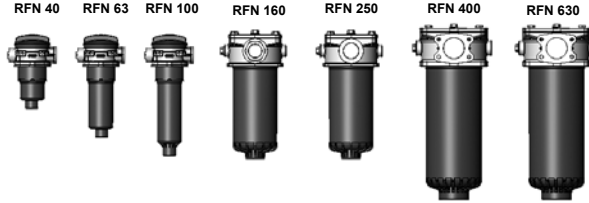




Tank-Top Return Line Filter RFN with Elements to DIN 24550 up to 630 l/min, up to 10 bar



1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head, filter bowl and screw-on cover plate.

Standard equipment:

- with bypass valve
- 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 Betamicron BN4HC

RFN	3 µm	6 µm	10 µm	25 µm
40	7.1	8.0	8.9	10.6
63	13.0	14.7	16.3	19.6
100	22.0	24.7	27.5	33.0
160	36.2	40.7	45.3	54.2
250	61.4	69.1	76.8	92.1
400	88.2	99.2	110.2	132.3
630	148.6	167.3	185.8	222.9

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

1.3 FILTER SPECIFICATIONS

Nominal pressure	10 bar
Temperature range	-10 °C to +100 °C
Material of filter head	Aluminium
Material of filter bowl	Polyamide
Material of cover plate	Polyamide (RFN 40 to 100) Aluminium (RFN 160 to 630)
Type of clogging indicator	VR connection thread G 1/2 VMF connection thread G 1/8
Pressure setting of clogging indicator	2.5 bar (others on request)
Bypass cracking pressure	3.5 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 MOUNTING

As tank-top filter

1.6 SPECIAL MODELS AND ACCESSORIES

On request

1.7 SPARE PARTS

See Original Spare Parts List

1.8 CERTIFICATES AND APPROVALS

On request

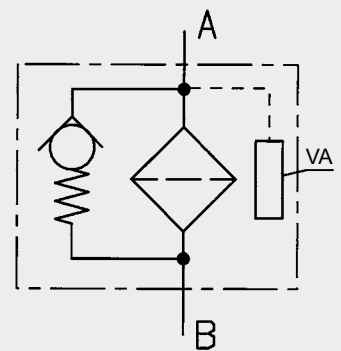
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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 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)

RFN BN4HC 250 B F 10 D 1 . X /-L24

2.1 COMPLETE FILTER

Filter type _____

RFN

Filter material of element _____

BN4HC Betamicron® (BN4HC)

Size of filter or element _____

RFN: 40, 63, 100, 160, 250, 400, 630

Operating pressure _____

B = 10 bar

Type and size of port _____

to DIN 24550 (●), possible ports (X)

Type	Port	Filter size						
		40	63	100	160	250	400	630
B	G ½	X	X					
C	G ¾	X	X					
D	G 1	X	X	●				
E	G1 ¼				X			
F	G1 ½				X			
M	DN 64						X	●

Filtration rating in µm _____

BN4HC: 3, 6, 10, 25

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 _____

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

GM LZ indicator with "no element" indicator

30C LZ indicator with temperature limiter (only in conjunction with type DB)

T with tank breather filter (only RFN 40, 63, 100)

BAN filling connection G ¾ (from size RFN 160)

Vxxx outlet extension (xxx = corresponding length in mm)

V FPM seals

W suitable for HFA and HFC emulsions

2.2 REPLACEMENT ELEMENT

0250 RN 010 BN4HC /-V

Size _____

0040, 0063, 0100, 0160, 0250, 0400, 0630

Type _____

RN

Filtration rating in µm _____

BN4HC: 003, 006, 010, 025

Filter material _____

BN4HC

Supplementary details _____

V (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VR 2.5 D . X /-L24

Type _____

VR threaded connection G 1/2

VMF threaded connection G 1/8

Pressure setting _____

2.5 2.5 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 (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 element Δp 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)

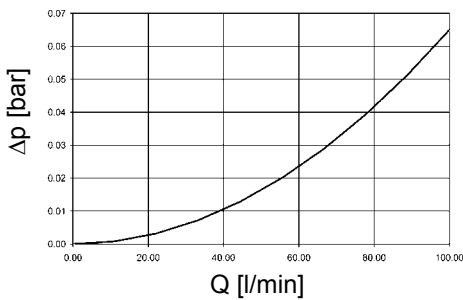
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

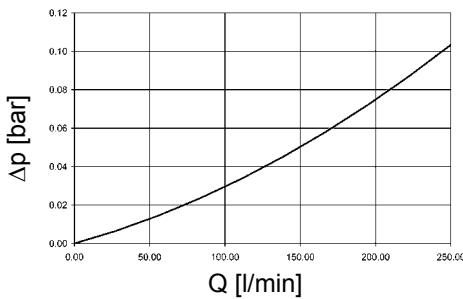
3.1 Δp -Q HOUSING GRAPHS BASED ON ISO 3968

The housing graphs 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.

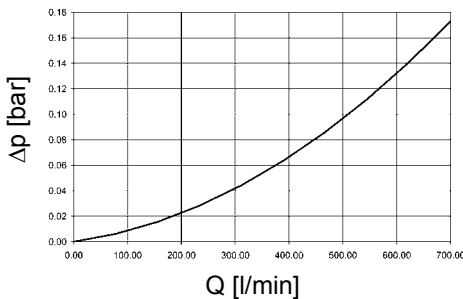
RFN 40/63/100



RFN 160/250



RFN 400/630

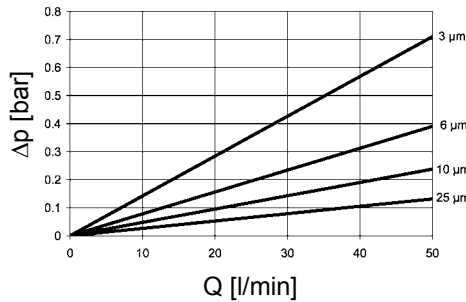


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

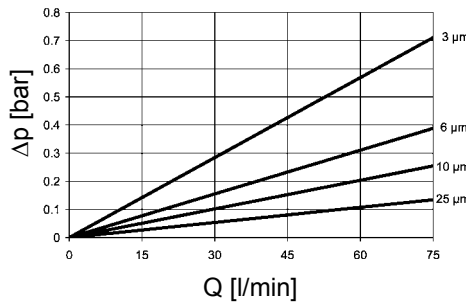
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

RFN	BN4HC			
	3 μm	6 μm	10 μm	25 μm
40	14.2	7.8	4.8	2.6
63	9.5	5.2	3.4	1.8
100	6.8	3.3	2.3	1.2
160	3.6	1.8	1.2	0.5
250	2.8	1.4	0.9	0.4
400	2.2	1.6	1.3	1.0
630	2.1	1.6	1.3	0.9

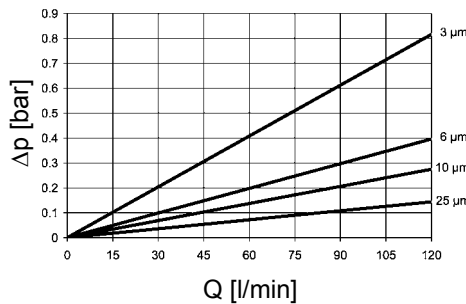
BN4HC: RFN 40



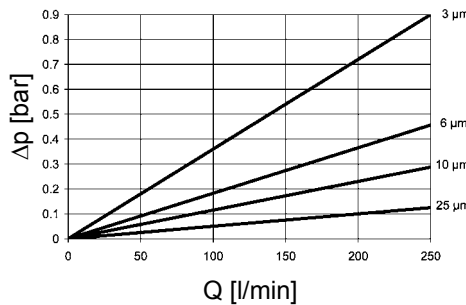
BN4HC: RFN 63



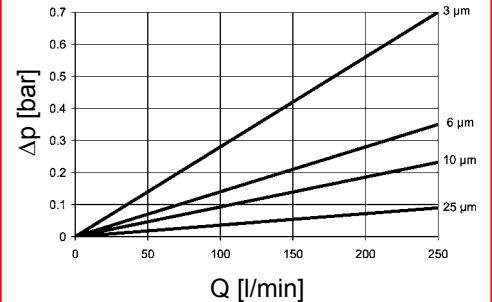
BN4HC: RFN 100



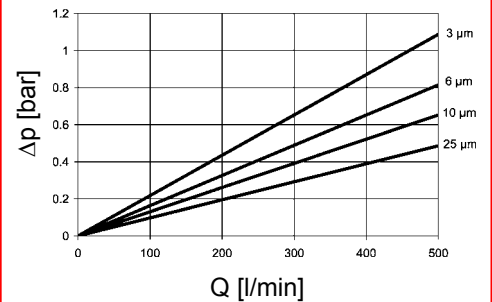
BN4HC: RFN 160



BN4HC: RFN 250



BN4HC: RFN 400



BN4HC: RFN 630

