	3.55	3.55
G	.48	.48	.48	.55	.55	.55	.55
H	1.97	1.97	1.97	2.36	2.36	2.36	2.36
J	3.35	3.35	3.35	4.53	4.53	4.53	4.53
K	7.87	7.87	7.87	10.63	10.63	10.63	10.63
weight lbs.	35.2	36.3	37.4	85.8	88.0	92.4	96.8
volume tank	.08 Gal.	.10 Gal.	.16 Gal.	.18 Gal.	.23 Gal.	.31 Gal.	.42 Gal.

1.2. Filter element: (ordering example)

01E. 170. 10VG. HR. E. P. -

1	2	3	4	5	6	7
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- 1 **series:**
01E. = filter element according to INTERNORMEN factory specification
- 2 **nominal size:** 60, 90, 150, 170, 240, 360, 450
- 3 - 7 see type index-complete filter

EDV 08/03

Changes of measures and design are subject to alteration!

3. Spare parts:

item	qty.	designation	dimension and article-no.	
			HPW 60-150	HPW 170-450
1	1	filter element	01E. 60 - 01E. 150	01E. 170 - 01E.450
2	1	O-ring	22 x 3,5 304341 (NBR) 304392 (FPM)	34 x 3,5 304338 (NBR) 304730 (FPM)
3	1	O-ring	54 x 3 304657 (NBR) 304720 (FPM)	75 x 3 302215 (NBR) 304729 (FPM)
4	1	support ring	61 x 2,6 x 1 304660	81 x 2,6 x 1 304581
5	1	clogging indicator visual	AOR or AOC	see sheet-no. 1606
6	1	clogging indicator visual-electrical	AE	see sheet-no. 1615
7	1	clogging sensor electrical	VS1	see sheet-no. 1617
8	1	clogging sensor electrical	VS2	see sheet-no. 1618
9	1	O-ring	15 x 1,5	315357 (NBR) 315427 (FPM)
10	1	O-ring	22 x 2	304708 (NBR) 304721 (FPM)
11	1	O-ring	14 x 2	304342 (NBR) 304722 (FPM)
12	1	screw plug	20913-4	309817

item 12 execution only without clogging indicator or clogging sensor

4. Description:

Pressure filter of the series HPW 60-450 are intended for fields of application, where the medium that should be filtered flows through the filter in two directions and the filter effect for both directions of flow exists.

Four check valves fitted in Graetz-position (see switching symbol) guarantee the function, that the flow against to the filter-element will be always from the same side even with changing flow direction. The HPW-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 the inside. Filter elements are available down to 5 $\mu\text{m}_{(c)}$. INTERNORMEN-Filter elements are known as elements with a high intrinsic stability and an excellent filtration capability, a high dirt-retaining capacity and a long service life.

INTERNORMEN-Filter are suitable for all petroleum based fluids, HW-emulsions, most synthetic hydraulic fluids and lubrication oils.

INTERNORMEN-Filter elements are available up to a pressure difference resistance of Δp 2320 PSI and a rupture strength of Δp 3625 PSI.

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.

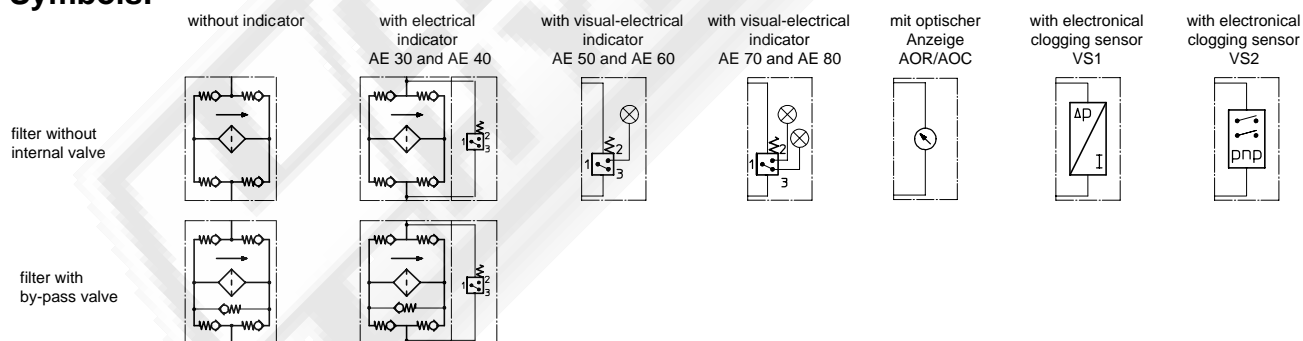
5. Technical data:

temperature range:	+14°F to + 176°F (for a short time + 212°F)
operating medium:	mineral oil, other media on request
max. operating pressure:	4568 PSI
test pressure:	5945 PSI
connection system:	thread connection
housing material:	GGG 40.3; C-steel
sealing material:	Nitrile (NBR) or Viton (FPM), other materials on request
installation position:	vertical

Classified under the Pressure Vessel Directive 97/23/EC for mineral oil (fluid group 2), Article 3, Para. 3.

Classified under ATEX Directive 94/9/EC according to specific application (see questionnaire sheet-no. 34279-4).

6. Symbols:



7. Pressure drop flow curves: Precise flow rates see 'INF-Expert-System Filter', respectively Δp -curves; depending on filter fineness and viscosity.

8. 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