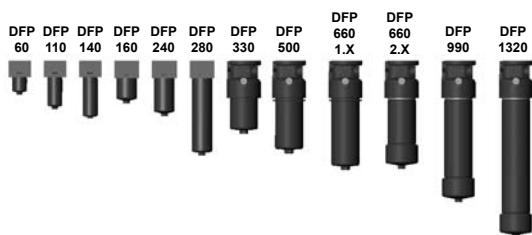




## Pressure Filter for Manifold Block Mounting DFP up to 600 l/min, up to 315 bar



### 1. TECHNICAL SPECIFICATIONS

#### 1.1 FILTER HOUSING

##### Construction

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

Standard equipment:

- connection for a clogging indicator in filter head
- two-piece bowl for size DFP 990 and above (optional for size DFP 660)
- drain plug with pressure relief (size DFP 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

DFP	Betamicon® (BN4HC)			
	3 µm	5 µm	10 µm	20 µm
60	6.5	7.3	7.8	8.0
110	13.8	15.5	16.4	16.9
140	18.1	20.3	21.5	22.2
160	19.8	22.2	23.5	24.3
240	32.3	36.3	38.4	39.6
280	70.6	79.3	83.9	86.6
330	47.2	53.1	56.1	57.9
500	76.9	86.5	91.5	94.4
660	102.2	114.9	121.5	125.4
990	154.5	173.7	183.7	189.5
1320	209.9	236.0	249.6	257.5

DFP	Betamicon® (BH4HC)			
	3 µm	5 µm	10 µm	20 µm
60	4.6	4.5	5.0	5.7
110	10.1	9.9	10.9	12.4
140	13.3	13.0	14.3	16.3
160	12.9	12.6	13.9	15.9
240	21.6	21.1	23.2	26.5
280	48.1	47.1	51.8	59.1
330	34.6	33.9	37.2	42.5
500	57.5	56.3	61.8	70.5
660	76.8	75.2	82.6	94.3
990	111.8	109.4	120.2	137.2
1320	153.8	150.7	165.5	188.8

#### 1.3 FILTER SPECIFICATIONS

Nominal pressure	315 bar
Fatigue strength	at nominal pressure 10 <sup>6</sup> load cycles from 0 to nominal pressure
Temperature range	-30 °C to +100 °C (-30 °C to -10 °C: p <sub>max</sub> = 157.5 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 (others on request)
Cracking pressure of bypass (optional)	6 bar (others on request)

Filter elements are available with the following pressure stability values:

Betamicon® (BN4HC):	20 bar
Betamicon® (BH4HC):	210 bar
Wire mesh (W):	20 bar
Stainless steel fibre (V):	210 bar

#### 1.4 SEALS

NBR (= Perbunan)

#### 1.5 MOUNTING

As pressure filter for manifold block mounting

#### 1.6 SPECIAL MODELS AND ACCESSORIES

- Bypass valve in head
- Seals in FPM, EPDM

#### 1.7 SPARE PARTS

See Original Spare Parts List

#### 1.8 CERTIFICATES AND APPROVALS

On request

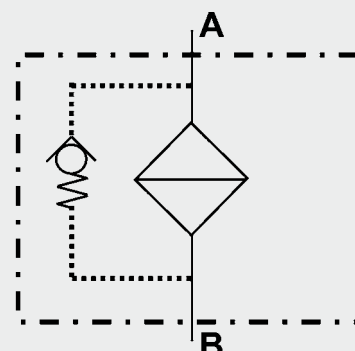
#### 1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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
- Non-flam operating fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) on request

#### 1.10 IMPORTANT INFORMATION

- Filter housing must be earthed
- When using visual clogging indicators only the BM version should be used (visual with manual re-set).
- 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)

DFP BN/HC 60 Q B 10 D 1 . X /-L24

### 2.1 COMPLETE FILTER

Filter type \_\_\_\_\_

DFP

Filter material of element \_\_\_\_\_

BN/HC Betamicron® (BN4HC)

BH/HC Betamicron® (BH4HC)

V Stainless steel fibre

W Wire mesh

Size of filter or element \_\_\_\_\_

DFP: 60, 110, 140, 160, 240, 280, 330, 500, 660, 990, 1320

Operating pressure \_\_\_\_\_

Q = 315 bar

Type and size of port \_\_\_\_\_

Type	Port	Filter size										
		60	110	140	160	240	280	330	500	660	990	1320
B	G 1/2	●	●	●								
C	G 3/4				●	●	●					
D	G1 1/2							●	●	●	●	●

Filtration rating 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

BM visual

C electrical

D visual and electrical

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

Type code \_\_\_\_\_

1 one-piece filter bowl

2 two-piece filter bowl (size DFP 660 to 1320)

Modification number \_\_\_\_\_

X the latest version is always supplied

Supplementary details \_\_\_\_\_

B. bypass cracking pressure (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

SO184 pressure release/oil drain screw (sizes DFP 660 to 1320)

V FPM seals

W suitable for HFA and HFC emulsions

### 2.2 REPLACEMENT ELEMENT

0060 D 010 BN4HC /-V

Size \_\_\_\_\_

0060, 0110, 0140, 0160, 0240, 0280, 0330, 0500, 0660, 0990, 1320

Type \_\_\_\_\_

D

Filtration rating 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

VD 5 D . X /-L24

Type \_\_\_\_\_

VD differential pressure indicator up to 420 bar operating pressure

Pressure setting \_\_\_\_\_

5 5 bar standard, others on request

Type of clogging indicator (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:

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

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

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

(\*see point 3.2)

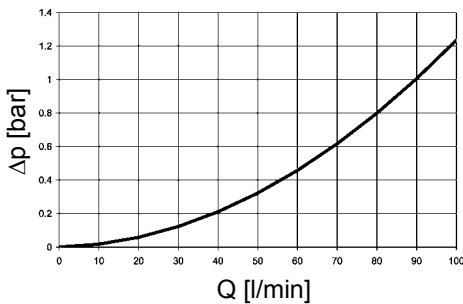
For ease of calculation, our Filter Sizing Program is available on request free of charge.

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

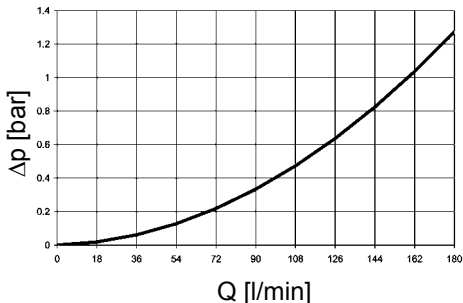
#### 3.1 $\Delta p$ -Q HOUSING GRAPHS BASED ON ISO 3968

The housing graphs apply to mineral oil with a density of 0.86 kg/dm<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.

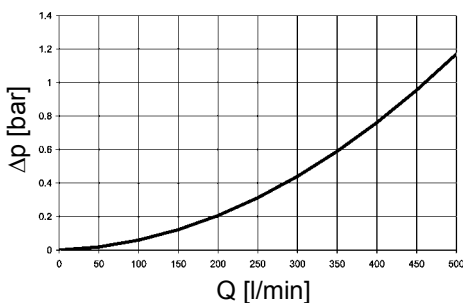
##### DFP 60/110/140



##### DFP 160/240/280



##### DFP 330/500/660/990/1320

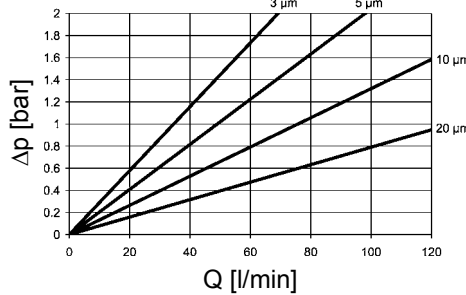


### 3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

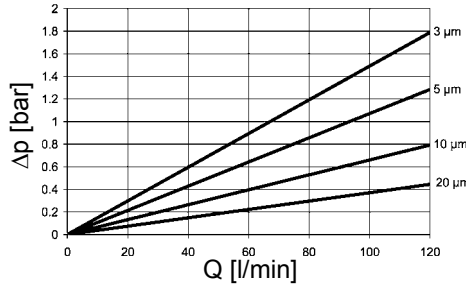
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm<sup>2</sup>/s. The pressure drop changes proportionally to the change in viscosity.

DFP	V				W	BH4HC			
	3 μm	5 μm	10 μm	20 μm		-	3 μm	5 μm	10 μm
60	16.0	11.0	6.5	3.3	1.683	58.6	32.6	18.1	12.2
110	8.3	6.0	4.2	2.1	0.918	25.4	14.9	8.9	5.6
140	5.9	3.8	3.0	1.7	0.721	19.9	11.3	8.1	4.3
160	4.5	3.2	2.3	1.4	0.631	16.8	10.4	5.9	4.4
240	3.2	2.4	1.9	1.1	0.421	10.6	6.8	3.9	2.9
280	1.5	1.2	1.0	0.8	0.361	5.7	3.4	1.8	1.6
330	2.1	1.5	1.3	0.8	0.307	7.7	4.5	2.8	2.0
500	1.4	1.0	0.8	0.5	0.202	4.2	2.6	1.5	1.2
660	1.1	0.9	0.6	0.3	0.153	3.3	1.9	1.0	0.9
990	0.7	0.5	0.4	0.3	0.102	2.2	1.3	0.8	0.6
1320	0.6	0.5	0.3	0.2	0.077	1.6	1.0	0.6	0.4

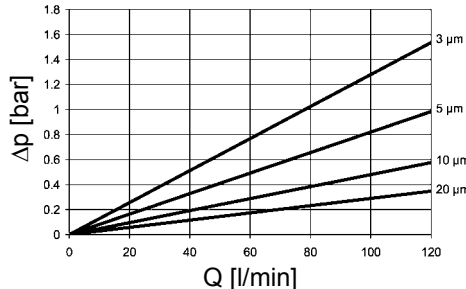
##### BN4HC: DFP 60



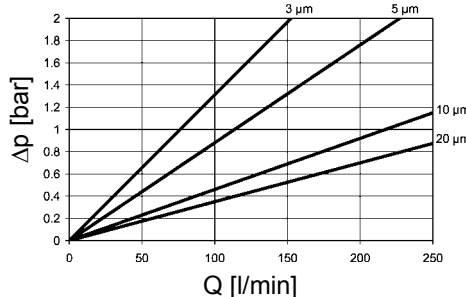
##### BN4HC: DFP 110



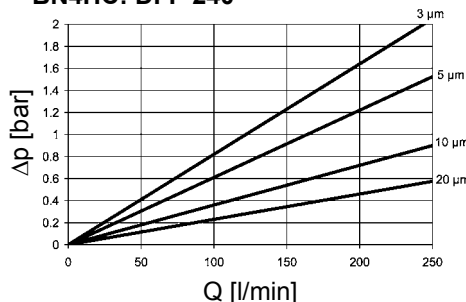
##### BN4HC: DFP 140



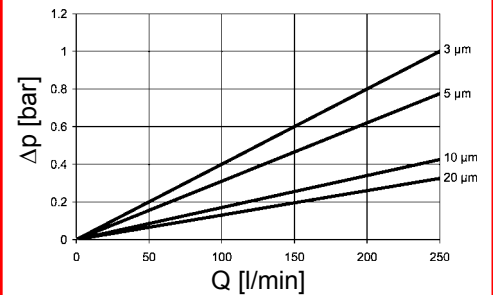
##### BN4HC: DFP 160



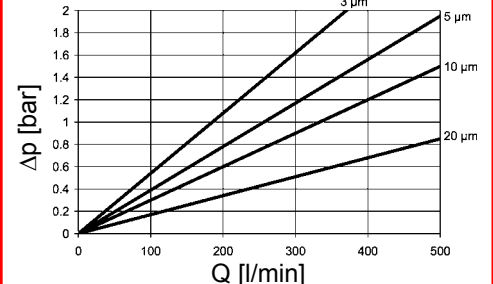
##### BN4HC: DFP 240



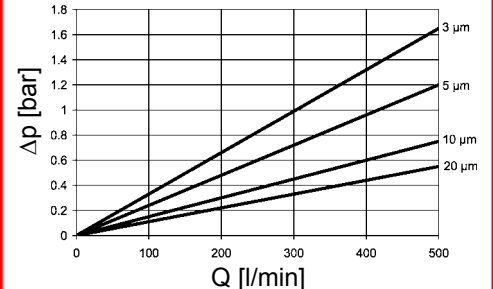
##### BN4HC: DFP 280



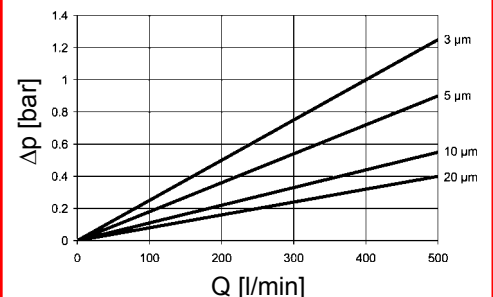
##### BN4HC: DFP 330



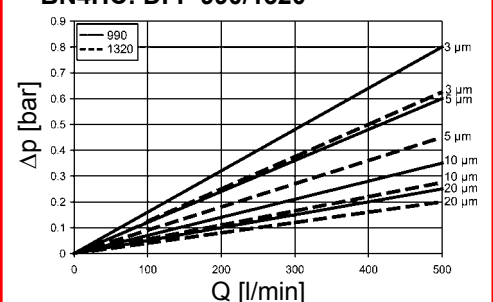
##### BN4HC: DFP 500



##### BN4HC: DFP 660

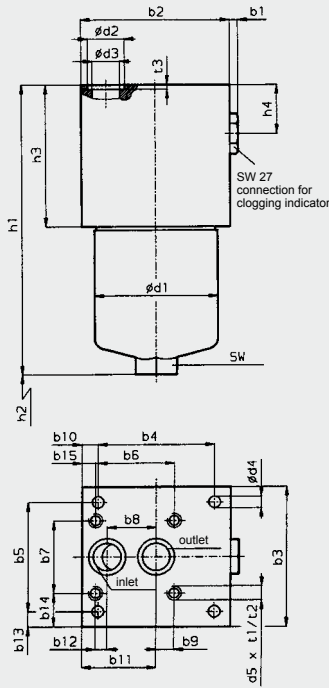


##### BN4HC: DFP 990/1320

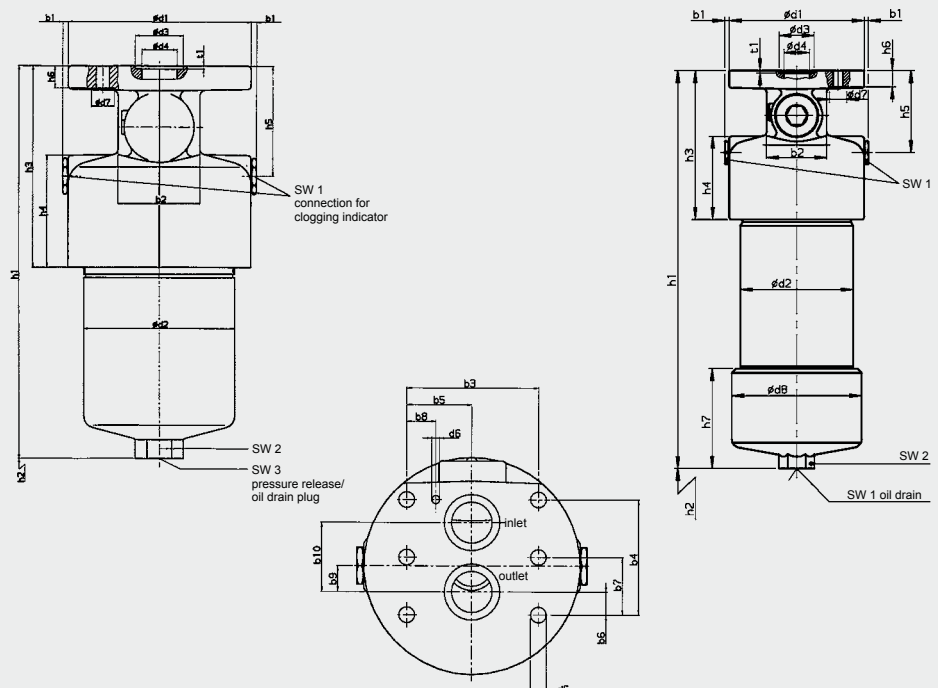


## 4. DIMENSIONS

DFP 60 - 280



DFP 330 - 1320



DFP	60	110	140	160	240	280	330	500	660	990	1320
b1	6	6	6	6	6	6	5	5	5	5	5
b2	104	104	104	115	115	115	70	70	70	70	70
b3	80	80	80	110	110	110	96.8	96.8	96.8	96.8	96.8
b4	89	89	89	90	90	90	84.1	84.1	84.1	84.1	84.1
b5	31.8	31.8	31.8	86	86	86	48.4	48.4	48.4	48.4	48.4
b6	-	-	-	61	61	61	16.7	16.7	16.7	16.7	16.7
b7	-	-	-	57	57	57	42.05	42.05	42.05	42.05	42.05
b8	31.6	31.6	31.6	38	38	38	21.4	21.4	21.4	21.4	21.4
b9	-	-	-	14	14	14	19	19	19	19	19
b10	7.5	7.5	7.5	12.5	12.5	12.5	50.7	50.7	50.7	50.7	50.7
b11	55.9	55.9	55.9	57.5	57.5	57.5	-	-	-	-	-
b12	-	-	-	9	9	9	-	-	-	-	-
b13	24.1	24.1	24.1	12	12	12	-	-	-	-	-
b14	-	-	-	26.5	26.5	26.5	-	-	-	-	-
b15	-	-	-	10.5	10.5	10.5	-	-	-	-	-
d1	68.2	68.2	68.2	95.2	95.2	95.2	158	158	158	158	158
d2	25.3	25.3	25.3	28.6	28.6	28.6	130	130	130	130	130
d3	17.5	17.5	17.5	21.4	21.4	21.4	41	41	41	41	41
d4	8.5	8.5	8.5	9	9	9	30	30	30	30	30
d5	-	-	-	7/18-14 UNC	7/18-14 UNC	7/18-14 UNC	11.5	11.5	11.5	11.5	11.5
d6	-	-	-	-	-	-	6	6	6	6	6
d7	-	-	-	-	-	-	20	20	20	20	20
d8	-	-	-	-	-	-	-	-	-	152	152
h1	158.5	227.5	269.5	199.5	259.5	441.5	339.5	432.5	510.0	660.0	826.0
h2	75	75	75	85	85	85	95	95	95	500	670
h3	76	76	76	83	83	83	174.5	174.5	174.5	174.5	174.5
h4	25	25	25	25	25	25	98	98	98	98	98
h5	-	-	-	-	-	-	96	96	96	96	96
h6	-	-	-	-	-	-	19	19	19	19	19
h7	-	-	-	-	-	-	-	-	-	112	112
t1	-	-	-	13	13	13	2.6	2.6	2.6	2.6	2.6
t2	-	-	-	18	18	18	-	-	-	-	-
t3	2	2	2	2	2	2	-	-	-	-	-
SW	27	27	27	32	32	32	-	-	-	-	-
SW1	-	-	-	-	-	-	27	27	27	27	27
SW2	-	-	-	-	-	-	36	36	36	36	36
SW 3	-	-	-	-	-	-	10	10	10	10	10
Weight incl. element [kg]	5.1	6.0	6.6	9.1	10.4	14.7	21.0	25.5	29.0	39.2	47.1
Volume of pressure chamber [l]	0.20	0.33	0.40	0.60	0.80	1.60	1.50	2.30	3.00	4.20	5.60

### 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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