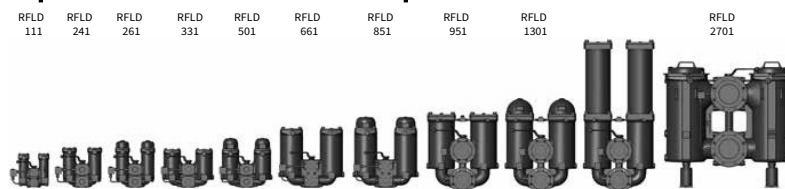


HYDAC INTERNATIONAL



Change-Over Inline Filter RFLD Cast Version up to 2500 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, each of which has a bolt-on cover plate, are connected by means of a ball change-over valve.

Standard equipment:

- connections for venting and draining
- connection for a clogging indicator
- for size DN 80 and above, 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

Filter elements are available with the following pressure stability values:

Optimicron® (ON):	20 bar
Optimicron® Power (ON/PO):	10 bar
Paper (P/HC)*:	10 bar
Stainl. st. wire mesh (W/HC):	20 bar
Stainless steel fibre (V)*:	30 bar
Betamicon® /Aquamicon® (BN4AM)*:	10 bar
Aquamicon® (AM)*:	10 bar

* for RFLD 2701 on request

1.3 FILTER SPECIFICATIONS

Nominal pressure	16 bar (RFLD 2701) 25 bar (RFLD 331-1321) 40 bar (RFLD 111-261, 662-1322) 64 bar (RFLD 332-502)
Temperature range	-10 °C to +100 °C
Material of filter housing and cover plate	EN-GJS-400-15: = 1
Material code (final digit of filter size)	EN-GJS-400-18LT: = only RFLD 2701 GP 240 GH+N: = 2
Type of clogging indicator	VM (differential pressure measurement up to 210 bar operating pressure)
Pressure setting of the clogging indicator	2 bar (others on request)
Bypass cracking pressure	3 bar (others on request)

1.4 SEALS

NBR (=Perbunan)

1.5 MOUNTING

Inline filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Orifice in the pressure equalisation line
- Stand
- Drain and vent ports with ball valves or other shut-off valves
- Counter flanges available for all sizes
- Change-over valve lockable
- Venting line with sight gauges
- RFLD filter with nominal bore 100 at max. 50 bar operating pressure on request

1.7 SPARE PARTS 1.8 CERTIFICATES AND

See Original Spare Parts List

APPROVALS

These filters can be supplied with manufacturer's test 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.

Filter to API 614 (ANSI flange) on request!

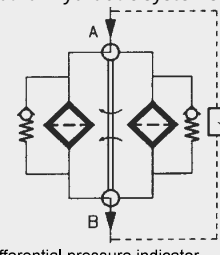
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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
- Fire-resistant fluids HFA, HFB, HFC and HFD
- Operating fluids with high water content (>50% water content) and CLP oils on request

1.10 IMPORTANT INFORMATION

- 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.
- 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



Differential pressure indicator

E 7.109.8/11.16

2. MODEL CODE (also order example) 2.1

COMPLETE FILTER Filter type

RFLD

Filter material

ON Optimicron® V Stainless steel fibre* P/HC Paper* AM Aquamicon®
ON/PO Optimicron® Power¹⁾ W/HC Stainl. st. wire mesh BN/AM Betamicon®/Aquamicon®*

Size of filter or element

EN-GJS-400-15: 111, 241, 261, 331, 501, 661, 851, 951, 1301, 1321

EN-GJS-400-18LT: 2701

GP 240 GH+N: 332, 502, 662, 852, 952, 1302, 1322

Operating pressure

C = 16 bar RFLD 2701
D = 25 bar RFLD 331-1321
E = 40 bar RFLD 111-261, 662-1322
F = 64 bar RFLD 332-502

Type of change-over

A = Ball

Type and size of port

EN-GJS-400-15 + EN-GJS-400-LT18 (●)

GP 240 GH+N (X)

Type	Port	Filter size	111	241	261	331	501	661	851	951	1301	1321	2701
						332	502	662	852	952	1302	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									●	●	●	
V	DIN DN 150												●

Other nominal bores, and ANSI flange version on request

Filtration rating in µm

ON: 1, 3, 5, 10, 15, 20 W/HC: 25, 50, 100, 200 BN/AM*: 3, 10
ON/PO¹⁾, V*: 3, 5, 10, 20 P/HC*: 10, 20 AM*: 40

Type of clogging indicator

Y plastic blanking plug in indicator port

A stainless steel blanking plug in indicator port

B visual

C electrical

D visual and electrical

for other clogging indicators,
see brochure no. 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 without 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 Size

0110, 0240, 0260, 0330, 0500, 0660, 0850, 0950, 1300, 2600, 2700

Type

R

Filtration rating in µm

ON: 001, 003, 005, 010, 015, 020 W/HC: 025, 050, 100, 200 BN4AM*: 003, 010
ON/PO¹⁾, V*: 003, 005, 010, 020 P/HC*: 010, 020 AM*: 040

Filter material

ON, ON/PO¹⁾, V*, W/HC, P/HC*, BN4AM*, AM*

Supplementary details

V (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

Type

VM differential pressure measurement up to 210 bar operating pressure

Pressure setting

2 standard 2 bar, 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)

* for RFLD 2701 on request! ¹⁾ Optimicron® Power only in filtration rating 5, 10 and 20 µm

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:

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

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

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

(*see point 3.2)

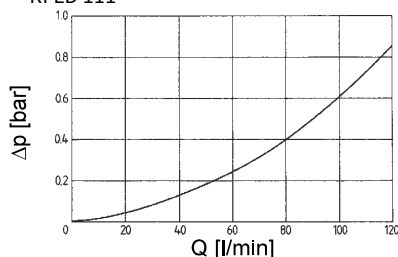
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

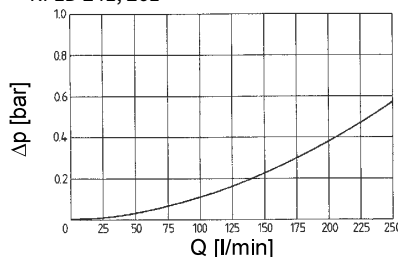
3.1 HOUSING CURVES BASED ON ISO 3968

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.

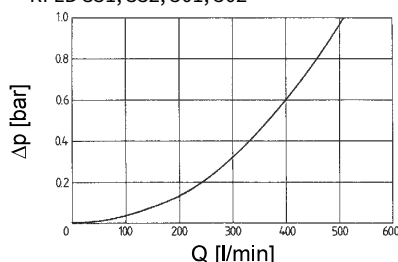
RFLD 111



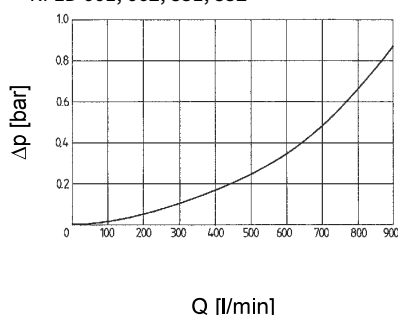
RFLD 241, 261



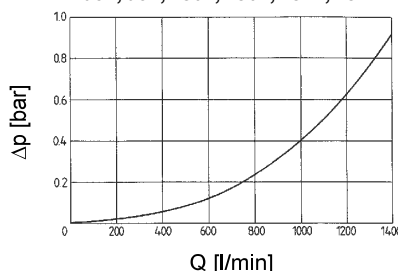
RFLD 331, 332, 501, 502



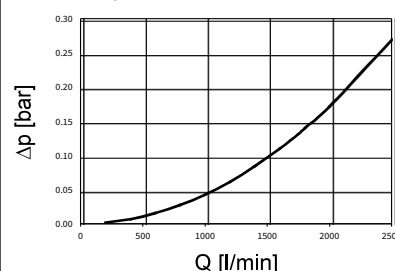
RFLD 661, 662, 851, 852



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



RFLD 2701



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	ON 1 μm	3 μm	5 μm	10 μm	15 μm	20 μm	ON/PO 5 μm	10 μm	20 μm
110	22.3	13.1	8.87	5.40	4.26	3.24	3.63	3.08	2.03
240	12.4	5.18	3.66	2.27	1.84	1.41	1.32	1.12	0.72
330	8.09	3.72	2.65	1.48	1.28	1.02	0.81	0.69	0.44
500	2.77	2.60	1.90	1.09	0.84	0.69	0.53	0.45	0.29
660	2.39	1.69	1.21	0.67	0.57	0.45	0.35	0.30	0.19
850	1.31	1.00	0.58	0.44	0.36	0.36	0.28	0.24	0.16
950	1.03	0.79	0.48	0.38	0.31	0.31	0.25	0.21	0.14
1300	1.72	0.72	0.59	0.35	0.32	0.22	0.18	0.15	0.10
2600	0.84	0.36	0.29	0.18	0.16	0.11	0.08	0.07	0.05
2700	0.91	0.35	0.30	0.18	0.17	0.08	0.08	0.07	0.05

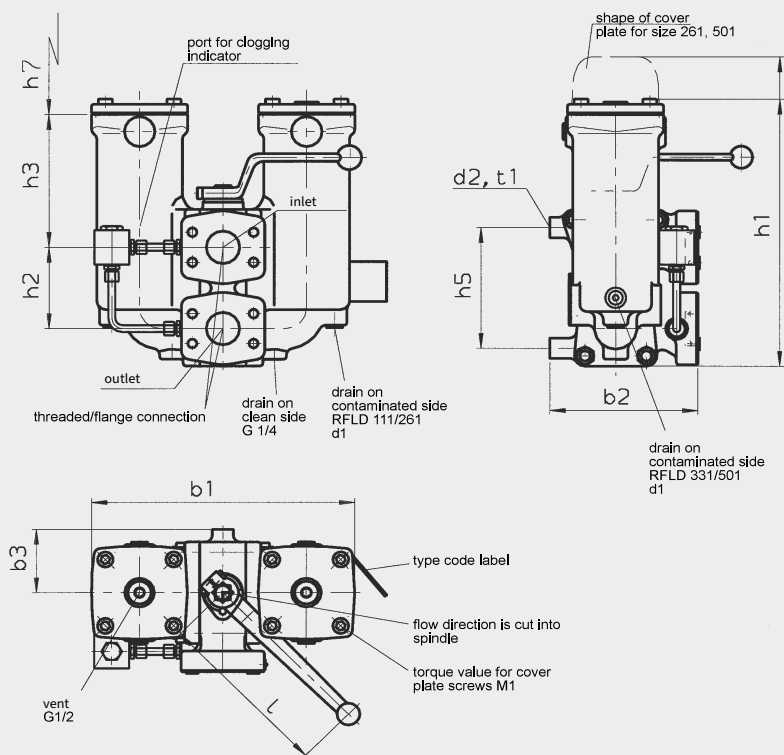
RFLD V	W/HC 3 μm	5 μm	10 μm	20 μm	-
110	7.6	5.1	3.0	2.0	0.30
240	3.2	2.6	1.7	1.2	0.123
330	2.1	1.7	1.1	0.8	0.195
500	1.5	1.2	0.8	0.5	0.128
660	1.0	0.8	0.6	0.4	0.067
850	0.8	0.6	0.4	0.3	0.052
950	0.7	0.6	0.4	0.2	0.048
1300	0.5	0.4	0.3	0.2	0.034
2600	0.3	0.2	0.1	0.1	0.017
2700	0.2	0.1	0.1	0.1	0.013

Size 260 on request!

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 241/261	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	DIN DN 50	260 l/min
RFLD 661	SAE DN 50 SAE DN 65 SAE /DIN DN 80	260 l/min 260 l/min 480 l/min
RFLD 662	DIN DN 80	480 l/min
RFLD 851	SAE DN 50 SAE DN 65	260 l/min 260 l/min
RFLD 851	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
RFLD 2701	DIN DN 150	2500 l/min

4. DIMENSIONS
RFLD 111-501

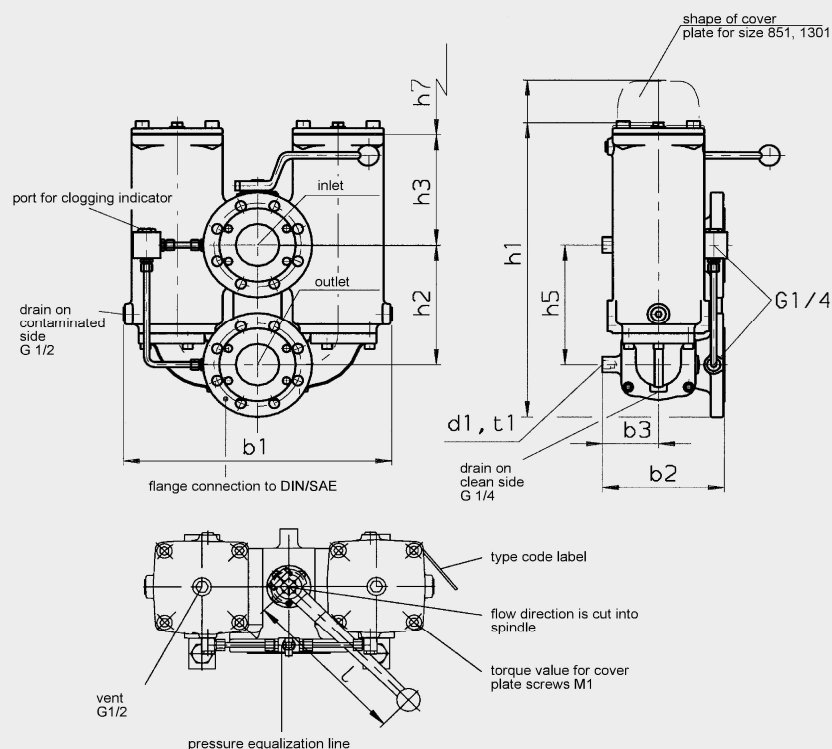


RFLD	Flange connection ¹⁾	Threaded connection ²⁾	b1	b2	b3	d1	d2	h1	h2	h3	h5	h7	l	M1 (Nm)	t1	Weight including element [kg]	Volume of pressure chamber [l]
111	DN 25 (1")	G 1	233	157	63	G 1/4	M12	263	80	132	80	175	173	24	25	17	2 x 0.60
241	DN 40 (1 1/2")	G 1 1/2	302	167	75	G 1/4	M12	312	95	155	140	210	216	40	18	27	2 x 1.40
261	DN 40 (1 1/2")	G 1 1/2	302	167	75	G 1/4	M12	366	95	155	140	270	216	40	18	28	2 x 1.80
331	DN 40 (1 1/2")	-	396	167	75	G 1/2	M12	302	95	145	140	200	216	40	18	33	2 x 2.30
331	DN 50 (2")	-	380	187	85	G 1/2	M12	323	110	140	165	200	216	45	18	37	2 x 2.40
501	DN 40 (1 1/2")	-	396	167	75	G 1/2	M12	382	95	145	140	280	216	45	18	35	2 x 3.00
501	DN 50 (2")	-	380	187	85	G 1/2	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

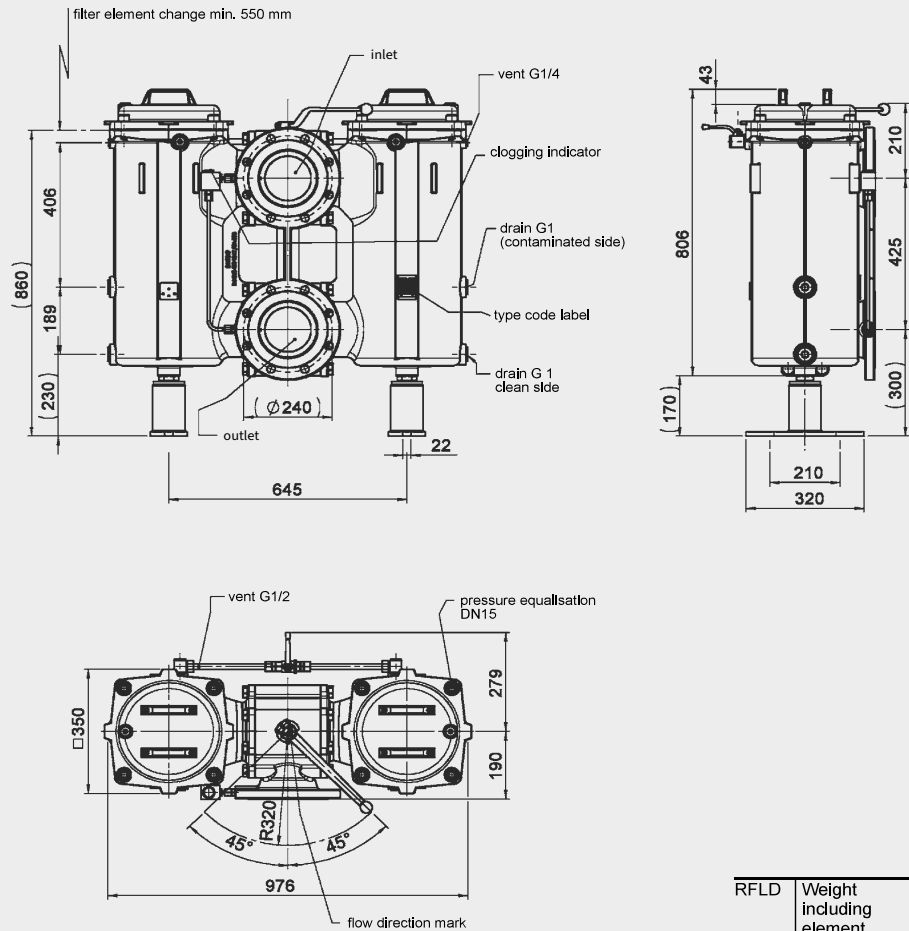
RFLD 661-1321



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	252	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	252	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	1190	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 series 3000 psi); DIN flange connection to DIN EN ISO 1092, PN 25/40 up to DN 100 (with sealing strip, flange shape B)

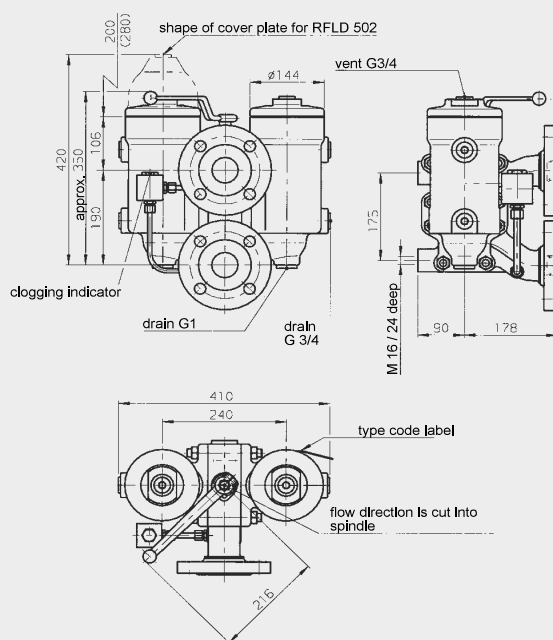
RFLD 2701



RFLD	Weight including element [kg]	Volume of pressure chamber [l]
2701	304.00	2 x 44.0

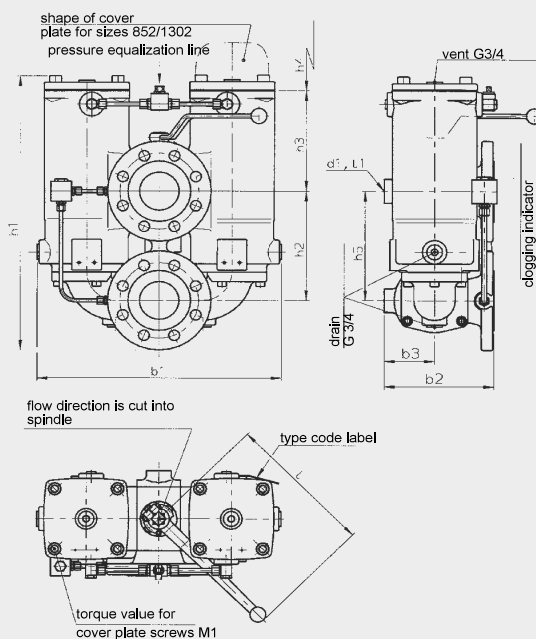
DIN flange connection to DIN EN ISO 1092-1, PN 16 (with sealing strip, flange shape B)

RFLD 332, 502



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

RFLD 662-1322



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
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 series 3000 psi); DIN flange connection to DIN EN ISO 1092, PN 25/40 up to DN 100 (with sealing strip, flange shape B)

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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