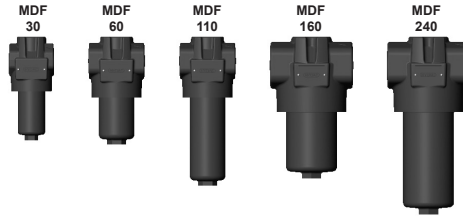


## Pressure Filter MDF up to 280 l/min, up to 280 bar



### 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.

Standard equipment:

- without bypass valve
- connection for a clogging indicator in filter head
- installation holes in the filter head

#### 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 |

#### 1.3 FILTER SPECIFICATIONS

|  |  |
|--|--|
| Nominal pressure                           | 210 bar or 280 bar   |
| Fatigue strength                           | min. 5 million cycles at 1.2 times nominal pressure (for other pressures, see Point 1.8)   |
| Temperature range                          | -30 °C to +100 °C<br>(-30 °C to -10 °C: $p_{max} = 140$ bar)   |
| Material of filter head                    | EN-GJS-400-15  |
| Material of filter bowl                    | Steel  |
| Type of indicator                          | VM (Diff. pressure indicator up to 210 bar operating pressure)<br>VD (Diff. pressure indicator up to 420 bar operating pressure) |
| Pressure setting of the clogging indicator | 5 bar (others on request)  |
| Bypass cracking pressure (optional)        | 6 bar (others on request)  |

#### 1.4 SEALS

NBR (=Perbunan)

#### 1.5 INSTALLATION

Inline filter

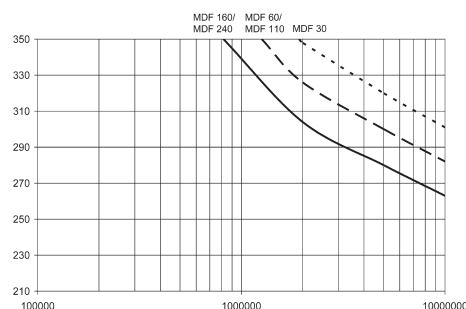
#### 1.6 SPECIAL MODELS AND ACCESSORIES

- Bypass valve built into the head, separate from the main flow
- Oil drain plug
- Seals in FPM, EPDM
- Test and approval certificates

#### 1.7 SPARE PARTS

See Original Spare Parts List

#### 1.8 FATIGUE STRENGTH



#### 1.9 CERTIFICATES AND APPROVALS

- Test certificate 2.2
- Manufacturer's certificate O and M to DIN 55350, part 18  
Other certificates on request

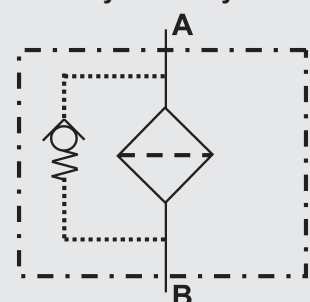
#### 1.10 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

- 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

#### 1.11 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



## 2. MODEL CODE (also order example)

MDF ON 60 O C 10 D 1 . X /-L24

### 2.1 COMPLETE FILTER

#### Filter type

MDF

#### Filter material

ON Optimicron® W Stainl. st. wire mesh  
 BH/HC Betamicron® (BH4HC) V Stainless steel fibre

#### Size of filter or element

MDF: 30, 60, 110, 160, 240

#### Operating pressure

Threaded port: L = 210 bar (VM clogging indicator)  
 O = 280 bar (standard; VD clogging indicator)  
 Flange connection: L = 210 bar (3000 PSI flange) → VM clogging indicator

#### Type and size of connection

| Type | Connection | Filter size |    |     |     |     |
|------|------------|-------------|----|-----|-----|-----|
|      |            | 30          | 60 | 110 | 160 | 240 |
| B    | G 1/2      | x           |    |     |     |     |
| C    | G 3/4      | ●           | x  | x   |     |     |
| D    | G1         |             | ●  | ●   |     |     |
| E    | G1 1/4     |             |    |     | x   | x   |
| F    | G1 1/2     |             |    |     | ●   | ●   |
| H    | SAE DN 13  | ●           |    |     |     |     |
| I    | SAE DN 20  |             | ●  | ●   |     |     |
| J    | SAE DN 32  |             |    |     | ●   | ●   |

x Preferred models

#### 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 stainless steel blanking plug in indicator port  
 B visual  
 C electrical  
 D visual and electrical  
 for other clogging indicators, see brochure no. 7.050../..

#### Type code

1

#### 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 (24V, 48V, 110V, 220V) only for clogging indicators  
 LED 2 light emitting diodes up to 24 Volt type "D"  
 SO184 pressure release/oil drain screw  
 V FPM seals  
 W suitable for HFA, HFC oil-water emulsions (only necessary when using a clogging indicator or V or W elements)

### 2.2 Replacement element

0060 D 010 ON /-V

#### Size

0030, 0060, 0110, 0160, 0240

#### Type

D

#### Filtration rating 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

VM 5 D . X /-L24

#### Type of indicator

VM Diff. pressure indicator up to 210 bar oper. pressure  
 VD Diff. pressure indicator 420 bar oper. pressure

#### Pressure setting

5 standard 5 bar, 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  $\Delta p$  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)

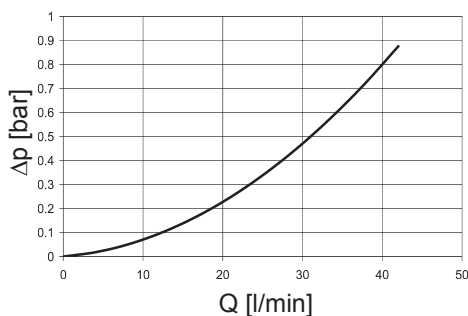
For ease of calculation, our Filter Sizing Program is available on request free of charge.

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

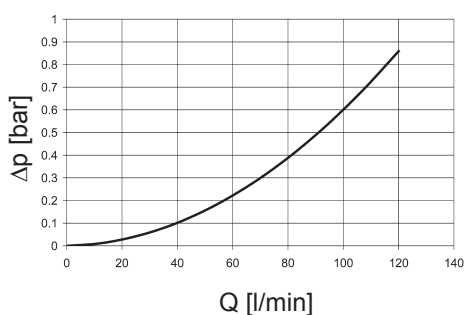
#### 3.1 $\Delta p$ -Q HOUSING CURVES BASED ON ISO 3968

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.

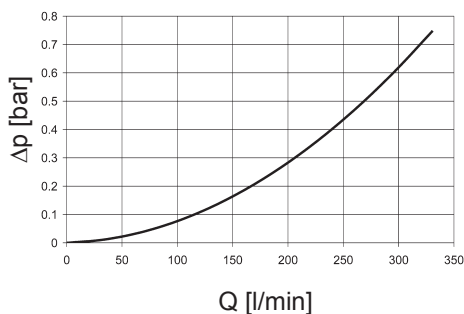
##### MDF 30



##### MDF 60-110



##### MDF 160-240



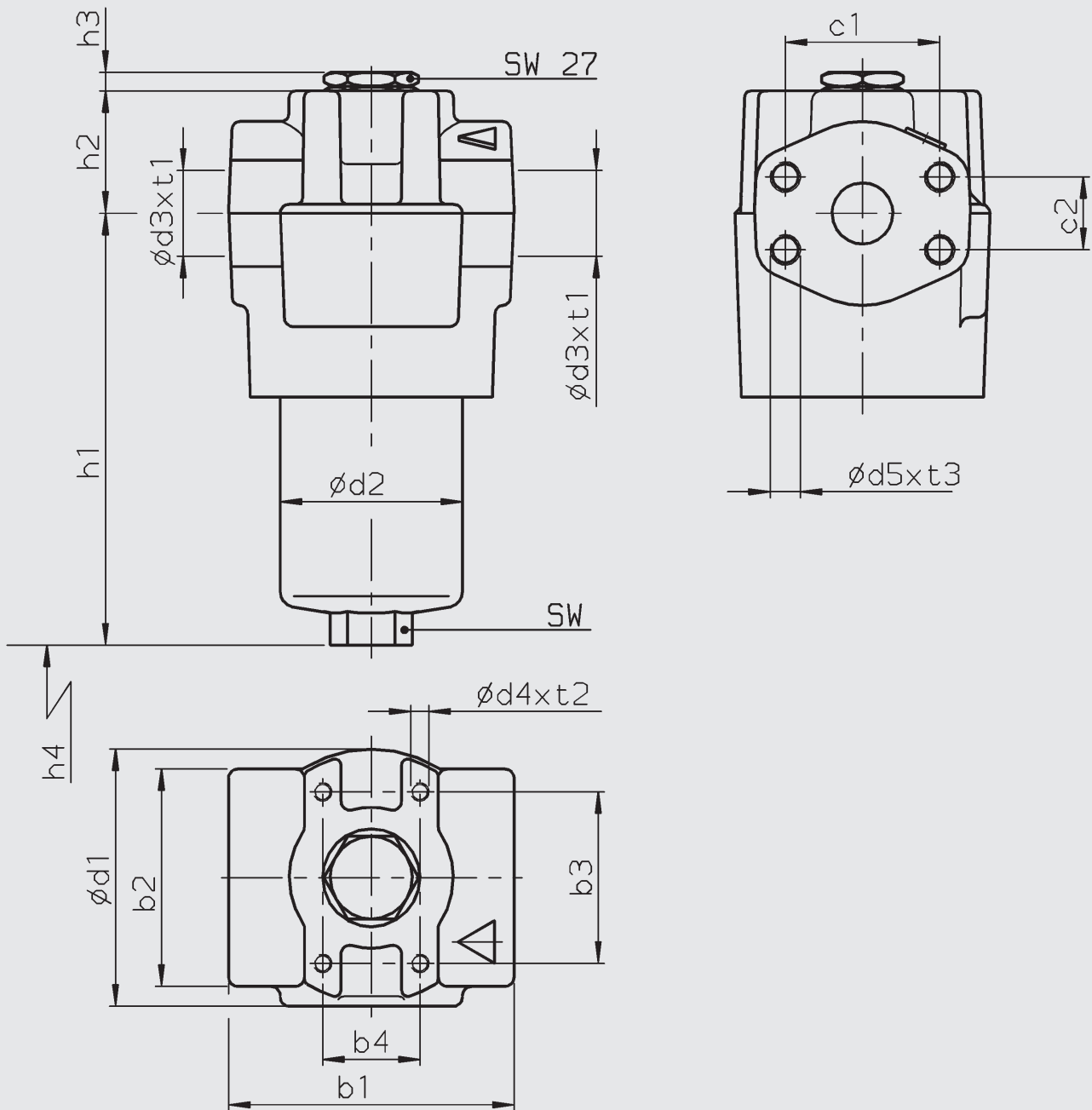
### 3.2 GRADIENT COEFFICIENTS (SK) FOR FILTER ELEMENTS

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.

| MDF | ON   |      |      |       |       |       |
|-----|------|------|------|-------|-------|-------|
|     | 1 μm | 3 μm | 5 μm | 10 μm | 15 μm | 20 μm |
| 30  | 77.8 | 63.9 | 43.3 | 22.8  | 14.0  | 11.3  |
| 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  |
| 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  |

| MDF | V    |      |       |       | 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   |
| 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   |

## 4. DIMENSIONS



| MDF       | b1  | b2 | b3 | b4 | C1   | C2   | d1  | d2 | d3                                 | d4  | d5  | h1  | h2 | h3 | h4  | SW | t1    | t2 | t3 | Weight incl. element [kg] | Volume of pressure chamber [l] |
|-----------|-----|----|----|----|------|------|-----|----|------------------------------------|-----|-----|-----|----|----|-----|----|-------|----|----|---------------------------|--------------------------------|
| 30 (B/C)  | 71  | 55 | 45 | 30 | -    | -    | 69  | 45 | G $\frac{1}{2}$ -G $\frac{3}{4}$   | M5  | -   | 133 | 38 | 6  | 75  | 19 | 14-17 | 6  | -  | 2.3                       | 0.1                            |
| 30 (H)    | 70  | 55 | 45 | 30 | 38.1 | 17.5 | 69  | 45 | SAE DN 13                          | M5  | M8  | 133 | 38 | 6  | 75  | 19 | -     | 6  | 12 | 2.3                       | 0.1                            |
| 60 (C/D)  | 90  | 71 | 56 | 32 | -    | -    | 86  | 59 | G $\frac{3}{4}$ -G1                | M6  | -   | 138 | 40 | 6  | 85  | 27 | 17-19 | 9  | -  | 4.1                       | 0.18                           |
| 60 (I)    | 89  | 71 | 56 | 32 | 47.6 | 22.2 | 86  | 59 | SAE DN 20                          | M6  | M10 | 138 | 40 | 6  | 85  | 27 | -     | 9  | 15 | 4.1                       | 0.18                           |
| 110 (C/D) | 90  | 71 | 56 | 32 | -    | -    | 86  | 59 | G $\frac{3}{4}$ -G1                | M6  | -   | 206 | 40 | 6  | 85  | 27 | 17-19 | 9  | -  | 4.6                       | 0.32                           |
| 110 (I)   | 89  | 71 | 56 | 32 | 47.6 | 22.2 | 86  | 59 | SAE DN 20                          | M6  | M10 | 206 | 40 | 6  | 85  | 27 | -     | 9  | 15 | 4.6                       | 0.32                           |
| 160 (E/F) | 133 | 95 | 85 | 35 | -    | -    | 119 | 84 | G1 $\frac{1}{4}$ -G1 $\frac{1}{2}$ | M10 | -   | 187 | 47 | 6  | 105 | 32 | 21-23 | 14 | -  | 9.6                       | 0.55                           |
| 160 (J)   | 133 | 95 | 85 | 35 | 58.7 | 30.2 | 119 | 84 | SAE DN 32                          | M10 | M10 | 187 | 47 | 6  | 105 | 32 | -     | 14 | 15 | 9.6                       | 0.55                           |
| 240 (E/F) | 133 | 95 | 85 | 35 | -    | -    | 119 | 84 | G1 $\frac{1}{4}$ -G1 $\frac{1}{2}$ | M10 | -   | 246 | 47 | 6  | 105 | 32 | 21-23 | 14 | -  | 10.5                      | 0.79                           |
| 240 (J)   | 133 | 95 | 85 | 35 | 58.7 | 30.2 | 119 | 84 | SAE DN 32                          | M10 | M10 | 246 | 47 | 6  | 105 | 32 | -     | 14 | 15 | 10.5                      | 0.79                           |

(.) = connection size (see Point 2.1: Type and size of connection)

### 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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