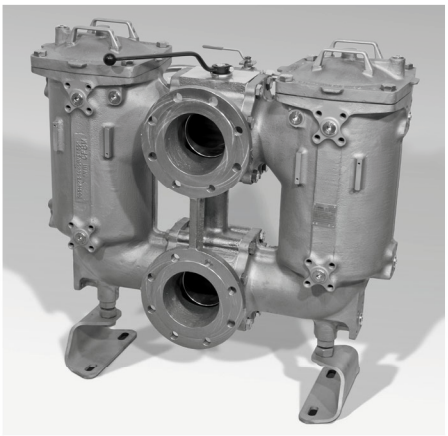
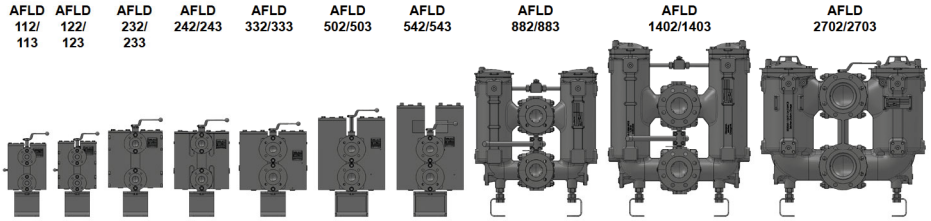


Change-Over Inline Filter AFLD to API 614

up to 1700 l/min, up to 40 bar



1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filters are designed in accordance with the API 614 (approval according to ASME Sec. VIII, Div.1). The two sections of the filter housing (each with a bolt-on cover plate) are connected by means of a ball change-over valve with negative overlap and single lever operation.

Standard equipment:

- without bypass valve
- without clogging indicator
- inlet and outlet ASME flange
- ball change-over valve with internal parts made of stainless steel
- pressure equalization line with 4 mm orifice
- side vent and drain, ¾“ ASME flange connection (300 lbs)
- with stand
- test certificates (acceptance test certificate 3.1 to DIN EN 10204; Manufacturer's Test Certificate M of final inspection and pressure testing)

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, ISO3968, ISO 11170, ISO 16889

Filter elements are available with the following pressure stability values:

Optimicron® Power (ON/PO): 10 bar

1.3 FILTER SPECIFICATIONS

Nominal pressure	16 bar (at 150 lbs) 25 bar (at 300 lbs) 40 bar (at 300 lbs)
Temperature range	-10 °C to +100 °C
Material of filter housing and cover	Forged version: SA-266 Gr.4/1.0565: 112, 122, 232, 242, 332, 502, 542 SA-182 F316L/1.4404: 113, 123, 233, 243, 333, 503, 543 Cast version: SA-216 WCB/1.0619: 882, 1402, 2702 SA-351 CF8M/1.4408: 883, 1403, 2703

1.4 SEALS

NBR (=Perbunan)

1.5 INSTALLATION

Inline filter

1.6 SPECIAL MODELS AND ACCESSORIES

- Ball, spindle (internal parts) not made of stainless steel
- Pressure compensating line with different orifice size and/or flared fitting
- Differential pressure measurement across complete filter (clogging indicator)
- Higher operating pressure on request
- Others on request!

1.7 SPARE PARTS

See Original Spare Parts List

1.8 CERTIFICATES AND APPROVALS

- With U-Stamp at extra charge
- Classification societies and other approvals on request

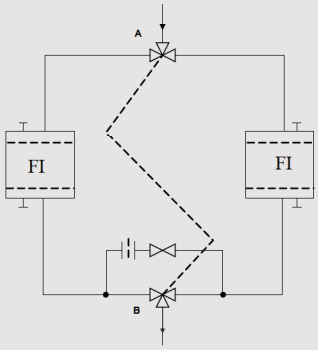
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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
- 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.

Symbol for lubrication systems



2. MODEL CODE (also order example)

AFLD ON/PO 882 E A 4 10 W 1.X /-Z-300

2.1 COMPLETE FILTER

Filter type
AFLD

Filter material of element
ON/PO Optimicron® Power

Size

Carbon steel(1.0565/SA-266 Gr.4):	112, 122, 232, 242, 332, 502, 542
Stainless steel (1.4404/SA-182 F316L):	113, 123, 233, 243, 333, 503, 543
Cast steel CS (1.0619/SA-216 WCB):	882, 1402, 2702
Cast stainless steel (1.4408/SA-351 CF8M):	883, 1403, 2703

Operating pressure

Pressure range		Filter size									
		Forged							Cast		
		112/ 113	122/ 123	232/ 233	242/ 243	332/ 333	502/ 503	542/ 543	882/ 883	1402/ 1403	2702/ 2703
C	150 lbs; 16 bar	●	●	●	●	●	●	●	●	●	●
D	300 lbs; 25 bar	●	●	●	●	●	●	●	●	●	
E	300 lbs; 40 bar	●	●	●	●	●	●	●	●	●	

Preferred models
Other pressure ranges on request!

Type of change-over
A Ball (all nominal sizes)

Type and size of connection

Type	Connection to ASME B16.5	Filter size									
		Forged							Cast		
		112/ 113	122/ 123	232/ 233	242/ 243	332/ 333	502/ 503	542/ 543	882/ 883	1402/ 1403	2702/ 2703
1	1"	●	●								
2	1½"			●	●						
3	2"					●	●	●			
4	3"								●		
5	4"									●	
7	6"										●

Preferred models
Other connections on request!

Filtration rating in µm
ON/PO: 10

Type of clogging indicator
W Without port (no clogging indicator)
others see Point 2.3 or on request

Type code
1

Modification number
X the latest version is always supplied

Supplementary details
Z Manufacturer's Test Certificate M to DIN 55350 Part 18
Acceptance test certificate 3.1 to EN 10204 (material certificate)
300 Indicate flange pressure range (150 lbs, 300 lbs)

Further optional supplementary details
BBx flared fitting with orifice size (BB2 = aperture 2 mm)
KISS internal parts not in stainless steel (ball, spindle)
SBx filling line in compression fitting with orifice size (SB2 = orifice 2 mm)
SS steel parts of element in stainless steel
V FPM seals, filters suitable for biodegradable oils and phosphate ester fluid (HFD-R)
ZU U-Stamp (approval to ASME Sec. VIII, Div. 1)

2.2 REPLACEMENT ELEMENT

0880 A 010 ON/PO

Size
0110, 0120, 0230, 0240, 0330, 0500, 0540, 0880, 1400, 2700

Type
A API version

Filtration rating in µm
ON/PO: 010

Filter material of element
ON/PO Optimicron® Power

Supplementary details
SS Steel parts of element in stainless steel

2.3 CLOGGING INDICATOR (OPTIONAL)

VM 2 D . X /-L24

Type
VM Differential pressure indicator

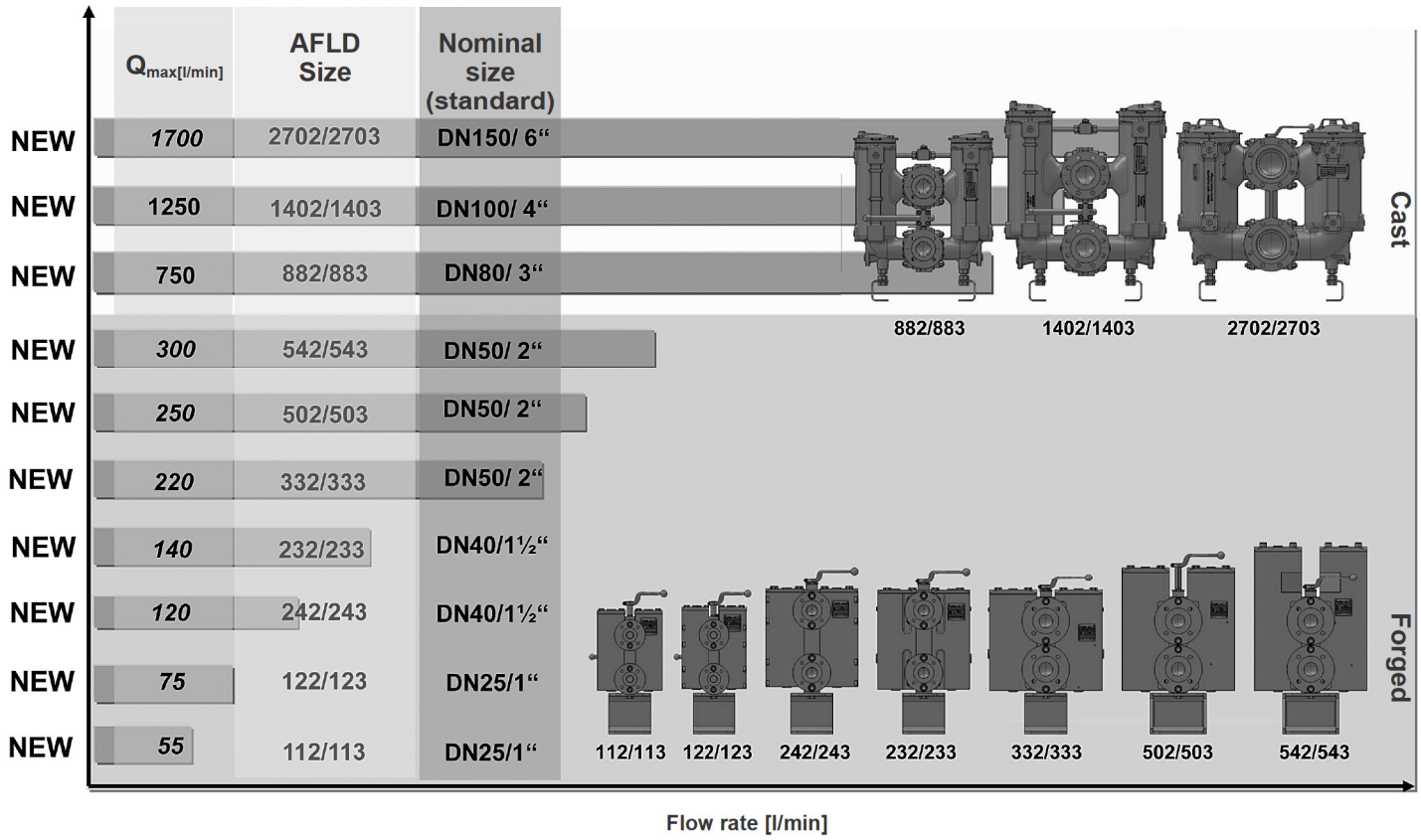
Pressure setting
2 standard 2 bar, others on request

Type
B visual
C electrical
D visual/electrical

Modification number
X the latest version is always supplied

Supplementary details
L... light with appropriate voltage (24V, 48V, 110V, 220V)
LED 2 light emitting diodes up to 24 Volt
V FPM seals

2.4 QUICK SELECTION



2.5 TWO-PART BALL CHANGE-OVER VALVE (KUA)

The new two-part ball change-over valve was originally developed for use in filters of the AFLD series according to API directives.

Independently of AFLD filters, the valve can also be used separately as a connector piece in double plate heat exchangers as well as for double tube bundle coolers.

It is made of either steel or stainless steel and has ASME flanges as standard. It is available in the sizes ASME 3“ and 4“ – both in 150 or 300 lbs.

When supplied: control spindle is disconnected!

Technical features

- Two-part change-over valve
- Connections: DN 80 (3“) and DN 100 (4“) (other connections on request)
- Materials
  - Steel: SA-216-WCB / 1.0619-DIN EN 10213 (GP-240GH)
  - Stainless steel: SA-351 CF8M / 1.4408-DIN EN 10213
- Full bore
- Supplied with flange for cooler

MODEL CODE

KUA 02 C E 5 /-150-Axxxx-8SB

Type
KUA Ball change-over valve

Material
02 Steel (SA-216-WCB/1.0619)
03 Stainless steel (SA-351 CF8M/1.4408)

Operating pressure
C 16 bar
D 25 bar
E 40 bar

Change-over valve
E 2-parts ball valve

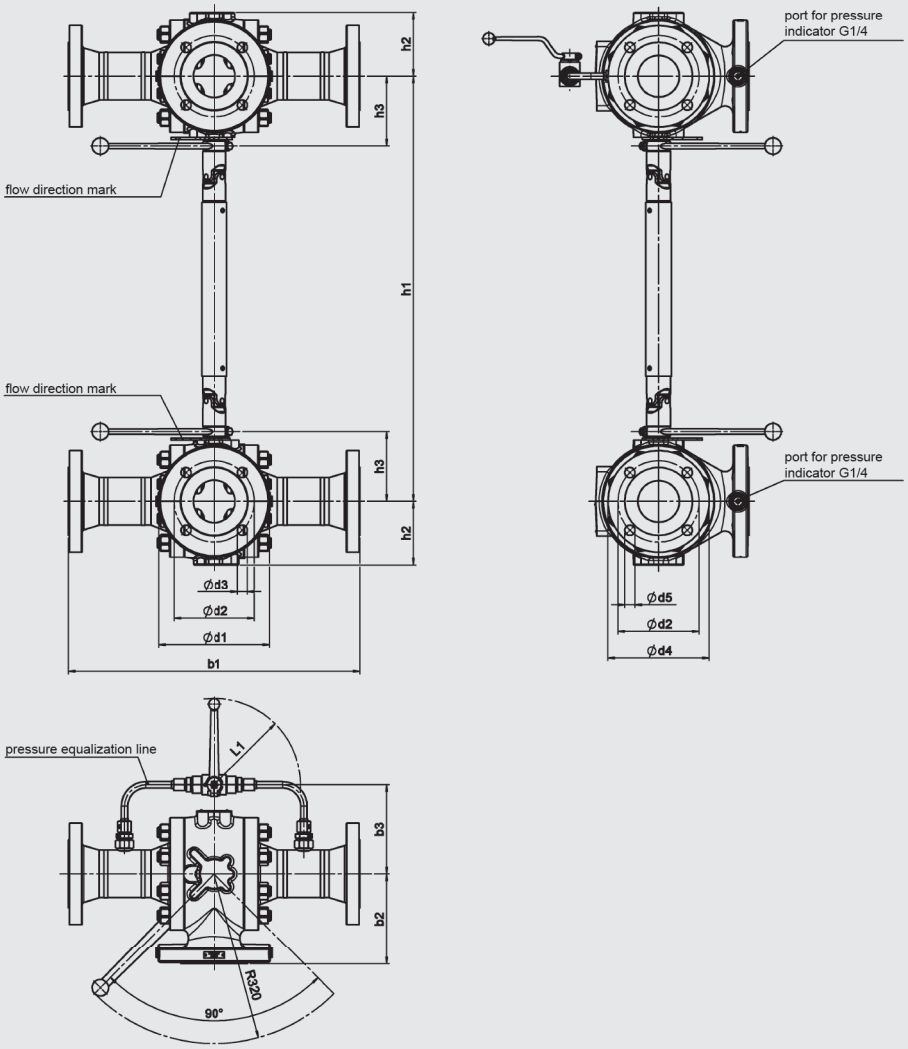
Type and size of connection

Type	Connection to ASME B16.5	Material 02, 03
4	3"	●
5	4"	●

other nominal sizes on request!

Supplementary details
150 Indicate pressure load (150 lbs, 300 lbs)
Axxxx Centre-to-centre distance
(e.g. A1365 = centre-to-centre distance 1365 mm)
8SB Pressure equalization line (8SB = DN8, compression fitting)

DIMENSIONS



KUA	Connection to ASME B16.5		b1	b2	b3	d1	d2	d3	d4	d5	h1	h2	h3	L1
	Nominal size	Pressure range												
02/03	3"	150 lbs.	554	170	144	210	152.4	4x19	190	19.1	Axxx min. 330	120	132	95
		300 lbs.					168.3	8x23	210	22.2				
02/03	4"	150 lbs.	600	210	167	255	190.5	8x19	230	19.1	Axxx min. 385	147	159	95
		300 lbs.					200	8x23	255	22.2				

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)

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

(*see Point 3.2)

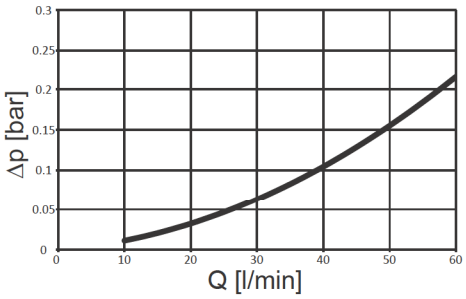
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

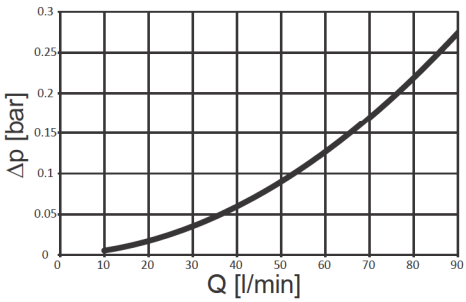
3.1 Δp-Q HOUSING CURVES BASED ON ISO 3968

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.

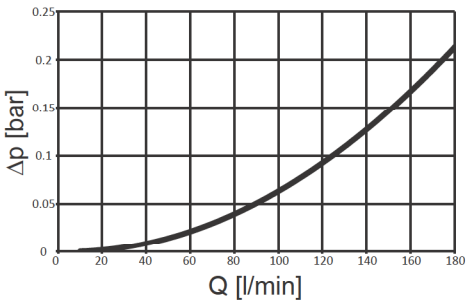
AFLD 112/113



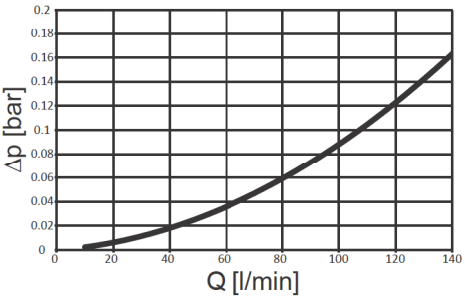
AFLD 122/123



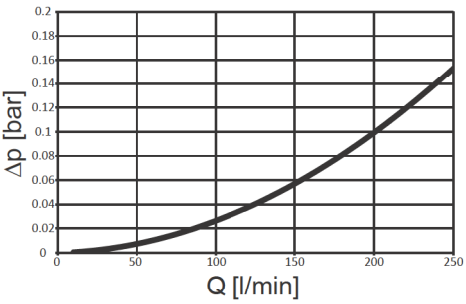
AFLD 232/233



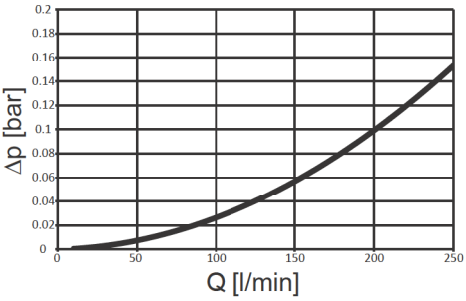
AFLD 242/243



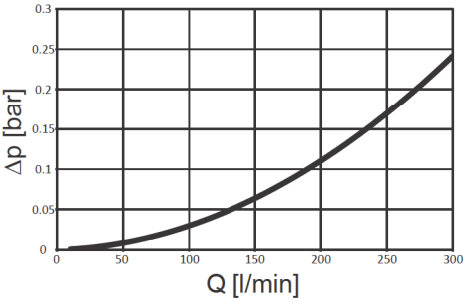
AFLD 332/333



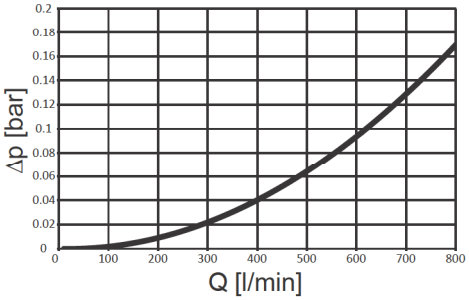
AFLD 502/503



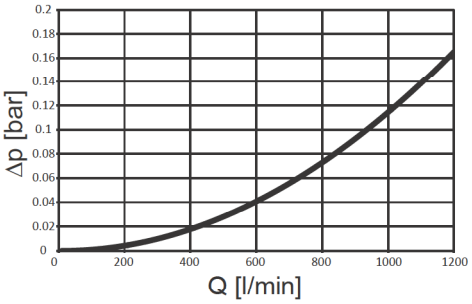
AFLD 542/543



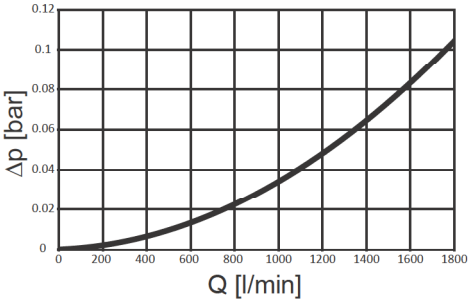
AFLD 882/883



AFLD 1402/1403



AFLD 2702/2703



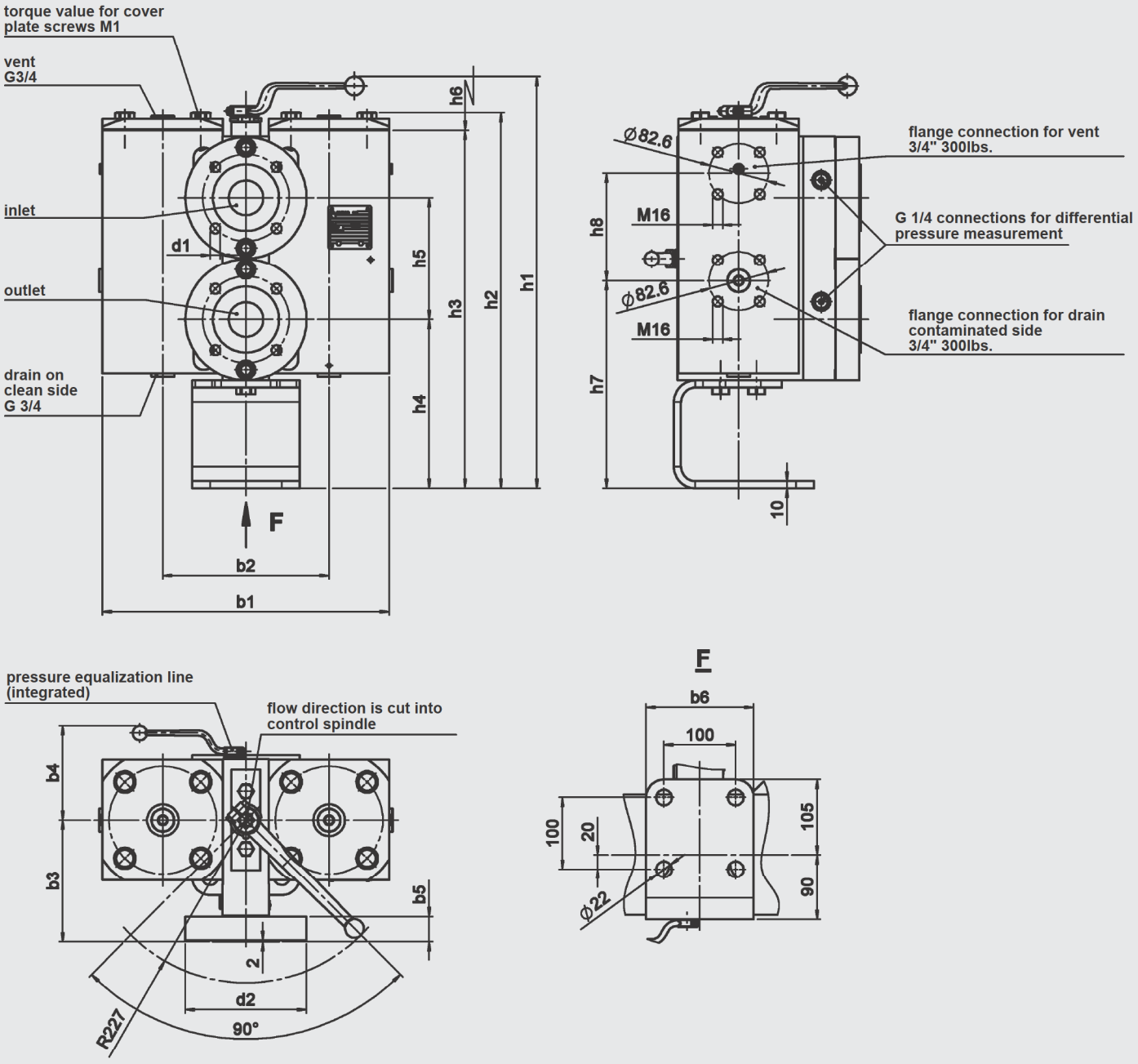
3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

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.

AFLD	ON/PO 10 µm
112/113	3.08
122/123	1.37
232/233	0.68
242/243	1.12
332/333	0.69
502/503	0.45
542/543	0.33
882/883	0.14
1402/1403	0.09
2702/2703	0.07

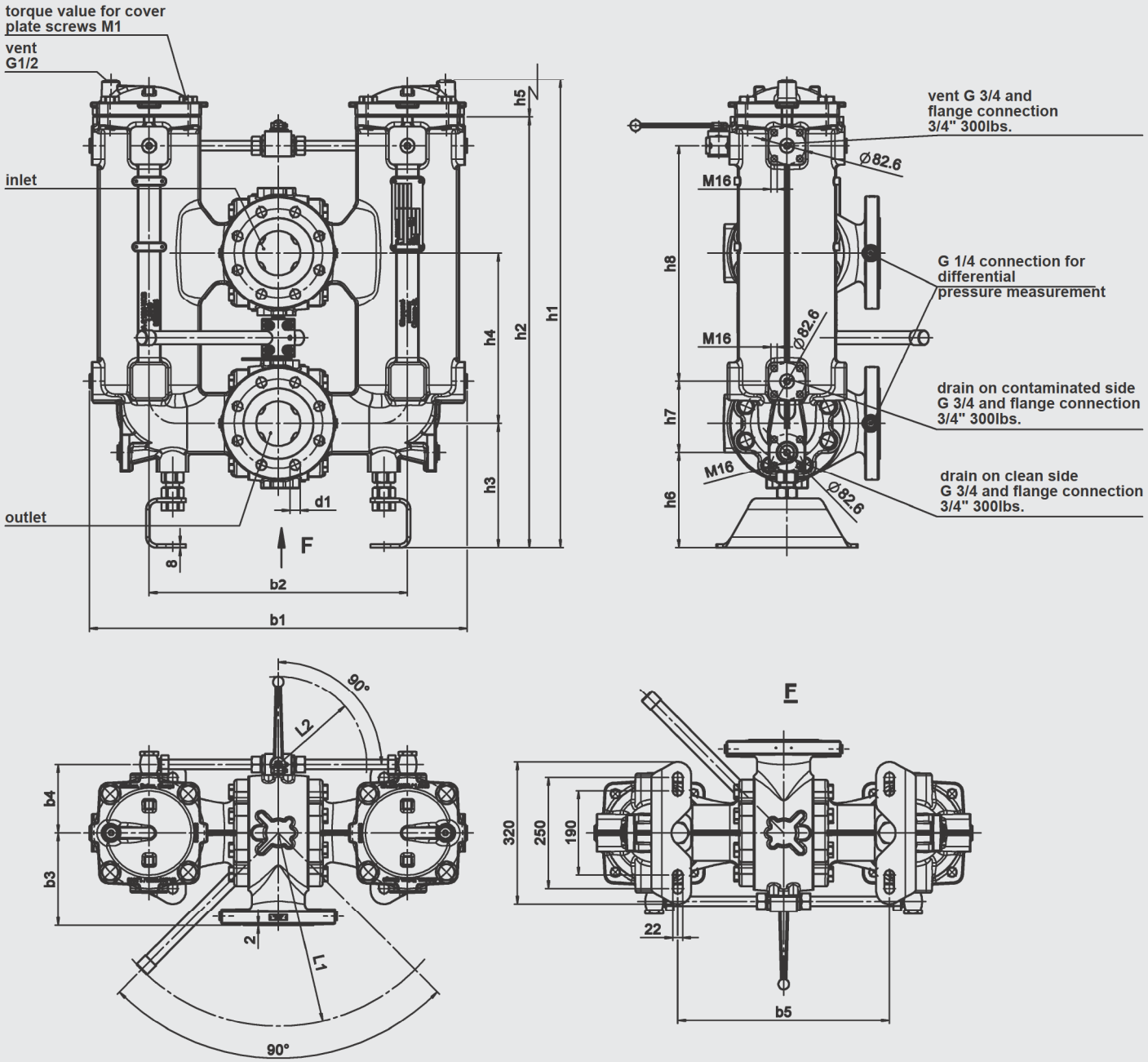
4. DIMENSIONS

AFLD 112-543 (FORGED)



AFLD	Connection to ASME B16.5		b1	b2	b3	b4	b5	b6	d1	d2	h1	h2	h3	h4	h5	h6	h7	h8	M1 [Nm]	Weight incl. element [kg]	Volume of pressure vessel [l]
	Nominal size	Pressure range																			
112/113	1"	150 lbs.	231	131	108	96	25	150	4 x M12	Ø 110	514	448	430	200	155	180	237	133	80/60	55	2 x 0.6
		300 lbs.							4 x M16	Ø 125											
122/123	1"	150 lbs.	231	127	108	96	25	150	4 x M12	Ø 110	514	460	443	200	155	195	229	154	80/60	55	2 x 0.75
		300 lbs.							4 x M16	Ø 125											
232/233	1 1/2"	150 lbs.	327	179	145	122	30	150	4 x M12	Ø135	597	527	507	222	220	205	272	170	190/150	125	2 x 2.0
		300 lbs.							4 x M20	Ø155											
242/243	1 1/2"	150 lbs.	327	199	145	122	30	150	4 x M12	Ø135	595	522	507	222	220	205	272	170	190/150	121	2 x 1.5
		300 lbs.							4 x M20	Ø155											
332/333	2"	150 lbs.	400	232	170	131	35	150	4 x M16	Ø169	573	523	499	235	170	205	289	150	190/150	200	2 x 2.2
		300 lbs.							8 x M16	Ø169											
502/503	2"	150 lbs.	400	232	170	131	35	200	4 x M16	Ø169	653	604	580	235	170	300	289	231	190/150	225	2 x 3.1
		300 lbs.							8 x M16	Ø169											
542/543	2"	150 lbs.	400	232	170	131	35	200	4 x M16	Ø169	573	678	653	235	170	370	279	315	190/150	250	2 x 4.3
		300 lbs.							8 x M16	Ø169											

AFLD 882 - 2703 (CAST)



AFLD	Connection to ASME B16.5		b1	b2	b3	b4	b5	d1	h1	h2	h3	h4	h5	h6	h7	h8	L1	L2	M1 [Nm]	Weight incl. element [kg]	Volume of pressure vessel [l]
	Nominal size	Pressure range																			
882/883	3"	150 lbs.	738	502	170	137/231	430	4 x Ø19	898	834	275	330	515	231	127	411	438	200/132	110	200	2 x 16
		300 lbs.						8 x Ø23													
1402/1403	4"	150 lbs.	854	584	210	155/266	478	8 x Ø19	1057	972	280	385	650	216	160	532	438	200/132	170	290	2 x 24
		300 lbs.						8 x Ø23													
2702/2703	6"	150 lbs.	980	653	190	184/249	645	8 x Ø23	964	863	300	425	500	239	177	383	317	200/132	110	360	2 x 37

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.