

## Low Pressure Filter LPF

Flow rates up to 280 l/min

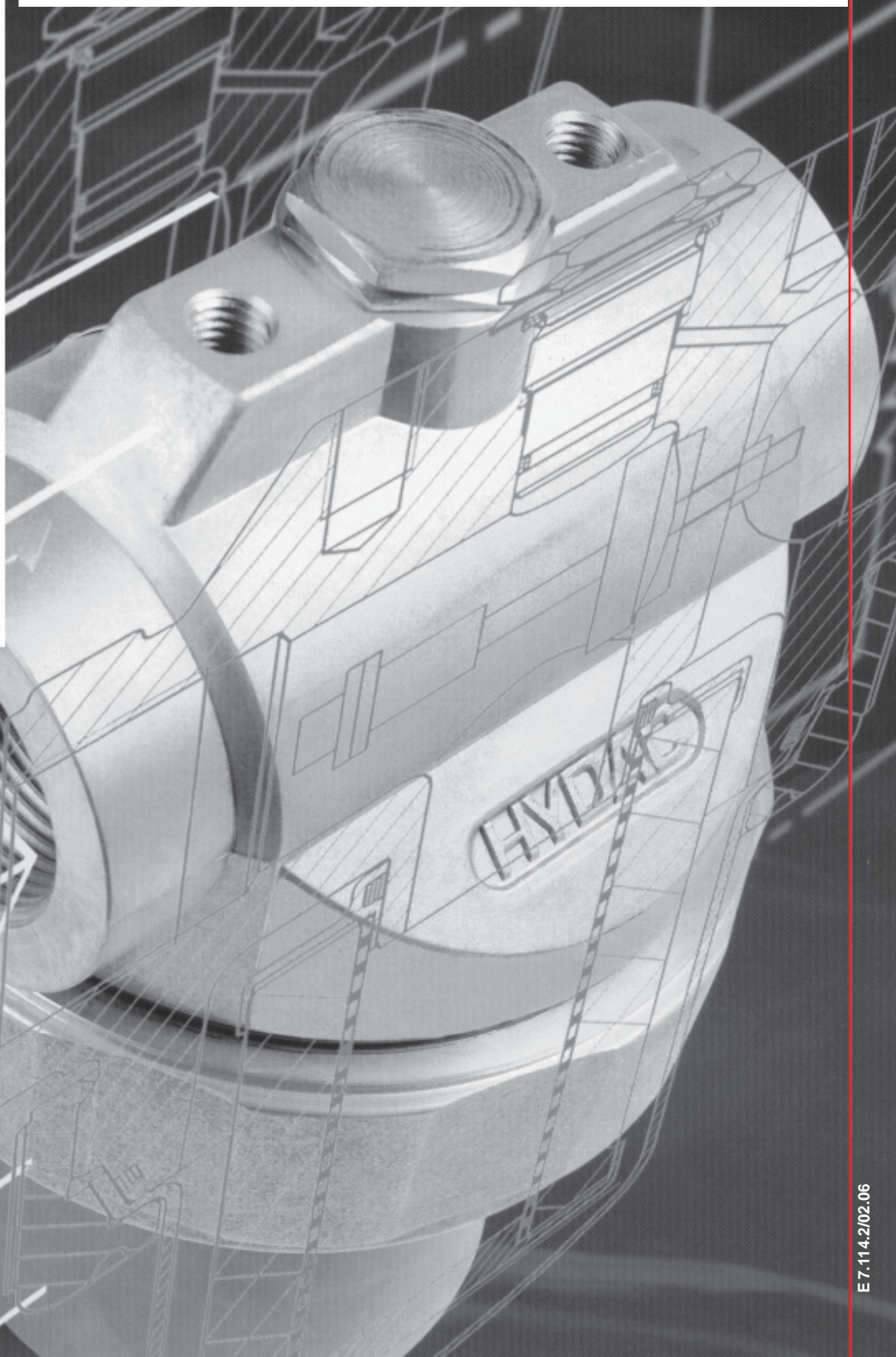
Pressure ranges up to 25 and 50 bar

Material: Aluminium / Steel

LPF low pressure filters offer the combined advantages of high performance filtration, high contamination retention capacity, long service life and economy.

The filters are particularly suited to applications in industrial hydraulics and in the mobile sector such as, for example:

- Pressure lines with up to 50 bar operating pressure
- Return lines with flow rate fluctuations and pressure peaks
- Feed lines of hydrostatic drives
- Off-line filtration
- Flushing circuits
- Alternative to high pressure spin-ons



## 1. TECHNICAL DESCRIPTION

### 1.1. FILTER HOUSING

#### Construction

The low pressure filter consists of a filter head, a filter element and a filter bowl which is fixed to the filter head by means of a retaining nut.

### 1.2. FILTER ELEMENTS

Hydac filter elements fulfil all ISO test criteria.

**Reliable filter operation is only guaranteed for original Hydac filter elements.**

The filter elements are also suitable for dynamic conditions due to their high pressure stability; max permissible  $\Delta p$  across the element:

Betamicron® (BN3HC) : 25 bar  
Betamicron® (BH3HC) : 210 bar  
Wire mesh (W/HC) : 30 bar

#### Fluid compatibility

Suitable for mineral oils, lubrication oils, non-flam fluids, synthetic and rapidly biodegradable fluids. For use with water, please contact our sales/technical department.

For further details on filter elements, please see brochure, no.: **E 7.200../..**

### 1.3. CLOGGING INDICATORS

VM 5 D. 0 / -L220

#### Type of indicator

VM differential pressure indicator

#### Pressure setting

5 5 bar

#### Indicator type code

B. = visual  
C. = electrical  
D. = visual/electrical

#### Modification number

0 = the latest version is always supplied

#### Supplementary details

-V Viton  
-Lxx voltage details for type "D"

For further details on clogging indicators, please see **brochure, no. E 7.050../..**

### 1.4. SEALS

Perbunan (= NBR) or Viton (= FPM for HFD oils).

### 1.5. SPECIAL MODELS AND ACCESSORIES

Please contact our sales/technical department.

### 1.6. SPARE PARTS

Please see Spare Parts List and Maintenance Instructions.

## 2. GENERAL

### Mounting

Inline filter

### Temperature range

-30 °C to +100 °C

### Pressure setting of the clogging indicator

$\Delta p_a = 5 \text{ bar}^{-10\%}$   
(optionally: 2 bar)

Other pressure settings on request

### Cracking pressure of the bypass valve

$\Delta p_o = 6 \text{ bar}^{+0.5 \text{ bar}}$   
(optionally: 3 bar)

Other cracking pressures on request

### 3. MODEL CODE

(also order example)

#### 3.1. COMPLETE FILTER

**LPF BN/HC 280 D E 10 D 1 . X /-L24**

**Filter type** \_\_\_\_\_

**Filter material of element** \_\_\_\_\_

BN/HC Betamicron® (BN3HC)

BH/HC Betamicron® (BH3HC)

W/HC Stainless steel wire mesh

**Size / Housing material** \_\_\_\_\_

160, 240, 280

Head: Aluminium; Bowl: Steel; Retaining nut: Aluminium (25 bar) Steel (50 bar)

**Operating pressure** \_\_\_\_\_

D = 25 bar

G = 50 bar | all sizes

**Type and size of port** \_\_\_\_\_

Type	Port	Filter size		
		160	240	280
E	G 1 1/4	●	●	●

**Filtration rating in µm** \_\_\_\_\_

BN3HC, BH3HC : 3, 5, 10, 20

W/HC : 25, 50, 100, 200

**Type of clogging indicator** \_\_\_\_\_

A without clogging indicator,  
steel blanking plug in indicator port

B with visual clogging indicator

C with electrical clogging indicator

D with visual and electrical clogging indicator

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

**Type code** \_\_\_\_\_

1

**Modification number** \_\_\_\_\_

X the latest version is always supplied

**Supplementary details** \_\_\_\_\_

V FPM seals, filter suitable for rapidly biodegradable oils and  
phosphate esters (HFD-R)

W filter suitable for oil-water emulsions (HFA, HFC) – (only necessary for W/HC!)

L... light with appropriate voltage (24V, 48V, 110V, 220V)

LED 2 light emitting diodes up to 24 volt

B. bypass valve cracking pressure (B3 = 3 bar, B6 = 6 bar)

only for clogging  
indicator type D

#### 3.2. REPLACEMENT ELEMENT

(also order example)

**0280 D 010 BN3HC /-V**

**Size** \_\_\_\_\_

0160, 0240, 0280

**Type** \_\_\_\_\_

D

**Filtration rating in µm** \_\_\_\_\_

BN3HC, BH3HC : 3, 5, 10, 20

W/HC : 25, 50, 100, 200

**Filter material** \_\_\_\_\_

BN3HC, BH3HC, W/HC

**Supplementary details** \_\_\_\_\_

V = FPM seals, filter suitable for rapidly biodegradable oils and  
phosphate esters (HFD-R)

W = NBR seals, filter suitable for oil-water emulsions (HFA, HFC)

## 4. FILTER SPECIFICATIONS

Filter type	Port	Element size	Number of elements	Weight [kg] with element
160	G 1¼	0160 D ...	1	2.3
240	G 1¼	0240 D ...	1	2.5
280	G 1¼	0280 D ...	1	3.4

## 5. FILTER CALCULATION / SIZING

The total pressure drop of a filter at a certain flow rate is the sum of the housing  $\Delta p$  and element  $\Delta p$ .

The pressure drop can either be determined with the aid of our HFS Filter Sizing Program, which is available free of charge, or by using the following graphs.

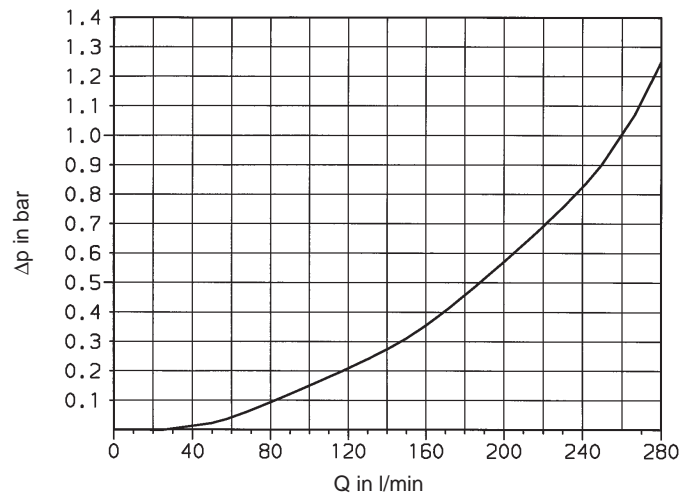
**NEW:** Sizing online at [www.hydac.com](http://www.hydac.com) (please click on the following buttons: Products - Filters - Electronic catalogue - Filter sizing HFS)

It must be stressed that all of the technical documentation from HYDAC Filtrertechnik always states the total housing pressure drop.

### 5.1. $\Delta P$ -Q DIAGRAMS TO ISO 3968

The housing graphs apply to mineral oil with a density of  $0.86 \text{ kg/dm}^3$  and a kinematic viscosity of  $30 \text{ mm}^2/\text{s}$ . In this case, the differential pressure changes proportionally to the density.

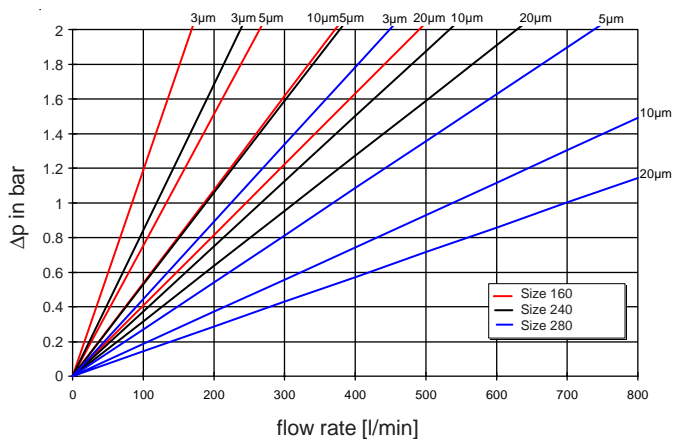
Size 160 - 280



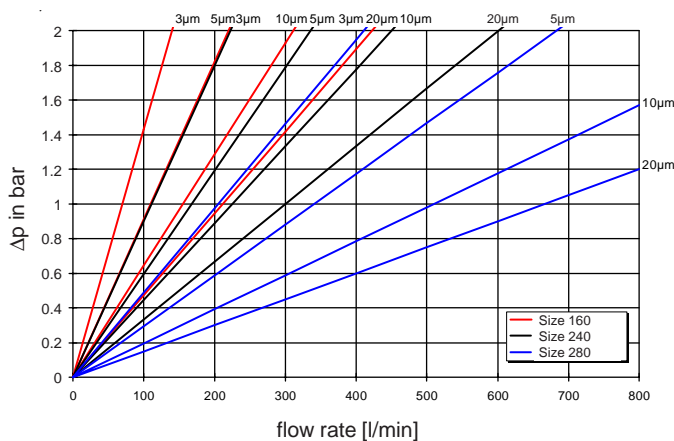
## 5.2. ΔP-Q GRAPHS – FILTER ELEMENTS

The element graphs apply to mineral oil with a kinematic viscosity of 30 mm<sup>2</sup>/s. The pressure drop changes proportionally to the change in viscosity (see Example 5.3.).

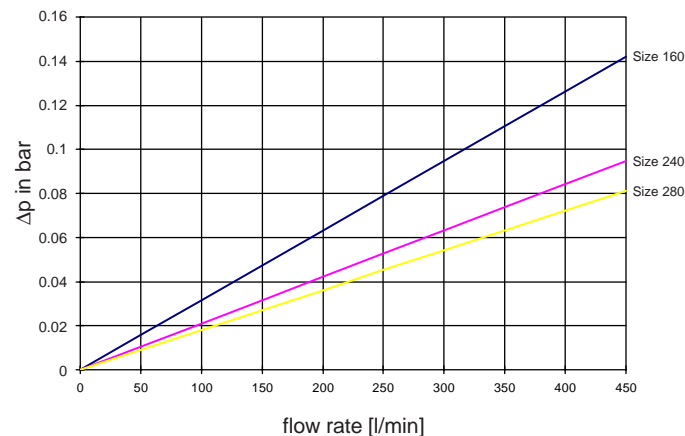
### BN3HC



### BH3HC



### W/HC



## 5.3. EXAMPLE

### General

$$\Delta p_{\text{total}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}} \cdot \frac{\text{viscosity}(\text{mm}^2/\text{s})}{30 \text{ mm}^2/\text{s}}$$

$\Delta p_{\text{housing}}$  = to be determined in accordance with Point 5.1.

$\Delta p_{\text{element}}$  = element pressure drop at flow rate Q and viscosity  $v = 30 \text{ mm}^2/\text{s}$  from graphs in Point 5.2.

### Example

System parameters: Q = 100 l/min;  
LPF 280 with BN3HC element 10 μm;  
Viscosity = 100 mm<sup>2</sup>/s  
(ISO VG 100 at 40 °C);

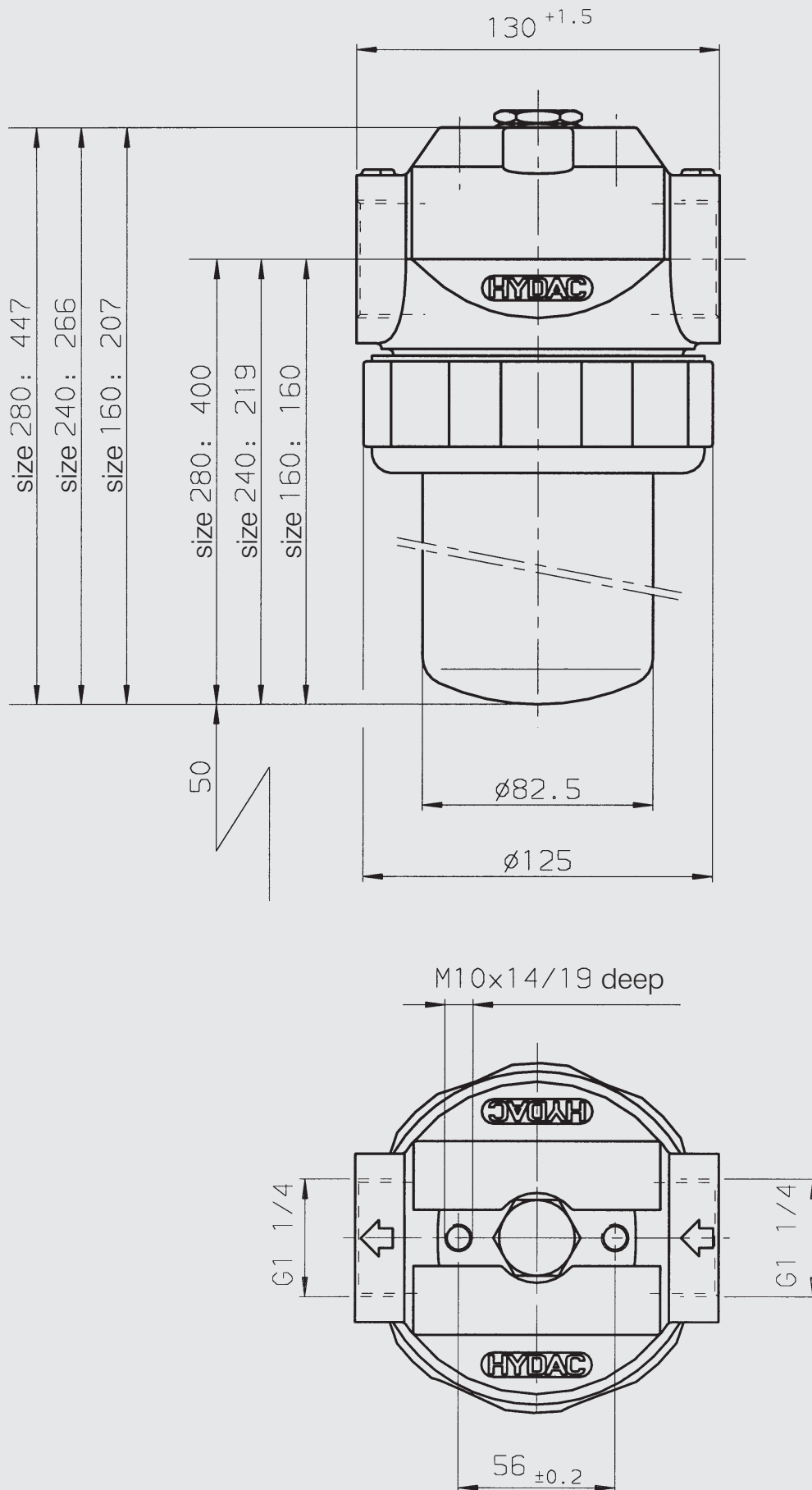
$$\Rightarrow \Delta p_{\text{housing}} = 0.15 \text{ bar (LPF 280)}$$

$$\Delta p_{\text{element}} = 0.2 \cdot \frac{100 \text{ mm}^2/\text{s}}{30 \text{ mm}^2/\text{s}} = 0.66 \text{ bar}$$

$$\Delta p_{\text{total}} = \Delta p_{\text{housing}} + \Delta p_{\text{element}} = \underline{\underline{0.82 \text{ bar}}}$$

## 6. DIMENSIONS

### 6.1. LPF 160 - 280



## 7. 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.

