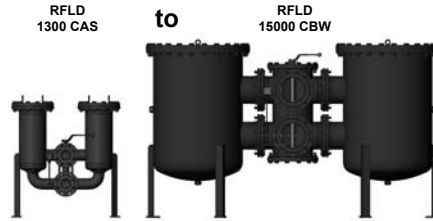




Change-Over Inline Filter RFLD Welded Version up to 15000 l/min, up to 16 bar



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 with negative overlap and single lever operation (ball, segment) or hand-wheel (butterfly).

Standard equipment:

- connections for venting and draining
- connection for a clogging indicator
- pressure equalisation line
- 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
130x	1x1300 R	181.0	200.7	241.4	273.1
132x	1x2600 R	369.4	409.4	492.5	557.2
250x	3x0850 R	336.3	372.6	448.5	507.3
252x	3x1700 R	689.4	764.1	919.2	1039.8
400x	5x0850 R	560.5	621.0	747.5	845.5
402x	5x1700 R	1149.0	1273.5	1532.0	1733.0
520x	4x1300 R	724.0	802.8	965.6	1092.4
522x	4x2600 R	1477.6	1637.6	1970.0	2228.8
650x	5x1300 R	905.0	1003.5	1207.0	1365.5
652x	5x2600 R	1847.0	2047.0	2462.5	2786.0
780x	6x1300 R	1086.0	1204.2	1448.4	1638.6
782x	6x2600 R	2216.4	2456.4	2955.0	3343.2
1500x	10x1300 R	1810.0	2007.0	2414.0	2731.0
1502x	10x2600 R	3694.0	4094.0	4925.0	5572.0

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	16 bar (or 10 bar: depending on size and nominal width)
Temperature range	-10 °C to +100 °C
Material of filter housing and cover plate	1 = steel, welded
Material code (final digit of filter size)	3* = stainless steel 1.4571
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
- 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
- Flanges to DIN 2501 with O-ring seal
- Cover plate lifting device for sizes RFLD 4000 and above

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) - 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.

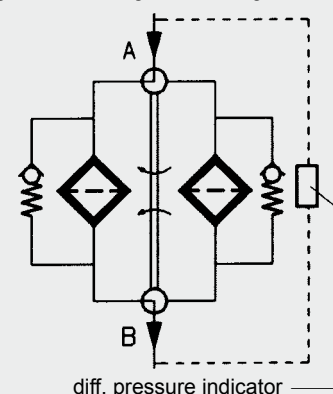
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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.

Symbol for hydraulic systems



2. MODEL CODE (also order example)

RFLD BN/HC 1300 C A K 10 D 1 . X /-L24

2.1 COMPLETE FILTER

Filter type

RFLD

Filter material of element

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

Size of filter or element

Steel, welded: 1300, 1320, 2500, 2520, 4000, 4020, 5200, 5220, 6500, 6520, 7800, 7820, 15000, 15020
 Stainl. steel 1.4571: 1303, 1323, 2503, 2523, 4003, 4023, 5203, 5223, 6503, 6523, 7803, 7823, 15003, 15023

Operating pressure

C = 16 bar (other operating pressures on request)

Type of change-over

A ball all nominal widths except DN 200, 250, 300
 B segment nominal widths DN 200, 250
 C butterfly nominal widths DN 150, 200, 250, 300

Type and size of port

Steel, welded (●) - For lubrication applications: 1.4571 (★) - For emulsion applications (please contact Process Technology Dept.)

Type	Port	Filter size								
		1300 1303	1320 1323	2500 2503	4000 4003	5200 5203	6500 6503	7800 7803	15000 15003	
K	SAE DN 40	●★	●★							
L	SAE DN 50	●★	●★	●★						
M	SAE DN 65	●★	●★	●★						
S	SAE/DIN DN 80		●★	●★	●★	●★	●★			
T	SAE/DIN DN 100	●★	●★	●★	●★	●★	●★	●★		
U	DIN DN 125		●★	●★	●★	●★	●★	●★		
V	DIN DN 150			●★	●★	●★	●★	●★		
W	DIN DN 200				●★	●★	●★	●★	●★	
X	DIN DN 250					●★	●★	●★	●★	
Y	DIN DN 300							●★	●★	

Other nominal widths and ANSI flange version on request

Filtration rating in µm

BN4HC, 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
 DH cover plate lifting device
 KB no bypass valve
 L... light with appropriate voltage (24V, 48V, 110V, 220V)
 LED 2 light emitting diodes up to 24 Volt
 OR O-ring groove on the DIN flange (inlet, outlet) to Rexroth standard AB22-04
 RE sealing strip E on the flange (inlet and outlet): surface finish 3.6 µm
 only for clogging indicators type D
 - ball change-over, up to port width 150
 - segment change-over port widths CBV, CBW, CBX
 - butterfly change-over all port widths
 SB pressure equalisation line (SB2 = with 2mm orifice)
 V FPM seals

2.2 REPLACEMENT ELEMENT

0850 R 010 BN4HC /-V

Size

0850, 1300, 1700, 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.

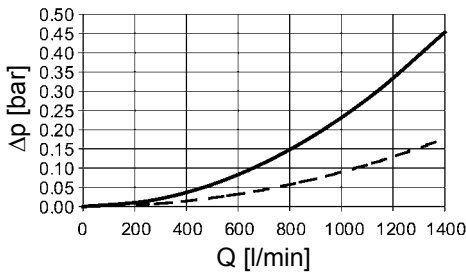
NEW: Sizing online at www.hydac.com

3.1 Δp -Q HOUSING GRAPHS BASED ON ISO 3968

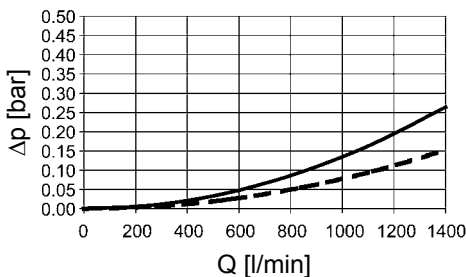
The housing graphs apply to mineral oil with a density of 0.86 kg/dm³ and a kinematic viscosity of 30 mm²/s. In this case, the differential pressure changes proportionally to the density.

--- without change-over valve
 — with change-over valve

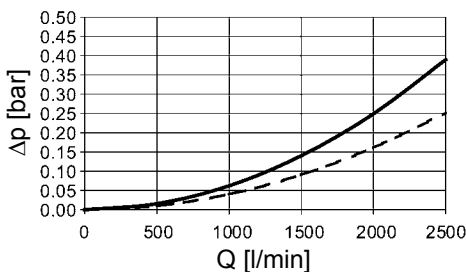
RFLD 1300, 1303



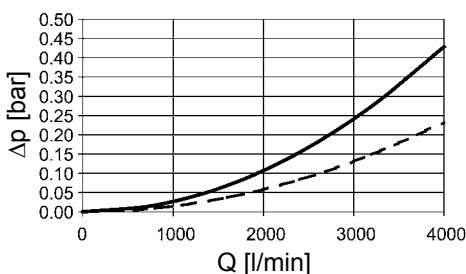
RFLD 1320, 1323



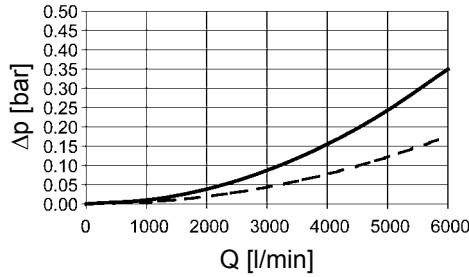
RFLD 2500, 2503, 2520, 2523



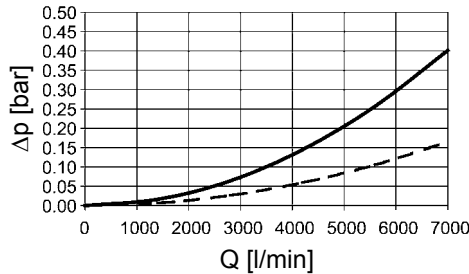
RFLD 4000, 4003, 4020, 4023



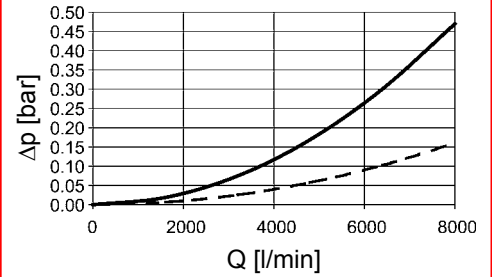
RFLD 5200, 5203, 5220, 5223



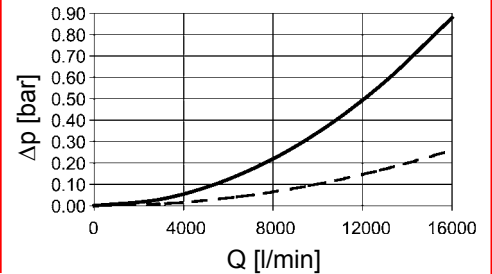
RFLD 6500, 6503, 6520, 6523



RFLD 7800, 7803, 7820, 7823



RFLD 15000, 15003, 15020, 15023

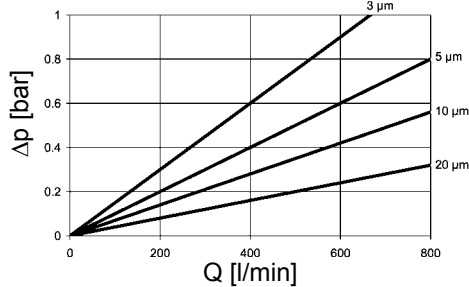


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

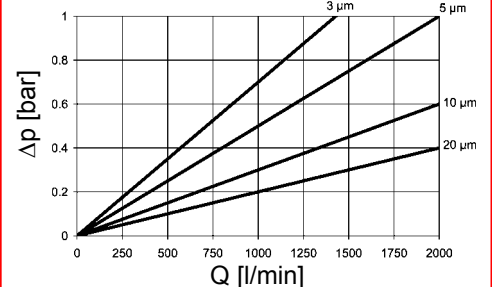
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

RFLD	V				W/HC
	3 μm	5 μm	10 μm	20 μm	
850	0.8	0.6	0.4	0.3	0.063
1300	0.5	0.4	0.3	0.2	0.045
1700	0.4	0.3	0.2	0.1	0.032
2600	0.3	0.2	0.1	0.1	0.018

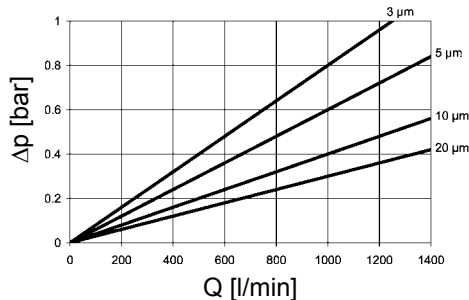
BN4HC: RFLD 850



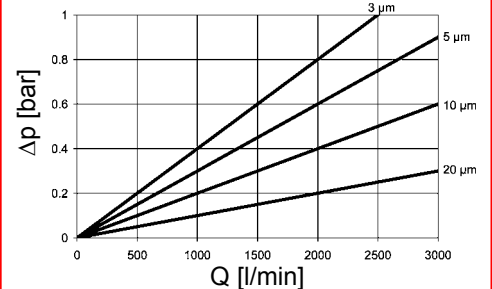
BN4HC: RFLD 1700



BN4HC: RFLD 1300



BN4HC: RFLD 2600



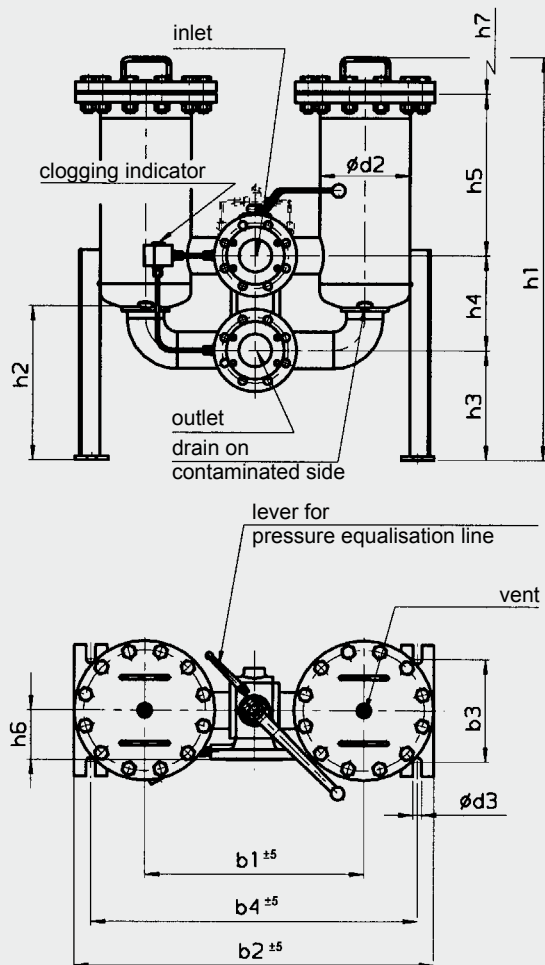
3.3 FILTER SPECIFICATIONS (TYPE OF CHANGE-OVER: A=BALL; B=SEGMENT; C=BUTTERFLY)

Filter type	Connection	Change-over	Volume of pressure chamber [l]	Weight [kg] incl. change-over valve and elements		
				A (ball)	B (segment)	C (butterfly)
1300, 1303	SAE DN 40	ball	2 x 22.0	105		
	SAE DN 50	ball	2 x 22.0	110		
	SAE DN 65	ball	2 x 22.0	115		
	SAE/DIN DN 80	ball	2 x 19.0	136		
	SAE/DIN DN 100	ball	2 x 19.0	150		
1320, 1323	SAE DN 40	ball	2 x 37.0	138		
	SAE DN 50	ball	2 x 37.0	143		
	SAE DN 65	ball	2 x 37.0	148		
	SAE/DIN DN 80	ball	2 x 34.0	169		
	SAE/DIN DN 100	ball	2 x 34.0	183		
	DIN DN 125	ball	2 x 45.0	209		
2500, 2503/ 2520, 2523	SAE DN 50	ball	2 x 34.0 / 2 x 54.0	144/174		
	SAE DN 65	ball	2 x 34.0 / 2 x 54.0	149/179		
	SAE/DIN DN 80	ball	2 x 37.0 / 2 x 57.0	170/200		
	SAE/DIN DN 100	ball	2 x 39.0 / 2 x 59.0	184/214		
	DIN DN 125	ball,	2 x 40.0 / 2 x 60.0	208/238		
	DIN DN 150	ball, butterfly	2 x 45.0 / 2 x 65.0	262/292		287/327
4000, 4003/ 4020, 4023	SAE/DIN DN 80	ball	2 x 63.0 / 2 x 96.0	210/270		
	SAE/DIN DN 100	ball	2 x 63.0 / 2 x 96.0	222/283		
	DIN DN 125	ball	2 x 74.0 / 2 x 109.0	246/307		
	DIN DN 150	ball, butterfly	2 x 75.0 / 2 x 110.0	292/352		313/373
	DIN DN 200	segment, butterfly	2 x 83.0 / 2 x 118.0		262/504	393/453
5200, 5203/ 5220, 5223	SAE/DIN DN 80	ball	2 x 89.0 / 2 x 142.0	384/494		
	SAE/DIN DN 100	ball	2 x 90.0 / 2 x 143.0	398/507		
	DIN DN 125	ball	2 x 104.0 / 2 x 157.0	422/532		
	DIN DN 150	ball, butterfly	2 x 106.0 / 2 x 159.0	476/586		503/614
	DIN DN 200	segment, butterfly	2 x 110.0 / 2 x 162.0		646/756	596/706
	DIN DN 250	segment, butterfly	2 x 128.0 / 2 x 180.0		890/1000	956/1118
6500, 6503/ 6520, 6523	SAE/DIN DN 100	ball	2 x 161.0 / 2 x 246.0	628/782		
	DIN DN 125	ball	2 x 162.0 / 2 x 247.0	652/806		
	DIN DN 150	ball, butterfly	2 x 163.0 / 2 x 248.0	706/868		738/901
	DIN DN 200	segment, butterfly	2 x 190.0 / 2 x 275.0		877/1039	826/988
	DIN DN 250	segment, butterfly	2 x 194.0 / 2 x 279.0		1121/1282	956/1118
7800, 7803/ 7820, 7823	SAE/DIN DN 100	ball	2 x 161.0 / 2 x 246.0	636/798		
	DIN DN 125	ball	2 x 162.0 / 2 x 247.0	660/822		
	DIN DN 150	ball, butterfly	2 x 163.0 / 2 x 248.0	714/884		746/917
	DIN DN 200	segment, butterfly	2 x 190.0 / 2 x 275.0		885/1055	834/1004
	DIN DN 250	segment, butterfly	2 x 194.0 / 2 x 279.0		1129/1298	964/1134
15000, 15003/ 15020, 15023	DIN DN 200	segment, butterfly	2 x 391.0 / 2 x 558.0		1210/1380	1143/1250
	DIN DN 250	segment, butterfly	2 x 397.0 / 2 x 564.0		1454/1623	1271/1379
	DIN DN 300	butterfly	2 x 433.0 / 2 x 600.0			1487/1547

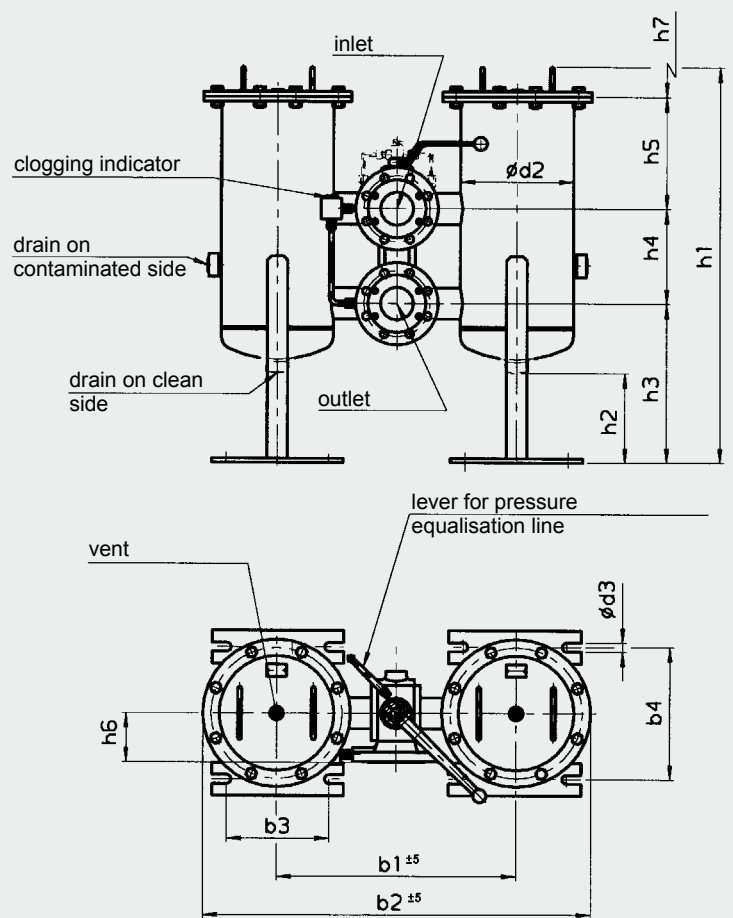
4. DIMENSIONS

4.1 WELDED FILTER SERIES - BALL VERSION RFLD 130x - 252x (CHANGE-OVER TYPE A)

RFLD 1300/1320



RFLD 2500/2520

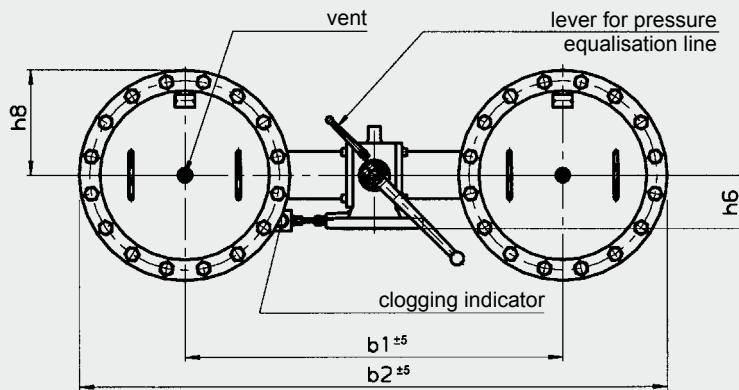
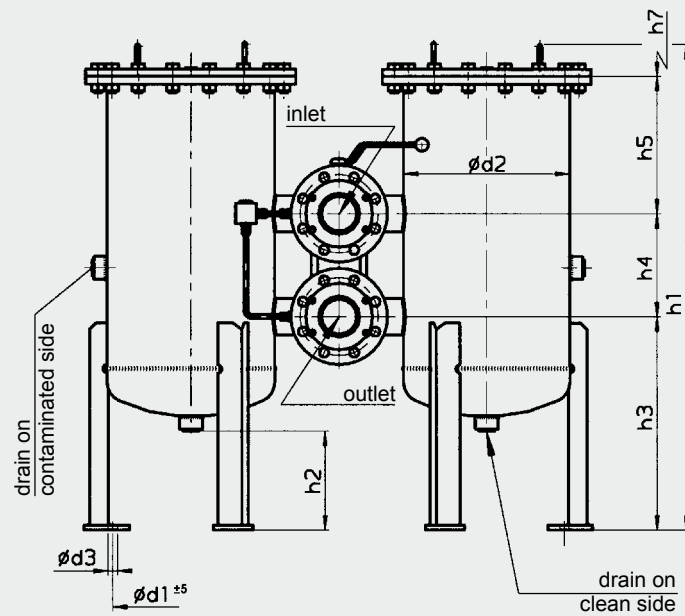


Dimensions in mm

Type	Flange connection ¹⁾	b ₁	b ₂	b ₃	b ₄	d ₂	d ₃	h ₁	h ₂	h ₃	h ₄	h ₅	h ₆	h ₇
RFLD 1300/1320	SAE DN 40	495	835	250	755	220	22	970/1410	205	335	95	460/900	92	500/940
	SAE DN 50	506	846	250	766	220	22	970/1410	210	328	110	452/892	102	500/940
	SAE DN 65	506	846	250	766	220	22	970/1410	210	328	110	452/892	167	500/940
	SAE/DIN DN 80	530	870	250	790	220	22	970/1410	370	260	230	400/840	120	500/940
	SAE/DIN DN 100	588	926	250	846	220	22	970/1410	375	266	250	374/814	130	500/940
RFLD 1320	DIN DN 125	603	943	250	863	220	22	1536	190	385	300	765	188	940
RFLD 2500/2520	SAE DN 50	548	908	250	312	273	22	940/1330	220	383	110	378/768	102	420/810
	SAE DN 65	548	908	250	312	273	22	990/1380	220	383	230	280/670	167	420/810
	SAE/DIN DN 80	572	932	250	312	273	22	990/1380	220	408	230	280/670	120	420/810
	SAE/DIN DN 100	588	948	250	312	273	22	990/1380	220	408	250	260/650	130	420/810
	DIN DN 125	589	949	250	312	273	22	1050/1440	220	438	300	240/630	188	420/810
	DIN DN 150	641	1001	250	312	273	22	1050/1440	220	438	300	240/630	187	420/810

¹⁾ Flange connection to SAE J 518 C (standard pressure range 3000 psi)
 DIN flange connection to DIN 2501/1 for PN 16 from DN 125 and PN 25/40 up to DN 100
 (sealing strip "D" or "E")

4.2 WELDED FILTER SERIES - BALL VERSION RFLD 400x - 782x (CHANGE-OVER TYPE A)

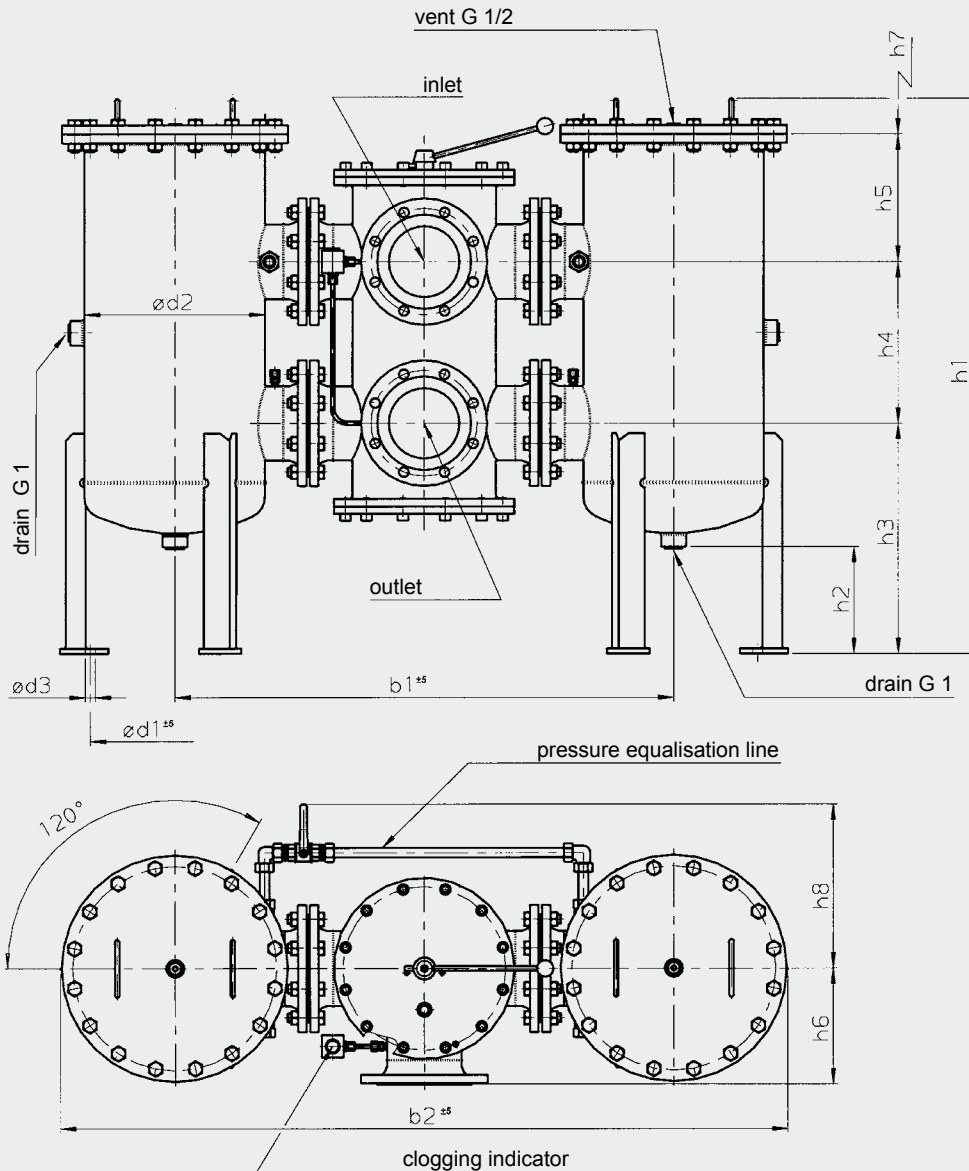


Dimensions in mm

Type	Flange connection ¹⁾	b ₁	b ₂	d ₁	d ₂	d ₃	h ₁	h ₂	h ₃	h ₄	h ₅	h ₆	h ₇	h ₈
RFLD 4000/4020	SAE/DIN DN 80	688	1152	330	356	22	1080/1470	260	475	230	295/685	120	420/810	230
	SAE/DIN DN 100	704	1164	330	356	22	1080/1470	260	475	250	275/665	130	420/810	230
	DIN DN 125	723	1183	330	356	22	1170/1560	260	525	300	265/655	188	420/810	230
	DIN DN 150	775	1240	330	356	22	1170/1560	260	525	300	265/655	187	420/810	230
RFLD 5200/5220	SAE/DIN DN 80	728	1244	380	406	22	1144/1584	250	465	230	371/811	120	500/940	255
	SAE/DIN DN 100	744	1260	380	406	22	1144/1584	250	465	250	351/791	130	500/940	255
	DIN DN 125	763	1275	380	406	22	1256/1696	250	525	300	351/791	188	500/940	255
	DIN DN 150	815	1330	380	406	22	1256/1696	250	525	300	351/791	187	500/940	255
RFLD 6500/6520	SAE/DIN DN 100	1024	1644	480	508	22	1260/1700	260	540	250	390/830	130	500/940	310
	DIN DN 125	863	1483	480	508	22	1260/1700	260	540	300	340/780	188	500/940	310
	DIN DN 150	915	1535	480	508	22	1260/1700	260	540	300	340/780	187	500/940	310
RFLD 7800/7820	SAE/DIN DN 100	1024	1644	480	508	22	1260/1700	260	540	250	390/830	130	500/940	310
	DIN DN 125	863	1483	480	508	22	1260/1700	260	540	300	340/780	188	500/940	310
	DIN DN 150	915	1535	480	508	22	1260/1700	260	540	300	340/780	187	500/940	310

¹⁾ DIN flange connection DIN 2501/1 for PN 16 from DN 125 and PN 25/40 up to DN 100 (sealing strip "D" or "E")

4.3 WELDED FILTER SERIES - SEGMENT VERSION RFLD 250x - 1502x (CHANGE-OVER TYPE B)

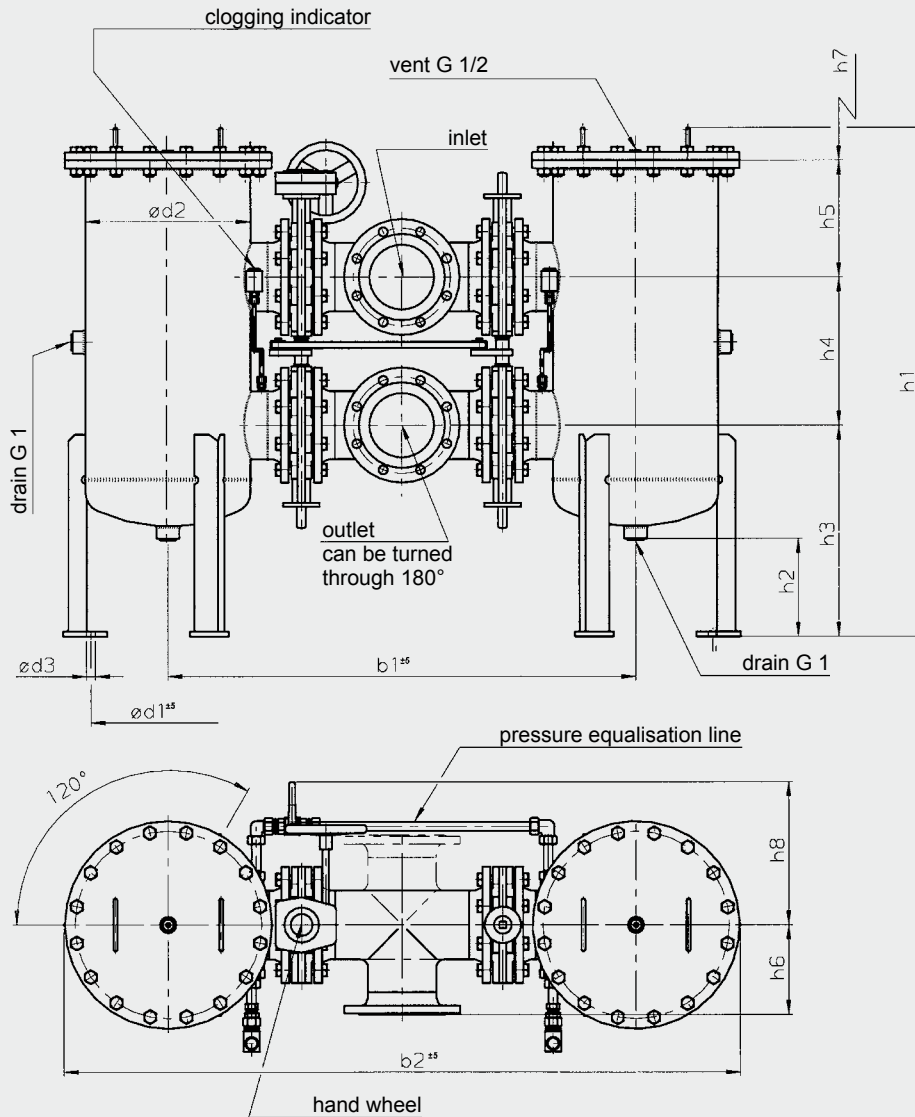


Dimensions in mm

Type	Flange connection ¹⁾	b_1	b_2	d_1	d_2	d_3	h_1	h_2	h_3	h_4	h_5	h_6	h_7	h_8
RFLD 4000/4020	DN 200	1124	1590	330	356	22	1250/1595	260	525	365	235/625	261	420/810	370
RFLD 5200/5220	DN 200	1166	1680	380	406	22	1265/1705	250	525	365	286/726	261	500/940	370
	DN 250	1312	1825	380	406	22	1324/1764	250	560	450	236/676	322	500/940	400
RFLD 6500/6520	DN 200	1266	1886	480	508	22	1380/1820	260	600	365	335/775	261	500/940	370
	DN 250	1402	2022	480	508	22	1380/1820	260	600	450	250/690	322	500/940	400
RFLD 7800/7820	DN 200	1266	1886	480	508	22	1380/1820	260	600	365	335/775	261	500/940	370
	DN 250	1402	2022	480	508	22	1380/1820	260	600	450	250/690	322	500/940	400
RFLD 15000/15020	DN 200	1506	2016	690	711	22	1425/1865	263	655	365	330/770	261	500/940	415
	DN 250	1628	2458	690	711	22	1425/1865	263	640	450	260/700	322	500/940	415

¹⁾ DIN flange connection to DIN 2501/1 for PN 16 (sealing strip "C")

4.4 WELDED FILTER SERIES - BUTTERFLY VERSION RFLD 250x - 1502x (CHANGE-OVER TYPE C)



Dimensions in mm

Type	Flange connection ¹⁾	b_1	b_2	d_1	d_2	d_3	h_1	h_2	h_3	h_4	h_5	h_6	h_7	h_8
RFLD 2500/2520	DN 150	1018	1378		273	22	1108/1498	220	460	365	211/601	220	420/810	330
RFLD 4000/4020	DN 150	1152	1616	330	356	22	1170/1560	260	525	365	200/590	220	420/810	350
	DN 200	1240	1724	330	356	22	1205/1595	260	525	365	235/625	260	420/810	370
RFLD 5200/5220	DN 150	1152	1666	380	406	22	1256/1696	250	525	365	286/726	220	500/940	350
	DN 200	1280	1794	380	406	22	1256/1696	250	525	365	286/726	260	500/940	370
	DN 250	1496	2010	380	406	22	1326/1766	250	560	450	236/676	350	500/940	400
RFLD 6500/6520	DN 150	1292	1916	480	508	22	1260/1700	260	540	365	275/715	220	500/940	350
	DN 200	1380	2004	480	508	22	1380/1820	260	600	365	335/775	260	500/940	370
	DN 250	1586	2210	480	508	22	1380/1820	260	600	450	250/690	350	500/940	400
RFLD 7800/7820	DN 150	1292	1916	480	508	22	1260/1700	260	540	365	275/715	220	500/940	350
	DN 200	1380	2004	480	508	22	1380/1820	260	600	365	335/775	260	500/940	370
	DN 250	1586	2210	480	508	22	1380/1820	260	600	450	250/690	350	500/940	400
RFLD 15000/15020	DN 200	1620	2450	690	711	22	1425/1865	260	655	365	330/770	260	500/940	370
	DN 250	1816	2646	690	711	22	1425/1865	260	655	450	250/690	350	500/940	400
	DN 300	1956	2786	690	711	22	1500/1940	260	670	515	235/675	400	500/940	430

¹⁾ DIN flange connection to DIN 2501/1 for PN 16 (sealing strip "C")

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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