

# HYDAC

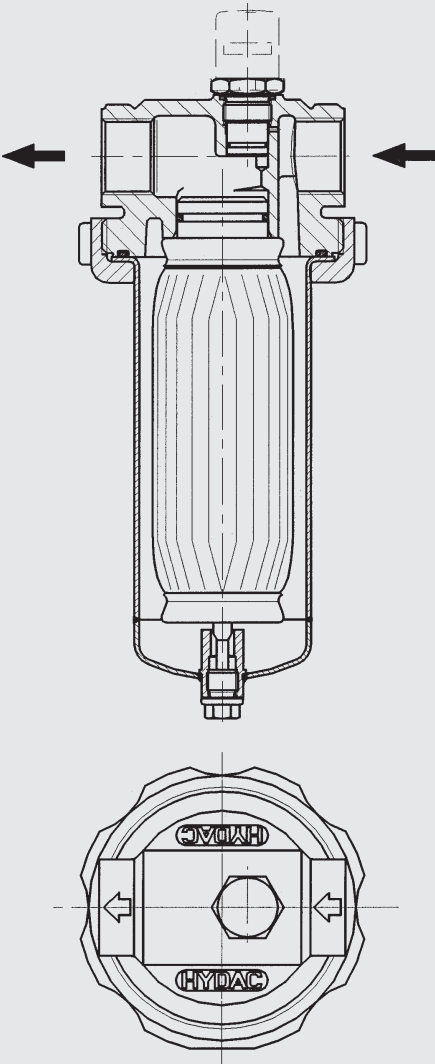
# INTERNATIONAL

## Process Filter Low-Pressure PFL Process Filter Medium-Pressure PFM

HYDAC stainless steel inline filters, type PFL and PFM, are designed for inline mounting in systems. They enable contamination to be separated from the fluids used at operating pressures of up to 40 bar and at temperatures of up to 200 °C.



## PFL/PFM



## 1. DESCRIPTION

### 1.1 GENERAL

HYDAC stainless steel inline filters, type PFL and PFM, are designed for use in industrial processing systems. They are suitable for separating contamination from low and high viscosity fluids. The range of different sizes, filter materials and sealing materials means that the filters can be adapted to the respective application conditions.

According to the required cleanliness level, the following stainless steel filter elements can be used: Chemicon® (metal fibre, filtration rating: 1 µm to 20 µm absolute), wire mesh (mesh width  $\geq 25$  µm), pleated, or slotted tube (slot width  $\geq 50$  µm). Slotted tubes consist of profiled wire which is wound in a spiral over a support section. The filtration rating is determined by the distance between the coil loops.

Contamination of the filter elements can be monitored by means of a clogging indicator (differential pressure monitoring) fitted to the filter.

### 1.2 BASIC MODEL

The stainless steel inline filters type PFL and PFM consist of a filter element, a filter head and a filter bowl which are held together by means of a synthetic or stainless steel lock nut.

The flow direction is from out to in. The filter elements can be reused several times, thereby reducing the costs of disposal and re-purchase.

## 2. TECHNICAL SPECIFICATIONS

### 2.1 GENERAL

2.1.1 **Type of construction**  
Inline filter

2.1.2 **Pressure range**  
PFL pressure range:  
PN 10 at 100 °C  
PFM pressure range:  
PN 40 at 100 °C  
PN 16 at 200 °C

### 2.1.3 Materials

Filter head:  
stainless steel 1.4581 (316 Ti)  
Filter bowl:  
stainless steel 1.4571 (316 Ti)  
Lock nut:  
PFL: high temperature  
synthetic material  
PFM: stainless steel 1.4571(316 Ti)  
Filter elements:  
Stainless steel : 1.4571  
(AISI 316 Ti), 1.4401  
(AISI 316 L), 1.4404 (AISI 316 L)

### 2.1.4 Seals

FPM (Viton) or FEP  
(fluorinated ethylene propylene)  
encapsulated O-rings  
Other sealing materials on request.

### 2.1.5 Inline connection

Parallel pipe thread  
(to DIN ISO 228, Part 1)

### 2.1.6 Connection size

G1

### 2.1.7 Weights (without elements)

Size	PFL	PFM
0	3.7 kg	4.4 kg
1	4.1 kg	4.9 kg
2	4.7 kg	5.6 kg
3	5.9 kg	6.8 kg

### 2.1.8 Filter housing volume

Size 0: 0.4 l  
Size 1: 0.8 l  
Size 2: 1.6 l  
Size 3: 3.0 l

## 2.2. HYDRAULIC DATA

### 2.2.1 Operating pressure

Type of filter	Max. pressure at 100 °C
PFL	10 bar
PFM	40 bar
PFM	100 bar (on request)

### 2.2.2 Operating temperature

PFL: max. 120 °C  
PFM: max. 200 °C

The boiling point of the fluid must be higher than the operating temperature at atmospheric pressure.

When using a clogging indicator:  
max. 100 °C

### 2.2.3 Permiss. differential pressure across filter element

$\Delta p = 40$  bar

### 3. TECHNICAL DATA

#### 3.1. MODEL CODE FOR PFL/PFM (also order example)

**PFL - 1 - G - 2 - V - 0 - L24 / EC**

#### Type of filter

PFL (synthetic lock nut)  
PFM\*\* (stainless steel lock nut)

#### Size

0 = short filter bowl  
1 = medium filter bowl  
2 = long filter bowl  
3 = very long filter bowl

#### Type of connection

G = threaded connection 1"

#### Type of clogging indicator

0 = no indicator  
1 = with visual clogging indicator (PVD 2 B.1)  
2 = with visual/electrical indicator (PVD 2 D.0/-L..) \*  
3 = with electrical indicator (PVD 2 C.0)

#### Material of seals

V = FPM (Viton)  
T = FEP-encapsulated

Other seals on request

#### Modification number

#### Supplementary details

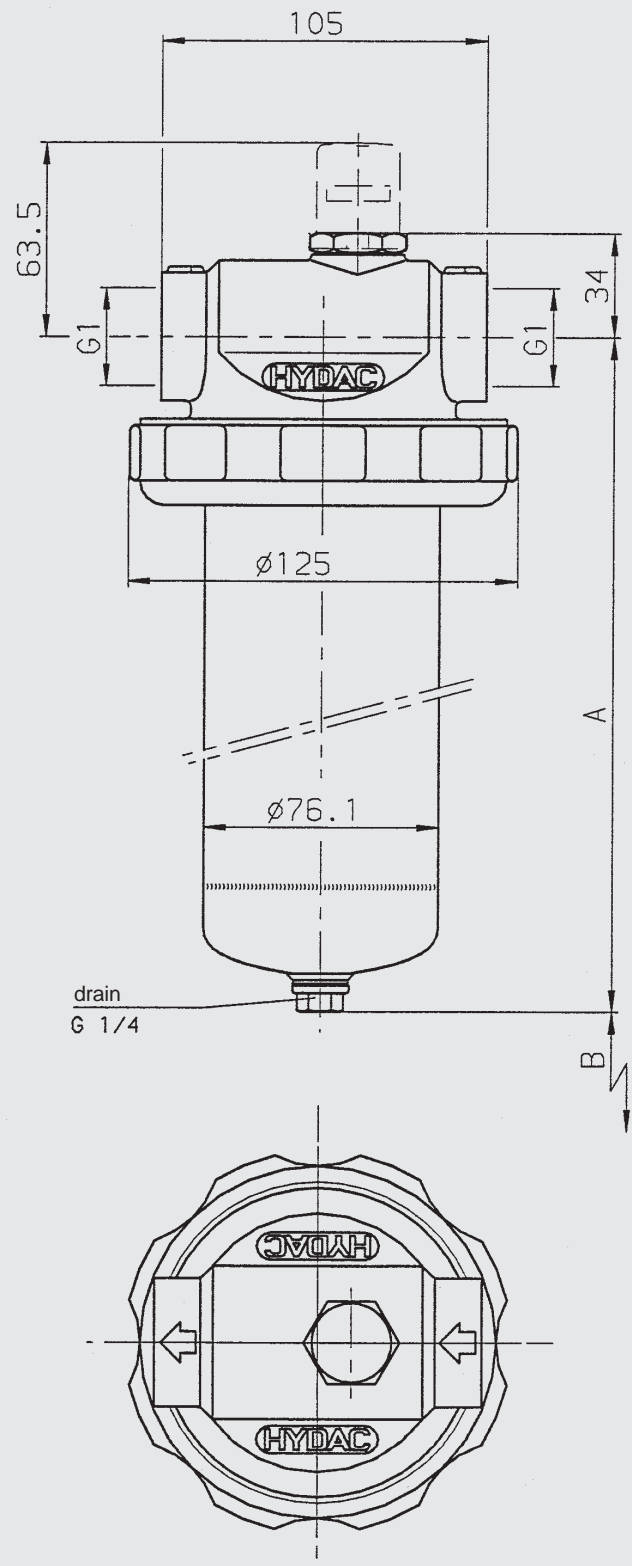
#### Element code

(see point 3.3.)

\* See Clogging Indicators for Process Filters, brochure no. E 7.706../..

\*\* for PFM 100 bar, please contact HYDAC for drawing n°. 3103298

### 3.2 PFL/PFM DIMENSIONS



Size	A	B (installation height)
0	146	35
1	240	35
2	400	35
3	725	35

### 3.3. MODEL CODE FOR SZ ELEMENT

(also order example)

SZ - 1 - 20 - M - V

Type of element

Size

- 0
- 1
- 2
- 3

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

- 1; 3; 5; 10; 20 Chemicon® (metal fibre)
- 25; 40; 60; 100; 150; 200; 250 (wire mesh)
- 50; 100; 200; 300; 500; 1000; 1500; 2000 (slotted tube)

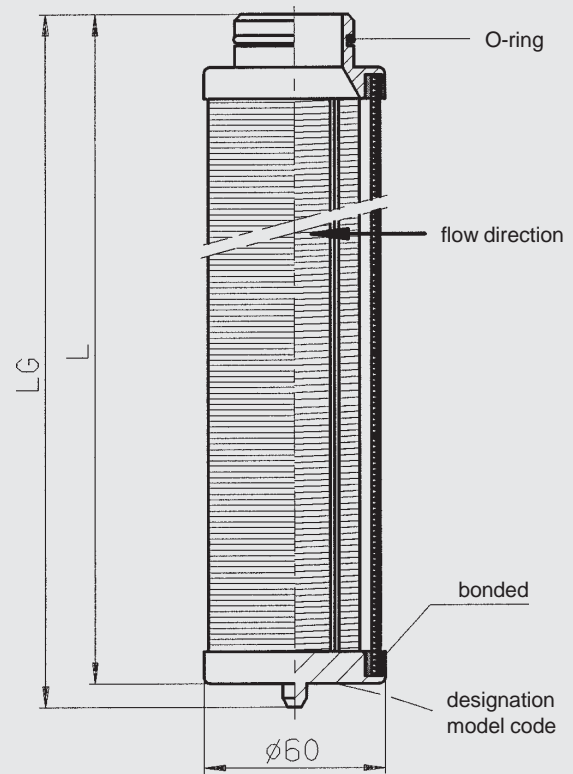
Filter material

- M = Chemicon® (metal fibre)
- MS = Chemicon® (metal fibre) with support spring
- D = wire mesh
- DS = wire mesh with support spring
- S = slotted tube

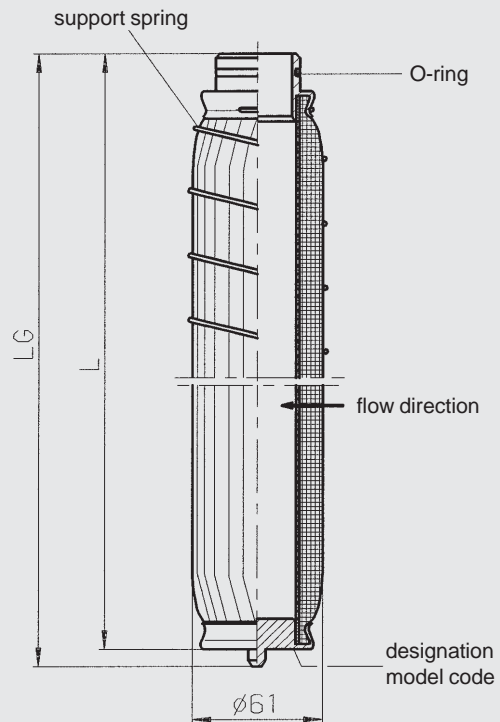
Material of seals

- V = FPM (Viton) O-ring
- T = FEP encapsulated O-ring
- other seals on request

### 3.4. DIMENSIONS OF ELEMENTS



Size	Filtration area	L	LG	O-ring dimensions
0	116 cm <sup>2</sup>	88	96	34.6 x 2.6
1	262 cm <sup>2</sup>	185	193	34.6 x 2.6
2	552 cm <sup>2</sup>	347	355	34.6 x 2.6
3	1133 cm <sup>2</sup>	672	680	34.6 x 2.6

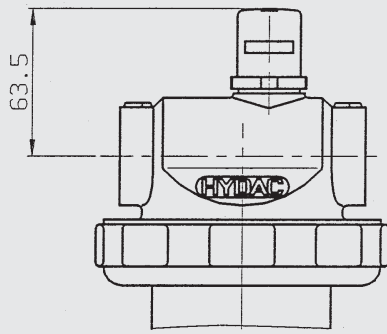


Size	Filtration area	L	LG	O-ring dimensions
0	676 cm <sup>2</sup>	88	96	34.6 x 2.6
1	1710 cm <sup>2</sup>	185	193	34.6 x 2.6
2	3421 cm <sup>2</sup>	347	355	34.6 x 2.6
3	6842 cm <sup>2</sup>	672	680	34.6 x 2.6

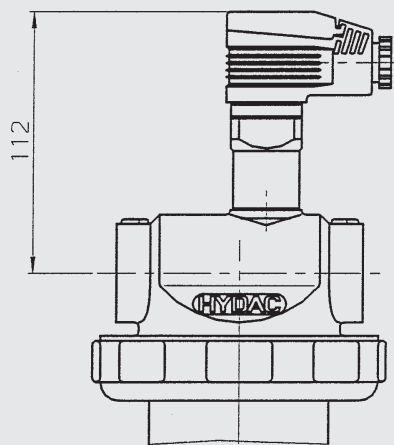
### 3.5. CLOGGING INDICATORS

#### PFL/PFM

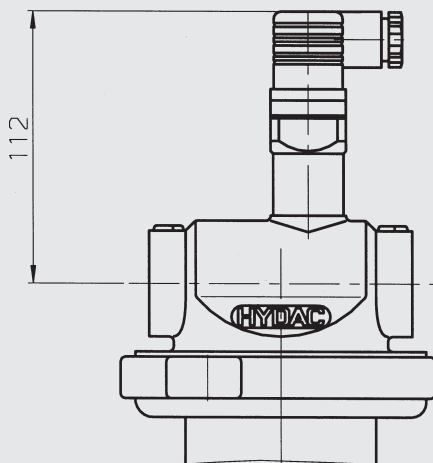
Visual clogging indicator



Visual/electrical clogging indicator

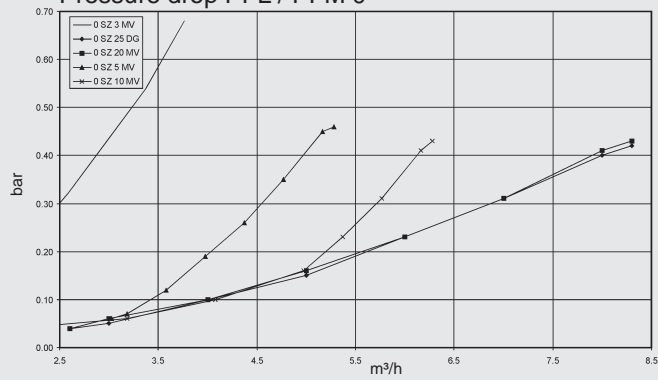


Electrical clogging indicator

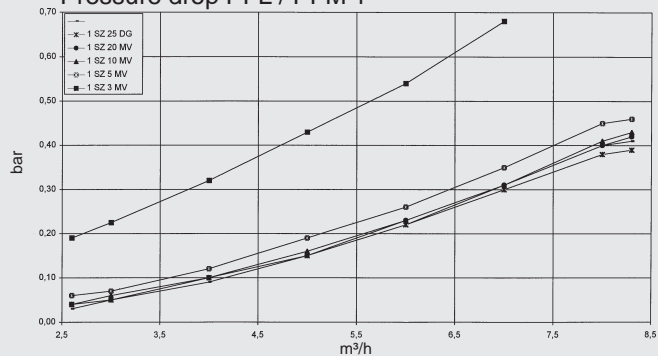


### 3.6. GRAPHS

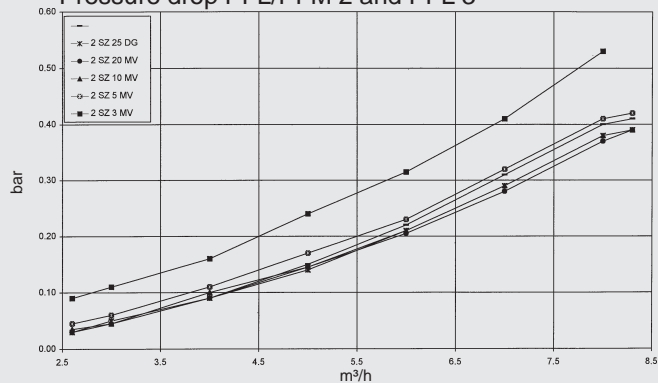
Pressure drop PFL / PFM 0



Pressure drop PFL / PFM 1



Pressure drop PFL/PFM 2 and PFM 3



## 4. FILTRATION PERFORMANCE

### 4.1 RETENTION RATES FOR WIRE MESH AND SLOTTED TUBE

Nominal retention rate.

The filtration ratings given in the model code for these elements are based on a HYDAC factory standard filter test.

This test is carried out by introducing a large amount of dust (ISO MTD) at the beginning of the filter test and subsequently separating the contamination particles over 1 hour. The test filter must retain 90 - 95 % of all particles larger than the given filtration rating.

### 4.2. RETENTION RATES FOR CHEMICRON®

Absolute retention rate.

The rates given in the brochure are determined by the multi-pass test carried out on the HYDAC test rig, in line with ISO 4572 (multi-pass test for the determination and proof of the filtration performance, extended to finest filtration).

In this test at least 99 % of all particles larger than the given filtration rating must be retained and this up to the given differential pressure. A filtration rate of 99 % corresponds to a  $\beta_x$  value of 100 ( $\beta_x = 100$ ), which denotes absolute filtration.

## 5. 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.