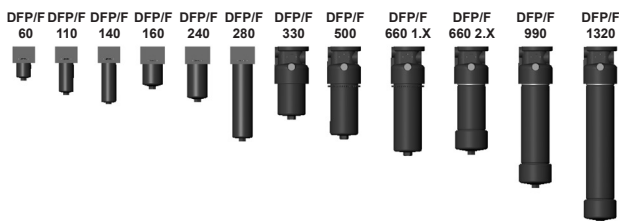




## Pressure Filter for Manifold Mounting DFP and for Reversible Flow DFPF up to 620 l/min, up to 315 bar



### 1. TECHNICAL SPECIFICATIONS

#### 1.1 FILTER HOUSING Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head and a screw-in filter bowl. DFPF filters are suitable for flow in both directions.

Standard equipment:

- connection for a clogging indicator
- two-piece bowl for DFP/F 990 and above (optional for DFP/F 660 and above)
- without bypass valve
- drain screw with pressure relief (standard for DFP/F 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

Filter elements are available with the following pressure stability values:

|                            |         |
|----------------------------|---------|
| Optimicon® (ON):           | 20 bar  |
| Betamicon® (BH4HC):        | 210 bar |
| Wire mesh (W):             | 20 bar  |
| Stainless steel fibre (V): | 210 bar |

#### 1.4 FILTER SPECIFICATIONS

|  |  |
|--|--|
| Nominal pressure                           | 315 bar *  |
| Fatigue strength                           | At nominal pressure 10 <sup>6</sup> cycles (LC) from 0 to nominal pressure |
| Temperature range                          | -30 °C to +100 °C<br>(-30 °C to -10 °C: p <sub>max</sub> = 157.5 bar)      |
| Material of filter head                    | EN-GJS 400-15  |
| Material of filter bowl                    | Steel  |
| Type of clogging indicator up to           | VD (differential pressure measurement 420 bar operating pressure)          |
| Pressure setting of the clogging indicator | DFP = 5 bar<br>DFPF = 8 bar<br>(others on request)                         |
| Bypass cracking pressure (optional)        | 6 bar (others on request)  |

#### 1.4 SEALS

NBR (=Perbunan)

#### 1.5 INSTALLATION

Pressure filter for manifold block mounting, with or without reversible oil flow

#### 1.6 SPECIAL MODELS AND ACCESSORIES

- Bypass valve built into the head
- Seals in FPM, EPDM

#### 1.7 SPARE PARTS

See Original Spare Parts List

#### 1.8 CERTIFICATES AND APPROVALS on request

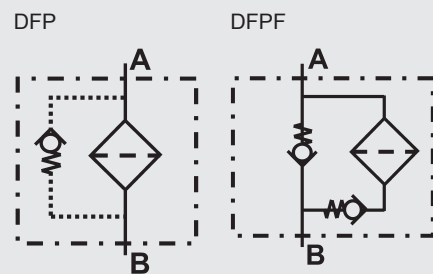
#### 1.9 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

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

#### 1.10 IMPORTANT INFORMATION

- Filter housings must be earthed.
- When using visual clogging indicators, the BM version (visual with manual reset) only should be used.
- 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



\*

| Size 330 – 660 |             |                |
|----------------|-------------|----------------|
|                | with bypass | without bypass |
| 0–315 bar      | 95,000 LC   | 400,000 LC     |
| 0–350 bar      | 80,000 LC   | 350,000 LC     |

LC = load cycles

## 2. MODEL CODE (also order example)

DFP ON 60 Q B 10 D 1 . X /-L24

### 2.1 COMPLETE FILTER

#### Filter type

DFP or DFPF

#### Filter material

ON Optmicron®  
 BN/HC Betamicron® (BN4HC)  
 V Metal fibre  
 W Wire mesh

#### Size of filter or element

DFP/F: 60, 110, 140, 160, 240, 280, 330, 500, 660, 990, 1320

#### Operating pressure

Q = 315 bar

#### Type and size of connection

| Type | Port   | Filter size |     |     |     |     |     |     |     |     |     |      |
|------|--------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|      |        | 60          | 110 | 140 | 160 | 240 | 280 | 330 | 500 | 660 | 990 | 1320 |
| B    | Ø 17.5 | ●           | ●   | ●   |     |     |     |     |     |     |     |      |
| C    | Ø 21.4 |             |     |     | ●   | ●   | ●   |     |     |     |     |      |
| D    | Ø 41   |             |     |     |     |     |     | ●   | ●   | ●   | ●   | ●    |

#### Filtration rating in µm

ON: 1, 3, 5, 10, 15, 20 BH/HC, V: 3, 5, 10, 20

W: 25, 50, 100, 200

#### Type of clogging indicator

Y plastic blanking plug in indicator port  
 A steel blanking plug in indicator port  
 BM visual  
 C electrical  
 D visual and electrical  
 for other clogging indicators, see brochure no. 7.050../..

#### Type code

1 one-piece filter bowl  
 2 two-piece filter bowl (DFP/F 660 to 1320)

#### Modification number

X the latest version is always supplied

#### Supplementary details

B. bypass cracking pressure (e.g. B6 = 6 bar); without details = without bypass valve  
 L... light with appropriate voltage (24, 48, 110, 220 volts)  
 LED 2 light-emitting diodes up to 24 volts  
 SO184 pressure release/oil drain screw (standard for size DFP/F 330 and above)  
 V FPM seals  
 W suitable for HFA and HFC emulsions

### 2.2 REPLACEMENT ELEMENT

0060 D 010 ON /-V

#### Size

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

#### Type

D

#### Filtration range in µm

ON: 001, 003, 005, 010, 015, 020

BH4HC, V: 003, 005, 010, 020

W: 025, 050, 100, 200

#### Filter material

ON, BH4HC, V, W

#### Supplementary details

V, W (for descriptions, see point 2.1)

### 2.3 REPLACEMENT CLOGGING INDICATOR

VD 5 D . X /-L24

#### Type

VD differential pressure indicator up to 420 bar operating pressure

#### Pressure setting

5 standard for DFP filters 5 bar  
 8 standard for DFPF filters 8 bar } on request  
 others

#### 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  $\Delta p$  and the element  $\Delta p$  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)

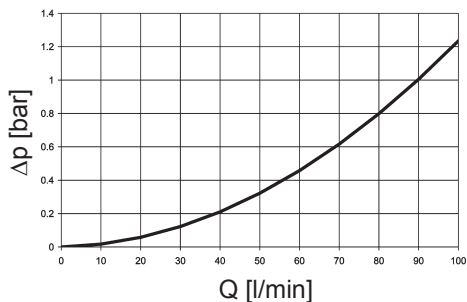
For ease of calculation, our Filter Sizing Program is available on request free of charge.

**NEW:** Sizing online at [www.hydac.com](http://www.hydac.com)

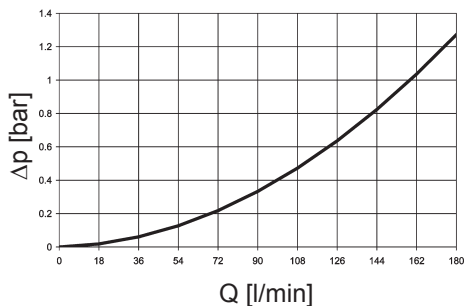
### 3.1 $\Delta p$ -Q HOUSING CURVES BASED ON ISO 3968

The housing curves apply to mineral oil with a density of 0.86 kg/dm<sup>3</sup> and a kinematic viscosity of 30 mm<sup>2</sup>/s. In this case, the differential pressure changes proportionally to the density.

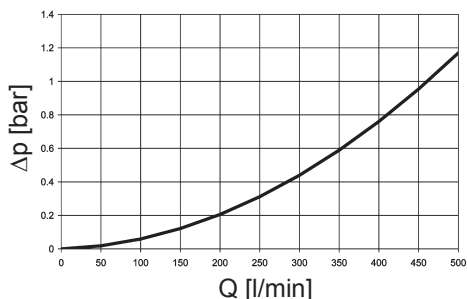
**DFP 60/110/140**



**DFP 160/240/280**



**DFP 330/500/660/990/1320**



DFPF  $\Delta p$ -Q housing curves on request

### 3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

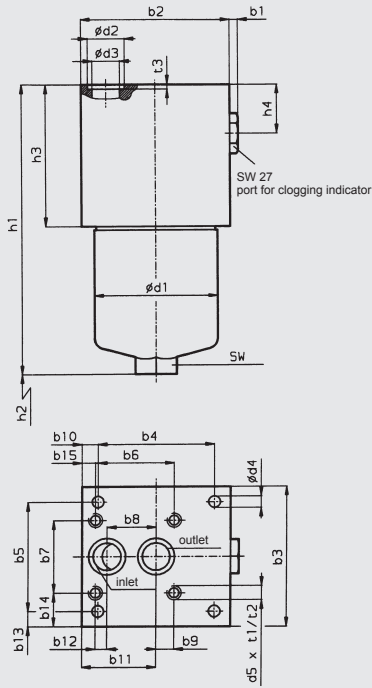
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm<sup>2</sup>/s. The pressure drop changes proportionally to the change in viscosity.

| DFP/<br>DFPF | ON   |      |      |       |       |       |
|--------------|------|------|------|-------|-------|-------|
|              | 1 μm | 3 μm | 5 μm | 10 μm | 15 μm | 20 μm |
| 60           | 53.5 | 26.0 | 18.3 | 12.1  | 9.78  | 6.32  |
| 110          | 25.8 | 13.4 | 9.61 | 6.06  | 4.63  | 2.99  |
| 140          | 19.9 | 11.5 | 7.39 | 4.38  | 3.54  | 2.29  |
| 160          | 18.5 | 11.0 | 7.70 | 4.10  | 3.71  | 3.18  |
| 240          | 11.5 | 6.90 | 5.34 | 3.19  | 2.44  | 2.10  |
| 280          | 5.54 | 3.37 | 2.74 | 1.49  | 1.36  | 1.17  |
| 330          | 8.23 | 4.19 | 3.37 | 2.46  | 1.55  | 1.22  |
| 500          | 5.05 | 2.57 | 2.07 | 1.23  | 0.95  | 0.75  |
| 660          | 3.78 | 1.93 | 1.56 | 0.93  | 0.71  | 0.56  |
| 990          | 2.51 | 1.28 | 1.03 | 0.61  | 0.47  | 0.37  |
| 1320         | 1.85 | 0.97 | 0.76 | 0.45  | 0.35  | 0.27  |

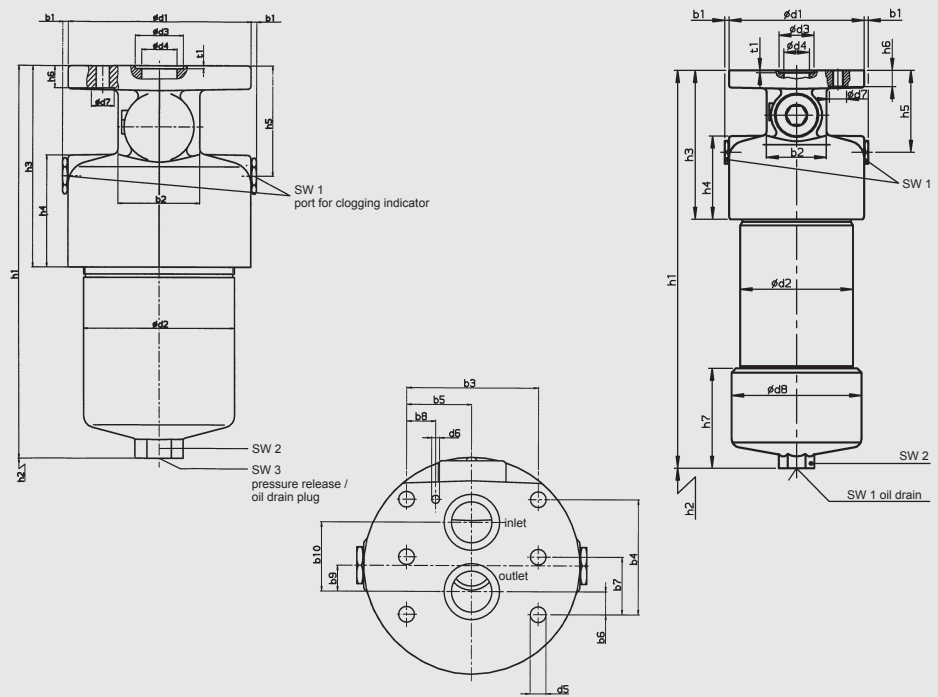
| DFP/<br>DFPF | V    |      |       |       | W<br>- | BH4HC |      |       |       |
|--------------|------|------|-------|-------|--------|-------|------|-------|-------|
|              | 3 μm | 5 μm | 10 μm | 20 μm |        | 3 μm  | 5 μm | 10 μm | 20 μm |
| 60           | 16.0 | 11.0 | 6.5   | 3.3   | 0.757  | 58.6  | 32.6 | 18.1  | 12.2  |
| 110          | 8.3  | 6.0  | 4.2   | 2.1   | 0.413  | 25.4  | 14.9 | 8.9   | 5.6   |
| 140          | 8.3  | 6.0  | 4.2   | 2.1   | 0.413  | 25.4  | 14.9 | 8.9   | 5.6   |
| 160          | 4.5  | 3.2  | 2.3   | 1.4   | 0.284  | 16.8  | 10.4 | 5.9   | 4.4   |
| 240          | 3.2  | 2.4  | 1.9   | 1.1   | 0.189  | 10.6  | 6.8  | 3.9   | 2.9   |
| 280          | 1.5  | 1.2  | 1.0   | 0.8   | 0.162  | 5.7   | 3.4  | 1.8   | 1.6   |
| 330          | 2.1  | 1.5  | 1.3   | 0.8   | 0.138  | 7.7   | 4.5  | 2.8   | 2.0   |
| 500          | 1.4  | 1.0  | 0.8   | 0.5   | 0.091  | 4.2   | 2.6  | 1.5   | 1.2   |
| 660          | 1.1  | 0.9  | 0.6   | 0.3   | 0.069  | 3.3   | 1.9  | 1.0   | 0.9   |
| 990          | 0.7  | 0.5  | 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   |

## 4. DIMENSIONS: DFP

DFP 60 - 280



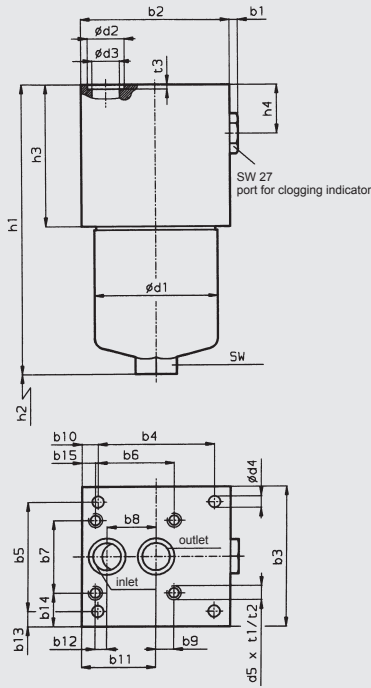
DFP 330 - 1320



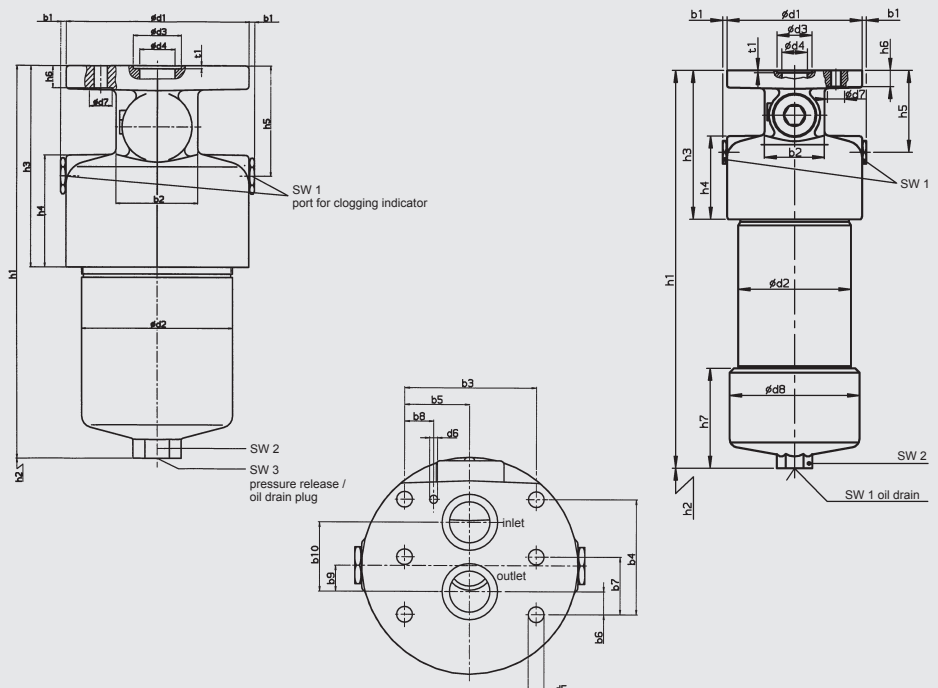
| DFP                            | 60    | 110   | 140   | 160         | 240         | 280         | 330   | 500   | 660..1.x | 660..2.x | 990..2.x | 1320..2.x |
|--------------------------------|-------|-------|-------|-------------|-------------|-------------|-------|-------|----------|----------|----------|-----------|
| b1                             | 6     | 6     | 6     | 6           | 6           | 6           | 5     | 5     | 5        | 5        | 5        | 5         |
| b2                             | 104   | 104   | 104   | 115         | 115         | 115         | 70    | 70    | 70       | 70       | 70       | 70        |
| b3                             | 80    | 80    | 80    | 110         | 110         | 110         | 96.8  | 96.8  | 96.8     | 96.8     | 96.8     | 96.8      |
| b4                             | 89    | 89    | 89    | 90          | 90          | 90          | 84.1  | 84.1  | 84.1     | 84.1     | 84.1     | 84.1      |
| b5                             | 31.8  | 31.8  | 31.8  | 86          | 86          | 86          | 48.4  | 48.4  | 48.4     | 48.4     | 48.4     | 48.4      |
| b6                             | -     | -     | -     | 61          | 61          | 61          | 16.7  | 16.7  | 16.7     | 16.7     | 16.7     | 16.7      |
| b7                             | -     | -     | -     | 57          | 57          | 57          | 42.05 | 42.05 | 42.05    | 42.05    | 42.05    | 42.05     |
| b8                             | 31.6  | 31.6  | 31.6  | 38          | 38          | 38          | 21.4  | 21.4  | 21.4     | 21.4     | 21.4     | 21.4      |
| b9                             | -     | -     | -     | 14          | 14          | 14          | 19    | 19    | 19       | 19       | 19       | 19        |
| b10                            | 7.5   | 7.5   | 7.5   | 12.5        | 12.5        | 12.5        | 50.7  | 50.7  | 50.7     | 50.7     | 50.7     | 50.7      |
| b11                            | 55.9  | 55.9  | 55.9  | 57.5        | 57.5        | 57.5        | -     | -     | -        | -        | -        | -         |
| b12                            | -     | -     | -     | 9           | 9           | 9           | -     | -     | -        | -        | -        | -         |
| b13                            | 24.1  | 24.1  | 24.1  | 12          | 12          | 12          | -     | -     | -        | -        | -        | -         |
| b14                            | -     | -     | -     | 26.5        | 26.5        | 26.5        | -     | -     | -        | -        | -        | -         |
| b15                            | -     | -     | -     | 10.5        | 10.5        | 10.5        | -     | -     | -        | -        | -        | -         |
| d1                             | 68.2  | 68.2  | 68.2  | 95.2        | 95.2        | 95.2        | 158   | 158   | 158      | 158      | 158      | 158       |
| d2                             | 25.3  | 25.3  | 25.3  | 28.6        | 28.6        | 28.6        | 130   | 130   | 130      | 130      | 130      | 130       |
| d3                             | 17.5  | 17.5  | 17.5  | 21.4        | 21.4        | 21.4        | 41    | 41    | 41       | 41       | 41       | 41        |
| d4                             | 8.5   | 8.5   | 8.5   | 9           | 9           | 9           | 30    | 30    | 30       | 30       | 30       | 30        |
| d5                             | -     | -     | -     | 7/16-14 UNC | 7/16-14 UNC | 7/16-14 UNC | 11.5  | 11.5  | 11.5     | 11.5     | 11.5     | 11.5      |
| d6                             | -     | -     | -     | -           | -           | -           | 6     | 6     | 6        | 6        | 6        | 6         |
| d7                             | -     | -     | -     | -           | -           | -           | 20    | 20    | 20       | 20       | 20       | 20        |
| d8                             | -     | -     | -     | -           | -           | -           | -     | -     | -        | 152      | 152      | 152       |
| h1                             | 158.5 | 227.5 | 269.5 | 199.5       | 263.5       | 445.0       | 339.5 | 432.5 | 510.0    | 504      | 660.0    | 826.0     |
| h2                             | 75    | 75    | 75    | 85          | 85          | 85          | 95    | 95    | 95       | 350      | 500      | 670       |
| h3                             | 76    | 76    | 76    | 83          | 83          | 83          | 174.5 | 174.5 | 174.5    | 174.5    | 174.5    | 174.5     |
| h4                             | 25    | 25    | 25    | 25          | 25          | 25          | 98    | 98    | 98       | 98       | 98       | 98        |
| h5                             | -     | -     | -     | -           | -           | -           | 96    | 96    | 96       | 96       | 96       | 96        |
| h6                             | -     | -     | -     | -           | -           | -           | 19    | 19    | 19       | 19       | 19       | 19        |
| h7                             | -     | -     | -     | -           | -           | -           | -     | -     | -        | 112      | 112      | 112       |
| t1                             | -     | -     | -     | 13          | 13          | 13          | 2.6   | 2.6   | 2.6      | 2.6      | 2.6      | 2.6       |
| t2                             | -     | -     | -     | 18          | 18          | 18          | -     | -     | -        | -        | -        | -         |
| t3                             | 2     | 2     | 2     | 2           | 2           | 2           | -     | -     | -        | -        | -        | -         |
| SW                             | 27    | 27    | 27    | 32          | 32          | 32          | -     | -     | -        | -        | -        | -         |
| SW1                            | -     | -     | -     | -           | -           | -           | 27    | 27    | 27       | 27       | 27       | 27        |
| SW2                            | -     | -     | -     | -           | -           | -           | 36    | 36    | 36       | 36       | 36       | 36        |
| SW 3                           | -     | -     | -     | -           | -           | -           | 10    | 10    | 10       | 10       | 10       | 10        |
| Weight incl. element [kg]      | 5.1   | 6.0   | 6.6   | 9.1         | 10.4        | 14.7        | 21.0  | 25.5  | 29.0     | 32.0     | 39.2     | 47.1      |
| Volume of pressure chamber [l] | 0.20  | 0.33  | 0.40  | 0.60        | 0.80        | 1.60        | 1.50  | 2.30  | 3.00     | 3.00     | 4.20     | 5.60      |

# DFPF

## DFPF 60 - 280



## DFPF 330 - 1320



| DFPF                           | 60    | 110   | 140   | 160        | 240        | 280        | 330   | 500   | 660..1.x | 660..2.x | 990..2.x | 1320..2.x |
|--------------------------------|-------|-------|-------|------------|------------|------------|-------|-------|----------|----------|----------|-----------|
| b1                             | 6     | 6     | 6     | 6          | 6          | 6          | 5     | 5     | 5        | 5        | 5        | 5         |
| b2                             | 104   | 104   | 104   | 120        | 120        | 120        | 70    | 70    | 70       | 70       | 70       | 70        |
| b3                             | 80    | 80    | 80    | 110        | 110        | 110        | 96.8  | 96.8  | 96.8     | 96.8     | 96.8     | 96.8      |
| b4                             | 89    | 89    | 89    | 90         | 90         | 90         | 84.1  | 84.1  | 84.1     | 84.1     | 84.1     | 84.1      |
| b5                             | 31.8  | 31.8  | 31.8  | 86         | 86         | 86         | 48.4  | 48.4  | 48.4     | 48.4     | 48.4     | 48.4      |
| b6                             | -     | -     | -     | 61         | 61         | 61         | 16.7  | 16.7  | 16.7     | 16.7     | 16.7     | 16.7      |
| b7                             | -     | -     | -     | 57         | 57         | 57         | 42.05 | 42.05 | 42.05    | 42.05    | 42.05    | 42.05     |
| b8                             | 31.6  | 31.6  | 31.6  | 38         | 38         | 38         | 21.4  | 21.4  | 21.4     | 21.4     | 21.4     | 21.4      |
| b9                             | -     | -     | -     | 14         | 14         | 14         | 19    | 19    | 19       | 19       | 19       | 19        |
| b10                            | 7.5   | 7.5   | 7.5   | 17.5       | 17.5       | 17.5       | 50.7  | 50.7  | 50.7     | 50.7     | 50.7     | 50.7      |
| b11                            | 55.9  | 55.9  | 55.9  | 62.5       | 62.5       | 62.5       | -     | -     | -        | -        | -        | -         |
| b12                            | -     | -     | -     | 9          | 9          | 9          | -     | -     | -        | -        | -        | -         |
| b13                            | 24.1  | 24.1  | 24.1  | 12         | 12         | 12         | -     | -     | -        | -        | -        | -         |
| b14                            | -     | -     | -     | 26.5       | 26.5       | 26.5       | -     | -     | -        | -        | -        | -         |
| b15                            | -     | -     | -     | 15.5       | 15.5       | 15.5       | -     | -     | -        | -        | -        | -         |
| d1                             | 68.2  | 68.2  | 68.2  | 95.2       | 95.2       | 158        | 158   | 158   | 158      | 158      | 158      | 158       |
| d2                             | 25.3  | 25.3  | 25.3  | 28.6       | 28.6       | 28.6       | 130   | 130   | 130      | 130      | 130      | 130       |
| d3                             | 17.5  | 17.5  | 17.5  | 21.4       | 21.4       | 21.4       | 41    | 41    | 41       | 41       | 41       | 41        |
| d4                             | 8.5   | 8.5   | 8.5   | 9          | 9          | 9          | 30    | 30    | 30       | 30       | 30       | 30        |
| d5                             | -     | -     | -     | 7/8-14 UNC | 7/8-14 UNC | 7/8-14 UNC | 11.5  | 11.5  | 11.5     | 11.5     | 11.5     | 11.5      |
| d6                             | -     | -     | -     | -          | -          | -          | 6     | 6     | 6        | 6        | 6        | 6         |
| d7                             | -     | -     | -     | -          | -          | -          | 20    | 20    | 20       | 20       | 20       | 20        |
| d8                             | -     | -     | -     | -          | -          | -          | -     | -     | -        | 152      | 152      | 152       |
| h1                             | 158.5 | 227.5 | 269.5 | 206.5      | 266.5      | 448.5      | 339.5 | 432.5 | 510.0    | 504      | 660.0    | 826.0     |
| h2                             | 75    | 75    | 75    | 85         | 85         | 85         | 95    | 95    | 95       | 350      | 500      | 670       |
| h3                             | 76    | 76    | 76    | 90         | 90         | 90         | 174.5 | 174.5 | 174.5    | 174.5    | 174.5    | 174.5     |
| h4                             | 21    | 21    | 21    | 32         | 32         | 32         | 98    | 98    | 98       | 98       | 98       | 98        |
| h5                             | -     | -     | -     | -          | -          | -          | 96    | 96    | 96       | 96       | 96       | 96        |
| h6                             | -     | -     | -     | -          | -          | -          | 19    | 19    | 19       | 19       | 19       | 19        |
| h7                             | -     | -     | -     | -          | -          | -          | -     | -     | -        | 112      | 112      | 112       |
| t1                             | -     | -     | -     | 13         | 13         | 13         | 2.6   | 2.6   | 2.6      | 2.6      | 2.6      | 2.6       |
| t2                             | -     | -     | -     | 18         | 18         | 18         | -     | -     | -        | -        | -        | -         |
| t3                             | 2     | 2     | 2     | 2          | 2          | 2          | -     | -     | -        | -        | -        | -         |
| SW                             | 27    | 27    | 27    | 32         | 32         | 32         | -     | -     | -        | -        | -        | -         |
| SW1                            | -     | -     | -     | -          | -          | -          | 27    | 27    | 27       | 27       | 27       | 27        |
| SW2                            | -     | -     | -     | -          | -          | -          | 36    | 36    | 36       | 36       | 36       | 36        |
| SW 3                           | -     | -     | -     | -          | -          | -          | 10    | 10    | 10       | 10       | 10       | 10        |
| Weight incl. element [kg]      | 5.1   | 6.0   | 6.6   | 9.1        | 10.4       | 14.7       | 21.0  | 25.5  | 29.0     | 32.0     | 39.2     | 47.1      |
| Volume of pressure chamber [l] | 0.20  | 0.33  | 0.40  | 0.60       | 0.80       | 1.60       | 1.50  | 2.30  | 3.00     | 3.00     | 4.20     | 5.60      |

