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

Contamination retention capacities in g

	Betamicron® (BN4HC)			
HDF/ HDFF	3 µm	5 µm	10 µm	20 µm
300	26.1	29.3	31.0	32.0
450	52.1	58.7	62.0	63.9
650	85.4	96.1	101.5	104.7
900	112.8	127.0	134.1	138.3

	Betamicron® (BH4HC)			
HDF/ HDFF	3 µm	5 µm	10 µm	20 µm
300	17.0	16.6	18.3	20.9
450	35.0	34.2	37.6	42.9
650	58.3	57.1	62.8	71.6
900	77.3	75.7	83.1	94.8

Filter elements are available with the following pressure stability values:
Betamicron® (BN4HC): 20 bar
Betamicron® (BH4HC): 210 bar

Other filtration ratings on request.

1.3 FILTER SPECIFICATIONS

Nominal pressure	280 (420) bar
Fatigue strength	0 to 280 bar (min. 10^6 cycles) 0 to 420 bar (min. 250,000 cycles)
Temperature range	-30 °C to +100 °C (-30 °C to -10 °C: p_{max} = 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

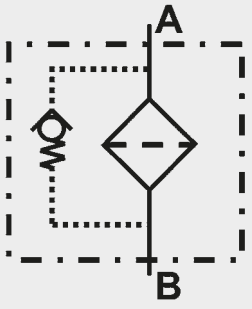
*1 Bypass valve and No-Element valve cannot be combined!

1.10 IMPORTANT INFORMATION

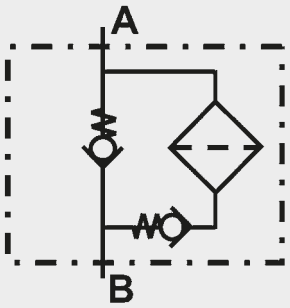
- Filter housings must be earthed.
- When using electrical clogging indicators, the electrical power supply to the system must be switched off before removing the clogging indicator connector.

Symbol for hydraulic systems

HDF



HDFF



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2. MODEL CODE (also order example)

HDF BN/HC 450 O L E 10 D 1 . X /-L24

2.1 COMPLETE FILTER

Filter type
HDF or HDFF (HDFF on request)

Filter material of element
BN/HC Betamicron® (BN4HC)
BH/HC Betamicron® (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	G1 ¼	●	●	●	●
F	G1 ½	●	●	●	●

Filtration rating in µm
BN/HC, 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 indicators type "D"
LED 2 light-emitting diodes up to 24 Volt
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 BN4HC /-V

Size
0300, 0450, 0650, 0900

Type
D

Filtration rating in µm
BN4HC, BH4HC: 003, 005, 010, 020

Filter material
BN4HC, 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 Δp and the element Δp and is calculated as follows:

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

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

$$\Delta p_{element} = Q \cdot \frac{SK^*}{1000} \cdot \frac{viscosity}{30}$$

(*see Point 3.2)

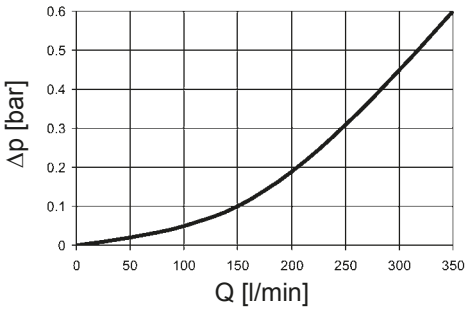
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

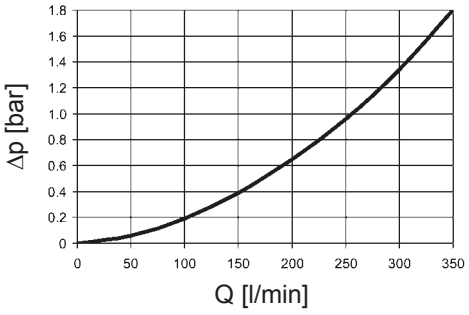
3.1 Δp-Q HOUSING CURVES BASED ON ISO 3968

The housing curves apply to mineral oil with a density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/s. In this case, the differential pressure changes proportionally to the density.

HDF



HDF with NEV

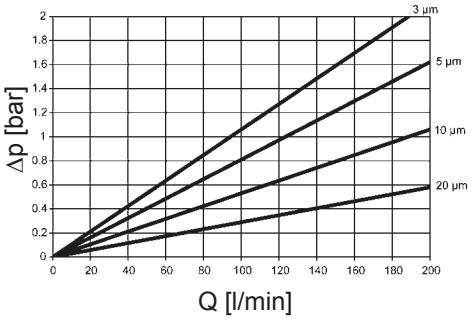


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

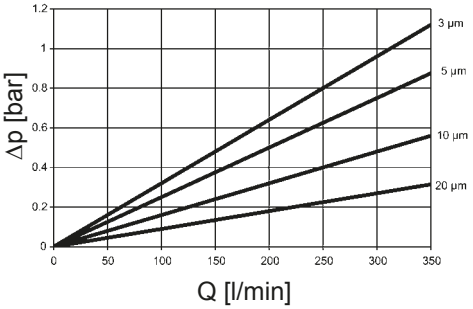
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

	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

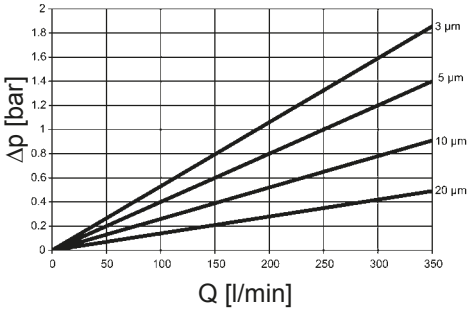
BN4HC: 300



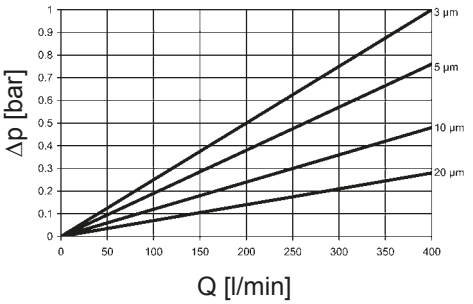
BN4HC: 650



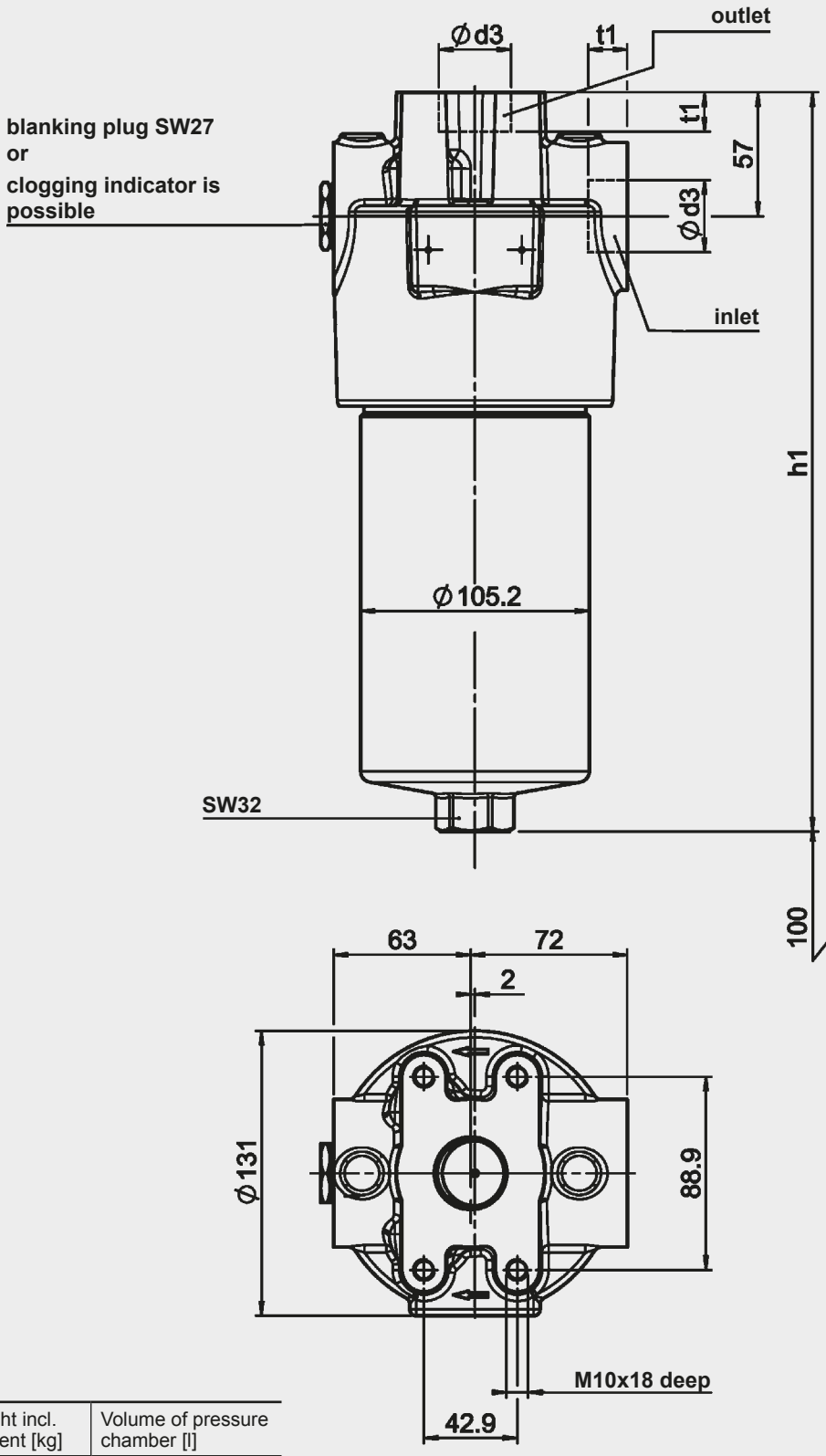
BN4HC: 450



BN4HC: 900



4. DIMENSIONS



HDF/ HDFF	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

Ød3	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.

HYDAC Filtertechnik GmbH
Industriegebiet
D-66280 Sulzbach/Saar
Tel: 0 68 97 / 509-01
Telefax. 0 68 97 / 509-300
Internet: www.hydac.com
E-Mail: filter@hydac.com