

# Breathing and air bleed filter, water-absorbing

## Type BFSK

**RE 51456**

Edition: 05.13

Replaces: 51412



BR231012\_124\_W

- ▶ Size 25 to 125
- ▶ Component series 2X
- ▶ Maximum operating pressure 1 bar [14.5 psi]
- ▶ Maximum flow: 1500 l/min [396.3 US gpm]
- ▶ Connection G 3/8 to G 1 1/4 BSP; (ISO 228)
- ▶ Operating temperature 0 °C to 85 °C [-18 °F to 185 °F]

## Features

- ▶ Highly efficient, special filter material
- ▶ Filtration of very fine particles and high dirt holding capacity across a broad pressure differential range
- ▶ 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 at no-load operation
- ▶ Optional adapter plate including check valve for discharge air from tank, without filtration
- ▶ Air filtration and dehumidification in fluid systems

## Contents

Features	1
Ordering codes, preferred types	2
Accessories	3
Symbols	4
Function, section	5
Technical data	6
Characteristic curves	7
Dimensions	8 ... 10
Spare parts	11
Assembly, commissioning and maintenance	12
Tightening torques	13
Directives and standardization	13

Ordering codes

Filter

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

Series

01	Air filter with water-absorbing granules	BFSK
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Size

02	BFSK	25
		40
		80
		125

Component series

03	Component series 20 to 29 (20 to 29: Unchanged installation and connection dimensions)	2X
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Filter rating in µm

04	Micro glass, not cleanable	H3V3
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Seal

05	NBR seals	M
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Material

06	Plastic variant – male thread for size 25 (steel double nipple)	0
	Stainless steel variant – male thread for sizes 40 - 125	S

Check valve

07	Without check valve (standard)	0
	With check valve, cracking pressure of anti-cavitation valve 0.01 bar [0.15 psi], cracking pressure of preload valve 0.01 bar [0.15 psi]	CV

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

Preferred types

Breathing and air bleed filter, water-absorbing	Material no.	Material no. Spare cartridge	Material no. Refill granules
BFSK25-2X/H3V3-M-0-0	R928049169	R928049574	Refilling of granules not possible/ spare filter: R928049169
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>- V01</b>

01	Maintenance indicator	<b>W</b>
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02	Visual indicator	<b>O</b>
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#### 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>2X</b>	<b>/ M</b>

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 not available for BFSK with integrated check valve (BRSK...-CV)	<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> Size 25 only possible in connection with reducing fitting (R900183367 G3/4 - G3/8 (ISO228)). The fitting must be ordered separately.

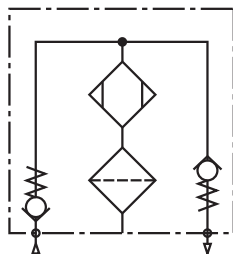
Type	Material no.
ACC-AP1-BFSK25-40-2X/M	R928049178
ACC-AP2-BFSK80-125-2X/M	R928049179
ACC-APCV-BFSK80-125-2X/M	R928049180

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

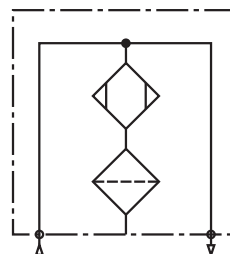
●	Standard
X	Possible if a reducing fitting is used
–	Not possible

## Symbols

**Breathing and air bleed filter with valve**



**Breathing and air bleed filter without valve**



## 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 steam. 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 Rexroth BFSK breathing and air 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 breathing and air bleed filters basically 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). Optionally, check valves (5) can be installed.

The BFSK breathing and air bleed filter is available with and without integrated check valves. The version with integrated check valves is primarily used in wind turbines. The WA granules contain red indicator beads. The water saturation is indicated by a color change from red to orange.

In addition, the optionally available visual maintenance indicator provides information on the state of the filter. The maintenance indicator (7) is mounted using an adapter plate (6), which is sold separately. In addition, the adapter plate makes a direct connection to the fluid tank possible.

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

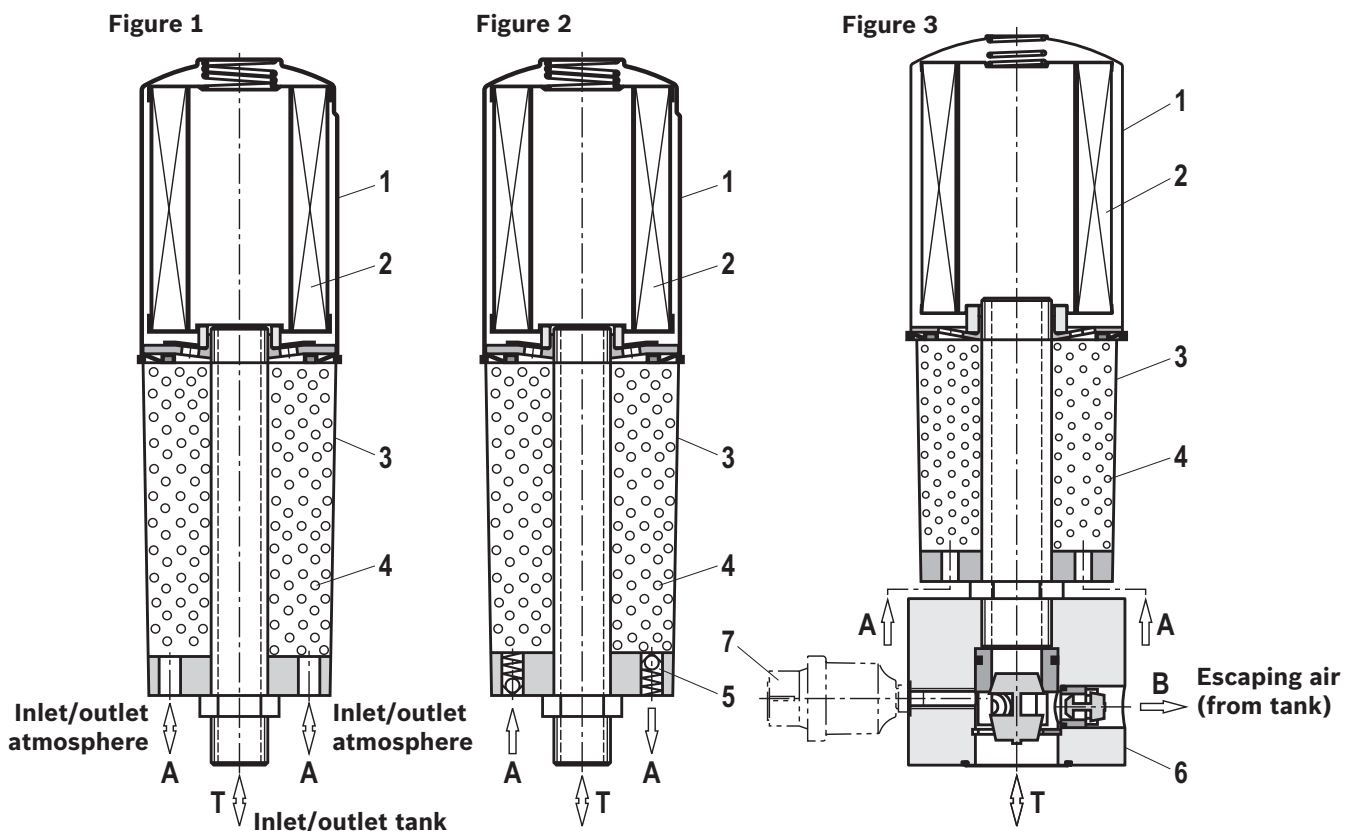
The contaminated air is transported to the WA granules (4) via opening A, is dried there and then flows through the pleated filter element. Solid dirt particles are captured here. Via connection T, only dried and filtered air gets into the tank. Air escaping from the system in the opposite direction 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 at 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]		
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	Single-use element on the basis of inorganic fiber
Admissible pressure differential	bar [psi] 1 [14.5]

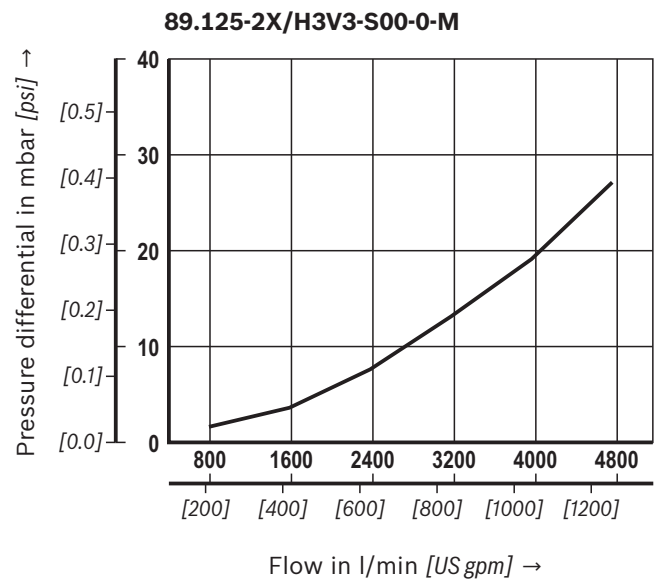
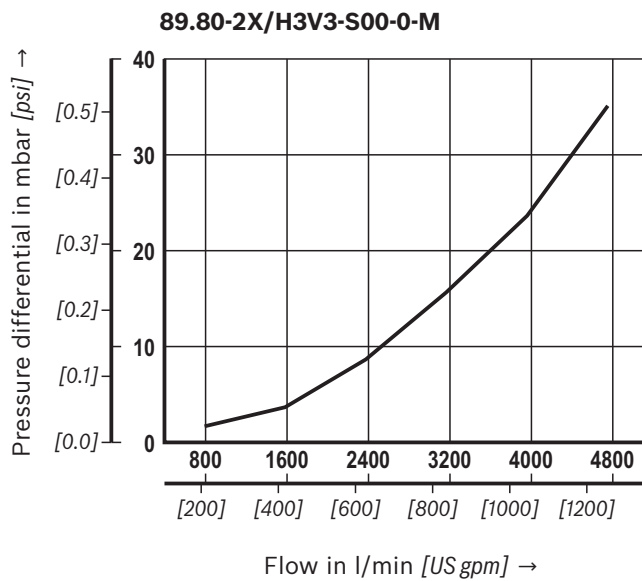
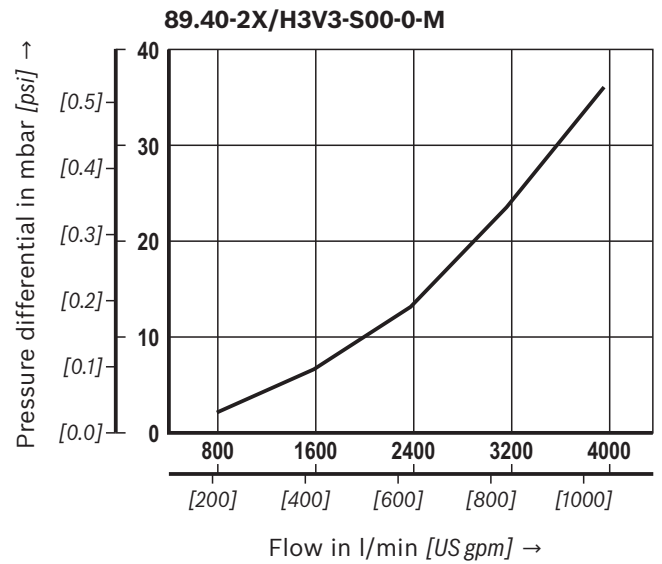
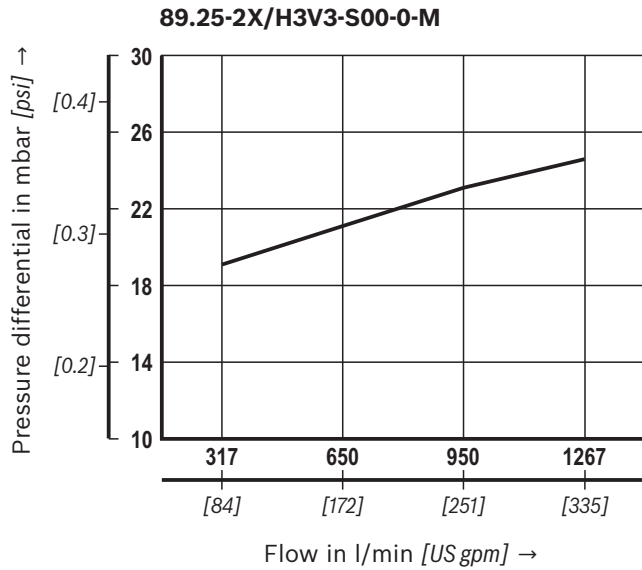
Permitted fluids	Classification	Suitable sealing materials	Standards
Mineral oil	HLP	NBR	DIN 51524
Bio-degradable – insoluble in water	HETG	NBR	VDMA 24568

**Important information on hydraulic fluids!**

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

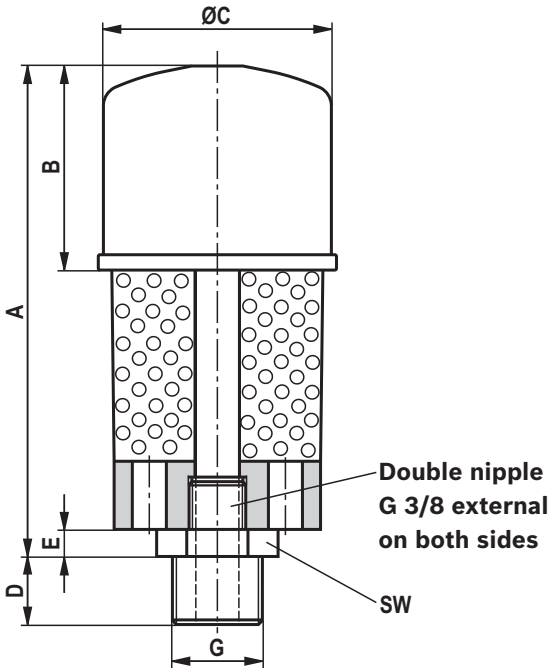
Filter material (WA granules)					
Volume	Size	25	40	80	125
	cm³ [in³]	100 [6.1]	600 [36.6]	1000 [61.0]	2000 [122.0]
Max. water absorption	l [US gal]	0.028 [0.0074]	0.172 [0.0454]	0.288 [0.07608]	0.576 [0.1521]
Information on water absorption		Oil mist reduces efficiency			

## Characteristic curves

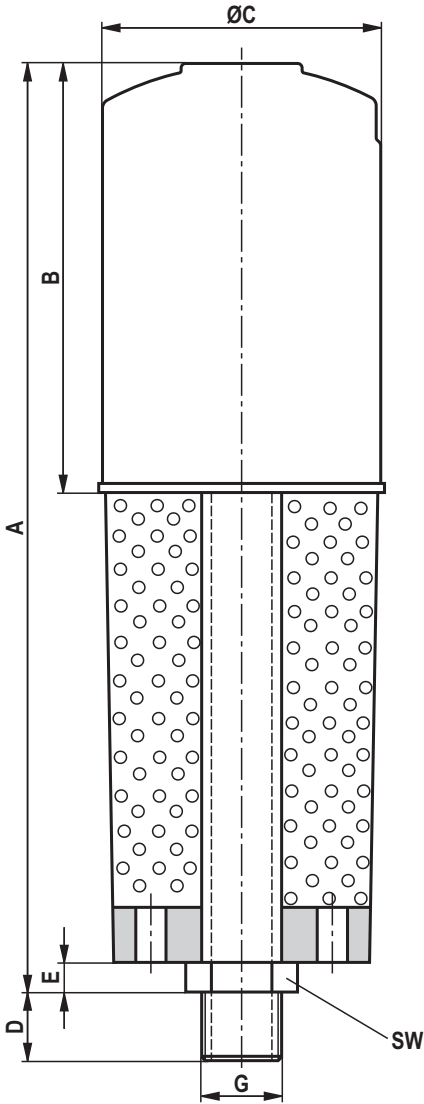


**Dimensions: Breathing and air bleed filter**  
 (dimensions in mm *[inch]*)

BFSK25



BFSK40 – 125

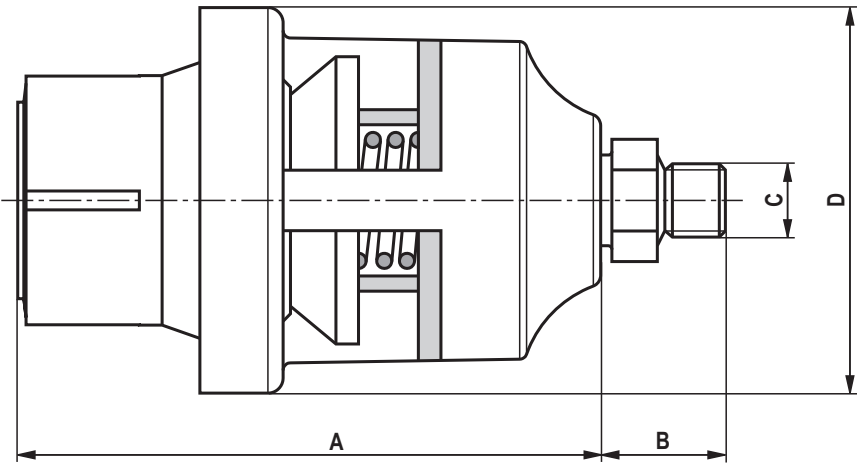


Filter types

Type BFSK...	A	B	ØC	D	E	G	SW
25	146	60	70	12	~10	G 3/8	22
40	281	121	97	23	~10	G ¾	32
80	335	181	130	30	~11	G 1¼	50
125	495	231	130	27	~11	G 1¼	50



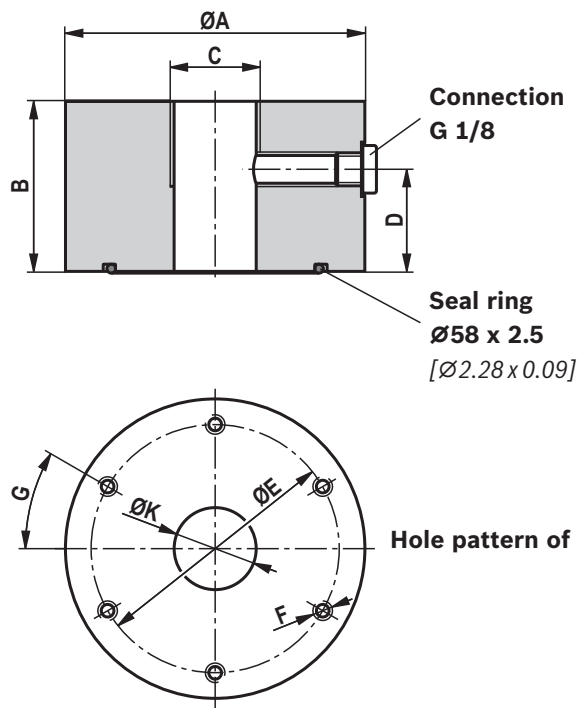
**Dimensions: Maintenance indicator, visual**  
(dimensions in mm [*inch*])



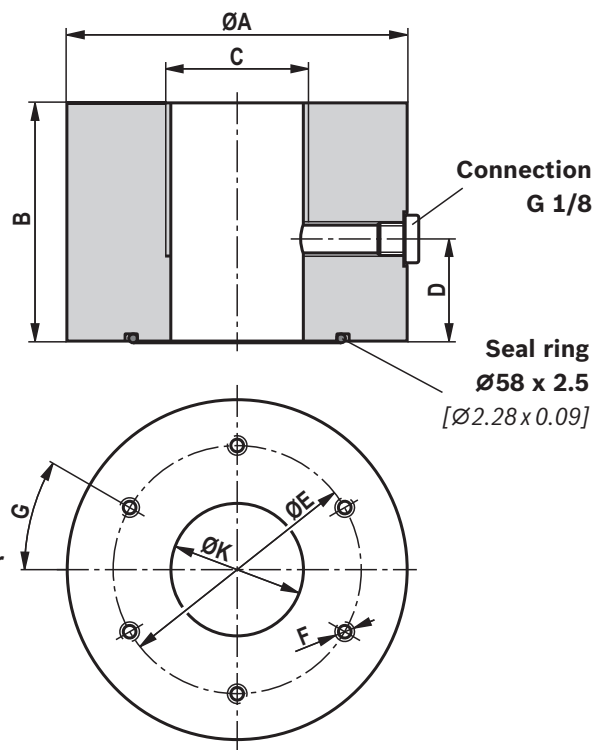
Type	A	B	C	D
WO-V01	70	16.5	G 1/8	50

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

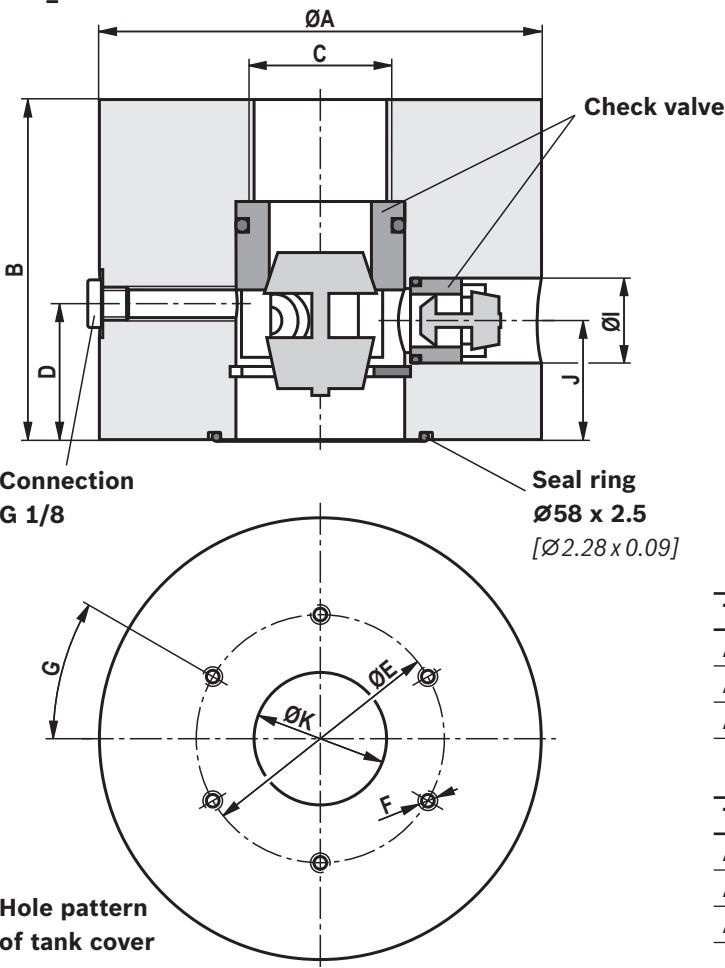
AP1



AP2



AP2\_CV



Type	$\varnothing A$	B	C	D	$\varnothing E$
AP1	88	50	G 3/4	30	73
AP2	100	70	G 1 1/4	30	
AP2_CV	130	100	G 1 1/4	40	

Type	$\varnothing F$	G	$\varnothing I$	J	$\varnothing K$
AP1	M5 x 10	30°	–	–	50
AP2			–	–	
AP2_CV			25	35	

## Spare parts

### Ordering code, replacement cartridge and refill pack

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

#### 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>

#### Filter rating in $\mu\text{m}$ absolute

04	Micro glass, not cleanable	<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> For replacement cartridge always 0

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

Breathing and air bleed filter, water-absorbing	Replacement cartridge	Refill granules (incl. 2 foam pads)
BFSK25-2X/H3V3-M-0-0	<b>R928049574</b>	Refilling of granules not possible/ spare filter: R928049169
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

### Assembly

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 directly into the tank bore or the adapter plate. 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

#### Exchange of the replacement cartridge

If the red mark on the maintenance indicator is reached, the cartridge must be replaced. It should, however, be replaced at least every 6 months.

#### 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 breathing and air 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.
- ▶ 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.



#### **Notice!**

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 $\mu_{\text{total}} = 0.14$	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

### Classification according to the Pressure Equipment Directive

Water-absorbing Bosch Rexroth BFSK breathing and air 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, Bosch Rexroth BFSK breathing and air bleed filters must not be used in explosive areas.

## Notes

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