

## HYDAC

## INTERNATIONAL



### Inline Filter HDF Inline Filter for Reversible Flow HDFF up to 380 l/min, up to 280 (420) bar



## 1. TECHNICAL SPECIFICATIONS

### 1.1 FILTER HOUSING

#### Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head and a screw-in filter bowl. HDFF filters (on request) are suitable for flow in both directions.

Standard equipment:

- port in L-configuration
- without bypass valve
- port for a clogging indicator in filter head

### 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 Filter elements are available with the following pressure stability values: Optimicon® (ON): 20 bar Betamicon® (BH4HC): 210 bar

### 1.3 FILTER SPECIFICATIONS

Nominal pressure	280 (420) bar
Fatigue strength	0 to 280 bar (min. 10 <sup>6</sup> cycles) 0 to 420 bar (min. 250,000 cycles)
Temperature range	-30 °C to +100 °C (-30 °C to -10 °C: p <sub>max</sub> = 140 bar)
Material of filter head	EN-GJS 400-15
Material of filter bowl	Steel
Type of clogging indicator	VD (differential pressure indication up to 420 bar operating pressure)
Pressure setting of clogging indicator	5 bar for HDF (others on request) 8 bar for HDFF (others on request)
Cracking pressure of bypass only for HDF filters (optional)	6 bar (others on request)

### 1.4 SEALS

NBR (= Perbunan)

### 1.5 INSTALLATION

Inline filter with or without reversible oil flow

### 1.6 SPECIAL MODELS AND ACCESSORIES

- Seals in FPM, EPDM
- With bypass valve (only HDF filter) \*1
- With No-Element valve (only HDF filter in L-configuration) \*1
- With oil drain plug

### 1.7 SPARE PARTS

See Original Spare Parts List

### 1.8 CERTIFICATES AND APPROVALS

On request

### 1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

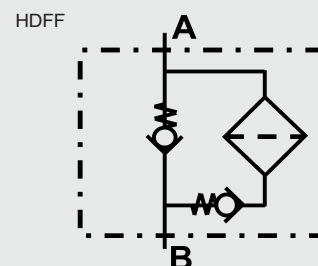
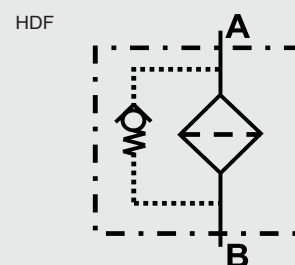
- Hydraulic oils H to HLPD DIN 51524
- Lubrication oils DIN 51517, API, ACEA, DIN 51515, ISO 6743
- Compressor oils DIN 51506
- Biodegradable operating fluids VDMA 24568 HETG, HEES, HEPG
- Fire-resistant fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

\*1 Bypass valve and No-Element valve cannot be combined!

### 1.10 IMPORTANT INFORMATION

- Filter housings 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



## 2. MODEL CODE (also order example)

**HDF ON 450 O L E 10 D 1 . X /-L24**

### 2.1 COMPLETE FILTER

#### Filter type

HDF or HDFF (HDFF on request)

#### Filter material

ON Optimicron® BH/HC  
Betamicon® (BH4HC)

#### Size of filter or element

HDF/HDFF: 300, 450, 650, 900

#### Operating pressure

O 280 bar

#### Head type

L Flow path in L-configuration (standard version)

#### Type and size of connection

Type	Connection	300	450	650	900
D	G 1	•	••		•
E	G 1 ¼	•••			•
F	G 1 ½	•••			•

#### Filtration rating in µm

ON: 1, 3, 5, 10, 15, 20  
BH/HC: 3, 5, 10, 20

#### Type of clogging indicator

Y plastic blanking plug in indicator port  
A steel blanking plug in indicator port  
BM visual  
C electrical  
D visual and electrical

for other clogging indicators,  
see brochure no. 7.050../..

#### Type code

1

#### Modification number

X the latest version is always supplied

#### Supplementary details

B. bypass cracking pressure (e.g. B6 = 6 bar); without details = without bypass valve  
L... light with appropriate voltage (24, 48, 110, 220 Volt) only for clogging  
LED 2 light-emitting diodes up to 24 Volt indicators type "D"  
NEV No-Element valve (only for HDF filters in L-configuration)  
SO184 pressure release/oil drain screw  
V FPM seals

### 2.2 REPLACEMENT ELEMENT

**0450 D 010 ON /-V**

#### Size

0300, 0450, 0650, 0900

#### Type

D

#### Filtration rating in µm

ON: 001, 003, 005, 010, 015, 020  
BH4HC: 003, 005, 010, 020

#### Filter material

ON, BH4HC

#### Supplementary details

V (for descriptions, see Point 2.1)

### 2.3 REPLACEMENT CLOGGING INDICATOR

**VD 5 D . X /-L24**

Type VD differential pressure indicator up to 420 bar operating pressure

#### Pressure setting

5 standard 5 bar  
(for HDF filters)  
8 standard 8 bar (for HDFF filters)

others on request

#### Type of clogging indicator (see Point 2.1)

#### Modification number

X the latest version is always supplied

#### Supplementary details

V (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 the element  $\Delta p$  and is calculated as follows:

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

$$\Delta p_{\text{housing}} = \left( \text{see Point 3.1} \right) \Delta p = Q \cdot \frac{\text{SK}^*}{\text{viscosity } 1000}$$

$30_{\text{element}}$

(\*see Point 3.2)

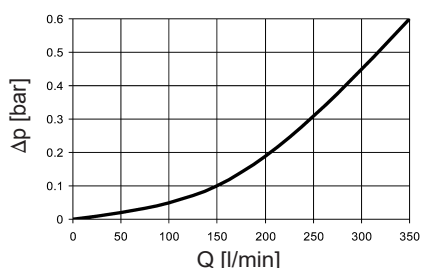
For ease of calculation, our Filter Sizing Program is available on request free of charge.

**NEW:** Sizing online at [www.hydac.com](http://www.hydac.com)

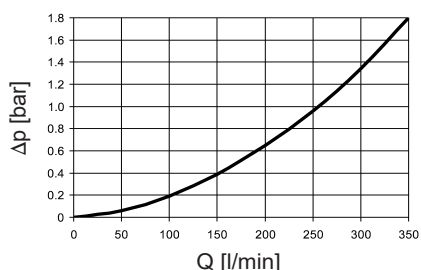
#### 3.1 $\Delta p$ -Q HOUSING CURVES BASED ON ISO 3968

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

**HDF**



**HDF with NEV**



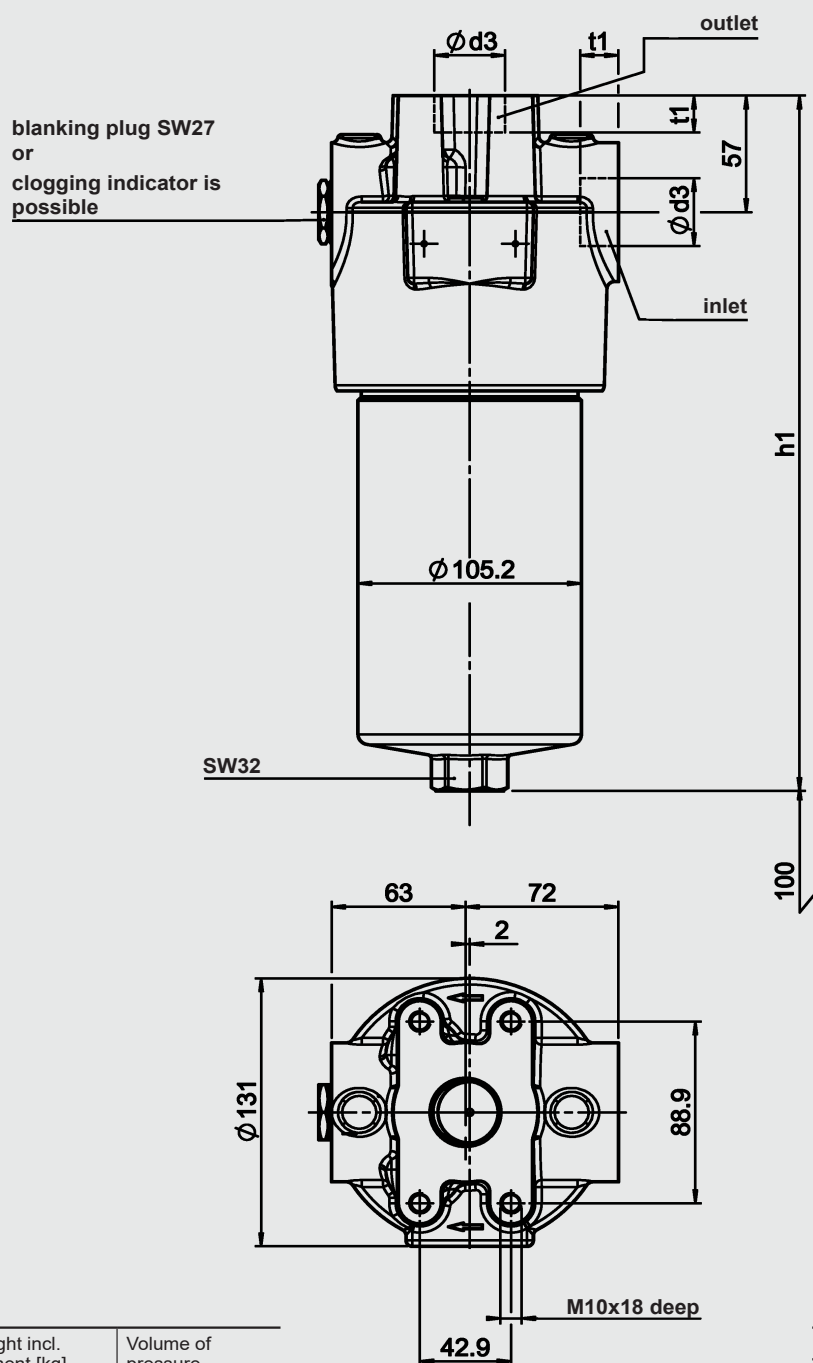
#### 3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

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

HDF / HDFF	ON	1 μm	3 μm	5 μm	10 μm	15 μm	20 μm
300	14.6	8.90	7.13	4.88	2.80	2.61	
450	7.30	4.45	3.52	2.39	1.40	1.26	
650	4.46	2.69	2.20	1.47	0.86	0.81	
900	3.37	2.10	1.67	1.10	0.65	0.63	

HDF / HDFF	BH4HC	3 μm	5 μm	10 μm	20 μm
300	16.0	8.9	7.1	3.3	
450	7.8	4.3	3.4	1.6	
650	4.7	2.6	2.1	1.0	
900	3.5	2.0	1.6	0.7	

## 4. DIMENSIONS



HDF/ HDF	h1	Weight incl. element [kg]	Volume of pressure chamber [l]
300	246	11.2	0.8
450	339	13.1	1.4
650	460	16.2	2.1
900	558	21.5	2.7

$\phi d3$	t1
G1	18
G1 1/4	20
G1 1/2	22

### 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.

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