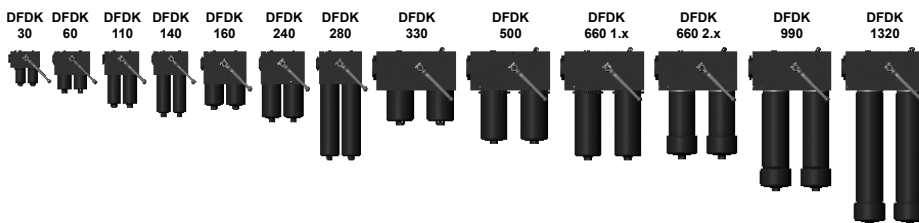




Change-Over Pressure Filter DFDK up to 600 l/min, up to 315 bar



1. TECHNICAL SPECIFICATIONS

1.1 FILTER HOUSING

Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head with screw-in filter bowls.

Standard equipment:

- with ball change-over valve
- 2-piece filter bowl for DFDK 990 and above (available as an option for DFDK 660 and above)
- connection for a clogging indicator
- with drain screw with pressure relief (for DFDK 330 and above)

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)				
DFDK	3 µm	5 µm	10 µm	20 µm
30	4.6	5.1	5.4	5.6
60	6.5	7.3	7.8	8.0
110	13.8	15.5	16.4	16.9
140	18.1	20.3	21.5	22.2
160	19.8	22.2	23.5	24.3
240	32.3	36.3	38.4	39.6
280	70.6	79.3	83.9	86.6
330	47.2	53.1	56.1	57.9
500	76.9	86.5	91.5	94.4
660	102.2	114.9	121.5	125.4
990	154.5	173.7	183.7	189.5
1320	209.9	236.0	249.6	257.5
Betamicon® (BH4HC)				
DFDK	3 µm	5 µm	10 µm	20 µm
30	3.0	2.9	3.2	3.7
60	4.6	4.5	5.0	5.7
110	10.1	9.9	10.9	12.4
140	13.3	13.0	14.3	16.3
160	12.9	12.6	13.9	15.9
240	21.6	21.1	23.2	26.5
280	48.1	47.1	51.8	59.1
330	34.6	33.9	37.2	42.5
500	57.5	56.3	61.8	70.5
660	76.8	75.2	82.6	94.3
990	111.8	109.4	120.2	137.2
1320	153.8	150.7	165.5	188.8

1.3 FILTER SPECIFICATIONS

Nominal pressure	315 bar
Fatigue strength	at nominal pressure 10 ⁶ load cycles from 0 to nominal pressure
Temperature range	-10 °C to +100 °C (-30 °C to -10 °C: p _{max} = 157.5 bar)
Material of filter head	EN-GJS-400-15
Material of filter bowl	Steel
Type of clogging indicator	VD (differential pressure indication up to 420 bar operating pressure)
Setting pressure of clogging indicator	8 bar (others on request)

Filter elements are available with the following pressure stability values:

Betamicon® (BN4HC):	20 bar
Betamicon® (BH4HC):	210 bar
Wire mesh (W/HC, W):	20 bar
Stainless steel fibre (V):	210 bar

1.4 SEALS

NBR (= Perbunan)

1.5 MOUNTING

As inline 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

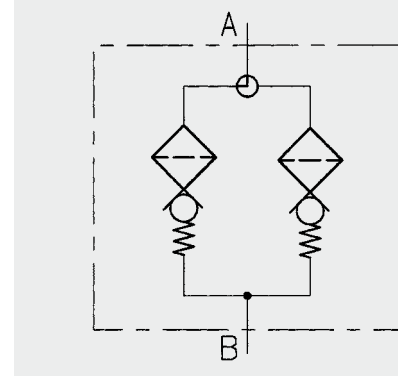
1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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)

DFDK BN/HC 160 Q A F 10 D 1 . X /-L24

2.1 COMPLETE FILTER

Filter type _____

DFDK

Filter material of element _____

BN/HC Betamicon® (BN4HC)

BH/HC Betamicon® (BH4HC)

V Stainless steel fibre

W/HC, W Wire mesh

Size of filter of element _____

DFDK: 30, 60, 110, 140, 160, 240, 280, 330, 500, 660, 990, 1320

Operating pressure _____

Q = 315 bar

Type of change-over _____

A Ball change-over

Type and size of port _____

Type	Port	Filter size											
		30	60	110	140	160	240	280	330	500	660	990	1320
B	G 1/2	●											
C	G 3/4		●	●	●								
F	G1 1/2					●	●	●					
L	DN 50*								●	●	●	●	●

*DIN ISO 228 (6000 PSI)

Filtration rate in µm _____

BN4HC, BH4HC, V: 3, 5, 10, 20

W/HC, W: 25, 50, 100, 200

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 model with one-piece filter bowls

2 model with two-piece filter bowls (only for DFDK 660 to 1320)

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

W suitable for HFA and HFC emulsions

only for clogging
indicators Type D

2.2 REPLACEMENT ELEMENT

0160 D 010 BN4HC /-V

Size _____

0030, 0060, 0110, 0140, 0160, 0240, 0280, 0330, 0500, 0660, 0990, 1320

Type _____

D

Filtration rate in µm _____

BN4HC, BH4HC, V: 003, 005, 010, 020

W/HC, W: 025, 050, 100, 200

Filter material _____

BN4HC, BH4HC, V, W/HC, W

Supplementary details _____

V, W (for descriptions, see point 2.1)

2.3 REPLACEMENT CLOGGING INDICATOR

VD 8 D . X /-L24

Type _____

VD differential pressure indicator up to 420 bar operating pressure

Pressure setting _____

8 8 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, W (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)

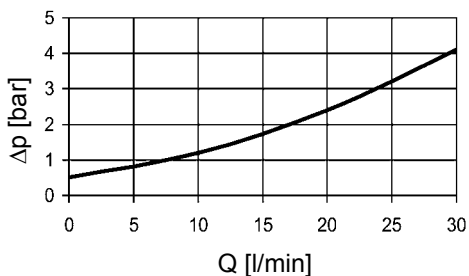
For ease of calculation, our Filter Sizing Program is available on request free of charge.

NEW: Sizing online at www.hydac.com

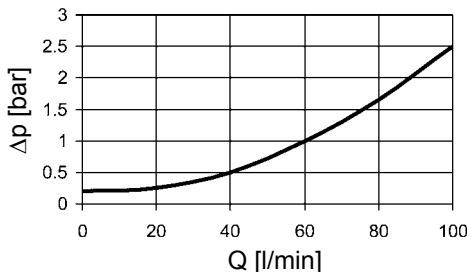
3.1 Δp -Q HOUSING GRAPHS BASED ON ISO 3968

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.

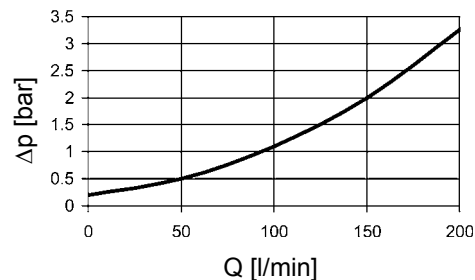
DFDK 30



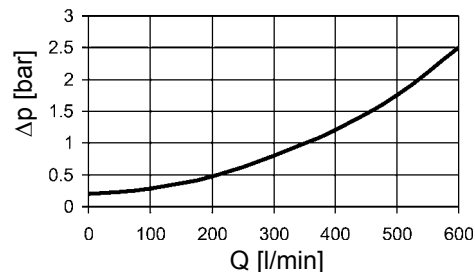
DFDK 60, 110, 140



DFDK 160, 240, 280



DFDK 330, 500, 660, 990, 1320

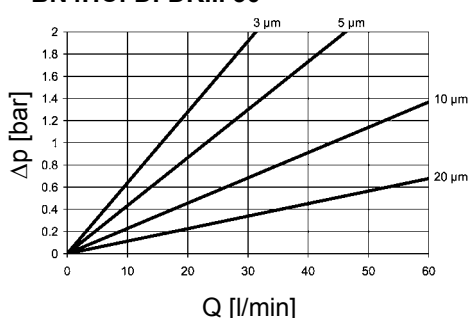


3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

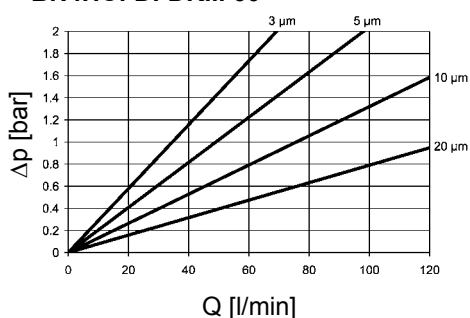
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm²/s. The pressure drop changes proportionally to the change in viscosity.

DFDK	V				W/HC, W	BH4HC			
	3 μm	5 μm	10 μm	20 μm		–	3 μm	5 μm	10 μm
30	18.4	13.5	7.5	3.6	3.030	91.2	50.7	36.3	19.0
60	16.0	9.3	5.4	3.3	0.757	58.6	32.6	18.1	12.2
110	8.2	5.6	3.3	2.2	0.413	25.4	14.9	8.9	5.6
140	5.8	4.8	3.1	2.3	0.324	19.9	11.3	8.1	4.3
160	4.6	3.2	2.3	1.4	0.284	16.8	10.4	5.9	4.4
240	3.1	2.5	1.7	1.1	0.189	10.6	6.8	3.9	2.9
280	2.3	1.7	1.2	0.8	0.162	5.7	3.4	1.8	1.6
330	2.2	1.8	1.2	0.8	0.138	7.7	4.5	2.8	2.0
500	1.5	1.2	0.8	0.5	0.091	4.2	2.6	1.5	1.2
660	1.1	0.9	0.6	0.4	0.069	3.3	1.9	1.0	0.9
990	0.8	0.6	0.4	0.3	0.046	2.2	1.3	0.8	0.6
1320	0.6	0.5	0.3	0.2	0.035	1.6	1.0	0.6	0.4

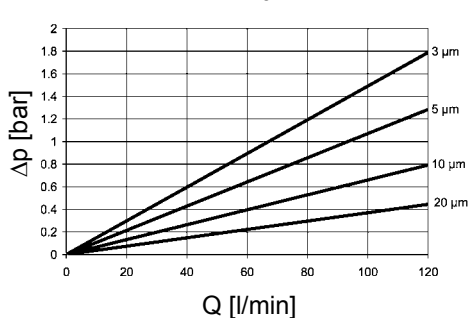
BN4HC: DFDK... 30



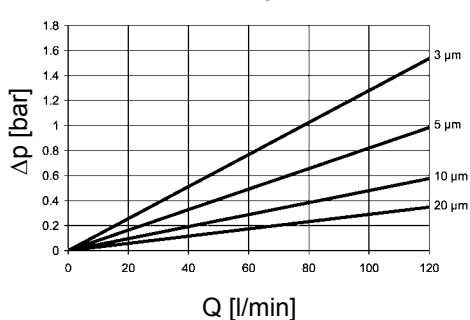
BN4HC: DFDK... 60



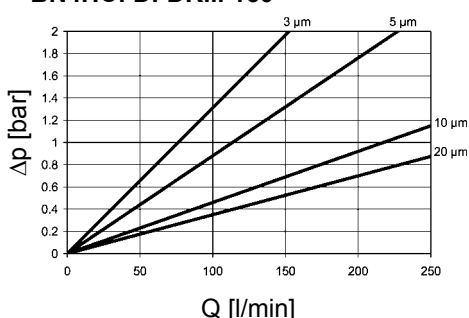
BN4HC: DFDK... 110



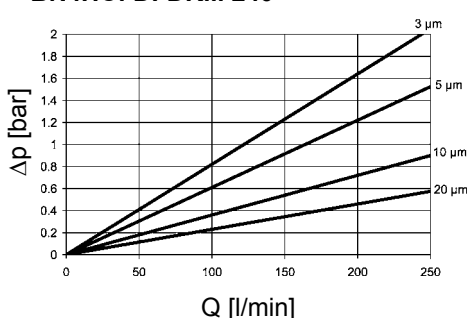
BN4HC: DFDK... 140



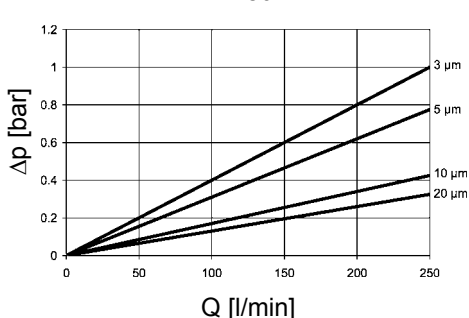
BN4HC: DFDK... 160



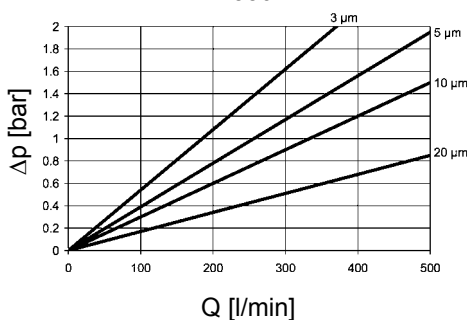
BN4HC: DFDK... 240



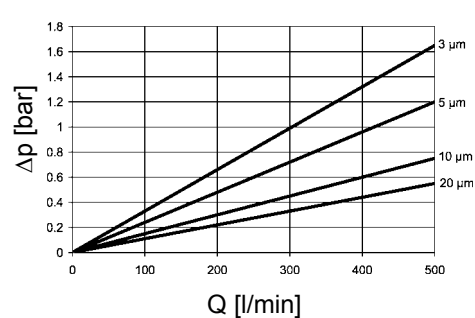
BN4HC: DFDK... 280



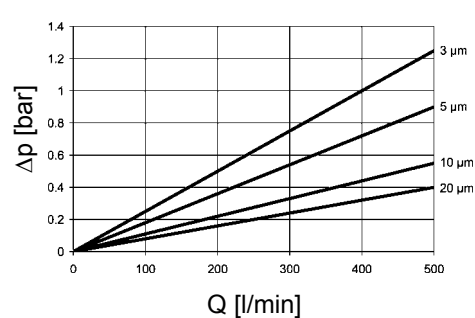
BN4HC: DFDK... 330



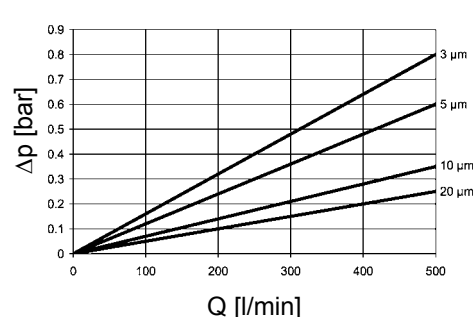
BN4HC: DFDK... 500



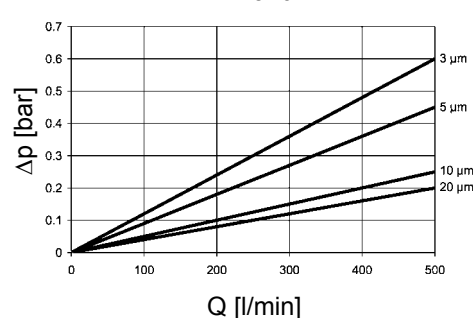
BN4HC: DFDK... 660



BN4HC: DFDK... 990

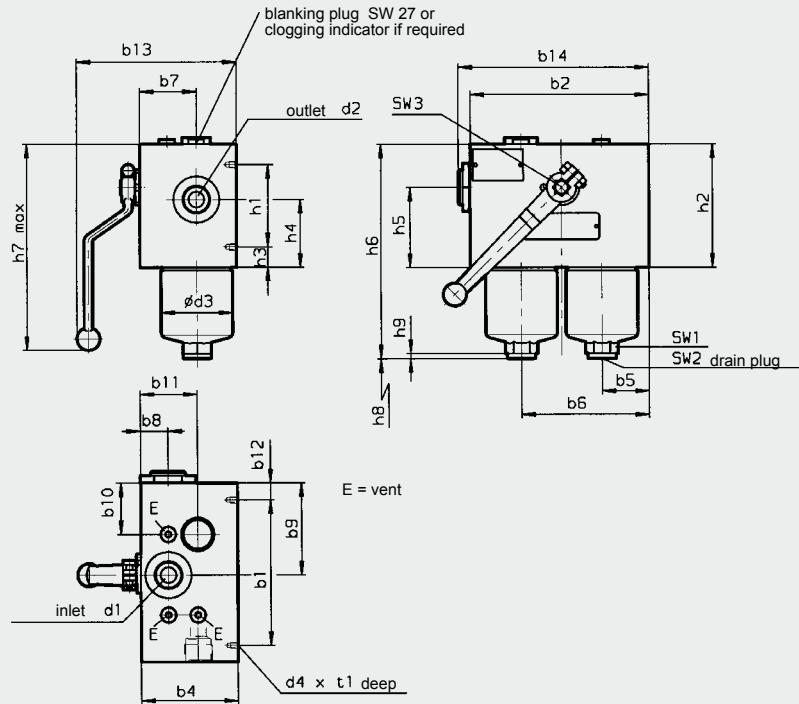


BN4HC: DFDK... 1320



4. DIMENSIONS

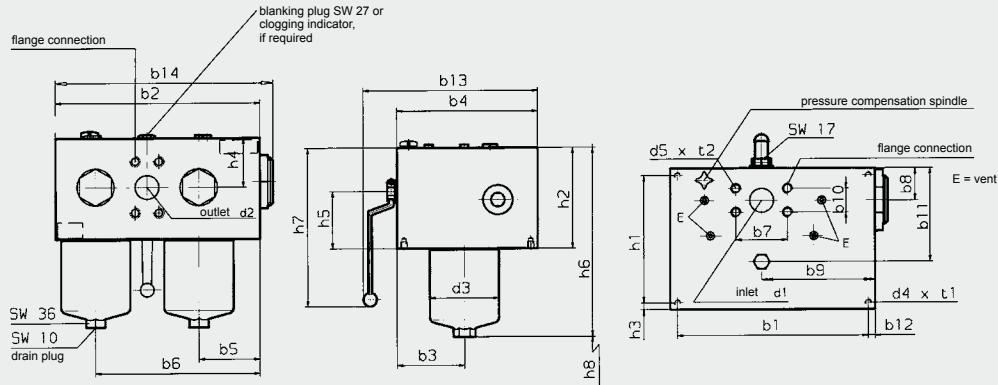
DFDK 30 - 280



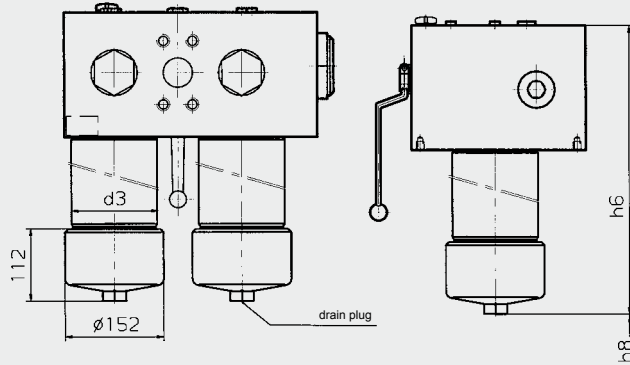
* SAE connection 6000 psi

DFDK	30	60	110	140	160	240	280
b1	130	138	138	138	190	190	190
b2	145	170	170	170	210	210	210
b4	80	92	92	92	128	128	128
b5	35	45	45	45	52.5	52.5	52.5
b6	96	121.5	121.5	121.5	157.5	157.5	157.5
b7	47	54	54	54	75.5	75.5	75.5
b8	22.8	26	26	26	35.5	35.5	35.5
b9	80.9	87	87	87	105	105	105
b10	80.9	48.5	48.5	48.5	52.5	52.5	52.5
b11	59	54	54	54	75.5	75.5	75.5
b12	7.5	16	16	16	10	10	10
b13 (approx.)	131	150	150	150	193	193	193
b14 (approx.)	155	181	181	181	221	221	221
d1*	G ½	G ¾	G ¾	G ¾	G 1½	G 1½	G 1½
d2*	G ½	G ¾	G ¾	G ¾	G 1½	G 1½	G 1½
d3	52.2	68.2	68.2	68.2	95.2	95.2	95.2
d4	M6	M6	M6	M6	M10	M10	M10
h1	64	78	78	78	96	96	96
h2	80	117	117	117	162	162	162
h3	8	19.5	19.5	19.5	33	33	33
h4	47	64.5	64.5	64.5	106	106	106
h5	43	76	76	76	100	100	100
h6	171	204.5	272.0	315.5	282.5	342.5	524.5
h7 (approx.)	180	205	205	205	245	245	245
h8	75	75	75	75	85	85	85
h9	5	5	5	5	5	5	5
t1	7	7	7	7	11	11	11
SW1	24	27	27	27	32	32	32
SW2	6	10	10	10	10	10	10
SW3	9	12	12	12	14	14	14
Weight incl. element [kg]	7.4	15.0	17.0	18.9	33.0	36.0	45.0
Volume of pressure chamber [l]	2x0.13	2x0.20	2x0.33	2x0.40	2x0.60	2x0.80	2x1.60

DFDK 330 - 660..1.x



DFDK 660 - 1320..2.x



* SAE connection 6000 psi

DFDK	330	500	660 1.x	660 2.x	990	1320
b1	359	359	359	359	359	359
b2	385	385	385	385	385	385
b3	127	127	127	127	127	127
b4	265	265	265	265	265	265
b5	115	115	115	115	115	115
b6	309	309	309	309	309	309
b7	96.8	96.8	96.8	96.8	96.8	96.8
b8	60.5	60.5	60.5	60.5	60.5	60.5
b9	212	212	212	212	212	212
b10	44.5	44.5	44.5	44.5	44.5	44.5
b11	175.5	175.5	175.5	175.5	175.5	175.5
b12	13	13	13	13	13	13
b13 (approx.)	326	326	326	326	326	326
b14 (approx.)	405	405	405	405	405	405
d1*	DN 50 (2")	DN 50 (2")	DN 50 (2")	DN 50 (2")	DN 50 (2")	DN 50 (2")
d2*	DN 50 (2")	DN 50 (2")	DN 50 (2")	DN 50 (2")	DN 50 (2")	DN 50 (2")
d3	130.2	130.2	130.2	130	130	130
d4	M12	M12	M12	M12	M12	M12
d5	M20	M20	M20	M20	M20	M20
h1	239	239	239	239	239	239
h2	190	190	190	190	190	190
h3	13	13	13	13	13	13
h4	98	98	98	98	98	98
h5	108	108	108	108	108	108
h6	357.5	450.5	527.0	521.5	677.5	843.5
h7 (approx.)	309	309	309	309	309	309
h8	95	95	95	95	500	670
t1	13	13	13	13	13	13
t2	27	27	27	27	27	27
Weight incl. element [kg]	151.5	159.0	165.0	171.0	184.4	202.4
Volume of pressure chamber [l]	2x1.50	2x2.20	2x3.00	2x3.00	2x4.50	2x6.00

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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