



# WKFMND Change Over Inline Filter

**-Up to 400L/min**

**-Up to 210bar**



## 1. TECHNICAL SPECIFICATIONS

### 1.1 FILTER HOUSING

#### Construction

The filter housings are designed in accordance with international regulations. They consist of a filter head with built-in change-over valve and screw-in filter bowls.

Standard equipment:

- without bypass valve
- connection for a clogging indicator
- oil drain plug (WKFMND 160 to 400)

### 1.2 FILTER ELEMENTS

WK-Hydraulic 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:

Glass fiber (ON):	20 bar
Glass fiber (BN4HC):	20 bar
Glass fiber (BH4HC):	210 bar
Wire mesh (W/HC, W):	20 bar

### 1.3 FILTER SPECIFICATIONS

Nominal pressure	210 bar (WKFMND 160 to 400) 250 bar (WKFMND 60 to 140)
Fatigue strength	At nominal pressure $10^6$ cycles from 0 to nominal pressure
Temperature range	-10 °C to +100 °C
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) VD (Diff. pressure indicator up to 420 bar operating pressure)
Pressure setting of the clogging indicator	2.5 bar or 5 bar (others on request)
Bypass cracking pressure (optional)	3.5 bar or 7 bar (others on request)

### 1.4 SEALS

NBR (=Perbunan)

### 1.5 INSTALLATION

Inline filter

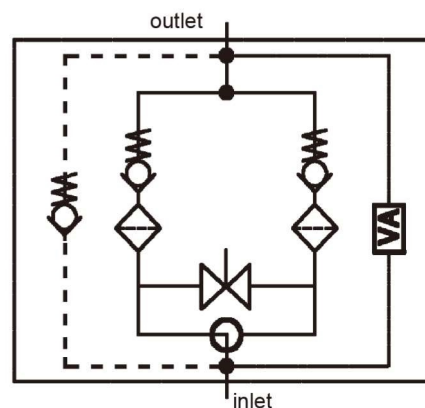
### 1.6 SPECIAL MODELS AND ACCESSORIES

- With bypass valve
- Oil drain plug (WKFMND 40 to 140 = SO184)
- Seals in FPM, EPDM
- Reverse flow "RL" for WKFMND 160 and above

### 1.7 SPARE PARTS

See Original Spare Parts List

### Symbol for hydraulic systems



VA = clogging indicator

**2. MODEL CODE (also order example)****2.1 COMPLETE FILTER****Filter type**

WKFMND

**Filter material**ON Glass fiber BNHC Glass fiber  
BH/HC Glass fiber (BH4HC) W/HC, W Wire mesh**Size of filter or element**

WKFMND: 60, 110, 140, 160, 250, 400

**Operating pressure**

L = 210 bar (WKFMND 160 to 400)

M = 250 bar (WKFMND 60 to 140)

**Type of change-over**

D single switching valve and check valve

**Type and size of port**

to DIN 24550 (●)

Type	Port	Filter size					
		60	110	140	160	250	400
C	G ½	●					
D	G ¾		●	●			
E	G 1¼				●		
F	G 1½					●	
K	DN 38**						●

\*\* Flange SAE, 3000 PSI

**Filtration rating in µm**

ON: 1, 3, 5, 10, 15, 20

BN/HC, BH/HC to DIN 24550: 3, 6, 10, 25

BH/HC: 3, 5, 10, 20

W/HC, W\*: 25, 50, 100, 200

**Type of clogging indicator**

Y plastic blanking plug in indicator port

A screw plug in indicator port

B visual

C electrical

D visual and electrical

LZ visual-mechanical / 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. B3.5 = 3.5 bar; B7 = 7 bar); without details = without bypass valve

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

LED 2 light emitting diodes up to 24 Volt

AV LZ indicator with plug to AUDI and VW specification

BO LZ indicator with plug and pin connections to BMW and Opel specification (M12x1)

CN LZ indicator with plug to DIN 43651 with 3 LEDs (CNOMO specification)

DB LZ indicator with plug to DIN 43651 with 3 LEDs (Daimler-Benz specification)

D4C LZ with plug and connector to Daimler-Chrysler specification and cold start suppression 30°C

BO-LED as for BO, but with diode strip

RL reverse flow direction

SO184 oil drain plug (WKFMND 60 to 140)

V FPM seals

W suitable for HFA and HFC emulsions

**2.2 REPLACEMENT ELEMENT****Size**

0060, 0110, 0140, 0160, 0250, 0400

**Type**

D 0060, 0110, 0140

DN to DIN 24550: 0160, 0250, 0400

**Filtration rating in µm**

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

BN4HC, BH4HC to DIN 24550: 003, 006, 010, 025

BH4HC: 003, 005, 010, 020

W/HC, W: 025, 050, 100, 200

**Filter material**

ON, BH4HC, W/HC, W

**Supplementary details**

V, W (for descriptions, see Point 2.1)

WKFMND BN/HC 250 L D F 10 D 1 X /-L24

0250 DN 010 BN4HC /-V

### 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:

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

$$\Delta p_{\text{housing}} = (\text{see Point 3.1})$$

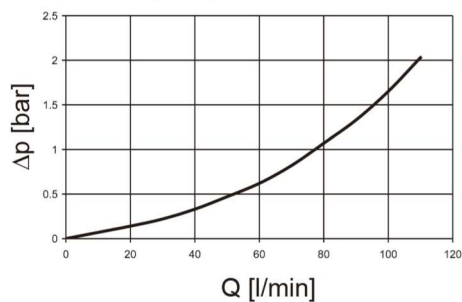
$$\Delta p_{\text{element}} = Q \cdot \frac{SK^*}{1000} \cdot \frac{\text{viscosity}}{30}$$

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

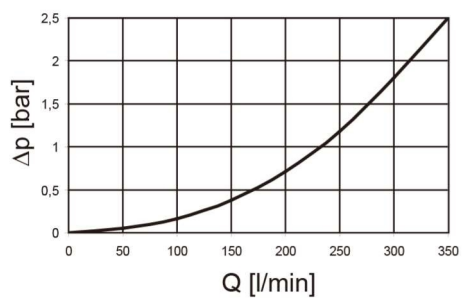
#### 3.1 $\Delta p$ -Q HOUSING CURVES BASED ON ISO 3968

The housing curves 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.

##### WKFMND 60, 110, 140

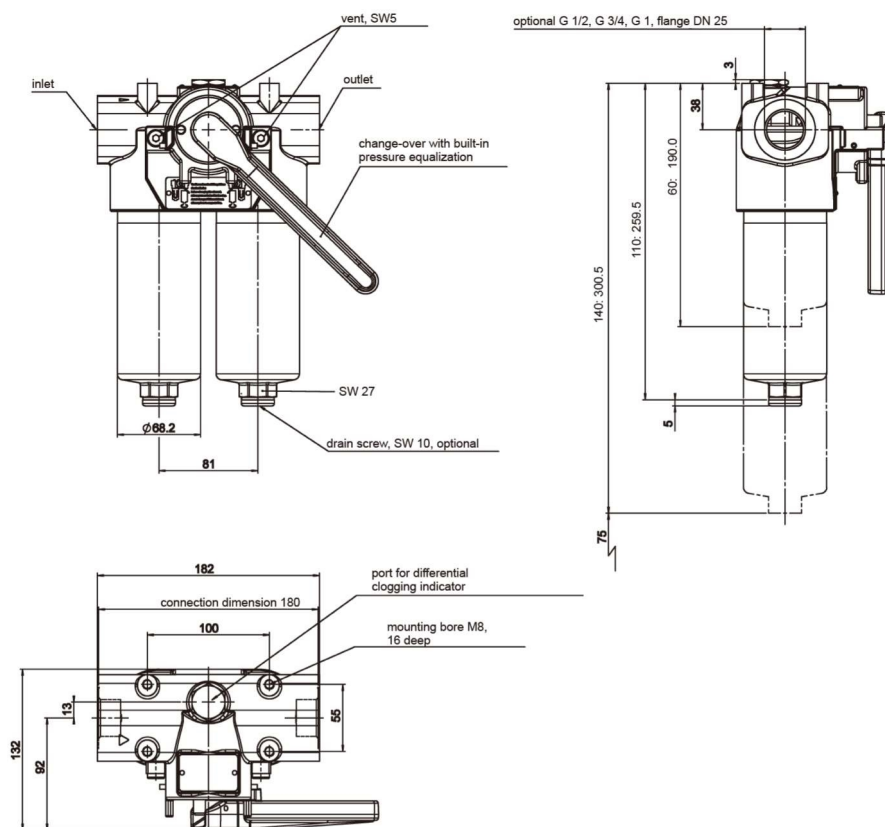


##### WKFMND 160, 250, 400

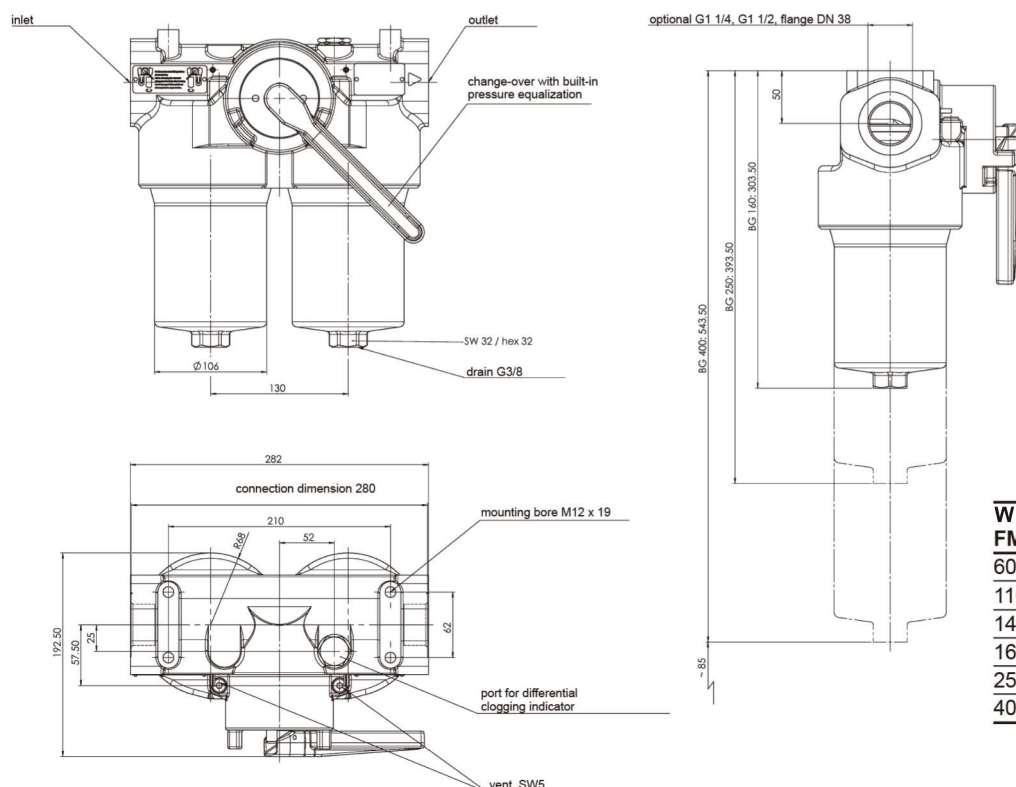


## 4. DIMENSIONS

### WKFMND 40 - 140



### WKFMND 160 - 400



WK-FMND	Weight incl. element [kg]	Vol. of pressure chamber [l]
60	9.2	2x 0.20
110	10.8	2x 0.33
140	12.0	2x 0.40
160	23.9	2x 1.10
250	27.1	2x 1.70
400	32.2	2x 2.70

## 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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