1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction
The filter housings are designed in accordance with international regulations. They consist of a filter head with screw-in filter bowl.

Standard equipment:
- port for clogging indicator in filter head
- mounting holes in the head
- pressure release/oil drain plug (LF 330 and above)

1.2 FILTER ELEMENTS

Hydac filter elements are validated and their quality is constantly monitored according to the following standards:
- ISO 2941
- ISO 2942
- ISO 2943
- ISO 3724
- ISO 3968
- ISO 11170
- ISO 16889

Contamination retention capacities in g

<table>
<thead>
<tr>
<th>Betamicroin® (BN4HC)</th>
<th>Betamicroin® (BH4HC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF 3 µm 5 µm 10 µm 20 µm</td>
<td>LF 3 µm 5 µm 10 µm 20 µm</td>
</tr>
<tr>
<td>30 4.8 5.1 5.4 5.8</td>
<td>30 3.0 2.9 3.2 3.7</td>
</tr>
<tr>
<td>60 6.5 7.3 7.8 8.0</td>
<td>60 4.6 4.5 5.0 5.7</td>
</tr>
<tr>
<td>110 13.8 15.5 16.4 16.9</td>
<td>110 10.1 9.9 10.9 12.4</td>
</tr>
<tr>
<td>160 19.8 22.2 23.5 24.3</td>
<td>160 12.9 12.6 13.8 15.9</td>
</tr>
<tr>
<td>240 32.3 36.3 38.4 39.6</td>
<td>240 21.6 21.1 23.2 26.3</td>
</tr>
<tr>
<td>330 47.2 53.1 56.1 57.9</td>
<td>330 34.6 33.9 37.2 42.5</td>
</tr>
<tr>
<td>660 102.2 114.9 121.5 125.4</td>
<td>660 76.8 75.2 82.6 94.3</td>
</tr>
</tbody>
</table>

Filter elements are available with the following pressure stability values:
- Betamicroin® (BN4HC): 20 bar
- Betamicroin® (BH4HC): 210 bar
- Wire mesh (W): 20 bar
- Stainless steel fibre (V): 210 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure 100 bar

Fatigue strength at nominal pressure 10⁶ load cycles from 0 to nominal pressure
(For other pressures, see graph at 1.8)

Temperature range -30 °C to +100 °C
(LF 660: -30 °C to -10 °C: pmax = 75 bar)

Material of filter head Aluminium

Material of filter bowl Aluminium (LF 660: steel)

Type of clogging indicator VM (differential pressure indicator up to 210 bar operating pressure)

Setting pressure of clogging indicator 5 bar (others on request)

Bypass cracking pressure (optional) 6 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 MOUNTING

As inline filter

1.6 SPECIAL MODELS AND ACCESSORIES

- bypass valve built into the head, separate from the main flow
- oil drain plug up to LF 240
- seals in FPM, EPDM
- test and approval certificates

1.7 SPARE PARTS

See Original Spare Parts List

1.8 FATIGUE STRENGTH

1.9 CERTIFICATES AND APPROVALS

On request

1.10 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- Hydraulic oils H to HLPD DIN 51524
- Lubrication oils DIN 51517, API, ACEA, DIN 51515, ISO 6743
- Compressor oils DIN 51506
- Biodegradable operating fluids VDMA 24568 HETG, HEES, HEPG
- Non-flam operating fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

1.11 IMPORTANT INFORMATION

- Filter housing must be earthed
- When using electrical clogging indicators, the electrical power supply to the system must be switched off before removing the clogging indicator connector

Symbol for hydraulic systems

A B
2. MODEL CODE (ALSO ORDER EXAMPLE)

2.1 COMPLETE FILTER

Filter type
LF

Filter material of element
BN/HC Betamicron® (BN4HC)
BH/HC Betamicron® (BH4HC)
W Stainless steel wire mesh
V Stainless steel fibre

Size of filter or element
LF: 30, 60, 110, 160, 240, 330, 660

Operating pressure
\( I = 100 \text{ bar} \)

Type and size of port

<table>
<thead>
<tr>
<th>Port</th>
<th>Filter size</th>
</tr>
</thead>
<tbody>
<tr>
<td>G ½</td>
<td></td>
</tr>
<tr>
<td>G ¾</td>
<td></td>
</tr>
<tr>
<td>G ¼</td>
<td></td>
</tr>
<tr>
<td>G ½</td>
<td></td>
</tr>
</tbody>
</table>

Filtration rate in µm
BN4HC, BH4HC, V: 3, 5, 10, 20
W: 25, 50, 100, 200

Type of clogging indicator
Y plastic blanking plug in indicator port
A steel blanking plug in indicator port
C electrical for other clogging indicators
D visual and electrical see brochure no. E 7.050../..

Type code
1

Modification number
X the latest version is always supplied

Supplementary details
B cracking pressure of bypass (e.g.: B6 = 6 bar); no details = without bypass valve
L... light with appropriate voltage (24V, 48V, 110V, 220V) only for clogging
LED 2 light emitting diodes up to 24 Volt indicators Type D
SO 184 pressure release/oil drain plug (LF 330 series and above)
V FPM seals
W suitable for HFA and HFC emulsions (only required when using a clogging indicator, or V or W elements)

2.2 REPLACEMENT ELEMENT

Size
0030, 0060, 0110, 0160, 0240, 0330, 0660

Type
D

Filtration rate in µm
BN4HC, BH4HC, V: 003, 005, 010, 020
W: 025, 050, 100, 200

Filter material
BN4HC, BH4HC, V, W

Supplementary details
V, W (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

Type
VM differential pressure indicator up to 210 bar operating pressure

Pressure setting
5 5 bar standard, others on request

Type of clogging indicator
D (see point 2.1)

Modification number
X the latest version is always supplied

Supplementary details
L..., LED, V, W (for descriptions, see point 2.1)
3. FILTER CALCULATION / SIZING

The total pressure drop of a filter at a certain flow rate Q is the sum of the housing $\Delta p$ and element $\Delta p$ and is calculated as follows:

$$\Delta p_{\text{total}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}}$$

$$\Delta p_{\text{housing}} = (\text{see point 3.1})$$

$$\Delta p_{\text{element}} = \frac{Q \cdot SK^* \cdot \text{viscosity}}{1000}$$

(*see point 3.2)

For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

3.1 $\Delta p$-Q HOUSING GRAPHS BASED ON ISO 3968

The housing graphs apply to mineral oil with a density of 0.86 kg/dm$^3$ and a kinematic viscosity of 30 mm$^2$/s. In this case, the differential pressure changes proportionally to the density.

<table>
<thead>
<tr>
<th>LF</th>
<th>V</th>
<th>3 µm</th>
<th>5 µm</th>
<th>10 µm</th>
<th>20 µm</th>
<th>W</th>
<th>BH4HC</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>18.0</td>
<td>13.0</td>
<td>7.4</td>
<td>3.7</td>
<td>3.367</td>
<td>91.2</td>
<td>50.7</td>
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<tr>
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<td>11.0</td>
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<td>3.3</td>
<td>1.683</td>
<td>58.6</td>
<td>32.6</td>
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<tr>
<td>110</td>
<td>8.3</td>
<td>6.0</td>
<td>4.2</td>
<td>2.1</td>
<td>0.918</td>
<td>25.4</td>
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<tr>
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<td>4.5</td>
<td>3.2</td>
<td>2.3</td>
<td>1.4</td>
<td>0.631</td>
<td>16.8</td>
<td>10.4</td>
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<tr>
<td>240</td>
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<td>2.4</td>
<td>1.9</td>
<td>1.1</td>
<td>0.421</td>
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<td>6.8</td>
</tr>
<tr>
<td>330</td>
<td>2.1</td>
<td>1.5</td>
<td>1.3</td>
<td>0.8</td>
<td>0.307</td>
<td>7.7</td>
<td>4.5</td>
</tr>
<tr>
<td>660</td>
<td>1.1</td>
<td>0.9</td>
<td>0.6</td>
<td>0.3</td>
<td>0.153</td>
<td>3.3</td>
<td>1.9</td>
</tr>
</tbody>
</table>

3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm$^2$/s. The pressure drop changes proportionally to the change in viscosity.
NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.