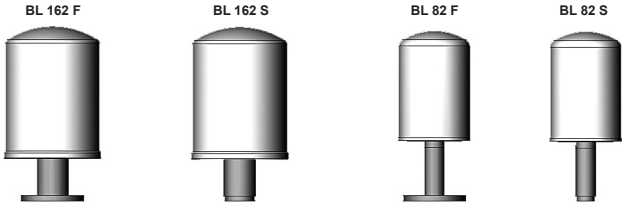
# Tank Breather Filter with Spin-On Filter Cartridge BL

up to 1800 l/min




## 1. TECHNICAL SPECIFICATIONS

### 1.1 FILTER HOUSING

**Construction**

The filters consist of a spin-on filter can which screws onto a connection tube installed on the oil tank. The connection can either be a flanged or weld version.

### 1.2 FILTER ELEMENTS

**Contamination retention capacities in g** BL 20 µm

| | 10 µm | |
|---|---|---|
| 82 | 67.6 | 99.4 |
| 162 | 192.0 | 201.3 |

The filter elements are made from phenolic resin impregnated paper and cannot therefore be cleaned.

### 1.3 FILTER SPECIFICATIONS

| | |
|---|---|
| Temperature range | - °C to +100 °C |
| Material of connection tube | Steel |
| Material of spin-on can | Sheet steel |
| Type of clogging indicator | VMF (return line indicator) |
| Pressure setting of clogging indicator | 0.6 bar (K pressure gauge) |

### 1.4 SEALS

Perbunan (=NBR)
Cardboard on the mounting flange

### 1.5 SPECIAL MODELS AND ACCESSORIES

- With connection for a clogging indicator
- With filler adapter

### 1.6 SPARE PARTS

See Original Spare Parts List

### 1.7 CERTIFICATES AND APPROVALS

On request

### 1.8 COMPATIBILITY WITH HYDRAULIC FLUIDS ISO 2943

The standard models are suitable for use with mineral and lubrication oils. For fire-resistant and biodegradable oils, see table:

Fire-resistant fluids

| BL | HFA | HFC | HFD-R |
|---|---|---|---|
| 82 | ● | ● | – |
| 162 | ● | ● | – |

- ● HFA oil in water emulsion (H2O content ≥ 80%)
- ● HFC water polyglycol solution (H2O content 35–55%)
- ● HFD-R synthetic, water-free phosphate ester

Biodegradable fluids

| BF | HTG | HE | HPG PAG | HPG PRG |
|---|---|---|---|---|
| 82, 162 | + | + | ● | ● |

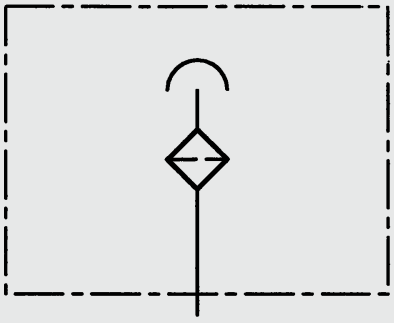
+ suitable for all
● contact our Technical Sales Department – not suitable

- ● HTG vegetable oil based hydraulic fluids
- ● HE ester-based synthetic hydraulic fluids
- ● HPG polyglycol-based synthetic hydraulic fluids
- ● PAG sub-group of HPG: polyalkylene glycol
- ● PEG sub-group of HPG: polyethylene glycol

### 1.9 CHANGING INTERVALS

The filter elements or filters must be replaced as frequently as the fluid filters, but at least every 12 months.

**Symbol**



## 2. MODEL CODE (also order example)

**BL P 162 S 10 W 1 . X /-FA12**

### 2.1 COMPLETE FILTER

**Filter type**
BL

**Filter material of element**
P Paper BN Betamicron® (for BL 82: only 20 µm available)

**Size of filter or element**
BL: 82, 162

**Type and size of connection**

| Type | Connection | Filter size | |
|---|---|---|---|
| | | 82 | 162 |
| F | Flange connection | ● | ● |
| S | Weld connection | ● | ● |

**Filtration rating in µm**
P 10 absolute = 3µm in air
BN 10 = 1 µm absolute in air
20 = 2 µm absolute in air

**Type of clogging indicator** W without port, no clogging indicator
K pressure gauge, measurement range -1 to +0.6 bar

**Type code**
1 for BL 82
2 for BL 162

**Modification number**
X the latest version is always supplied

**Supplementary details**
FA12 with filler adapter G ½
FA34 with filler adapter G ¾
FA1 with filler adapter G 1
only for BL 162

### 2.2 REPLACEMENT ELEMENT

**0080 MG 010 P**

**Size**
0080 only BL 82
0160 only BL 162

**Type**
MA only BL BN 162...
MU only BL P 162...
MG only BL .. 82...

**Filtration rating in µm**
P : 010
BN : 010, 020 (for BL 82: only 20 µm available)

**Filter material**
P, BN

### 2.3 REPLACEMENT CLOGGING INDICATOR

**VMF 0.6 K . X**

**Type of indicator**
VMF return line pressure indicator

**Pressure setting**
0.6 -1 to +0.6 bar

**Type of clogging indicator**
K (see Point 2.1)

**Modification number**
X the latest version is always supplied

# 3. FILTER CALCULATION / SIZING

## 3.1 SINGLE PASS FILTRATION PERFORMANCE DATA FOR AIR FILTER ELEMENTS

The following separation values were established under real-life simulated conditions.

This means that the selected velocity of the flow against the filter mesh-pack was 20 cm/s and the contamination added was 40 mg/m³ of ISO MTD test dust.

| Filtration rating | Retention value | For particle size | Filter material |
|---|---|---|---|
| BN 20 µm | d 80 0.25 µm<br>d 100 0.84 µm<br>d 80 0.36 µm<br>d 100 1.21 µm<br>d 80 1.49 µm<br>d 100 9.56 µm | 10 µm | P |

The d 80 value refers to the particle size which is filtered out at a rate of 80% during the retention test. The particle size determined by this method is called the nominal filtration rating of the air filter. The d 100 value therefore refers to the particle size which is filtered out at a rate of 100% during the single pass test. The particle size determined by this method is called the absolute filtration rating of the air filter.

Table of average dust concentrations in real life:

| | |
|---|---|
| Urban regions with a low level of industry | 3-7 mg/m³ air |
| General mechanical engineering | 9-23 mg/m³ air |
| Construction industry (wheeled vehicles) | 8-35 mg/m³ air |
| Construction industry (tracked vehicles) | 35-100 mg/m³ air |
| Heavy industry | 50-70 mg/m³ air |

## 3.2 DIFFERENTIAL PRESSURE ACROSS BREATHER FILTER

The differential pressure (with clean element) for the various filter sizes is shown in the graphs under Point 3.4.

## 3.3 SIZING GUIDELINES

The rate at which contamination enters a hydraulic system can be considerably reduced by using efficient tank breather filtration.

**CAUTION:**

Incorrectly sized tank breather filters can place additional strain on the system and reduce the service life of hydraulic filter elements.

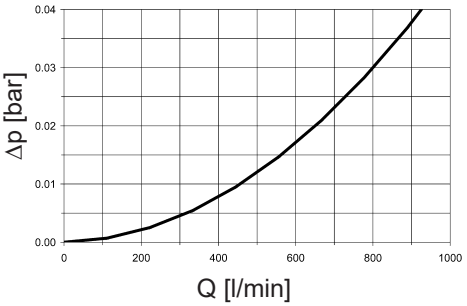
For optimum sizing the following should therefore be observed:

- Filtration rating of breather filter = filtration rating of hydraulic filter
- Only use breather filters with an absolute retention rate (d100 = x µm; x = given filtration rating)
- Max. permitted initial pressure drop: 0.01 bar (with a clean filter element and at calculated air flow)
- Determining the calculated air flow:
  $Q_A = f5 \times Q_p$
  $Q_A$ = calculated air flow in $l_N$/min
  f5 = factor for operating conditions
  Qp = max. flow rate of the hydraulic pump in l/min

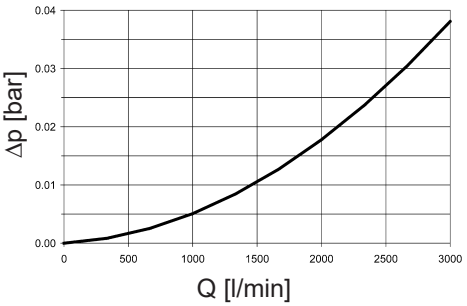
| Ambient conditions | Factor f5 |
|---|---|
| Low dust concentration; filter fitted with clogging indicator; continuous monitoring of the filter | 1-2 |
| Average dust concentration; filter without clogging indicator; intermittent monitoring of the filter | 3-6 |
| High dust concentration; filter without clogging indicator; infrequent or no monitoring of the filter | 7-10 |

## 3.4 AIR FLOW RATE

**BL 82**




**BL 162**

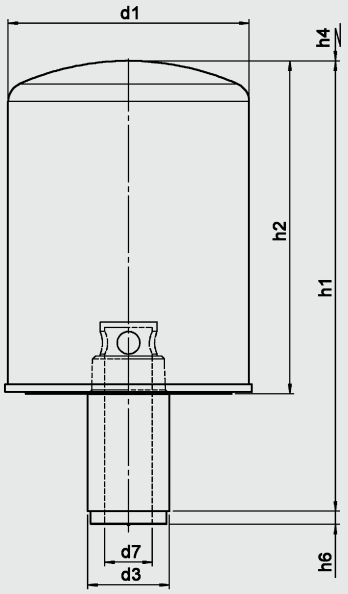


# 4. DIMENSIONS

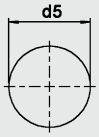
**Tank requirements**

1. In the filter mounting interface, the tank flange should have a maximum flatness of 0.2 mm and Ra 3.2 µm maximum roughness.
2. In addition, the contact area should be free of damage and scratches.
3. The fixing holes of the tank flange must be blind, or stud bolts with threadlocker must be used to fix the filter. As an alternative, the tank flange can be continuously welded from the inside.
4. Both the tank sheet metal and/or the filter mounting flange must be sufficiently robust so that neither deform when the seal is compressed during tightening.

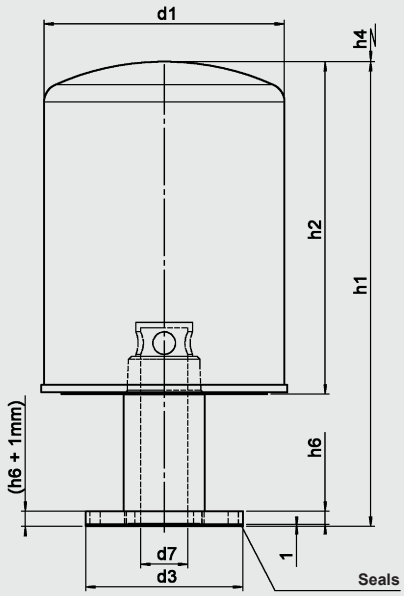
BL 82 S..., BL 162 S...



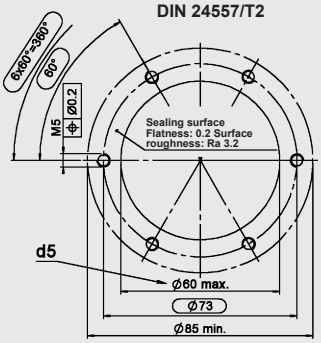

Tank connection




BL 82 F..., BL 162 F...



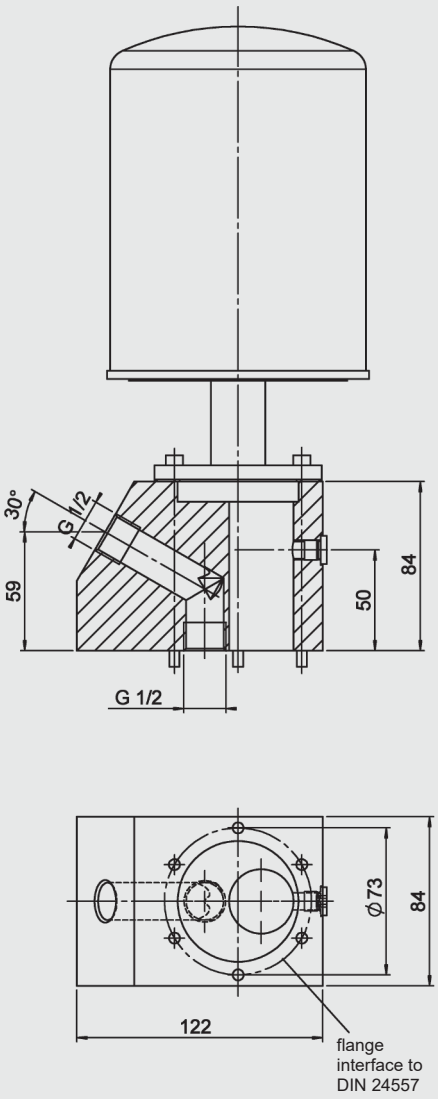

Flange connection
DIN 24557/T2




| | BL 82 S... | BL 162 S... |
|---|---|---|
| d1 | 94 | 127 |
| d3 | 27 | 43 |
| d5 | 25 | 41 |
| d7 | 16 | 25 |
| h1 | 187 | 238 |
| h2 | 146 | 176 |
| h4 | 90 | 90 |
| h6 | 7 | 7 |
| Weight | 0.73 kg | 1.90 kg |

| | BL 82 F... | BL 162 F... |
|---|---|---|
| d1 | 94 | 127 |
| d3 | 83 | 83 |
| d5 | 60 | 60 |
| d7 | 16 | 25 |
| h1 | 194 | 246 |
| h2 | 146 | 176 |
| h4 | 90 | 90 |
| h6 | 7 | 7 |
| Weight | 1.00 kg | 2.10 kg |

# 5. FILLER ADAPTER




These filler adapters are available in the following threaded connections:

- Adapter FA12
  Connection: G ½
  (Part No.: 00318597)
- Adapter FA34
  Connection: G ¾
  (Part No.: 01282563)
- Adapter FA1
  Connection: G 1
  (Part No.: 01274065)

## 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.