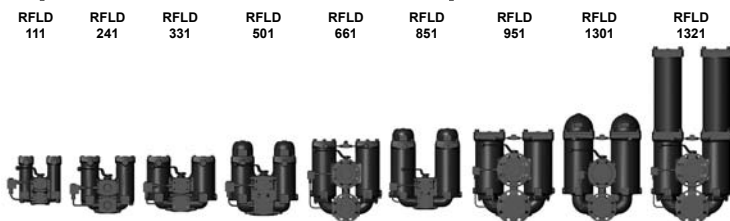




Change-Over Inline Filter RFLD Cast Version up to 1300 l/min, up to 64 bar



1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. The two sections of the filter housing with screw-on cover plates are connected by means of a ball change-over valve.

Standard equipment:

- connections for venting and draining
- connection for a clogging indicator
- from size DN 80 the filters are fitted with a pressure equalisation line and a ball shut-off valve
- with bypass valve

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 Betamicon® (BN4HC)

RFLD	Elements per side	3 µm	5 µm	10 µm	20 µm
111	1x0110 R	12	13.3	16	18.1
241	1x0240 R	29.3	32.5	39.1	44.2
33x	1x0330 R	38.4	42.6	51.2	57.9
50x	1x0500 R	58.9	65.3	78.6	88.9
66x	1x0660 R	87.1	96.5	116.1	131.3
85x	1x0850 R	112.1	124.2	149.5	169.1
95x	1x0950 R	130.0	144.1	173.3	196.1
130x	1x1300 R	181.0	200.7	241.4	273.1
132x	1x2600 R	369.4	409.4	492.5	557.2

Filter elements are available with the following pressure stability values:

Betamicon® (BN4HC):	20 bar
Paper (P/HC):	10 bar
Wire mesh (W/HC):	20 bar
Stainless steel fibre (V):	30 bar
Betamicon®/Aquamicron® (BN4AM):	10 bar
Aquamicron® (AM):	10 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure	25 bar (RFLD 331-1321, 853) 40 bar (RFLD 111-241, 503, 662-1322) 64 bar (RFLD 332-502)
Temperature range	-10 °C to +100 °C
Material of filter housing and cover plate	1 = EN-GJS-400-15
Material code (final digit of filter size)	2 = GP 240 GH+N 3* = stainless steel 1.4581
Type of clogging indicator	VM (differential pressure measurement up to 210 bar operating pressure)
Pressure setting of clogging indicator	2 bar (others on request)
Bypass cracking pressure	3 bar (others on request)

1.4 SEALS

NBR (= Perbunan)

1.5 MOUNTING

As inline filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Orifice in the pressure equalisation line
- Stand
- Draining and venting connections with ball valves or other shut-off valves
- Mating flanges available for all sizes
- Change-over valve lockable
- Venting line with sight gauges

1.7 SPARE PARTS

See Original Spare Parts List

1.8 CERTIFICATES AND APPROVALS

Material code (final digit of filter size) - 1:

These filters can be supplied with manufacturer's certificates O and M to DIN 55350, Part 18.

Test certificates 3.1 to DIN EN 10204 and approval certificates (Type Approval) for different approval authorities.

Areas of application, amongst others: lubrication.

Material code (final digit of filter size) - 2:

These filters are designed according to API 614, which contains guidelines for the design and designation of basic types of oil supply systems for bearings and shaft seals of larger machines.

Material code (final digit of filter size) - 3:

Filters for use in separation technology with low viscosity, high viscosity and aggressive fluids as well as gaseous media.*

* These filters are available from our HYDAC Process Technology dept.

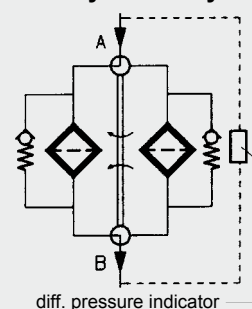
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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
- Filters must be flexibly mounted and not fixed rigidly to the floor or used as a pipe support.
- When used with W/HC and P/HC-elements, please follow the sizing recommendation under Point 3.3!

Symbol for hydraulic systems



2. MODEL CODE (also order example)

RFLD BN/HC 851 D A L 10 D 1 . X /-L24

2.1 COMPLETE FILTER

Filter type _____

RFLD

Filter material of element _____

BN/HC Betamicon® (BN4HC) P/HC Paper AM Aquamicon®
 V Stainless steel fibre W/HC Wire mesh BN/AM Betamicon®/Aquamicon®

Size of filter or element _____

EN-GJS-400-15: 111, 241, 331, 501, 661, 851, 951, 1301, 1321
 GP 240 GH+N: 332, 502, 662, 852, 952, 1302, 1322
 Stainless steel 1.4581: 503, 853

Operating pressure _____

D = 25 bar RFLD 331-1301, 853
 E = 40 bar RFLD 111-241, 503, 662-1302
 F = 64 bar RFLD 332-502

Type of change-over _____

A Ball

Type and size of port _____

EN-GJS-400-15 (●) = Hydraulic systems;
 GP 240 GH+N (X) = API 614 applications; 1.4581 (★)

Type	Port	Filter size									
		111	241	332	501 502 503	661 662	851 852 853	951 952	1301 1302	1321 1322	
D	G 1	●									
F	G 1½		●								
I	SAE DN 25	●									
J	DIN DN 50			X	X★						
K	SAE DN 40		●	●	●						
L	SAE DN 50			●X	●X	●	●				
M	SAE DN 65					●	●				
Q	DIN DN 80					X	X★				
R	DIN DN 100							X	X	X	
S	SAE/DIN DN 80					●	●	●	●	●	
T	SAE/DIN DN 100							●	●	●	

Other nominal widths and ANSI flange version on request

Filtration rating in µm _____

BN/HC, V: 3, 5, 10, 20 P/HC: 10, 20 AM: 40
 W/HC: 25, 50, 100, 200 BN/AM: 3, 10

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

Type code _____

1

Modification number _____

X the latest version is always supplied

Supplementary details _____

B. special cracking pressure of bypass (e.g. B1 = 1 bar)
 DE differential pressure measurement across element
 KB no bypass valve
 L... light with appropriate voltage (24V, 48V, 110V, 220V)
 LED 2 light emitting diodes up to 24 Volt
 SAK contamination retainer
 SB pressure equalisation line (SB2 = with 2mm orifice)
 STV stand
 V FPM seals
 only for clogging indicators type D

2.2 REPLACEMENT ELEMENT

0850 R 010 BN4HC /-V

Size _____

0110, 0240, 0330, 0500, 0660, 0850, 0950, 1300, 2600

Type _____

R

Filtration rating in µm _____

BN4HC, V: 003, 005, 010, 020 P/HC: 010, 020 AM: 040
 W/HC: 025, 050, 100, 200 BN4AM: 003, 010

Filter material _____

BN4HC, V, W/HC, P/HC, BN4AM, AM

Supplementary details _____

V (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VM 2 D . X /-L24

Type _____

VM differential pressure measurement up to 210 bar operating pressure

Pressure setting _____

2 2 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 (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)

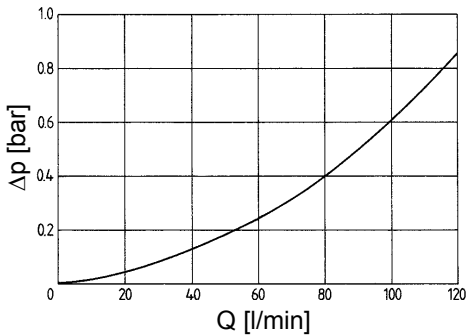
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

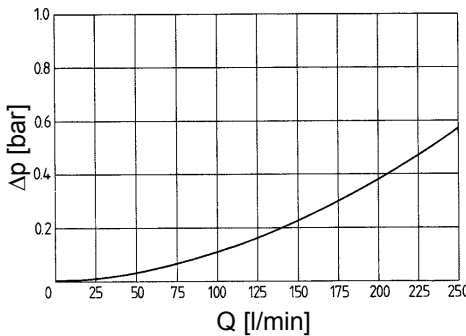
3.1 Δp -Q HOUSING GRAPHS BASED ON ISO 3968

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.

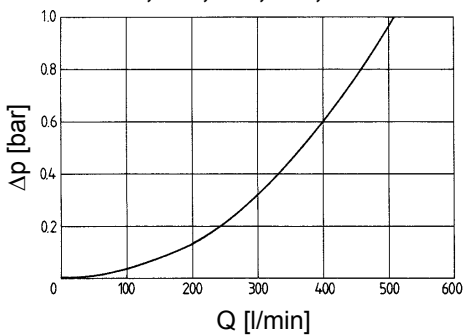
RFLD 111



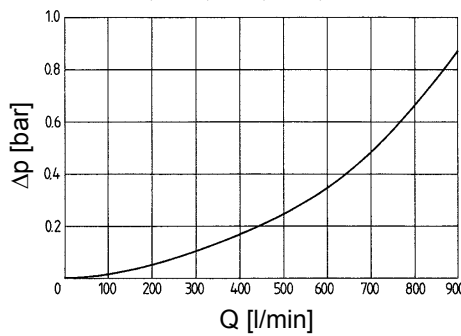
RFLD 241



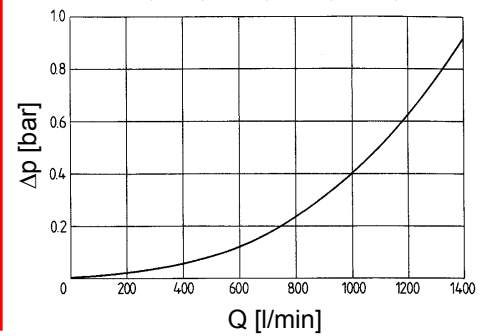
RFLD 331, 332, 501, 502, 503



RFLD 661, 662, 851, 852, 853



RFLD 951, 952, 1301, 1302, 1321, 1322

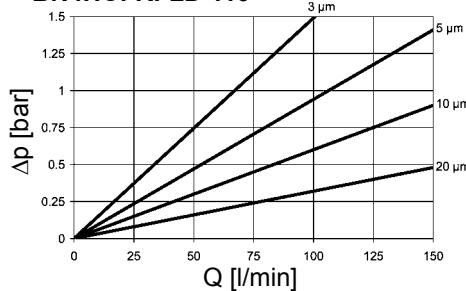


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

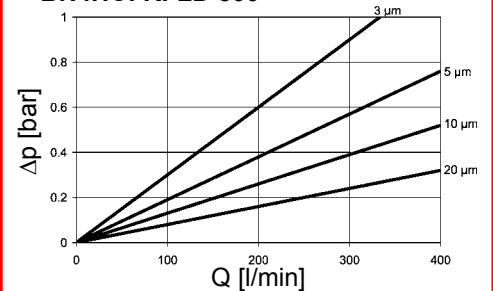
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

RFLD	V				W/HC
	3 μm	5 μm	10 μm	20 μm	
110	7.6	5.1	3.0	2.0	0.502
240	3.2	2.6	1.7	1.2	0.228
330	2.1	1.7	1.1	0.8	0.164
500	1.5	1.2	0.8	0.5	0.109
660	1.0	0.8	0.6	0.4	0.081
850	0.8	0.6	0.4	0.3	0.063
950	0.7	0.6	0.4	0.2	0.054
1300	0.5	0.4	0.3	0.2	0.045
2600	0.3	0.2	0.1	0.1	0.022

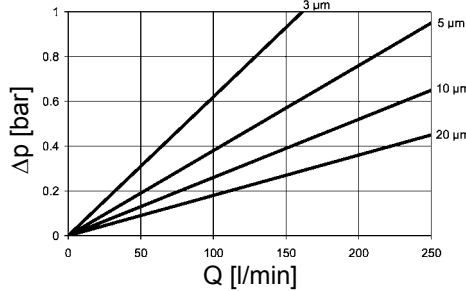
BN4HC: RFLD 110



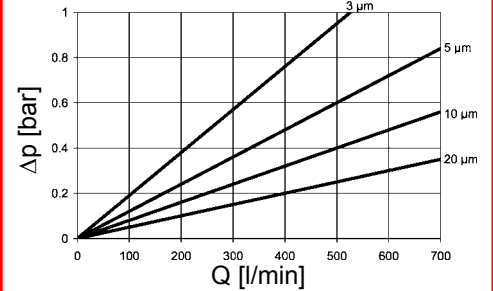
BN4HC: RFLD 500



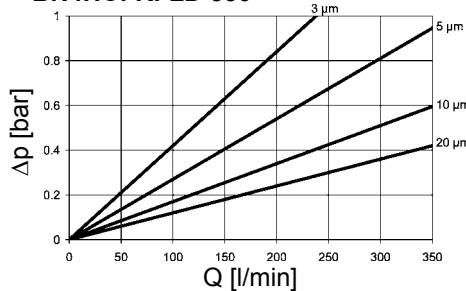
BN4HC: RFLD 240



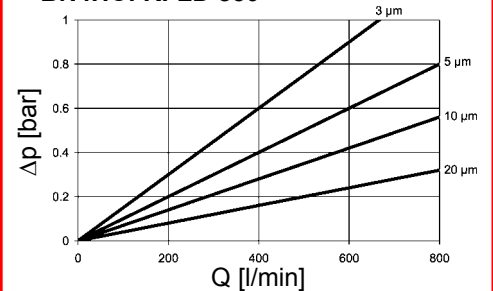
BN4HC: RFLD 660



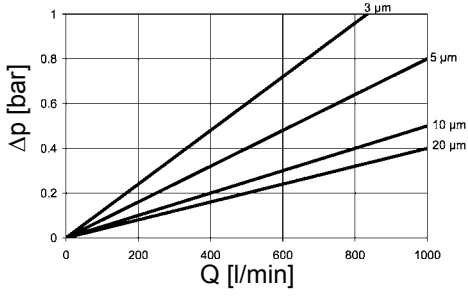
BN4HC: RFLD 330



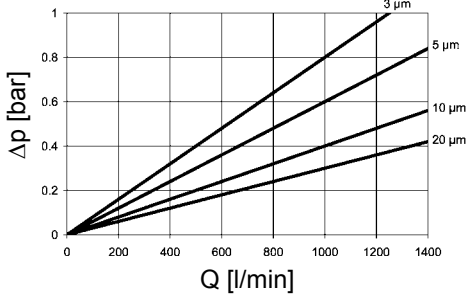
BN4HC: RFLD 850



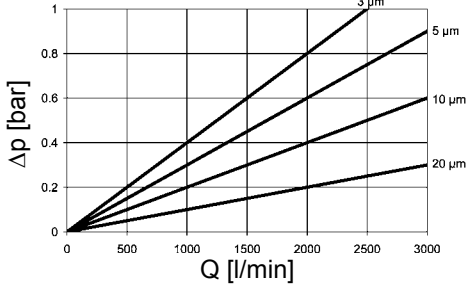
BN4HC: RFLD 950



BN4HC: RFLD 1300



BN4HC: RFLD 2600

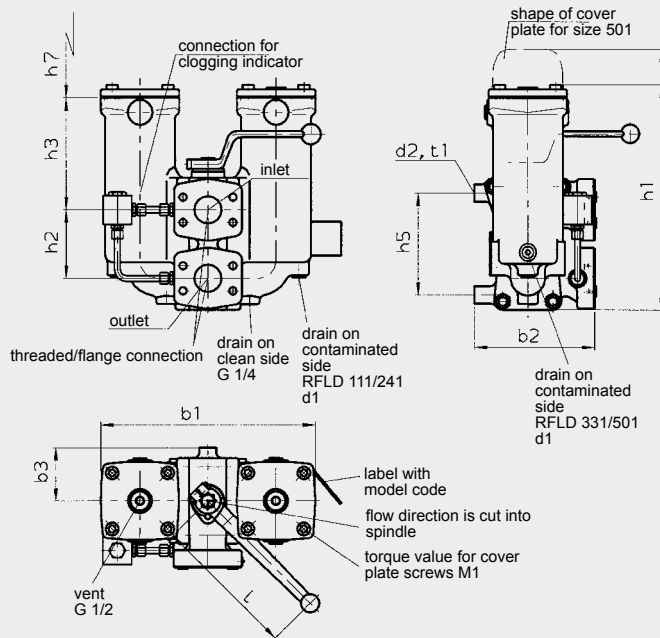


3.3 SIZING RECOMMENDATION

Filter type	Connection	Q _{max} when using W/HC and P/HC elements
RFLD 111	G1 SAE DN 25	70 l/min 70 l/min
RFLD 241	G 1½ SAE DN 40	170 l/min 170 l/min
RFLD 331	SAE DN 40	170 l/min
RFLD 331/332	SAE DN 50	260 l/min
RFLD 332	DIN DN 50	260 l/min
RFLD 501	SAE DN 40	170 l/min
RFLD 501/502	SAE DN 50	260 l/min
RFLD 502/503	DIN DN 50	260 l/min
RFLD 661	SAE DN 50 SAE DN 65 SAE /DIN DN 80	260 l/min 310 l/min 480 l/min
RFLD 662	DIN DN 80	480 l/min
RFLD 851	SAE DN 50 SAE DN 65	260 l/min 310 l/min
RFLD 851/853	SAE/DIN DN 80	480 l/min
RFLD 852	DIN DN 80	480 l/min
RFLD 951	SAE/DIN DN 80 SAE/DIN DN 100	480 l/min 900 l/min
RFLD 952	DIN DN 100	900 l/min
RFLD 1301/1321	SAE/DIN DN 80 SAE/DIN DN 100	480 l/min 900 l/min
RFLD 1302/1322	DIN DN 100	900 l/min

4. DIMENSIONS

RFLD 111-501

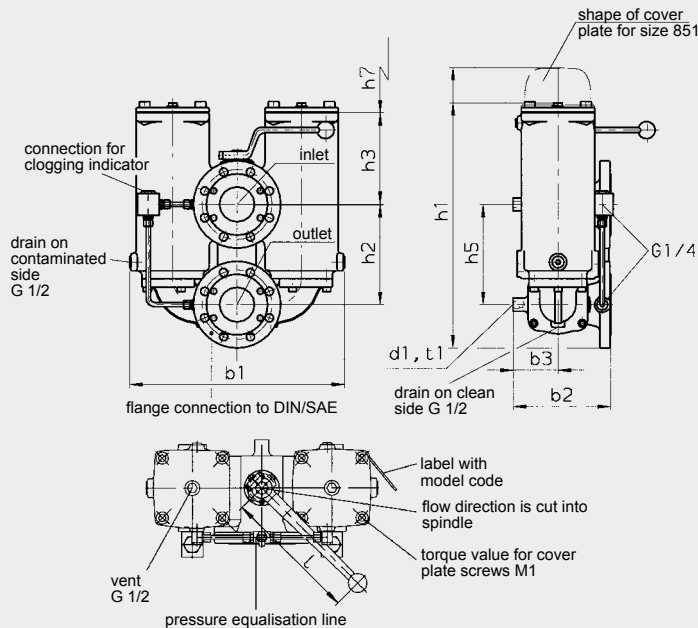


RFLD	Flange connection ¹⁾	Threaded connection ²⁾	b1	b2	b3	d1	d2	h1	h2	h3	h5	h7	l	M1 (Nm)	t1	Weight including element [kg]	Volume of pressure chamber [l]
111	DN 25 (1")	G 1	233	157	63	G ¼	M12	263	80	132	80	175	173	24	25	17	2 x 0.60
241	DN 40 (1½")	G 1½	302	167	75	G ½	M12	312	95	155	140	210	216	40	18	27	2 x 1.40
331	DN 40 (1½")	-	396	167	75	G ½	M12	302	95	145	140	200	216	40	18	33	2 x 2.30
331	DN 50 (2")	-	380	187	85	G ½	M12	323	110	140	165	200	216	45	18	37	2 x 2.40
501	DN 40 (1½")	-	396	167	75	G ½	M12	382	95	145	140	280	216	45	18	35	2 x 3.00
501	DN 50 (2")	-	380	187	85	G ½	M12	400	110	140	165	280	216	45	18	39	2 x 3.10

¹⁾ Flange connection to SAE J 518 C (standard pressure range 3000 psi)

²⁾ Threaded connection to ISO 228

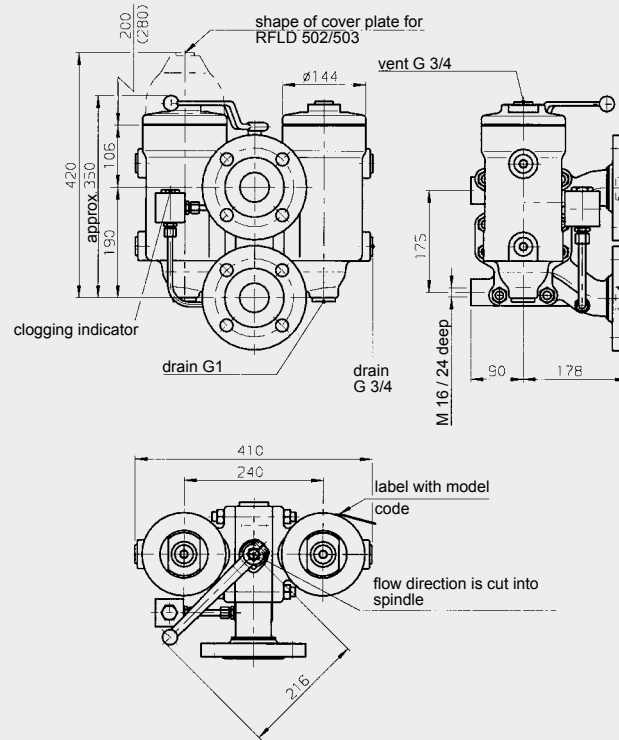
RFLD 661-1321



RFLD	Flange connection ¹⁾	b1	b2	b3	d1	h1	h2	h3	h5	h7	l	M1 (Nm)	t1	Weight including element [kg]	Volume of pressure chamber [l]
661	DN 50 (2")	496	187	85	M12	460	110	282	165	340	216	150	18	56	2 x 6.80
661	DN 65 (2½")	496	237	85	M12	472	110	282	165	340	216	150	18	74	2 x 6.80
661	DN 80 (3")	490	222	102	M12	566	230	210	230	340	301	150	23	82	2 x 8.20
851	DN 50 (2")	496	187	85	M12	544	110	282	165	420	216	150	18	62	2 x 8.10
851	DN 65 (2½")	496	237	85	M12	556	110	282	165	420	216	150	18	80	2 x 8.10
851	DN 80 (3")	490	222	102	M12	650	230	210	230	420	301	150	23	88	2 x 9.50
951	DN 80 (3")	548	222	102	M12	595	230	243	230	370	301	250	23	105	2 x 10.80
951	DN 100 (4")	555	248	118	M16	640	250	238	250	370	301	250	23	120	2 x 13.00
1301	DN 80 (3")	548	222	102	M12	701	230	243	230	490	301	250	23	110	2 x 13.80
1301	DN 100 (4")	555	248	118	M16	746	250	238	250	490	301	250	23	125	2 x 16.00
1321	DN 80 (3")	548	222	102	M12	1262	230	804	230	950	301	250	23	167	2 x 28.80
1321	DN 100 (4")	555	248	118	M16	1307	250	799	250	950	301	250	23	167	2 x 31.00

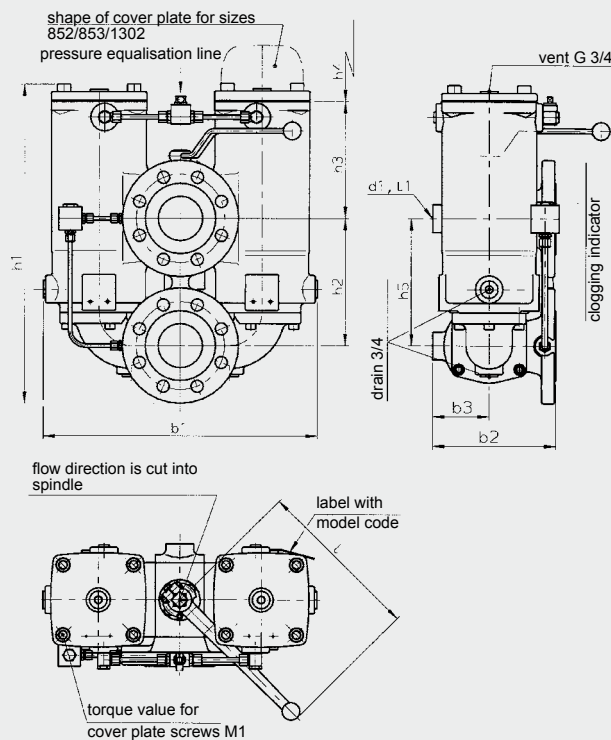
¹⁾ Flange connection to SAE J 518 C (standard pressure range 3000 psi) DIN flange connection to DIN 2501/1 for PN 25/40 (sealing strip "D" or "E")

RFLD 332, 502, 503



RFLD	Weight including element [kg]	Volume of pressure chamber [l]
332	37	2 x 2.40
502	39	2 x 3.10
503	39	2 x 3.10

RFLD 662-1322, 853



RFLD	Flange connection ¹⁾	b1	b2	b3	d1	h1	h2	h3	h4	h5	l	M1 (Nm)	t1	Weight including element [kg]	Volume of pressure chamber [l]
662	DN 80 (3")	495	222	102	M12	574	230	210	340	230	301	150	23	82	2 x 8.20
852	DN 80 (3")	495	222	102	M12	665	230	210	420	230	301	150	23	88	2 x 9.50
853	DN 80 (3")	495	222	102	M12	665	230	210	420	230	301	150	23	88	2 x 9.50
952	DN 100 (4")	573	248	118	M16	672	250	238	380	250	301	250	17	120	2 x 13.00
1302	DN 100 (4")	573	248	118	M16	745	250	238	490	250	301	250	17	125	2 x 16.00
1322	DN 100 (4")	573	248	118	M16	1307	250	238	950	250	301	250	17	167	2 x 31.00

¹⁾ Flange connection to SAE J 518 C (standard pressure range 3000 psi) DIN flange connection to DIN 2501/1 for PN 25/40 (sealing strip "D" or "E")

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 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