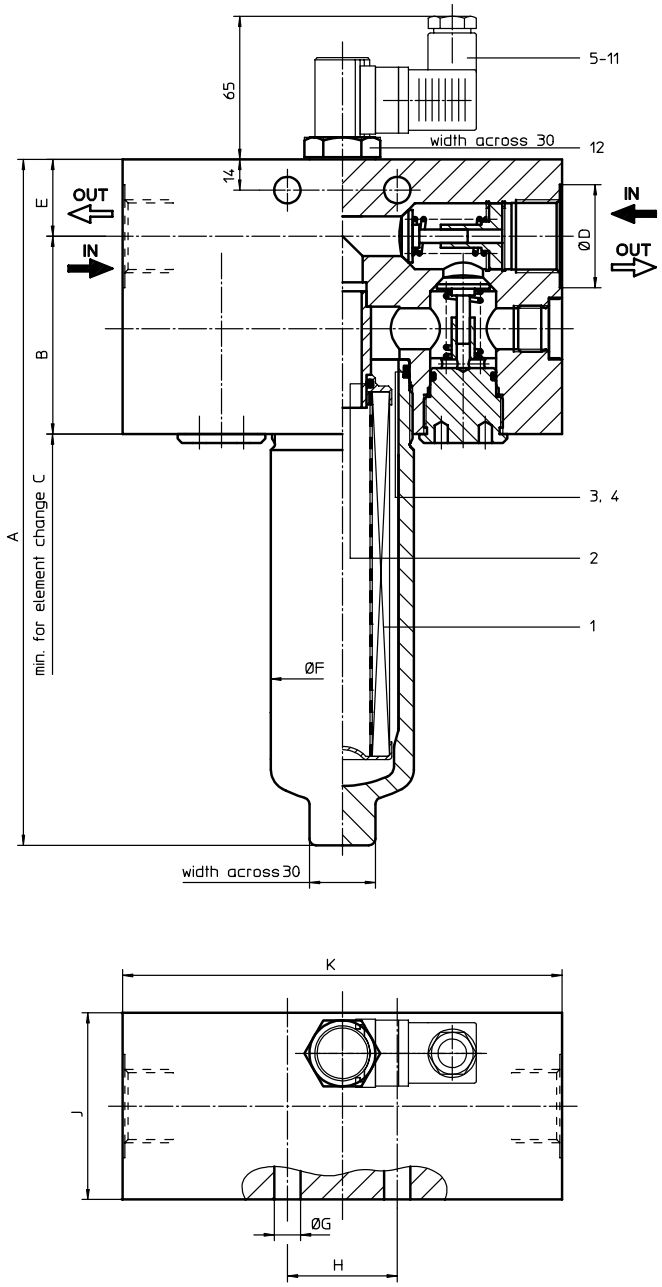
# PRESSURE FILTER for reversable filtration
## Series HPW 60 - 450 DN 25 - 40 PN 315

Sheet No.
**1481 K**




## 1. Type index:

### 1.1. Complete filter: (ordering example)

**HPW. 170. 10VG. HR. E. P. -. G. 7. -. -. AE**

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

**1 series:**
HPW = pressure filter for reversable filtration

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

**3 filter-material and filter-fineness:**
80 G = 80 µm, 40 G = 40 µm, 25 G = 25 µm
stainless steel wire mesh
25 VG = 20 $\mu m_{(c)}$, 16 VG = 15 $\mu m_{(c)}$, 10 VG = 10 $\mu m_{(c)}$,
6 VG = 7 $\mu m_{(c)}$, 3 VG = 5 $\mu m_{(c)}$ Interpor fleece (glass fibre)

**4 resistance of pressure difference for filter element:**
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 connection:**
G = thread connection according to DIN 3852, T2

**9 connection size:**
5 = G 1 HPW 60-150
7 = G 1 ½ HPW 170-450

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

**11 internal valve:**
- = without
S1 = with by-pass valve Δp 3,5 bar
S2 = with by-pass 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-electrical, see sheet-no. 1615
VS1 = electronical, see sheet-no. 1617
VS2 = electronical, see sheet-no. 1618

### 1.2. Filter element: (ordering example)

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

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

**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

## 2. Dimensions:

| type | HPW 60 | HPW 90 | HPW 150 | HPW 170 | HPW 240 | HPW 360 | HPW 450 |
|---|---|---|---|---|---|---|---|
| connection | G 1 | | | G 1 ½ | | | |
| A | 247 | 312 | 421 | 350 | 400 | 480 | 585 |
| B | 90 | 90 | 90 | 120 | 120 | 120 | 120 |
| C | 270 | 335 | 445 | 350 | 400 | 480 | 585 |
| D | 47 | 47 | 47 | 61 | 61 | 61 | 61 |
| E | 35 | 35 | 35 | 40 | 40 | 40 | 40 |
| F | 65 | 65 | 65 | 90 | 90 | 90 | 90 |
| G | 12 | 12 | 12 | 14 | 14 | 14 | 14 |
| H | 50 | 50 | 50 | 60 | 60 | 60 | 60 |
| J | 85 | 85 | 85 | 115 | 115 | 115 | 115 |
| K | 200 | 200 | 200 | 270 | 270 | 270 | 270 |
| weight kg | 16,0 | 16,5 | 17,0 | 39,0 | 40,0 | 42,0 | 44,0 |
| volume tank | 0,3 l | 0,4 l | 0,6 l | 0,7 l | 0,9 l | 1,2 l | 1,6 l |

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Changes of measures and design are subject to alteration!


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## 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)<br>304392 (FPM) | 34 x 3,5 304338 (NBR)<br>304730 (FPM) |
| 3 | 1 | O-ring | 54 x 3 304657 (NBR)<br>304720 (FPM) | 75 x 3 302215 (NBR)<br>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 electronical | VS1 see sheet-no. 1617 | |
| 8 | 1 | clogging sensor electronical | VS2 see sheet-no. 1618 | |
| 9 | 1 | O-ring | 15 x 1,5 315357 (NBR)<br>315427 (FPM) | |
| 10 | 1 | O-ring | 22 x 2 304708 (NBR)<br>304721 (FPM) | |
| 11 | 1 | O-ring | 14 x 2 304342 (NBR)<br>304722 (FPM) | |
| 12 | 1 | screw plug | 20913-4 309817 | |

item 12 execution only without clogging indicator or clogging sensor

## 4. Description:

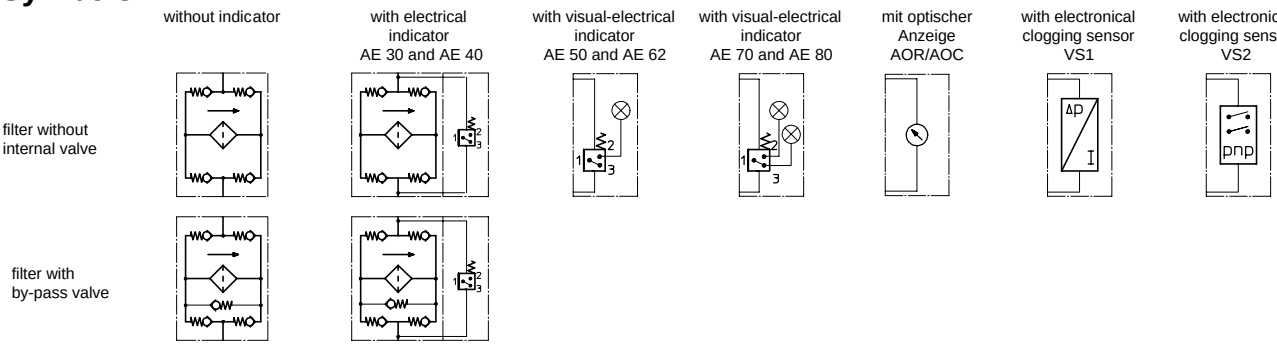
Pressure filter of the series HPW 60 - 450 are intended for fields of application, where the medium that should be filtered flows through the filter in two directions and the filter effect for both directions of flow exists.
Four check valves fitted in Graetz-position (see switching symbol) quarantee 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 4 $\mu m_{(c)}$.
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 $\Delta p$ 160 bar and a rupture strength of $\Delta p$ 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.

## 5. Technical data:

| | |
|---|---|
| temperature range: | -10°C to + 80°C (for a short time + 100°C) |
| operating medium: | mineral oil, other media on request |
| max. operating pressure: | 315 bar |
| test pressure: | 450 bar |
| connection system: | thread according to DIN 3852, T2 |
| housing material: | C-steel |
| sealing material: | Nitrile (NBR) or Viton (FPM), other materials on request |
| installation position: | vertical |

Classified under the Pressure Equipment 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 'INT-Expert-System Filter' respectively $\Delta p$-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