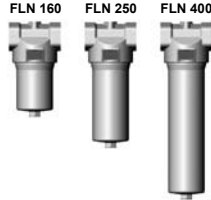




## Inline Filter FLN to DIN 24550 up to 400 l/min, up to 25 bar



### 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:

- without bypass valve
- with oil drain plug
- connection for a clogging indicator

#### 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

FLN	Betamicron® BN4HC			
	3 µm	6 µm	10 µm	25 µm
160	27.5	29.3	33.1	36.7
250	46.0	49.0	55.2	61.3
400	76.2	81.3	91.4	101.5

Filter elements are available with the following pressure stability values:

Betamicron® (BN4HC): 20 bar  
Wire mesh (W/HC): 20 bar

#### 1.3 FILTER SPECIFICATIONS

Nominal pressure	25 bar
Fatigue strength	at nominal pressure 10 <sup>6</sup> load cycles from 0 to nominal pressure
Temperature range	-30 °C up to +100 °C
Material of filter head	Aluminium
Material of filter bowl	Aluminium
Type of clogging indicator	VM (differential pressure indication up to 210 bar operating pressure) VD (differential pressure indication up to 420 bar operating pressure: types LE and LZ only)
Pressure setting of clogging indicator	5 bar (others on request)
Cracking pressure of bypass (optional)	3.5, 7 bar (others on request)

#### 1.4 SEALS

NBR (= Perbunan)

#### 1.5 MOUNTING

As inline filter

#### 1.6 SPECIAL MODELS AND ACCESSORIES

with bypass valve

#### 1.7 SPARE PARTS

See Original Spare Parts List

#### 1.8 CERTIFICATES AND APPROVALS

On request

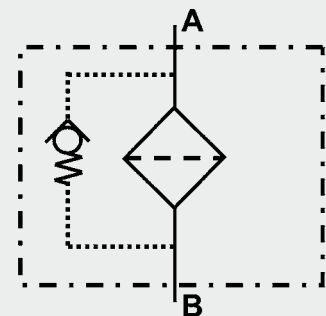
#### 1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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
- Operating fluids with high water content (>50% water content) on request

#### 1.10 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



## 2. MODEL CODE (also order example)

FLN BN/HC 250 D F 10 D 1 . X /-L24

### 2.1 COMPLETE FILTER

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

FLN

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

BN/HC Betamicon® (BN4HC)

W/HC Stainless steel wire mesh

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

FLN: 160, 250, 400

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

D = 25 bar

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

to DIN 24550 (●), possible ports (x)

Type	Port	Filter size		
		160	250	400
E	G 1¼	●	X	X
F	G 1½	X	●	X
K	DN 38*	X	X	●

\*Flange SAE 1½", 3000 PSI

**Filtration rating in µm** \_\_\_\_\_

BN4HC: 3, 6, 10, 25

W/HC: 25, 50, 100, 200

**Type of clogging indicator** \_\_\_\_\_

Y plastic blanking plug in indicator port

A steel blanking plug in indicator port

B visual

C electrical

D visual and electrical

LZ visual-mechanical / electrical

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

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

1

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

X the latest version is always supplied

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

A. pressure setting (e.g. A2 = 2 bar)

B. bypass cracking pressure (e.g.: B3.5 = 3.5 bar, B7 = 7 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

A V LZ indicator with plug to AUDI and VW specification

BO LZ indicator with plug and pin connection to BMW and Opel specification (M12x1)

CN LZ indicator with plug to DIN 43651 with 3 LEDs (CNOMO standard)

DB LZ indicator with plug to DIN 43651 with 3 LEDs (Daimler-Benz standard)

D4C LZ indicator with plug and pin connection to Daimler-Chrysler specification and cold start suppression 30 °C

BO-LED as for BO, but with progressive diode strip

V FPM seals

W suitable for HFA and HFC emulsions

### 2.2 REPLACEMENT ELEMENT

0250 DN 010 BN4HC /-V

**Size** \_\_\_\_\_

0160, 0250, 0400

**Type** \_\_\_\_\_

DN

**Filtration rating in µm** \_\_\_\_\_

BN4HC : 003, 006, 010, 025

W/HC : 025, 050, 100, 200

**Filter material** \_\_\_\_\_

BN4HC, W/HC

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

V, W (for descriptions, see point 2.1)

### 2.3 REPLACEMENT CLOGGING INDICATOR

VM 5 D . X /-L24

**Type** \_\_\_\_\_

VM differential pressure indicator up to 210 bar operating pressure

VD differential pressure indicator up to 420 bar operating pressure (only for LE and LZ)

**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:

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

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

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

(\*see point 3.2)

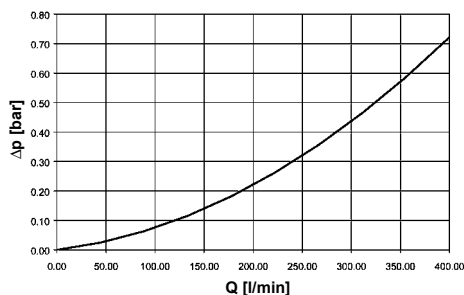
For ease of calculation, our Filter Sizing Program is available on request free of charge.

**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.

##### FLN 160, 250, 400

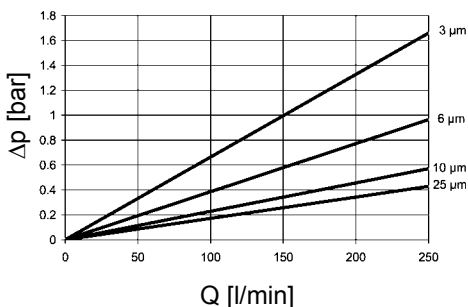


### 3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

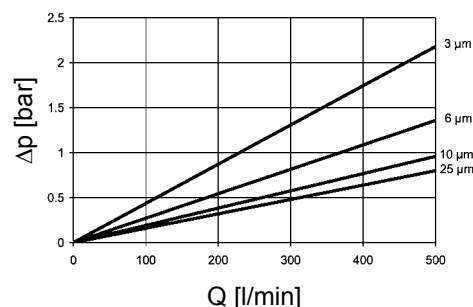
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm<sup>2</sup>/s. The pressure drop changes proportionally to the change in viscosity.

FLN	BN4HC				W/HC
	3 μm	6 μm	10 μm	25 μm	–
160	7.9	5.1	3.4	2.6	0.168
250	5.1	3.2	2.1	1.7	0.101
400	3.2	2.0	1.3	1.0	0.068

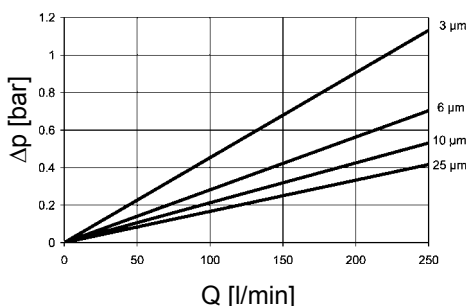
#### BN4HC: FLN 160



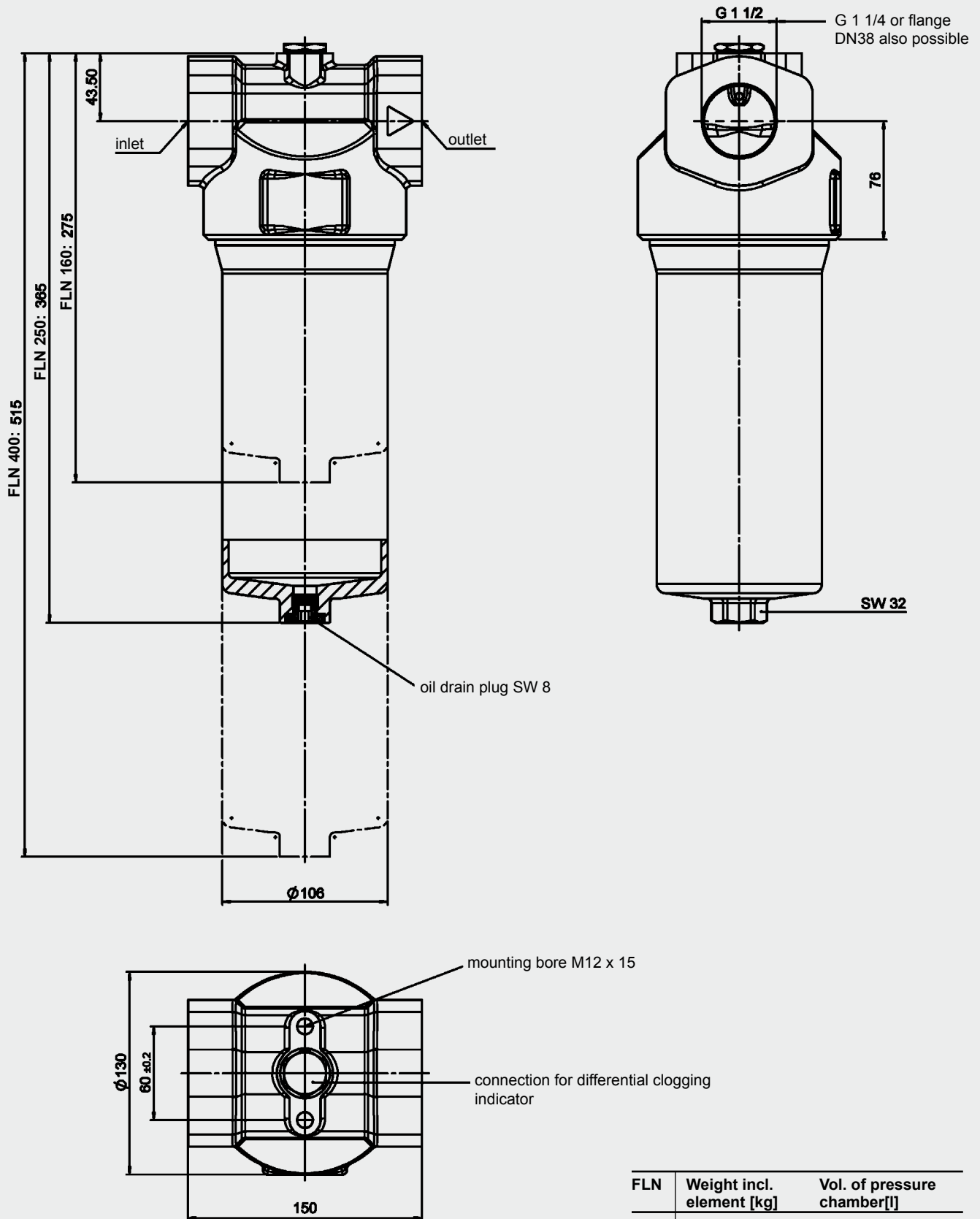
#### BN4HC: FLN 400



#### BN4HC: FLN 250



## 4. DIMENSIONS



FLN	Weight incl. element [kg]	Vol. of pressure chamber[l]
160	4.3	1.4
250	4.9	2.0
400	5.9	3.1

### 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. sind vorbehalten.

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