HYDAC INTERNATIONAL

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 and a screw-in filter bowl.
Standard equipment:

- without bypass valve
- oil drain plug
- port 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

	Betamicron® BN4HC			
FLN	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_6 cycles from 0 to nominal pressure
Temperature range	-30 °C to +100 °C
Material of filter head	Aluminium
Material of filter bowl	Aluminium
Type of indicator	VM (Diff. pressure indicator up to 210 bar operating pressure) VD (Diff. pressure indicator up to 420 bar operating pressure - only for types LE and LZ)
Pressure setting of the clogging indicator	2.5 and 5 bar (others on request)
Bypass cracking pressure (optional)	3.5 bar or 7 bar (others on request)

1.4 SEALS

NBR (=Perbunan)

1.5 INSTALLATION

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

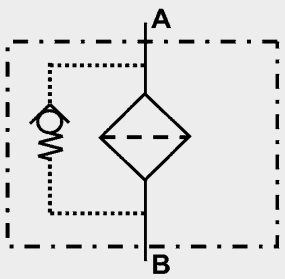
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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 (>

MAINTENANCE INSTRUCTIONS

- 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



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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 Betamicron® (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
BN/HC: 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. 7.050../..)

Type code
1

Modification number
X the latest version is always supplied

Supplementary details
A. pressure setting (e.g. A2.5 = 2.5 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 (24, 48, 110, 220 Volt) (only for clogging indicators Type "D")
LED 2 light-emitting diodes 24 Volt (only for clogging indicators Type "D")
AV LZ indicator with plug to AUDI and VW specifications
BO LZ indicator with plug and pin connections to BMW and Opel specification (M12x1)
CN LZ indicator with plug to DIN 43651 with 3 LEDs (CNOMO specification)
DB LZ indicator with plug to DIN 43651 with 3 LEDs (Daimler-Benz specification)
D4C LZ indicator with plug and connector to Daimler-Chrysler specification and cold start suppression 30 °C
BO-LED as for BO, but with 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 of indicator
VM Differential pressure indicator up to 210 bar operating pressure
VD Differential pressure indicator up to 420 bar operating pressure (only for types LE and LZ)

Pressure setting
5 standard 5 bar, 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)

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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)

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

(*see point 3.2)

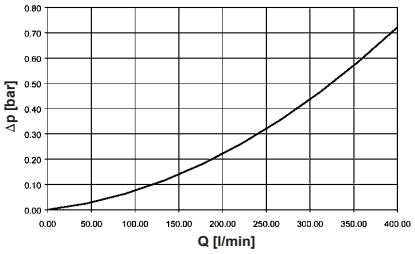
For ease of calculation, our Filter Sizing Program is available on request free of charge.

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.

FLN 160, 250, 400

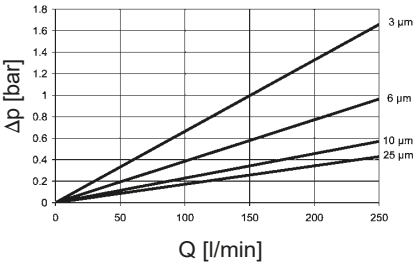


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

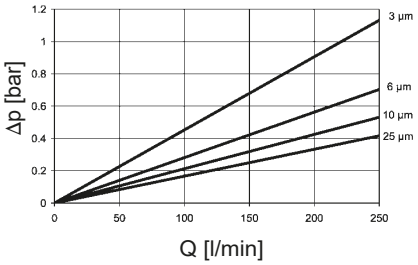
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

FLN	BN4HC				W/HC
	3 µm	6 µm	10 µm	25 µm	–
160	7.9	5.1	3.4	2.6	0.169
250	5.1	3.2	2.1	1.7	0.102
400	3.2	2.0	1.3	1.0	0.061

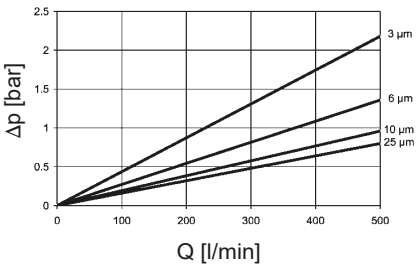
BN4HC: FLN 160



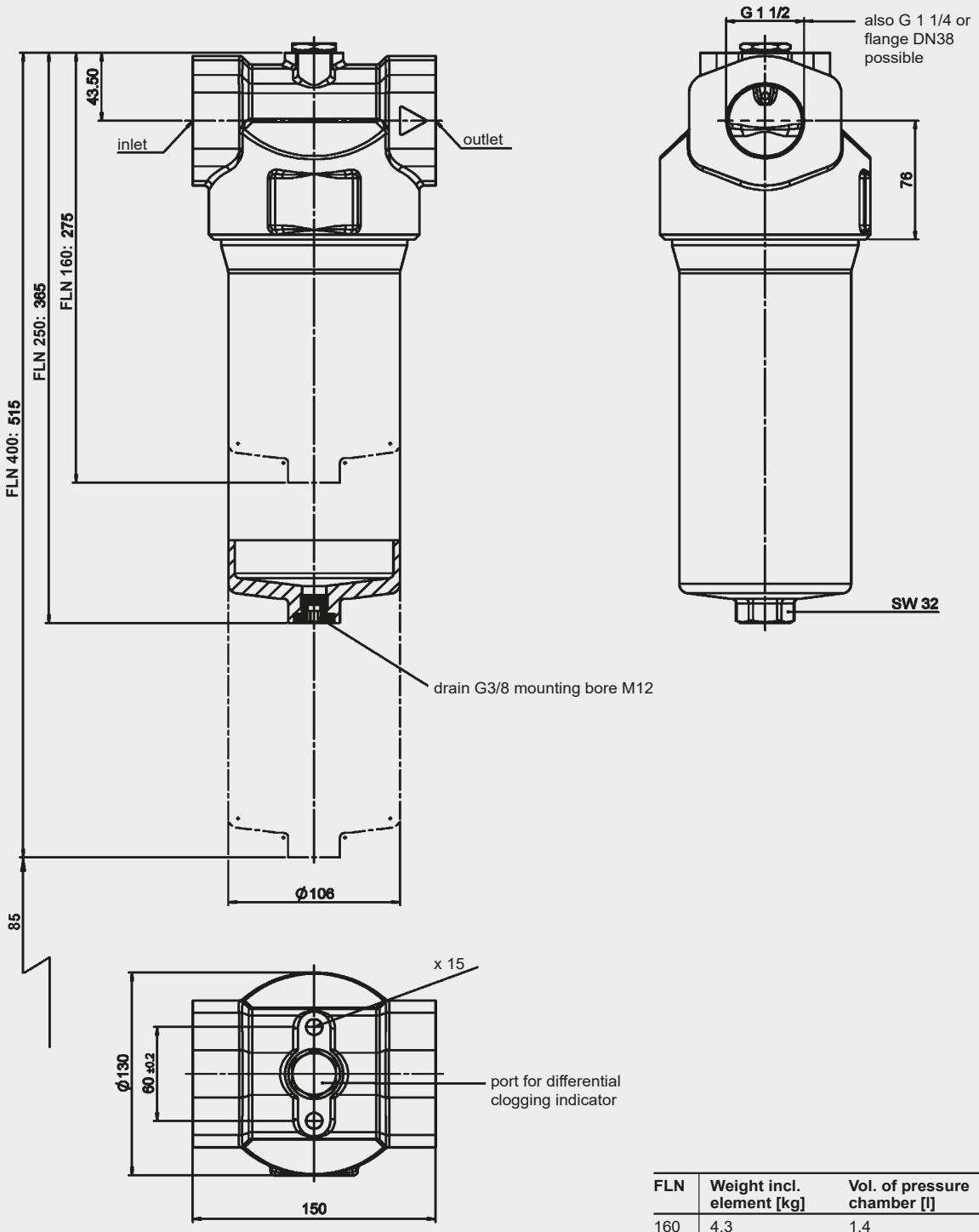
BN4HC: FLN 250



BN4HC: FLN 400



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.