

# Vent and bleed filter, water-absorbing

Type BFSK 25 to 125

**RE 51456**

Edition: 2021-04

Replaces: -



BR231012\_124\_W

- ▶ Sizes 25 to 125
- ▶ Component series 2X
- ▶ Maximum operating pressure 1 bar [14.5 psi]
- ▶ Connection G 3/8 to G 1 1/4 BSP; (ISO 228) with adapter plate: Ø58 x 2.5 (DIN 24557)
- ▶ Operating temperature 0 °C ... 85 °C [-18 °F ... 185 °F]

## Features

- ▶ Highly efficient, special filter material
- ▶ Filtration of ultra-fine particles and high dirt retention capacity
- ▶ Adsorption of air humidity
- ▶ Minimizes the risk of corrosion in the hydraulic tank
- ▶ Filter cartridge as well as water-absorbing granules exchangeable
- ▶ Optional check valves to avoid air exchange during no-load operation
- ▶ Optional adapter plate including check valve for discharge air from tank, without filtration
- ▶ Combines air filtration and dehumidification in fluid systems

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## Ordering code

### Filters

01	02	03	04	05	06	07					
<b>BFSK</b>		<b>-</b>	<b>2X</b>	<b>/</b>	<b>H3V3</b>	<b>-</b>	<b>M</b>	<b>-</b>		<b>-</b>	

### Series

01	Air filter with water-absorbing granules	<b>BFSK</b>
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### Size

02	BFSK	<b>25</b>
		<b>40</b>
		<b>80</b>
		<b>125</b>

### Component series

03	Component series 20 to 29 (20 to 29: unchanged installation and connection dimensions)	<b>2X</b>
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### Filter rating in µm

04	Glass fiber material, not cleanable, 3 µm	<b>H3V3</b>
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### Seal

05	NBR seals	<b>M</b>
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### Material

06	Plastic version – male thread for size 25 (steel double nipple)	<b>0</b>
	Stainless steel version – male thread for sizes 40 - 125	<b>S</b>

### Check valve

07	<b>Without</b> check valve (standard)	<b>0</b>
	<b>With</b> check valve, cracking pressure of anti-cavitation valve 0.02 bar [0.29 psi], cracking pressure of preload valve 0.02 bar [0.29 psi]	<b>CV</b>

**Order example: BFSK25-2X/H3V3-M-0-CV**

## Preferred types

Vent and bleed filter, water-absorbing	Material no.	Material no. Replacement cartridge	Material no. Refill granules
BFSK25-2X/H3V3-M-0-0	R928049169	R928049574	R928049182
BFSK40-2X/H3V3-M-S-0	R928049173	R928049575	R928049184
BFSK80-2X/H3V3-M-S-0	R928049175	R928049576	R928049185
BFSK125-2X/H3V3-M-S-0	R928049177	R928049577	R928049186

## Accessories

### Ordering codes, visual maintenance indicator <sup>1)</sup>

01 02 03

<b>W</b>	<b>O</b>	<b>-</b>	<b>V01</b>
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01	Maintenance indicator	<b>W</b>
02	visual indicator	<b>O</b>

#### Design

04	Vacuum differential, design 01	<b>V01</b>
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Type	Material no.
WO-V01	R928049181

<sup>1)</sup> only in connection with adapter plate (AP1, AP2 or APCV)

### Ordering codes, adapter plate

01 02 03 04 05

<b>ACC</b>	<b>-</b>		<b>-</b>		<b>-</b>	<b>2X</b>	<b>/</b>	<b>M</b>
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01	Accessories	<b>ACC</b>
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#### Design

02	Adapter plate size 1 for sizes 25 <sup>2)</sup> and 40	<b>AP1</b>
	Adapter plate size 2 for sizes 80 and 125	<b>AP2</b>
	Adapter plate with check valves	<b>APCV</b>

#### Series/size

03	Adapter plate 1	<b>BFSK25-40</b>
	Adapter plate 2 or adapter plate CV	<b>BFSK80-125</b>

#### Component series

04	Component series 20 to 29 (20 to 29: unchanged installation and connection dimensions)	<b>2X</b>
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#### Seal

05	NBR seals	<b>M</b>
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### Order example: ACC-AP1-BFSK25-40-2X/M

<sup>2)</sup> NG 25 only possible in connection with reducing fitting (R900183367 G3/4 - G3/8 (ISO228)). The fitting must be ordered separately.

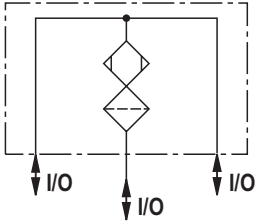
Type	Material no.
ACC-AP1-BFSK25-40-2X/M	R928049178
ACC-AP2-BFSK80-125-2X/M	R928049179
ACC-APCV-BFSK80-125-2X/M	R928049180

Size	Adapter plate		
	AP1	AP2	APCV
<b>25</b>	X	-	-
<b>40</b>	●	-	-
<b>80</b>	-	●	●
<b>125</b>	-	●	●

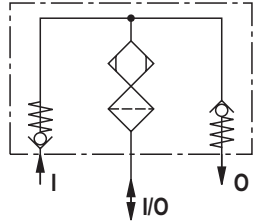
●	Standard
X	possible if a reducing fitting is used
-	not possible

## Symbols

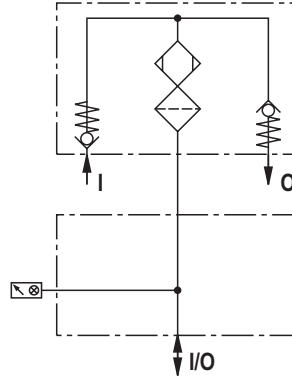
**Vent and bleed filter  
without valves**



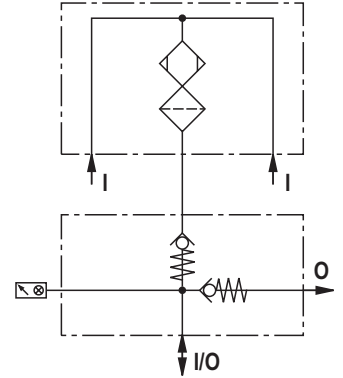
**Vent and bleed filter  
with valves**



**Vent and bleed filter  
with valves, mainte-  
nance indicator and  
adapter plate (AP1;  
AP2)**



**Vent and bleed filter  
with maintenance  
indicator and adapter  
plate (APCV) with  
integrated valves.**



## Function, section

In hydraulics, air exchange at the fluid tank must be ensured at all times. Depending on the machine cycles, air is sucked into the tank and pressed out again. The air contains miniature particles as well as water vapor. Due to temperature variations, the exchanged air condenses and stimulates the oxidation process of the oil. This leads to corrosion resulting in damage to the fluid tank.

By means of the Hengst BFSK vent and bleed filter, the fluid tank can suck in and give off clean and dry air. It is intended to be directly attached to a tank.

The BFSK vent and bleed filters essentially consist of an unscrewable replacement cartridge (1) with an integrated, pleated filter element (2) and an air filter housing (3).

The air filter housing (3) is filled with water-absorbing granules (WA granules) (4).

The WA granules contain red indicator beads. The water saturation is indicated when their color changes from red to orange. Optionally, check valves (5) can be integrated.

The BFSK vent and bleed filter is available with and without integrated check valves. The version with integrated check valves prevents air exchange during no-load operation.

Furthermore, the optional visual maintenance indicator provides information on the filter status. The maintenance indicator (7) is connected via an adapter plate (6) that can be purchased separately. In addition, the adapter plate makes a direct connection to the fluid tank possible.

### Standard version without check valve (Figure 1):

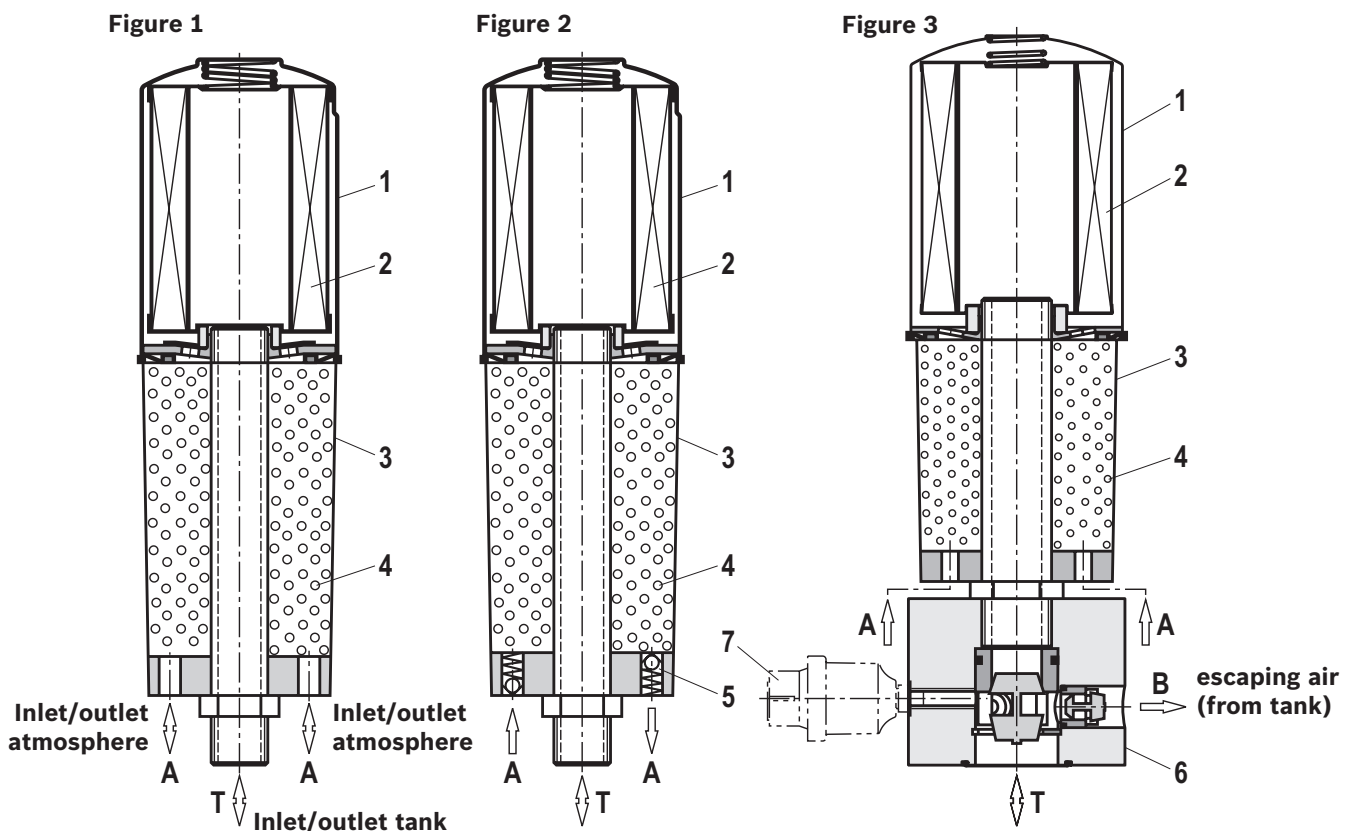
The contaminated air is transported to the WA granules (4) via opening A, is dried there and then flows through the pleated filter element. Solid dirt particles are captured here. Via connection T, only dried and filtered air gets into the tank. Air exiting the system in the opposite direction is dried as well.

### Version with check valve (5) in BFSK (Figure 2):

Functions in the same way as the standard version; but includes check valves (5) to prevent air exchange during no-load operation.

### Version with check valve in the adapter plate (6) (Figure 3):

Functions in the same way as the standard version; but the escaping air, which may be mixed with oil mist, is diverted directly from the tank upstream of the filter **via connection B** into the environment.



**Technical data**

(For applications outside these parameters, please consult us!)

<b>General</b>					
Weight	Size	25	40	80	125
	kg [lbs]	0.4 [0.9]	1.5 [3.3]	2.92 [6.4]	4.1 [9.0]
Installation position	vertical				
Ambient temperature range	°C [°F]	-40 ... +85 [-40 ... +185]			
Storage conditions	°C [°F]	+5 ... +40 [+41 ... +104]; max. relative air humidity 65%			
Operating temperature	°C [°F]	0 ... +85 [-18 ... +185]			
Material	Replacement cartridge	Steel			
	Air filter housing	Polymethyl methacrylate			
	Adapter plate	Anodized aluminum			
	Visual maintenance indicator	Housing made of polycarbonate			

Cracking pressure of check valve	bar [psi]	0.01 [0.15]
Type of pressure measurement of the maintenance indicator	Underpressure	
Response pressure of the maintenance indicator	bar [psi]	0.05 [0.73]

<b>Filter element</b>		
Micro glass H3V3	µm	3, Single-use element on the basis of inorganic fiber
Admissible pressure differential	bar [psi]	1 [14.5]

Approved fluids	Classification	Suitable sealing materials	Standards
Mineral oil	HLP	NBR	DIN 51524
Biodegradable – insoluble in water	HETG	NBR	VDMA 24568

**Important information on hydraulic fluids:**

- For more information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us.

<b>Filter material (WA granules)</b>					
Volume	Size	25	40	80	125
	cm <sup>3</sup> [in <sup>3</sup> ]	100 [6.1]	600 [36.6]	1000 [61.0]	2000 [122.0]
Max. water absorption	l [US gal]	0.028 [0.0074]	0.172 [0.0454]	0.288 [0.07608]	0.576 [0.1521]

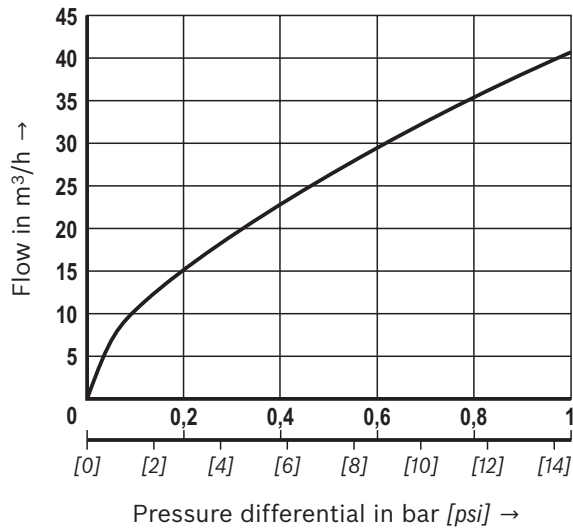
The following table displays the operating ranges of the water-absorbing vent and bleed filters in hydraulic systems.

Type	Max. air flow at a starting pressure differential of 0.01 bar in l/min
<b>BFSK25</b>	50
<b>BFSK40</b>	120
<b>BFSK80</b>	300
<b>BFSK125</b>	300
<b>BFSK25....CV</b>	25
<b>BFSK40....CV</b>	80
<b>BFSK80....CV</b>	160
<b>BFSK125....CV</b>	110

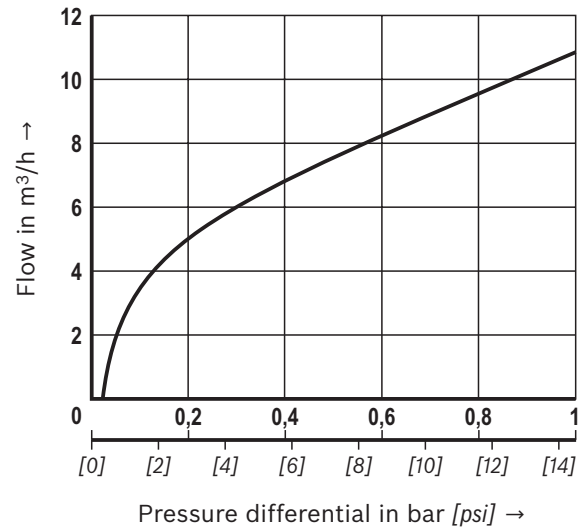
When air humidity is very high it is recommended to select the next highest variant with the aim of achieving a longer service life.

## Characteristic curves

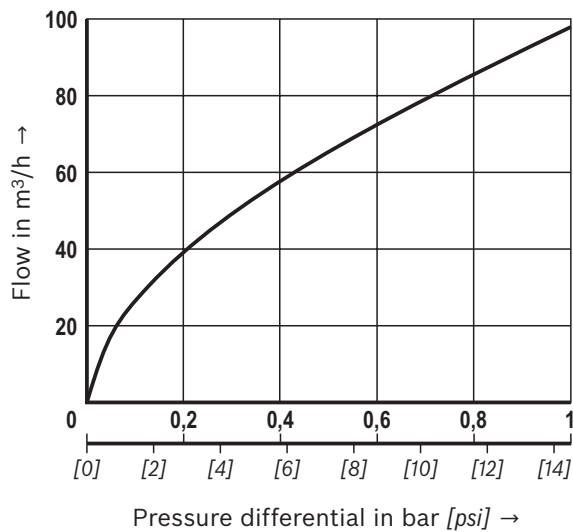
**BFSK25-2X / H3V3-M-O-O**  
without check valve



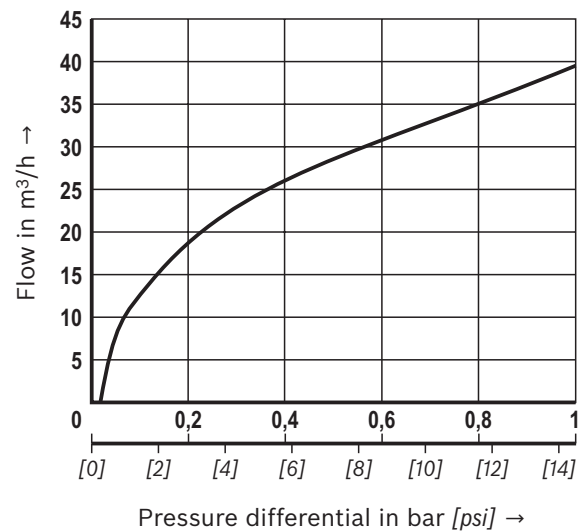
**BFSK25-2X / H3V3-M-O-CV**  
with check valve



**BFSK40-2X / H3V3-M-S-O**  
without check valve

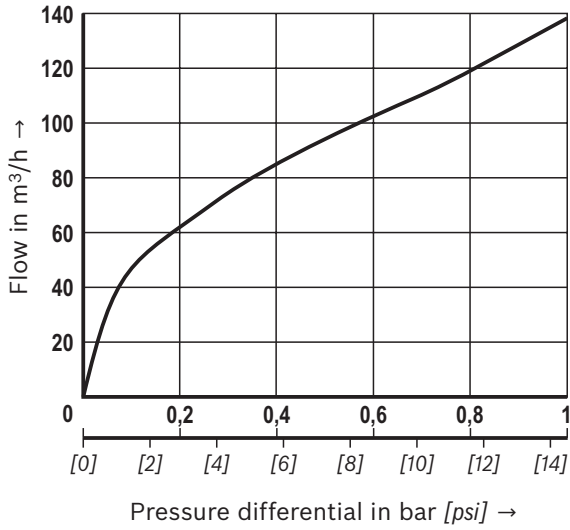


**BFSK40-2X / H3V3-M-S-CV**  
with check valve

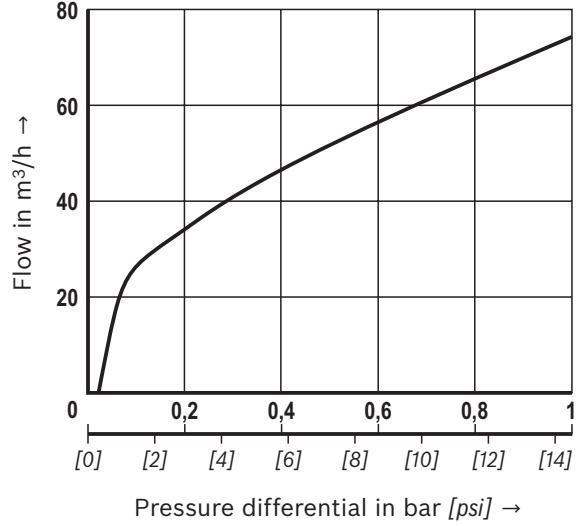


**Characteristic curves**

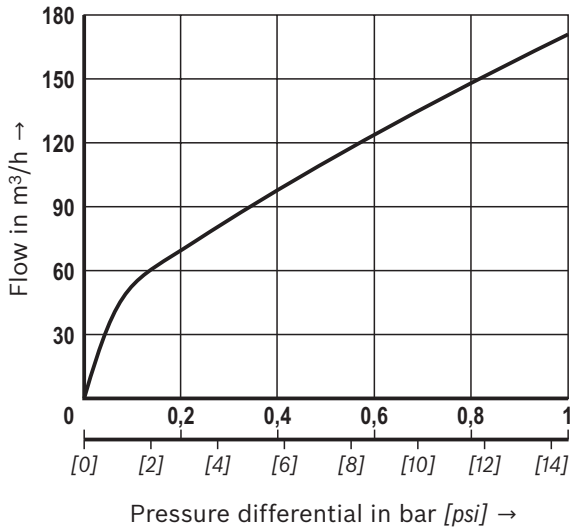
**BFSK80-2X / H3V3-M-S-O**  
without check valve



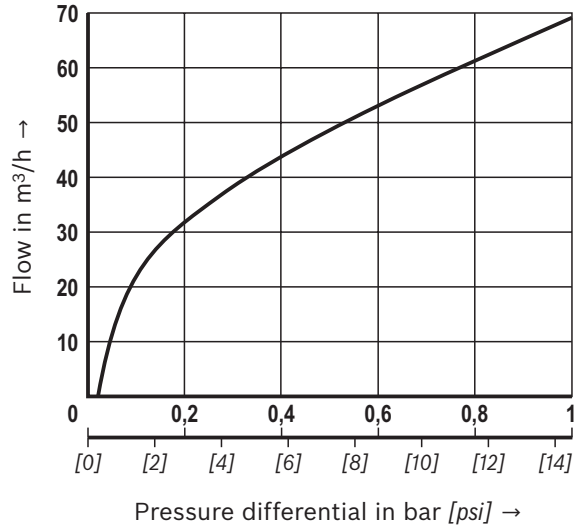
**BFSK80-2X / H3V3-M-S-CV**  
with check valve



**BFSK125-2X / H3V3-M-S-O**  
without check valve



**BFSK125-2X / H3V3-M-S-CV**  
with check valve



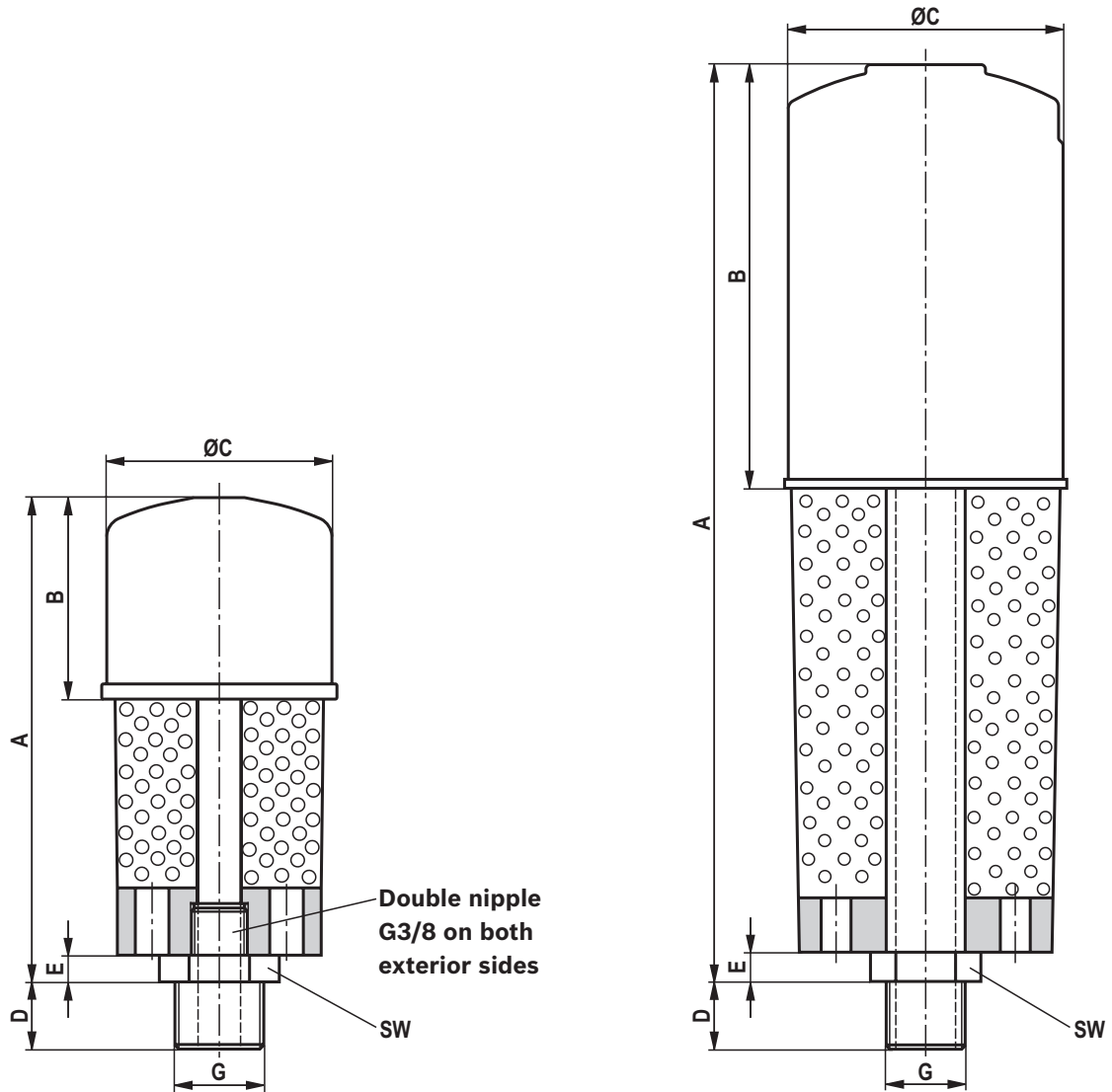


## Dimensions: Vent and bleed filter

(dimensions in mm [inch])

BFSK25

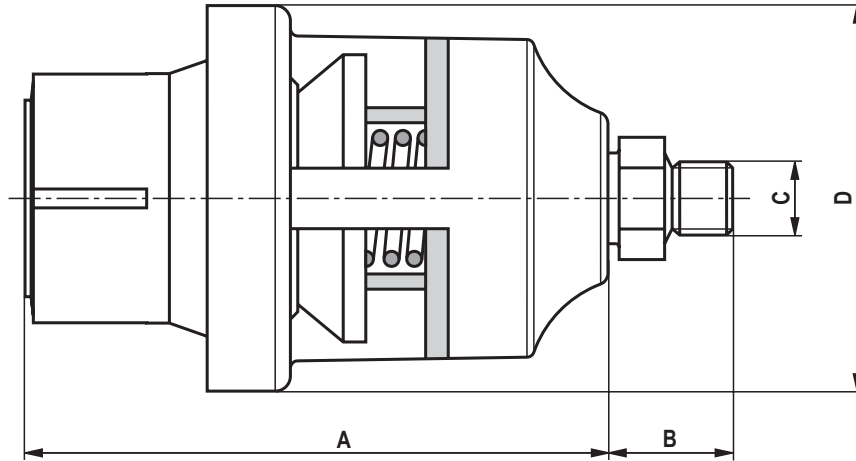
BFSK40 ... 125



### Filter types

Type BFSK...	A	B	ØC	D	E	G	SW
25	146 [5.75]	60 [2.36]	70 [2.76]	12 [0.47]	~10 [- 0.39]	G3/8	22 [0.87]
40	281 [11.06]	121 [4.76]	97 [3.82]	23 [0.91]	~10 [- 0.39]	G3/4	32 [1.26]
80	335 [13.19]	181 [7.13]	130 [5.12]	30 [1.18]	~11 [- 0.43]	G1 1/4	50 [1.97]
125	495 [19.49]	231 [9.09]	130 [5.12]	27 [1.06]	~11 [- 0.43]	G1 1/4	50 [1.97]

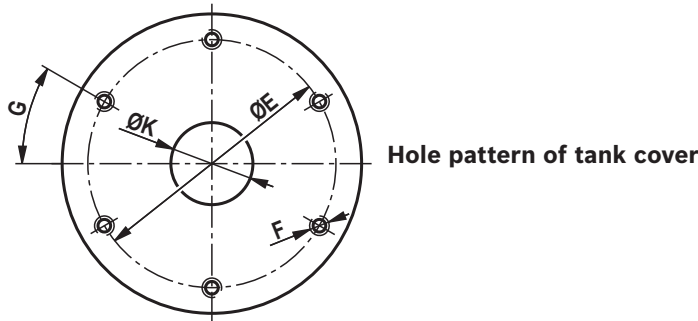
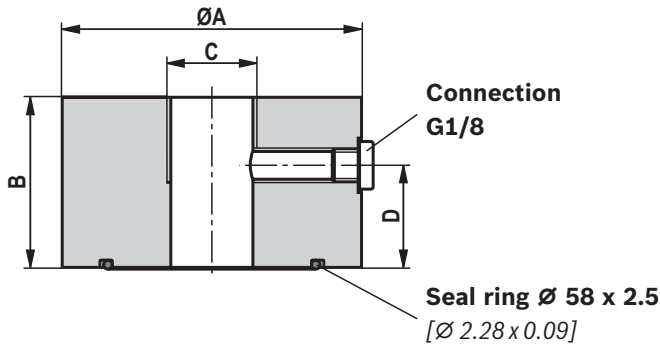
**Dimensions: Maintenance indicator, visual**  
 (dimensions in mm [*inch*])



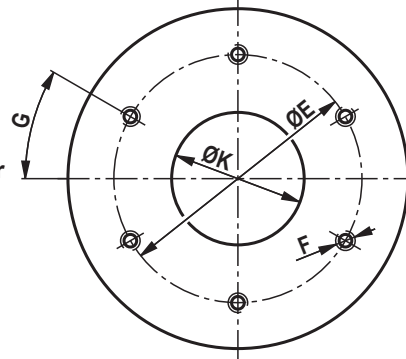
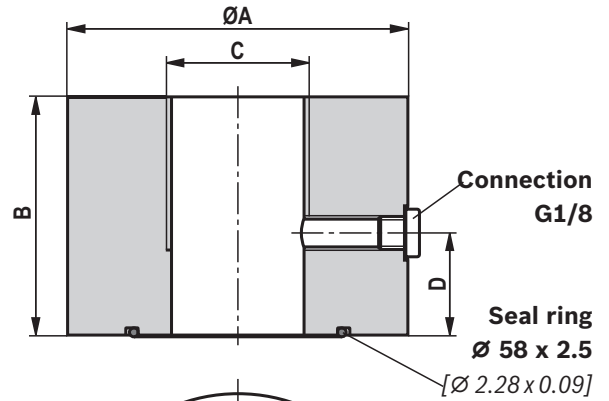
Type	A	B	C	D
<b>WO-V01</b>	70 [2.76]	16,5 [0.65]	G1/8	50 [1.97]

**Dimensions: Adapter plates**  
(dimensions in mm [inch])

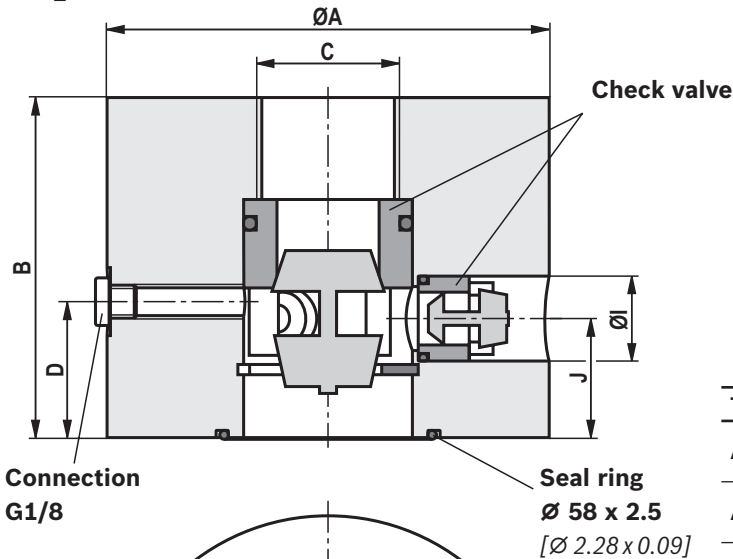
AP1



AP2

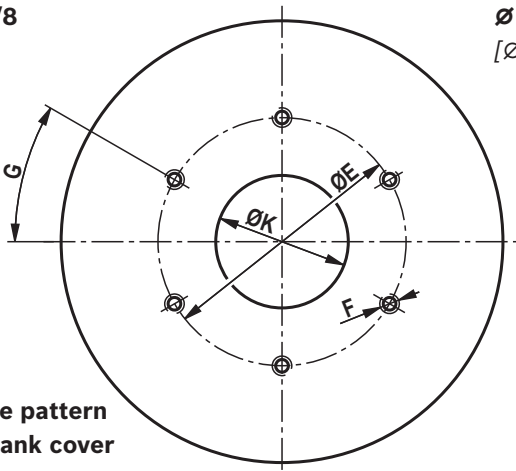


AP2\_CV



Connection  
G1/8

Seal ring  
Ø 58 x 2.5  
[Ø 2.28 x 0.09]



Hole pattern  
of tank cover

Type	ØA	B	C	D	ØE
AP1	88 [3.46]	50 [1.97]	G3/4	30 [1.18]	73 [2.87]
AP2	100 [3.94]	70 [2.76]	G1 1/4	30 [1.18]	
AP2_CV	130 [5.12]	100 [3.94]	G1 1/4	40 [1.57]	

Type	ØF	G	ØI	J	ØK
AP1	M5 x 10	30°	-	-	50 [1.97]
AP2			-	-	
AP2_CV			25 [0.98]	35 [1.38]	

## Spare parts

### Ordering code, replacement cartridge and refill pack

01	02	03	04	05	06	07					
<b>89.</b>		<b>-</b>	<b>2X</b>	<b>/</b>	<b>H3V3</b>	<b>-</b>	<b>S00</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>M</b>

#### Filter cartridge

01	Design	<b>89.</b>
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#### Size

02	BFSK	<b>25</b>
		<b>40</b>
		<b>80</b>
		<b>125</b>

03	Component series 20 to 29 (20 to 29: unchanged installation and connection dimensions)	<b>2X</b>
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#### Filter rating in µm absolute

04	Glass fiber material, not cleanable, 3 µm	<b>H3V3</b>
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#### Pressure differential

05	Standard	<b>S00</b>
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#### Bypass valve

06	<b>Without</b> check valve	<b>0</b> <sup>1)</sup>
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#### Seal

07	NBR seals	<b>M</b>
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<sup>1)</sup> Always 0 with replacement cartridge

**Order example: 89.25-2X/H3V3-S00-0-M**

Vent and bleed filter, water-absorbing	Replacement cartridge	Refill granules (incl. 2 foam pads)
BFSK25-2X/H3V3-M-0-0	<b>R928049574</b>	R928049182
BFSK40-2X/H3V3-M-S-0	<b>R928049575</b>	R928049184
BFSK80-2X/H3V3-M-S-0	<b>R928049576</b>	R928049185
BFSK125-2X/H3V3-M-S-0	<b>R928049577</b>	R928049186

## Assembly, commissioning and maintenance

### Installation

The connection thread of the filter must correspond to the connection thread of the tank cap. If an adapter plate is used, the hole pattern (DIN 24557-2) of the tank cap must be compared to the dimensions from the "Dimensions" chapter prior to installation. Please remove the sealing foil (air inlet A) and the end cap of the filter connection prior to use. Screw the filter into the tank bore or the adapter plate respectively. When installing the filter, the required servicing height of the replacement cartridge (approx. 50 mm [1.97 inch]) must be taken into account. For servicing reasons, we recommend installing the filter in a standing position. All filter components must be screwed on hand-tight.

### Commissioning

It is not necessary to commission the filter.

### Maintenance

#### Exchanging the replacement cartridge

It is necessary to exchange the replacement cartridge once the red marking of the maintenance indicator has been reached. Since the ambient conditions are very different depending on the place of installation, we recommend regular exchange of the replacement cartridge according to the specific installation conditions for BFSK filters that are designed without a maintenance indicator.

#### Exchanging the WA granules

If the indicator beads of the WA granules change their color from red to orange, the granules must be exchanged. The material numbers of the corresponding spare parts are indicated on the name plate of the complete filter. They must correspond to the material numbers on the replacement cartridge or the refill pack.

#### Maintenance instructions:

- ▶ Remove the complete vent and bleed filter by turning the air filter housing manually counter-clockwise.
- ▶ Remove the replacement cartridge by turning it counter-clockwise (hold tank port downwards).
- ▶ The WA granules are protected against falling out by a foam pad. In case of incorrect handling (shaking, turning upside down, ...) the granules might fall out.
- ▶ Remove foam pad prior to exchanging the WA granules.
- ▶ Dispose of the used WA granules and foam pads in accordance with environmental and applicable local requirements. Waste code: 150202
- ▶ Insert new bottom foam pad, fill in fresh WA granules and insert new upper foam pad.
- ▶ Screw air filter housing on tank port, put new seal ring (part of spare replacement cartridge) over air filter housing, center and install replacement cartridge (hand-tight) clockwise.

Do not forget to reset the visual maintenance indicator. This is done by pressing the RESET button.

#### Note:

Servicing should not take place below 10 °C. Should this still be necessary, however, special care must be taken when working with the plastic housing.

## Tightening torques

Adapter plates	AP1	AP2	APCV
Tightening torque, at $\mu_{total} = 0.14$	5 Nm $\pm$ 1 Nm		
Quantity	6		
Screw x length	M5 x 60	M5 x 80	M5 x 110
Recommended property class of screw	8.8		

## Directives and standardization

### Product validation

Hengst filters are tested and quality-monitored according to different ISO test standards:

Compatibility with hydraulic fluid	ISO 2943:1998-11
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The development, manufacture and assembly of Hengst industrial filters and Hengst filter elements is carried out within the framework of a certified quality management system in accordance with ISO 9001:2015.

### Classification according to the Pressure Equipment Directive

Hengst BFSK water-absorbing vent and bleed filters according to 51456 are not classified as devices or components for the purpose of the Pressure Equipment Directive 97/23/EC (PED).

### Directive 94/9/EC (ATEX)

According to the assessment of the risk of ignition, Hengst BFSK vent and bleed filters must not be used in explosive areas.

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