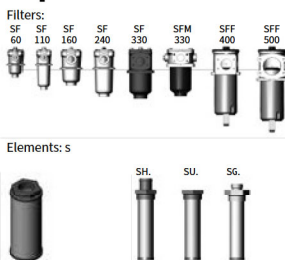




## Suction Filter SF/SFM/SFF and Suction Filter Elements S/S.. up to 500 l/min



### 1. TECHNICAL SPECIFICATIONS

#### 1.1 FILTER HOUSING

##### Construction

The filter housings are designed in accordance with international regulations. The SF filters consist of a filter housing and a bolt-on cover plate. The SFM and SFF filters consist of a filter head with filter bowl and bolt-on cover plate (on the SFF there is a foot valve in the base of the filter bowl).

Standard equipment:

- bypass valve
- connection for a clogging indicator

#### 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

The suction filter elements S are designed to be screwed into the suction lines of pumps.

It is essential that suction filter elements are always installed well below the minimum oil level.

The suction filter elements S.. are designed to be mounted simply onto the outside of the tank. They are used in devices with hoses that are exposed to little mechanical load. Elements can be changed very simply.

Standard equipment:

- without bypass valve

Filter elements are available with the following pressure stability values:

|                |       |
|----------------|-------|
| Paper (P):     | 5 bar |
| Wire mesh (W): | 5 bar |

#### 1.3 FILTER SPECIFICATIONS

|                                                                            |                                                                             |                    |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------|
| Nominal pressure                                                           | Suction operation                                                           |                    |
| Temperature range                                                          | -10 °C to +100 °C                                                           |                    |
| Material of SF filter                                                      | Cover plate:                                                                | aluminium          |
|                                                                            | Housing:                                                                    | aluminium          |
| Material of SFM filter                                                     | Cover plate:                                                                | aluminium          |
|                                                                            | Filter head:                                                                | aluminium          |
|                                                                            | Filter bowl:                                                                | polyamide          |
| Material of SFF filter                                                     | Cover plate:                                                                | GGG40              |
|                                                                            | Filter head:                                                                | aluminium          |
|                                                                            | Filter bowl:                                                                | steel              |
| Material of S elements                                                     | Filter mesh:                                                                | wire mesh          |
|                                                                            | End caps:                                                                   | polyamide          |
|                                                                            | Central tube:                                                               | steel, zinc-plated |
| Material of S.. elements                                                   | Filter mesh:                                                                | wire mesh          |
|                                                                            | End caps:                                                                   | on request         |
|                                                                            | Central tube:                                                               | on request         |
| Type of clogging indicator                                                 | VR Connection thread G ½<br>V1/4 Conn. thread NPT (only SFF)                |                    |
| Pressure setting of the clogging indicator                                 | 0.2 to 1 bar (others on request)                                            |                    |
| Bypass cracking pressure                                                   | 0.25 bar (SFF filter)<br>0.3 bar (SF and SFM filter)<br>(others on request) |                    |
| Cracking pressure of bypass valve for suction filter elements S (optional) | 0.2 bar                                                                     |                    |

#### 1.4 SEALS

NBR (=Perbunan)

#### 1.5 INSTALLATION

Tank-top or 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

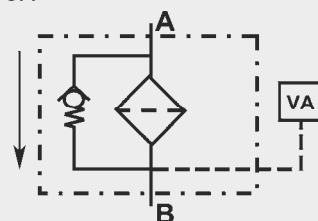
HYDRAULIC FLUIDS ISO 2943

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

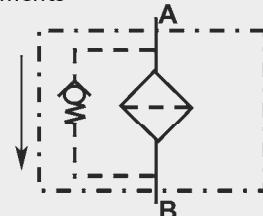
#### 1.10 IMPORTANT INFORMATION

- Filter housings must be earthed.
- When using electrical clogging indicators, the electrical power supply to the system must be switched off before removing the clogging indicator connector.

Symbol for hydraulic systems SF, SFM, SFF



S elements



VA = clogging indicator

## 2. MODEL CODE (also order example)

### 2.1 COMPLETE FILTER

Filter type

SF, SFM, SFF

Filter material

P paper (not for SFF)

W stainless steel wire mesh

#### Size of filter or element

SF: 60, 110, 160, 240, 330

SFM: 330

SFF: 400, 500

Operating pressure

W suction operation

Type and size of connection

| Type | Connection      | Filter size |           |           |           |           |            |            |            |
|------|-----------------|-------------|-----------|-----------|-----------|-----------|------------|------------|------------|
|      |                 | SF<br>60    | SF<br>110 | SF<br>160 | SF<br>240 | SF<br>330 | SFM<br>330 | SFF<br>400 | SFF<br>500 |
| CEF  | G ¾             | ●           | ●         |           |           |           |            |            |            |
|      | G 1¼            |             |           | ●         | ●         |           |            |            |            |
|      | G 1½            |             |           |           |           |           | ●          |            |            |
| G    | G 2             |             |           |           |           | ●         |            |            |            |
| K    | SAE DN 40 (1½") |             |           |           |           |           | ●          |            |            |
| L    | SAE DN 50 (2")  |             |           |           |           | ●         |            |            |            |
| MP   | SAE DN 65 (2½") |             |           |           |           |           |            | ●          |            |
|      | SAE DN 100 (4") |             |           |           |           |           |            |            | ●          |

Filtration rating

P: 10, 20 (not for SFF)

W: 75, 125

Clogging indicator version

A screw plug in indicator port

UE negative pressure gauge

UF negative pressure switch

for other clogging indicators  
see brochure no. 7.050../..

Type code

1

#### Modification number

X the latest version is always supplied

Supplementary details

KB without bypass valve

V FPM seals

W suitable for HFA and HFC emulsions

### 2.2 REPLACEMENT ELEMENT FOR SF / SFM / SFF FILTERS Size

0060, 0110, 0160, 0240, 0330, 0400, 0500

Type

RS

Filtration rating in µm

P: 010, 020 (not for SFF)

W: 075, 125

Filter material

P, W

Supplementary details

SFF must be added to model code for SFF filter

V, W (for descriptions, see Point 2.1)

### 2.3 REPLACEMENT CLOGGING INDICATOR Type

VR connection thread G ½ (only for SF and SFM filters)

V1/4 connection thread NPT (only for SFF filters)

Pressure setting

1 1 bar (for type UE)

0.2 0.2 bar (for type UF)

Type of clogging indicator (see Point 2.1)

#### Modification number

X the latest version is always supplied

Supplementary details

V (for descriptions, see Point 2.1)

SF W 330 W L 10 UE 1 X /-V

0330 RS 075 W /-V

VR 1 UE X /-V

## 2.4 SUCTION FILTER ELEMENT S 0050 S 125 W /-B0.2 Size

0015, 0025, 0050, 0100, 0180

Type  
S

Filtration rating in  $\mu\text{m}$   
075, 125

Filter material  
W

Supplementary details

B0.2 special cracking pressure of bypass 0.2 bar;  
no details = standard

## 2.5 SUCTION FILTER ELEMENT S.. Size

0070 SGD 125 W

0040, 0060, 0070, 0110

Type  
SHB\* suction filter element hose connection  
(38.1 and 32)

SUI\* suction filter element UN thread  
(1 1/16-12 UN and 1 5/16-12UN)

SG.\* suction filter element thread  
(G 3/4, G 1, G 1 1/2)

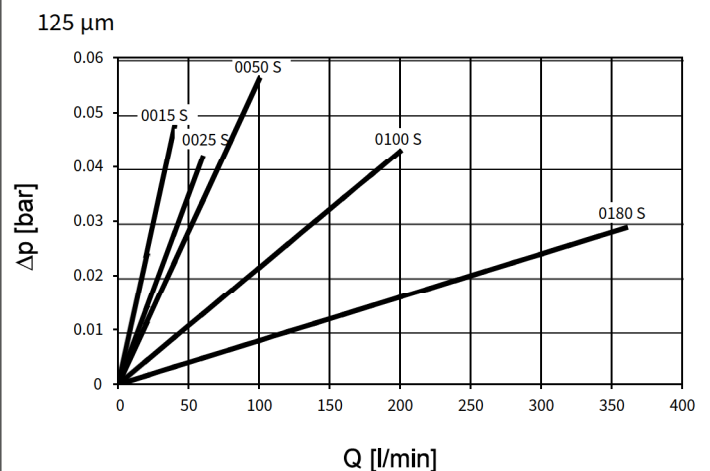
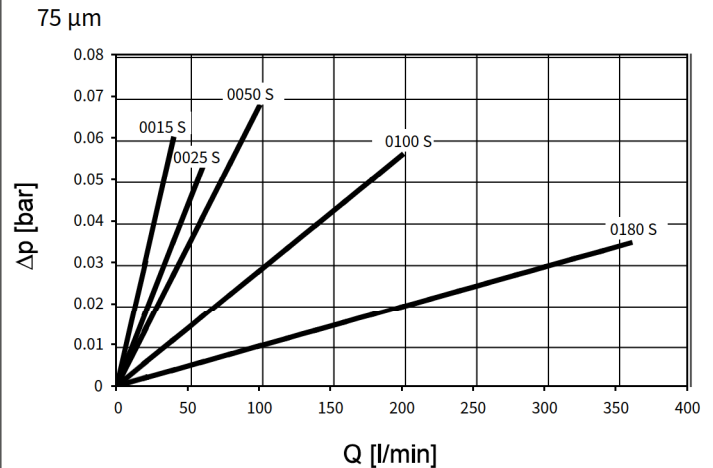
Filtration rating in  $\mu\text{m}$   
125

Filter material  
W

\*for further details on the designation, please see Point 5

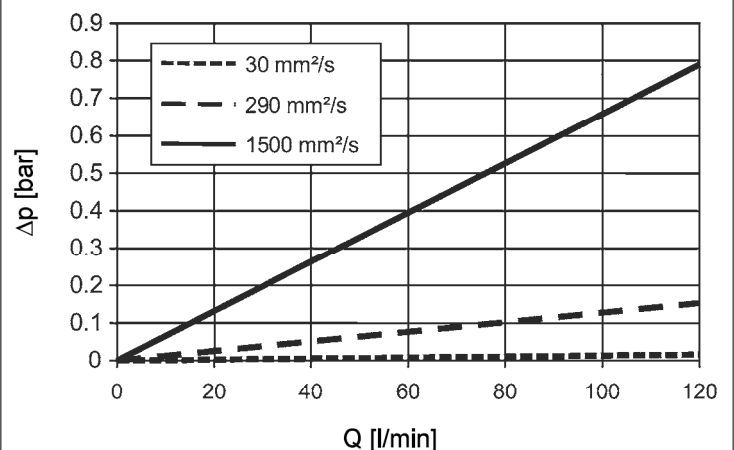
## 3. FILTER CALCULATION / SIZING S AND S..

### 3.1 $\Delta p$ -Q-GRAPHS FOR SUCTION FILTER ELEMENTS S (AT 30 $\text{mm}^2/\text{s}$ )



### 3.2 $\Delta p$ -Q-GRAPHS FOR SUCTION FILTER ELEMENTS S.. FOR MOUNTING ON OUTSIDE OF TANK

Size 0060 and 0070



Size 0040 and 0110 on request.

#### 4. FILTER CALCULATION / SIZING SF, SFM, SFF

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:

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

$$\Delta p_{\text{housing}} = (\text{see Point 4.1})$$

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

(\*see Point 4.2)

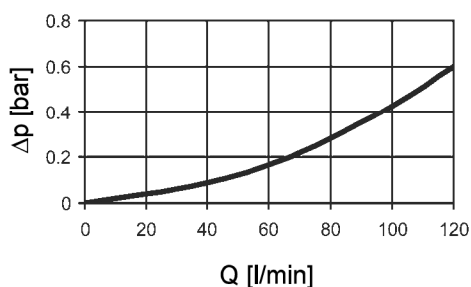
For ease of calculation, our Filter Sizing Program is available on request free of charge.

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

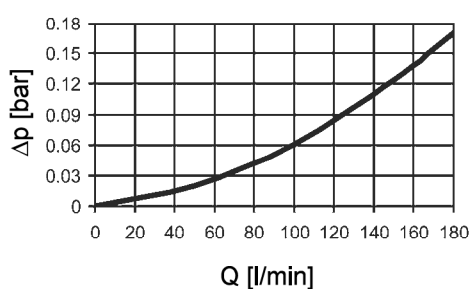
#### 4.1 Q HOUSING CURVES BASED ON ISO 3968

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.

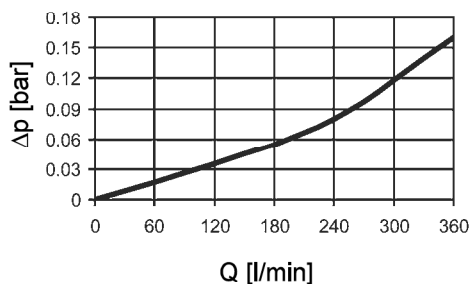
SF 60, 100



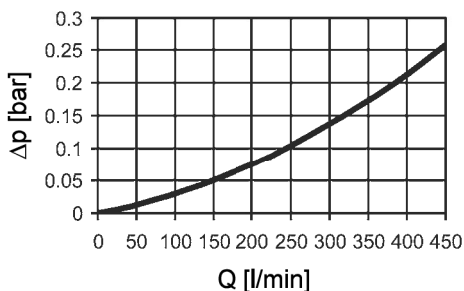
SF 160, 240



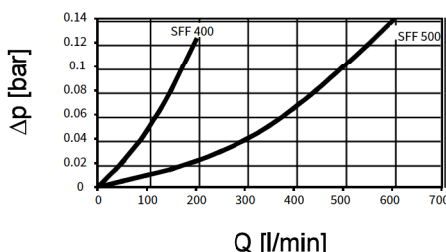
SF 330



SFM 330



SFF 400, 500

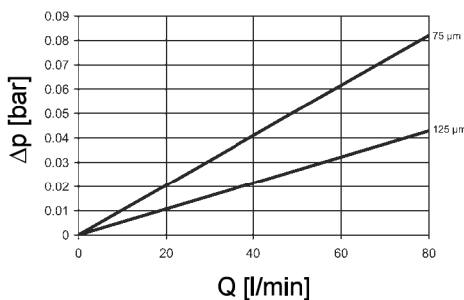


#### 4.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS (FOR SF/SFM/SFF FILTERS)

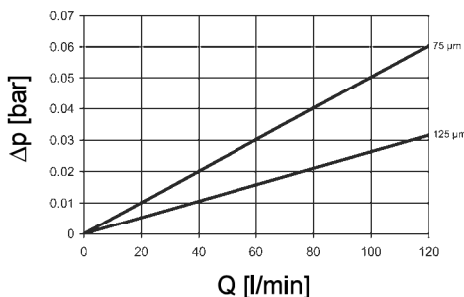
The gradient coefficients in mbar/(l/min) apply to mineral oils with a kinematic viscosity of 30 mm<sup>2</sup>/s. The pressure drop changes proportionally to the change in viscosity.

| RS  | W 75 |        |
|-----|------|--------|
|     | μm   | 125 μm |
| 60  | 1.03 | 0.54   |
| 110 | 0.52 | 0.26   |
| 160 | 0.36 | 0.19   |
| 240 | 0.25 | 0.13   |
| 330 | 0.19 | 0.10   |
| 400 | 0.20 | 0.16   |
| 500 | 0.20 | 0.16   |

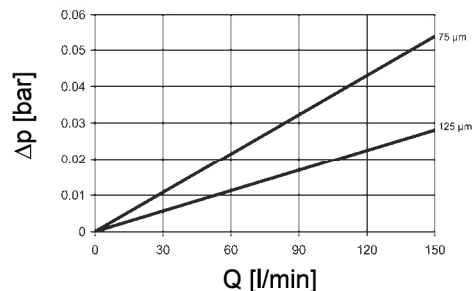
60 W



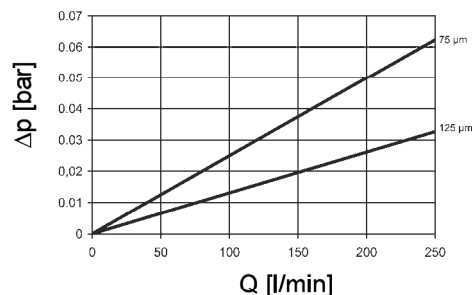
110 W



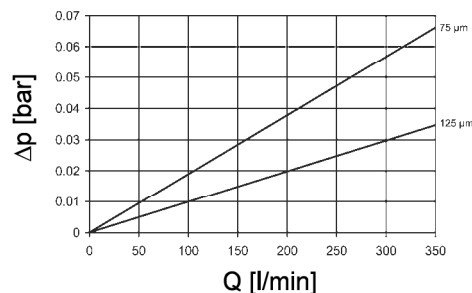
160 W



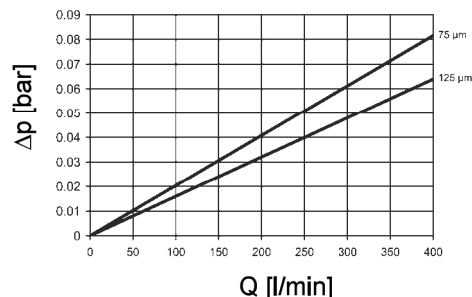
240 W



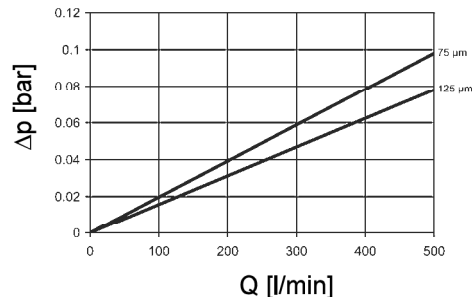
330 W



400 W



500 W

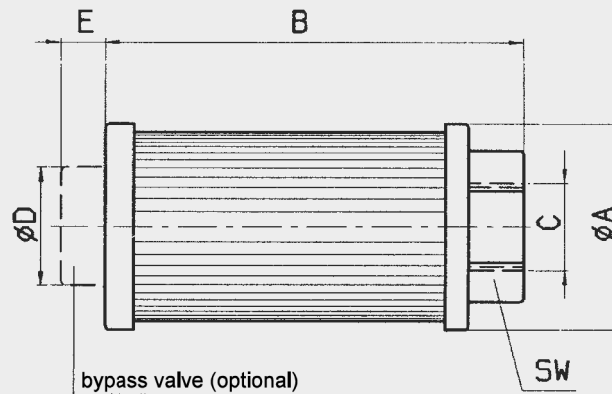


## 5. DIMENSIONS

### Tank requirements

1. In the filter contact area, the tank flange should have a maximum flatness of 0.3 mm and RA 3.2 µm maximum roughness.
2. In addition, the contact area should be free of damage and scratches.
3. The fixing holes of the tank flange must be blind, or stud bolts with threadlocker must be used to fix the filter.  
As an alternative, the tank flange can be continuously welded from the inside.
4. Both the tank sheet metal and/or the filter mounting flange must be sufficiently robust so that neither deform when the seal is compressed during tightening.

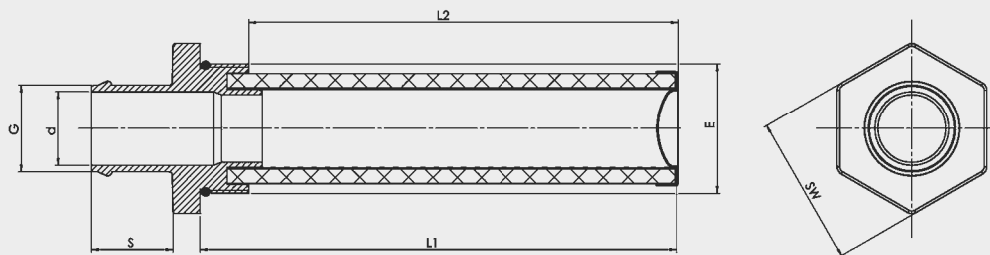
### Suction filter element S



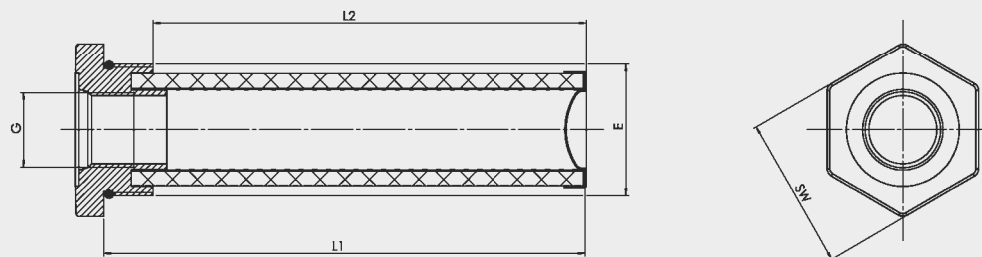
| Types  | A    | B   | C    | D<br>(ISO 228) | E    | SW | Flow rate<br>l/min |
|--------|------|-----|------|----------------|------|----|--------------------|
| 0015 S | 44   | 104 | G ½  | 24             | 10.5 | 30 | 15                 |
| 0025 S | 63   | 127 | G ¾  | 36             | 13.5 | 46 | 25                 |
| 0050 S | 63   | 159 | G 1  | 36             | 13.5 | 46 | 50                 |
| 0100 S | 86   | 210 | G 1½ | 46             | 18.5 | 69 | 100                |
| 0180 S | 86.5 | 311 | G 2  | 46             | 18.5 | 69 | 180                |

### Suction filter element S.. for mounting on the outside of tank

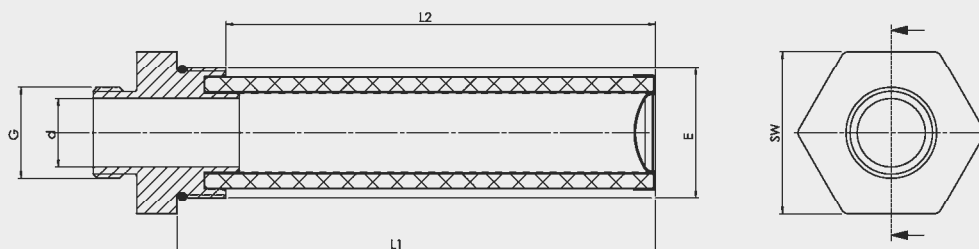
#### Type SHB



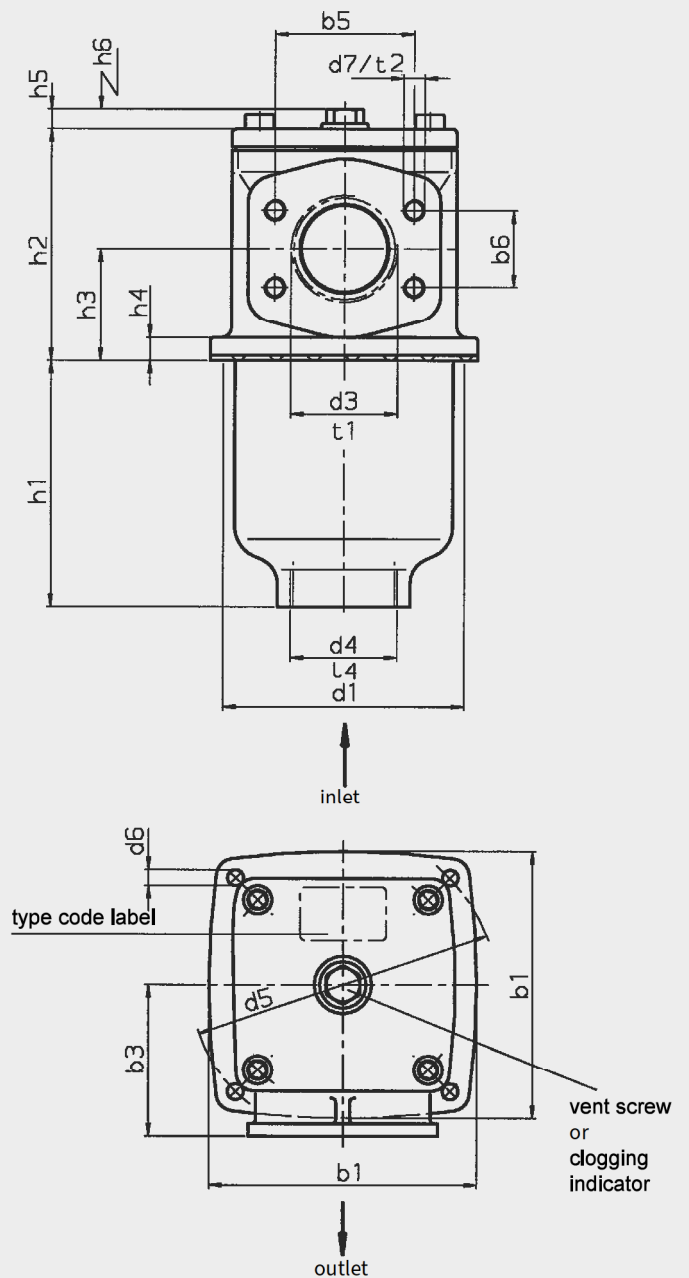
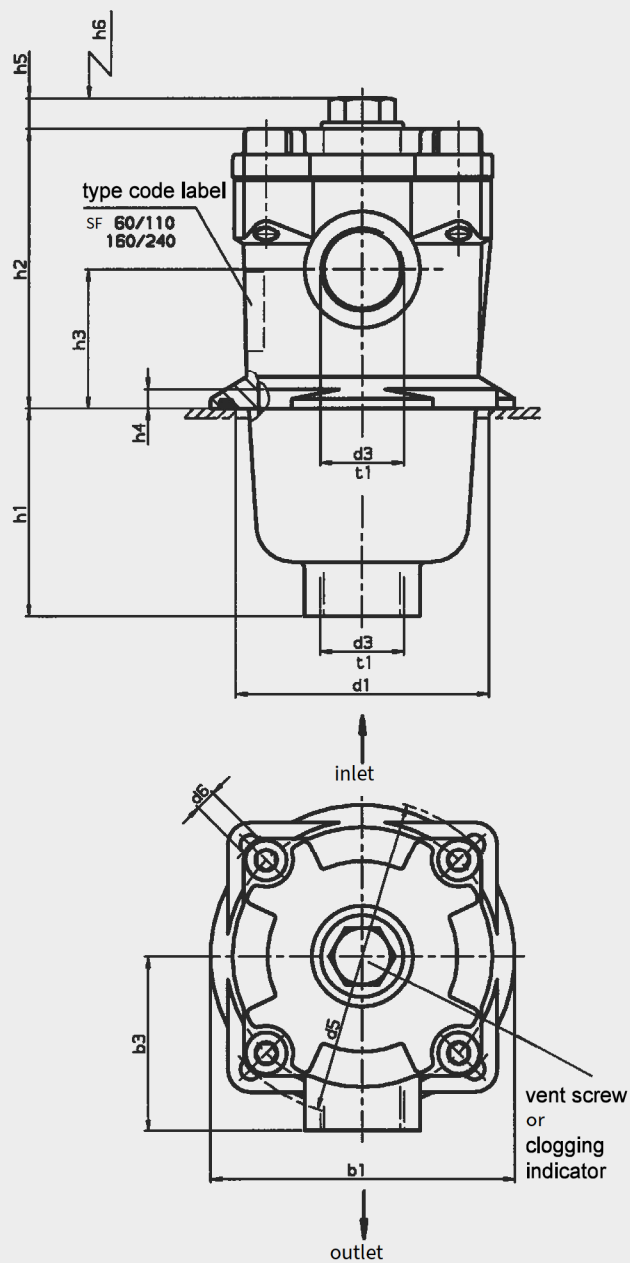
#### Type SUI



#### Type SGx

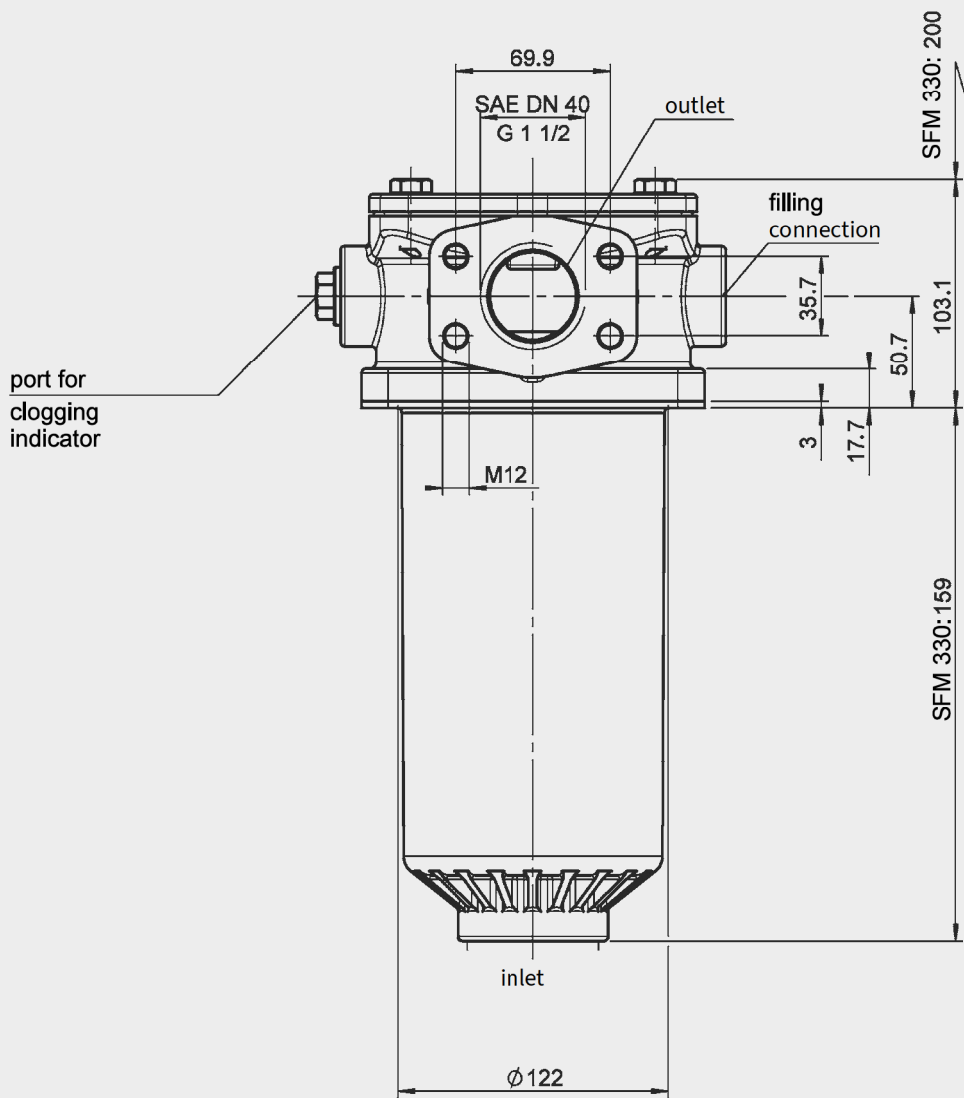


| Designation    | G            | E            | d  | L1  | L2  | SW |
|----------------|--------------|--------------|----|-----|-----|----|
| 0110 SHB 125 W | 38.1         | 2½-12 UN 2 B | 32 | 176 | 158 | 70 |
| 0070 SHB 125 W | 32.0         | 1 7/8-12 UNF | 25 | 176 | 158 | 55 |
| 0060 SHB 125 W | 32.0         | 1 7/8-12 UNF | 25 | 143 | 125 | 55 |
| 0070 SUI 125 W | 1 1/16-12 UN | 1 7/8-12 UNF | -  | 176 | 158 | 55 |
| 0060 SUI 125 W | 1 1/16-12 UN | 1 7/8-12 UNF | -  | 143 | 125 | 55 |
| 0110 SGF 125 W | G 1½         | 2½-12 UN 2 B | 34 | 176 | 158 | 70 |
| 0070 SGD 125 W | G 1          | 1 7/8-12 UNF | 25 | 176 | 158 | 55 |
| 0040 SGC 125 W | G ¾          | 1 7/8-12 UNF | 20 | 143 | 125 | 55 |

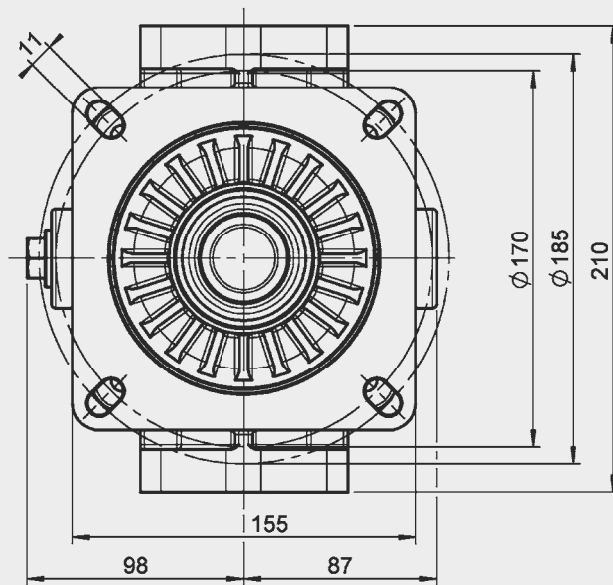


| SF  | b1  | b3 | b5   | b6   | d1  | d3 <sup>1)</sup> | d4 | d5  | d6 <sup>2)</sup> | d7  | h1  | h2  | h3 | h4 | h5 | h6  | t1 | t2 | t4 | Weight<br>incl.<br>element<br>[kg] | Volume<br>of pressure<br>chamber<br>[l] |
|-----|-----|----|------|------|-----|------------------|----|-----|------------------|-----|-----|-----|----|----|----|-----|----|----|----|------------------------------------|-----------------------------------------|
| 60  | 96  | 55 | -    | -    | 80  | G ¾              | -  | 100 | M5               | -   | 66  | 88  | 44 | 6  | 12 | 80  | 17 | -  | -  | 0.9                                | 0.4                                     |
| 110 | 96  | 55 | -    | -    | 80  | G ¾              | -  | 100 | M5               | -   | 133 | 88  | 44 | 6  | 12 | 145 | 17 | -  | -  | 1.1                                | 0.6                                     |
| 160 | 126 | 72 | -    | -    | 106 | G 1¼             | -  | 135 | M6               | -   | 89  | 108 | 54 | 6  | 12 | 120 | 20 | -  | -  | 1.8                                | 1.0                                     |
| 240 | 126 | 72 | -    | -    | 106 | G 1¼             | -  | 135 | M6               | -   | 150 | 108 | 54 | 6  | 12 | 180 | 20 | -  | -  | 2.2                                | 1.4                                     |
| 330 | 150 | 85 | -    | -    | 135 | G2<br>SAE DN 50  | G2 | 170 | M8               | -   | 138 | 130 | 63 | 13 | 12 | 180 | 27 | -  | 27 | 4.1                                | 2.0                                     |
|     |     |    | 77.8 | 42.9 |     |                  |    |     |                  | M12 |     |     |    |    |    |     |    | 23 |    |                                    |                                         |

<sup>1)</sup> Threaded port to ISO 228 / <sup>2)</sup> Mounting hole for screw

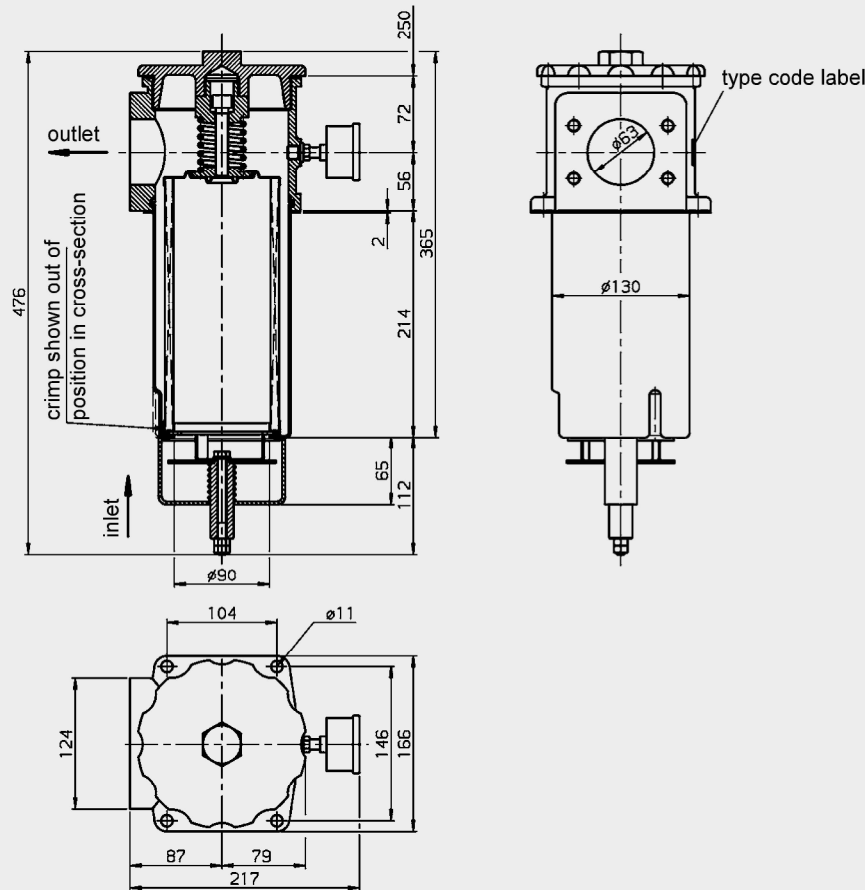


View from below

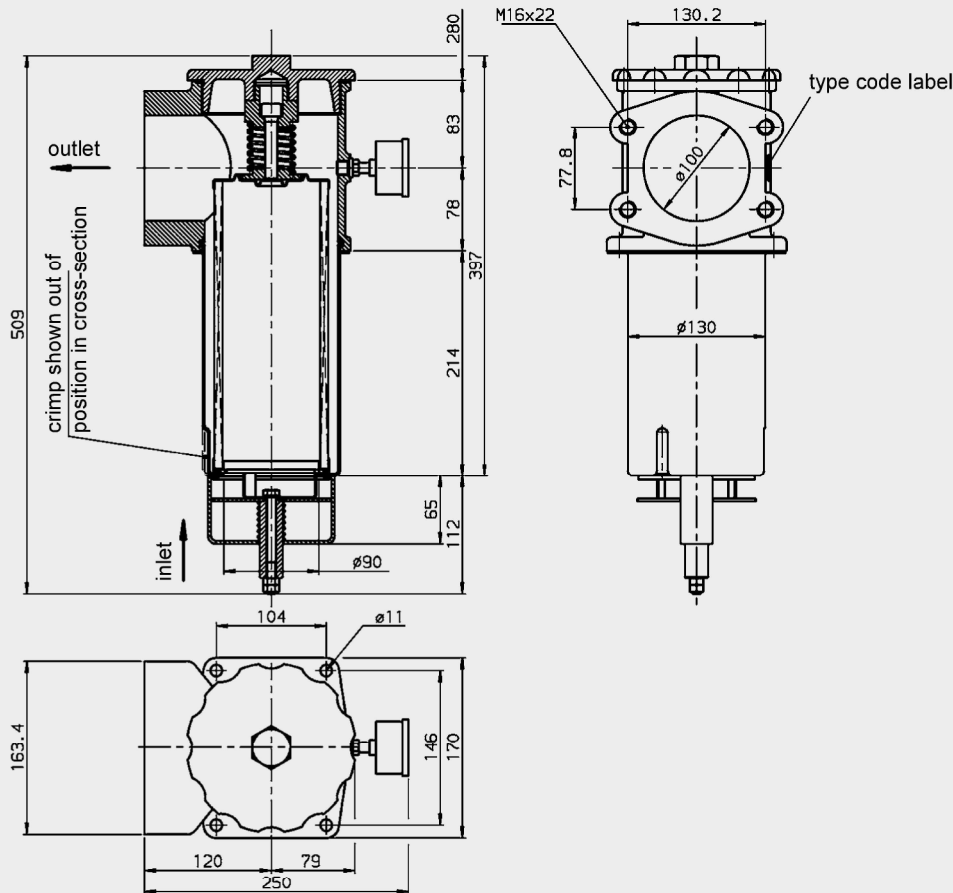


| SFM | Weight<br>incl.<br>element<br>[kg] | Volume of<br>pressure<br>chamber<br>[l] |
|-----|------------------------------------|-----------------------------------------|
| 330 | 3.9                                | 2.0                                     |

SFF 400



SFF 500



| SFF | Volume of pressure chamber [l] |
|-----|--------------------------------|
| 400 | 4.23                           |
| 500 | 4.63                           |

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.