

The STAUFF Hydraulic Accessories programme has been carefully designed to offer a constantly growing range of sophisticated components suited to the demands of designing and building tanks, reservoirs, power packs and gear boxes in most industrial and mobile hydraulic applications.

Whether you require visual or visual/electrical fluid level and temperature indicators, tank filler breathers made of plastic or metal, or air breathers to protect your reservoir from contamination and moisture: STAUFF Hydraulic Accessories will provide you with the product you need! The programme is rounded off by suction strainers and diffusers that are positioned within the reservoir and connected directly to the suction and return lines.

STAUFF guarantees prompt service, even for special constructions according to customer's specifications or based on STAUFF developments, such as the range of extra-compact equipment that has particularly been designed for applications in which space is limited.

Please do not hesitate to contact STAUFF for further details.

[www.stauff.com](http://www.stauff.com)

# E

## Hydraulic Accessories

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## Please Note

In the past, the Hydraulic Accessories section of our product catalogue included a lot more products than this edition does. These products are still available at STAUFF and part of this product catalogue, but have been moved to other sections in order to summarise similar and/or related products and simplify working with this catalogue. Thank you very much for your understanding.

## C Filtration Technology



**Spin-On Filters**

**C122**

## D Diagtronics



**Pressure Gauge**

SPG

**D6**



**Level-Temperature Switch**

SLTS

**D59**



**Flow Indicator**

SDM  
SDMKR

**D82**

## F Valves



**Throttle and Flow Control Valve**  
(In-Line Mounting)

DV  
DRV

**F80**



**Throttle and Flow Control Valve**  
(Manifold Mounting)

DVP  
DRVP

**F82**



**Throttle and Flow Control Valve**  
(Cartridge Assembly)

DVE

**F84**



**Check Valve**

RV

**F86**



**Gauge Isolator Valve**  
(Single Station)

SWS-S1

**F90**



**Gauge Isolator Valve**  
(Multi Station)

SWS-M

**F90**

## Fluid Level / Temperature Indicators



**Level Gauge**

SNA

**E4**



**Level Gauge**  
(Special Options)

SNA/SNK

**E5**



**Level Gauge**

SNK

**E6**



**Level Gauge**  
(Compact Design)

SNKK

**E7**



**Thermo Switch**  
for use with Level Gauge

TS-SNA/SNK

**E8**



**Dial Thermometer with Probe**  
for use with Level Gauge

T1 / T2

**E8**



**Temperature Sensor**  
for use with Level Gauge

TS-SNA/SNK-PT100

**E9**



**Temperature Sensor**  
with Direct Installation Set

TS-SNA/SNK-PT100-T

**E9**



**Display / Evaluation Unit**  
for use with Temperature Sensor

TS-SNA/SNK-PT100-D

**E10**



**Signal Converter**  
for use with Temperature Sensor

TS-SNA/SNK-PT100-C

**E10**



**Anti-Drain Valve**  
for use with Level Gauge

SDV-SNA/SNK

**E11**

## Tank Filler Breathers


## Giant Air Breathers

	<b>Plastic Filler Breather</b> (Screw-In Version)	SPB 1 SPB 2 SPB 3	<b>E12</b>
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	<b>Plastic Filler Breather</b> (Flange Version)	SPB 4 SPB 5	<b>E13</b>
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<b>Accessories / Options</b> (Dipsticks / Baskets / Pressurisation) <b>Pressure Drop Flow Curves</b>	<b>E14</b>
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	<b>Plastic Filler Breather</b> (Compact Design; Screw-In Version)	SPBN	<b>E16</b>
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	<b>Plastic Filler Breather</b> (Compact Design; Bayonet Version)	SPBN	<b>E16</b>
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<b>Accessories / Options</b> (Dipsticks / Baskets / Pressurisation) <b>Pressure Drop Flow Curves</b>	<b>E17</b>
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	<b>Metal Filler Breather</b> (Screw-In Version)	SMBT-47	<b>E18</b>
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	<b>Metal Filler Breather</b> (Bayonet Version)	SMBB-47	<b>E19</b>
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	<b>Metal Filler Breather</b> (Screw-In Version)	SMBT-80	<b>E20</b>
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	<b>Metal Filler Breather</b> (Bayonet Version)	SMBB-80	<b>E21</b>
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	<b>Metal Breather</b> (Push-On Version)	SMBP-80	<b>E22</b>
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	<b>Lockable Metal Filler Breather</b> (Clamping, Threaded and Push-On Version)	SMBL	<b>E23</b>
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	<b>Side Mount Bracket (Polyamide)</b> for use with Filler Breather	ASMB-1	<b>E24</b>
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	<b>Side Mount Bracket (Aluminium)</b> for use with Filler Breather	ASMB-2	<b>E24</b>
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	<b>Extended Bayonet Flange</b> for use with Filler Breather	EBF-1	<b>E25</b>
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	<b>Extended Bayonet Flange</b> for use with Filler Breather	EBF-2	<b>E25</b>
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	<b>Weld Riser</b> for use with Filler Breather	WR	<b>E25</b>
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	<b>Plastic Filler Breather</b> (Screw-In Version)	SES-1	<b>E26</b>
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	<b>Plastic Filler Breather</b> (Welded Version)	SES-2	<b>E26</b>
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	<b>Giant Air Breather</b>	SGB	<b>E28</b>
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	<b>Breather Adaptor</b>	TBA	<b>E29</b>
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## Desiccant Air Breathers

	<b>Desiccant Air Breather</b>	SDB	<b>E30</b>
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	<b>Desiccant Air Breather</b> (Economy Version)	SVDB	<b>E31</b>
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	<b>Desiccant Air Breather</b> with Check Valves	SDB-CV	<b>E32</b>
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	<b>Adaptor Plate</b> for use with Desiccant Air Breather	AP	<b>E33</b>
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	<b>Visual Contamination Indicator</b> for use with Adaptor Plate	FM	<b>E33</b>
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	<b>Oil Demister</b> for use with Desiccant Air Breather	TBA-OD	<b>E33</b>
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## Suction Line Accessories

	<b>Suction Strainer</b> (Polyamide End Cap)	SUS	<b>E34</b>
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	<b>Suction Strainer</b> (Aluminium End Cap)	SUS	<b>E35</b>
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## Return Line Accessories

	<b>Diffuser</b>	SRV	<b>E36</b>
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	<b>Return Line Bushing</b>	SRF	<b>E37</b>
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## STAUFF Clean

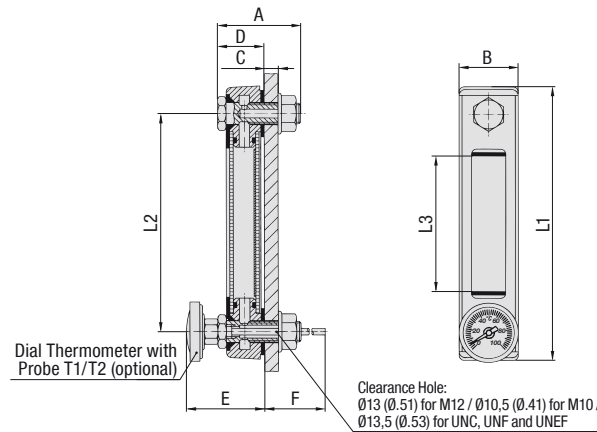
	<b>Pipe, Tube and Hose Cleaning System</b>		<b>E38</b>
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	<b>Launchers / Launcher Kits</b>		<b>E38</b>
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	<b>Nozzles / Nozzle Sets</b>		<b>E38</b>
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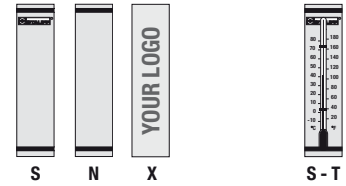
	<b>Projectiles</b>		<b>E39</b>
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## Level Gauge ■ Type SNA



### Design of Scale Plates Thermometer Options

**Capillary Tube Thermometer**  
 with a dual Celsius / Fahrenheit  
 scale up to +80 °C / +180 °F



### Characteristics

**Visual fluid level indication in hydraulic reservoirs with maximum tank pressures not exceeding 2 bar / 29 PSI**

#### Nominal Sizes and Designs

- 6 nominal sizes from 76 mm / 2.99 in to 305 mm / 12.00 in
- Display either undivided (SNA 076 ... 176) or subdivided by strut(s) into 2 (SNA 254) or 3 sections (SNA 305)

Please see page E5 for alternative nominal sizes and designs.

#### Media Compatibility

- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

#### Materials

- Housing made of Steel St 12, black powder-coated
- Sight tube and plugs made of Polyamide (PA)
- Sealings made of NBR (Buna-N®)
- Scale plate made of PVC

Special sight tube materials for improved UV or chemical resistance and use with special media (such as bio-degradable fluids, diesel oils, gasolines, etc.) as well as special sealing materials, e.g. FPM (Viton®), and scale plate materials, e.g. Aluminium, are available on request.

Please see page E5 for alternative housing materials.

#### Technical Data

- IP 65 protection rating: Dust tight and protected against water jets (IP 67 on request)
- Operating temperature range:  
 -30 °C ... +80 °C / -22 °F ... +176 °F
- Recommended tightening torque: 8 N·m / 5.9 ft·lb

#### Accessories / Options

- Red / blue capillary tube thermometers with a dual Celsius / Fahrenheit scale and a temperature display range of up to +80 °C / +180 °F
- Dial thermometers with probe and a Celsius or a dual Celsius / Fahrenheit scale with a temperature display range of up to +100 °C / +200 °F
- Thermo Switches
- Temperature Sensors

Please see pages E8 and E9 for details.

### Dimensions

Maximum admissible tolerance for the bolt center spacing (dimension L2) according to DIN ISO 2768-f:  $\pm 0,20$  mm / .008 in for all nominal sizes.

Nominal Size	Dimensions (mm/in)									
	A	B	C (Max.)	D	E	F (with T1)	F (with T2)	L1	L2	L3
<b>SNA 076</b>	45 1.77	34,5 1.36	8 .32	28 1.10	43,5 1.71	165,5 6.52	265,5 10.45	108 4.25	76 2.99	31 1.22
<b>SNA 127</b>	45 1.77	34,5 1.36	8 .32	28 1.10	43,5 1.71	165,5 6.52	265,5 10.45	159 6.26	127 5.00	76 2.99
<b>SNA 150</b>	45 1.77	34,5 1.36	8 .32	28 1.10	43,5 1.71	165,5 6.52	265,5 10.45	182 7.17	150 5.91	99 3.90
<b>SNA 176</b>	45 1.77	34,5 1.36	8 .32	28 1.10	43,5 1.71	165,5 6.52	265,5 10.45	208 8.19	176 6.93	124 4.88
<b>SNA 254</b>	45 1.77	34,5 1.36	8 .32	28 1.10	43,5 1.71	165,5 6.52	265,5 10.45	285 11.22	254 10.00	192 7.56
<b>SNA 305</b>	45 1.77	34,5 1.36	8 .32	28 1.10	43,5 1.71	165,5 6.52	265,5 10.45	336 13.23	305 12.00	244 9.61

### Order Codes

<b>SNA</b>	<b>127</b>	<b>B</b>	<b>-</b>	<b>S</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>12</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>60</b>
①	②	③		④		⑤		⑥		⑦		⑧

#### ① Type

Level Gauge with visual fluid level indication **SNA**

#### ② Nominal Size

SNA 076 (nominal size of 76 mm / 2.99 in)	<b>076</b>
SNA 127 (nominal size of 127 mm / 5.00 in)	<b>127</b>
SNA 150 (nominal size of 150 mm / 5.91 in)	<b>150</b>
SNA 176 (nominal size of 176 mm / 6.93 in)	<b>176</b>
SNA 254 (nominal size of 254 mm / 10.00 in)	<b>254</b>
SNA 305 (nominal size of 305 mm / 12.00 in)	<b>305</b>

Please see page E5 for alternative nominal sizes.

#### ③ Sealing Material

NBR (Buna-N®) (standard option)	<b>B</b>
FPM (Viton®)	<b>V</b>

#### ④ Design of Scale Plate

With STAUFF logo (standard option)	<b>S</b>
Neutral design without any logo	<b>N</b>
Custom-designed scale plate (please specify)	<b>X</b>

#### ⑤ Thermometer Option

Supplied without thermometer	<b>0</b>
Red Capillary Tube thermometer on scale plate	<b>T</b>
Blue Capillary Tube thermometer on scale plate	<b>TB</b>
Dial thermometer with probe (200 mm / 7.87 in) and a Celsius scale up to 100 °C	<b>T1C</b>
Dial thermometer with probe (300 mm / 11.81 in) and a Celsius scale up to 100 °C	<b>T2C</b>
Dial thermometer with probe (200 mm / 7.87 in) and a dual scale up to 100 °C / 200 °F	<b>T1CF</b>
Dial thermometer with probe (300 mm / 11.81 in) and a dual scale up to 100 °C / 200 °F	<b>T2CF</b>

#### ⑥ Banjo Bolt Size

Metric ISO thread M12 (standard option)	<b>12</b>
Metric ISO thread M10	<b>10</b>
Unified coarse thread 1/2–13 UNC	<b>U1</b>
Unified fine thread 1/2–20 UNF	<b>U2</b>
Unified extra-fine thread 1/2–28 UNEF	<b>U3</b>

#### ⑦ Thermo Switch / Temperature Sensor Option

Supplied without Thermo Switch / Temperature Sensor	<b>-</b>
Thermo Switch TS-SNA/SNK; Break contact (normally closed); Equipped with standard connector	<b>0</b>
Thermo Switch TS-SNA/SNK; Break contact (normally closed); Equipped with connector M12	<b>0D</b>
Thermo Switch TS-SNA/SNK; Make contact (normally open); Equipped with standard connector	<b>C</b>
Thermo Switch TS-SNA/SNK; Make contact (normally open); Equipped with connector M12	<b>CD</b>
Temperature Sensor TS-SNA/SNK-PT100; Equipped with connector M12	<b>PT100</b>

Thermo Switches / Temperature Sensors only available for banjo bolt size M12. Please see pages E8 and E9 for details.

#### ⑧ Switching Temperature

Contact switches at +60 °C / +140 °F	<b>60</b>
Contact switches at +70 °C / +158 °F	<b>70</b>
Contact switches at +80 °C / +176 °F	<b>80</b>
Contact switches at +90 °C / +194 °F	<b>90</b>

Only to be indicated when using a Thermo Switch.

Options T1C/CF and T2C/CF are not available for banjo bolt size M10 and not be used in conjunction with Thermo Switches or Temperature Sensors. Please see page E8 for details.

## Level Gauge (Special Options) ▪ Type SNA/SNK

### Characteristics

**Visual fluid level indication in hydraulic reservoirs with maximum tank pressures not exceeding 2 bar / 29 PSI; ideal for custom applications in terms of reservoir capacities and dimensions**

#### Nominal Sizes

- Special sizes beyond the normal of 305 mm / 12 in up to a maximum nominal size of 950 mm / 37.4 in – even for small and medium quantities
- High-precision manufacturing within 1 mm tolerance to customer requirements

#### Design

- Robust design thanks to one or more struts that subdivide the display into 2 or more sections
- Positioning of the strut(s) based on engineering considerations and/or according to particular customer requirements
- Precise visual indication of the fluid level by use of scale plates (only available for nominal sizes smaller than 670 mm / 26.4 in) or by use of a coloured floating element (recommended option for nominal sizes larger than 670 mm / 26.4 in)
- Plastic dampening clips to reduce vibration of the sight tube are used for nominal sizes larger than 450 mm / 17.7 in

#### Materials

- Housing made of Steel, Aluminium or Stainless Steel
- Sight tube and plugs made of Polyamide (PA)
- Sealings made of NBR (Buna-N®)
- Scale plate made of PVC
- Floating element made of Polyamide (PA)

Special sight tube materials for improved UV or chemical resistance and use with special media (such as bio-degradable fluids, diesel oils, gasolines, etc.) as well as special sealing materials, e.g. FPM (Viton®), and scale plate materials, e.g. Aluminium, are available on request.

Please also ask for our special low-temperature versions, suitable for extreme temperatures down to -50 °C / -58 °F.

#### Accessories / Options

- Capillary tube thermometers with a dual Celsius / Fahrenheit scale and a temperature display range of up to +80 °C / +180 °F
- Dial thermometers with probe and a Celsius or a dual Celsius / Fahrenheit scale with a temperature display range of up to +100 °C / +200 °F
- Thermo switches
- Temperature sensors

Please see pages E8 and E9 for details.

### Inquiry Checklist

In case that you require a special property or custom-designed level gauge, please use this checklist to provide us with details. If necessary, please also include further details, like the type of fluid in use, its temperature and viscosity.

#### Nominal Size

 Bolt centre distance (in mm)

#### Housing Material

☐ Aluminium ☐ Steel ☐ Stainless Steel

#### Housing Design

☐ Regular housing design with positioning of strut(s) based on engineering considerations

**Please provide additional details / drawing for custom housing designs.**

#### Banjo Bolt Size

☐ M12 ☐ M10 ☐ 1/2–13 UNC

☐ 1/2–20 UNF ☐ 1/2–28 UNEF

#### Banjo Bolt Material

☐ Steel ☐ Stainless Steel

#### Sealing Material

☐ NBR (Buna-N®) ☐ FPM (Viton®) ☐ EPDM

**Alternative sealing materials to be defined separately.**

#### Level Indication

☐ Scale plate (only for nominal sizes smaller than 670 mm / 26.4 in)

- ☐ Scale plate made of PVC
- ☐ Scale plate made of Aluminium
- ☐ With STAUFF logo
- ☐ Neutral design without any logo
- ☐ Custom-design (please specify)

- ☐ Without thermometer on scale plate
- ☐ Capillary tube thermometer with dual Celsius / Fahrenheit scale up to +80 °C / +180 °F

☐ Floating element (recommended option for nominal sizes larger than 670 mm / 26.4 in)

**Other types of level indication (magnetic floats, etc.) to be defined separately.**

#### Options

☐ Dial thermometer with probe

- ☐ Celsius scale up to +100 °C
- ☐ Dual scale up to +100 °C / +200 °F
- ☐ Length of probe: 200 mm / 7.87 in
- ☐ Length of probe: 300 mm / 11.81 in

☐ Thermo Switch TS-SNA/SNK

- ☐ Break contact; Standard connector
- ☐ Break contact; Connector M12
- ☐ Make contact; Standard connector
- ☐ Make contact; Connector M12
- ☐ Contact switches at +60 °C / +140 °F
- ☐ Contact switches at +70 °C / +158 °F
- ☐ Contact switches at +80 °C / +176 °F
- ☐ Contact switches at +90 °C / +194 °F

☐ Temperature Sensor TS-SNA/SNK-PT100


Also available:

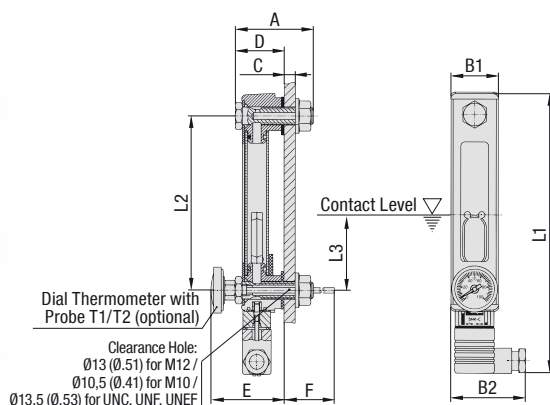
#### Level Gauges ▪ Type SNK in Special Lengths

Visual / electrical fluid level indication in hydraulic reservoirs with level gauges up to a maximum nominal size of 950 mm / 37.4 in.

Please do not hesitate to contact STAUFF for further details.

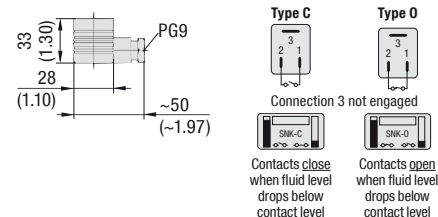


## Level Gauge ■ Type SNK

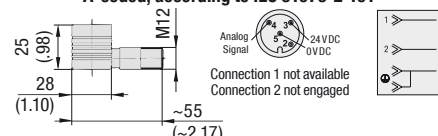


### Connection Details and Electrical Functions

**Types C and O: Industrial standard connector (contact gap: 11 mm / .43 in), similar to DIN EN 175301-803-B / ISO 6952**



**Types CD and OD: Five-pin circular connector M12, A-coded, according to IEC 61076-2-101**



### Characteristics

**Visual / electrical fluid level indication in hydraulic reservoirs with maximum tank pressures not exceeding 1 bar / 14.5 PSI**

#### Nominal Sizes and Designs

- 5 nominal sizes from 127 mm / 5.00 in to 305 mm / 12.00 in
- Display either undivided (SNK 127 ... 176) or subdivided by strut(s) into 2 (SNK 254) or 3 sections (SNK 305)

#### Media Compatibility

- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

#### Materials

- Housing made of Aluminium, black powder-coated
- Sight tube and plugs made of Polyamide (PA)
- Float made of Polyamide (PA)
- Sealings made of FPM (Viton®)

Special sight tube materials for improved UV or chemical resistance and use with special media (such as bio-degradable fluids, diesel oils, gasolines, etc.) as well as special sealing materials are available on request.

#### Electrical Specifications

- Magnetic float activates switch when fluid level drops below contact level within 60 mm / 2.36 in of lower banjo bolt
- Available as a break contact (normally closed) or make contact (normally open)
- Either equipped with industrial standard connector (types C / O) or five-pin circular connector M12 (types CD / OD)
- Direction of the electrical contact box (right / left) can be chosen when assembling the electrical contacts (types C / D) or is right by default (types CD / OD)
- Contact ratings: max. 10 W (types C / CD) or 5 W (types O / OD)
- Switching voltage: max. 50 VAC/DC
- Switching current: max. 0,25 A

#### Technical Data

- IP 65 protection rating: Dust tight and protected against water jets (IP 67 on request)
- Operating temperature range:  
-30 °C ... +80 °C / -22 °F ... +176 °F
- Recommended tightening torque: 8 N·m / 5.9 ft·lb
- Minimum lateral distance to other magnetic components and cables: 10 mm / .39 in

#### Accessories / Options

- Dial thermometers with probe and a Celsius or a dual Celsius / Fahrenheit scale with a temperature display range of up to +100 °C / +200 °F
- Thermo Switches
- Temperature Sensors

Please see pages E8 and E9 for details.

### Dimensions

Table shows dimension L1 for the version with industrial standard connector (types C and O) only. Maximum admissible tolerance for the bolt center spacing (dimension L2) according to DIN ISO 2768-F: ±0,20 mm / .008 in for all nominal sizes.

Nominal Size	Dimensions (mm/in)									
	A	B1	B2	C (Max.)	D	E	F (with T1)	F (with T2)	L1	L2
SNK 127	56	34,5	~50	8	35,1	51,5	157,5	257,5	205	127
	2.20	1.36	~1.97	.32	1.26	2.03	6.20	10.14	8.07	5.00
SNK 150	56	34,5	~50	8	35,1	51,5	157,5	257,5	228	150
	2.20	1.36	~1.97	.32	1.26	2.03	6.20	10.14	8.98	5.91
SNK 176	56	34,5	~50	8	35,1	51,5	157,5	257,5	254	176
	2.20	1.36	~1.97	.32	1.26	2.03	6.20	10.14	10.00	6.93
SNK 254	56	34,5	~50	8	35,1	51,5	157,5	257,5	332	254
	2.20	1.36	~1.97	.32	1.26	2.03	6.20	10.14	13.07	10.00
SNK 305	56	34,5	~50	8	35,1	51,5	157,5	257,5	383	305
	2.20	1.36	~1.97	.32	1.26	2.03	6.20	10.14	15.08	12.00

### Order Codes

<b>SNK</b>	<b>127</b>	<b>V</b>	<b>-</b>	<b>C</b>	<b>-</b>	<b>O</b>	<b>-</b>	<b>12</b>	<b>-</b>	<b>O</b>	<b>-</b>	<b>60</b>
①	②	③		④		⑤		⑥		⑦		⑧

#### ① Type

Level Gauge with visual / electrical fluid level indication	<b>SNK</b>
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#### ② Nominal Size

SNK 127 (nominal size of 127 mm / 5.00 in)	<b>127</b>
SNK 150 (nominal size of 150 mm / 5.91 in)	<b>150</b>
SNK 176 (nominal size of 176 mm / 6.93 in)	<b>176</b>
SNK 254 (nominal size of 254 mm / 10.00 in)	<b>254</b>
SNK 305 (nominal size of 305 mm / 12.00 in)	<b>305</b>

Consult STAUFF for alternative nominal sizes and designs.

#### ③ Sealing Material

FPM (Viton®)	<b>V</b>
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#### ④ Electrical Function

Break contact, opens at contact level (normally closed); Equipped with standard connector	<b>O</b>
Break contact, opens at contact level (normally closed); Equipped with connector M12	<b>OD</b>
Make contact, closes at contact level (normally open); Equipped with standard connector	<b>C</b>
Make contact, closes at contact level (normally open); Equipped with connector M12	<b>CD</b>

#### ⑤ Thermometer Option

Supplied without thermometer	<b>O</b>
Dial thermometer with probe (200 mm / 7.87 in) and a Celsius scale up to 100 °C	<b>T1C</b>
Dial thermometer with probe (300 mm / 11.81 in) and a Celsius scale up to 100 °C	<b>T2C</b>
Dial thermometer with probe (200 mm / 7.87 in) and a dual scale up to 100 °C / 200 °F	<b>T1CF</b>
Dial thermometer with probe (300 mm / 11.81 in) and a dual scale up to 100 °C / 200 °F	<b>T2CF</b>

#### ⑥ Banjo Bolt Size

Metric ISO thread M12 (standard option)	<b>12</b>
Metric ISO thread M10	<b>10</b>
Unified coarse thread 1/2-13 UNC	<b>U1</b>
Unified fine thread 1/2-20 UNF	<b>U2</b>
Unified extra-fine thread 1/2-28 UNEF	<b>U3</b>

#### ⑦ Thermo Switch / Temperature Sensor Option

Supplied without Thermo Switch / Temperature Sensor - Thermo Switch TS-SNA/SNK; Break contact (normally closed); Equipped with standard connector	<b>O</b>
Thermo Switch TS-SNA/SNK; Break contact (normally closed); Equipped with connector M12	<b>OD</b>
Thermo Switch TS-SNA/SNK; Make contact (normally open); Equipped with standard connector	<b>C</b>
Thermo Switch TS-SNA/SNK; Make contact (normally open); Equipped with connector M12	<b>CD</b>
Temperature Sensor TS-SNA/SNK-PT100; Equipped with connector M12	<b>PT100</b>

Thermo Switches / Temperature Sensors only available for banjo bolt size M12. Please see pages E8 and E9 for details.

#### ⑧ Switching Temperature

Contact switches at +60 °C / +140 °F	<b>60</b>
Contact switches at +70 °C / +158 °F	<b>70</b>
Contact switches at +80 °C / +176 °F	<b>80</b>
Contact switches at +90 °C / +194 °F	<b>90</b>

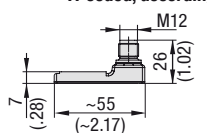
Only to be indicated when using a Thermo Switch.

Options T1C/CF and T2C/CF are not available for banjo bolt size M10 and not be used in conjunction with Thermo Switches or Temperature Sensors. Please see page E8 for details.

## Level Gauge (Compact Design) ■ Type SNKK

### Connection Details and Electrical Functions

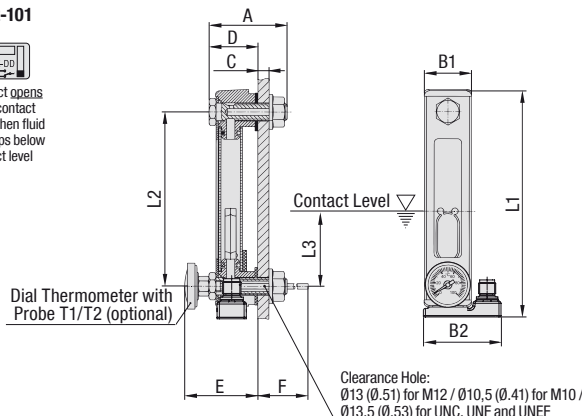
Type DD: Five-pin circular connector M12, A-coded, according to IEC 61076-2-101



Pin assignment at empty reservoir (default setting at point of delivery)



1 Contact opens and 1 contact closes when fluid level drops below contact level



Clearance Hole:  
Ø13 (Ø.51) for M12 / Ø10.5 (Ø.41) for M10 / Ø13.5 (Ø.53) for UNC, UNF and UNEF



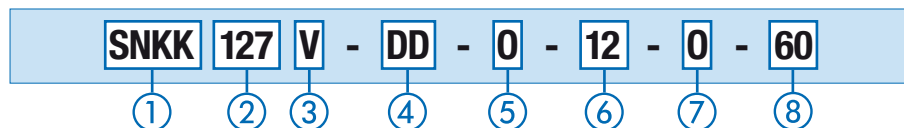
~40 mm / ~1.57 in  
in comparison with  
Level Gauges SNK

### Dimensions

Maximum admissible tolerance for the bolt center spacing (dimension L2) according to DIN ISO 2768-f: ±0,20mm / .008in for all nominal sizes.

Nominal Size	Dimensions (mm/in)										
	A	B1	B2	C (Max.)	D	E	F (with T1)	F (with T2)	L1	L2	L3
SNKK 127	56	34,5	~55	8	35,1	51,5	157,5	257,5	165	127	~60
	2.20	1.36	~2.17	.32	1.26	2.03	6.20	10.14	6.50	5.00	~2.36
SNKK 150	56	34,5	~50	8	35,1	51,5	157,5	257,5	188	150	~60
	2.20	1.36	~1.97	.32	1.26	2.03	6.20	10.14	8.98	5.91	~2.36
SNKK 176	56	34,5	~55	8	35,1	51,5	157,5	257,5	214	176	~60
	2.20	1.36	~2.17	.32	1.26	2.03	6.20	10.14	8.43	6.93	~2.36
SNKK 254	56	34,5	~55	8	35,1	51,5	157,5	257,5	292	254	~60
	2.20	1.36	~2.17	.32	1.26	2.03	6.20	10.14	11.50	10.00	~2.36
SNKK 305	56	34,5	~55	8	35,1	51,5	157,5	257,5	343	305	~60
	2.20	1.36	~2.17	.32	1.26	2.03	6.20	10.14	13.50	12.00	~2.36

### Order Codes



#### ① Type

Level Gauge with visual / electrical fluid level indication (compact design) **SNKK**

#### ② Nominal Size

SNKK 127 (nominal size of 127 mm / 5.00 in)	<b>127</b>
SNKK 150 (nominal size of 150 mm / 5.91 in)	<b>150</b>
SNKK 176 (nominal size of 176 mm / 6.93 in)	<b>176</b>
SNKK 254 (nominal size of 254 mm / 10.00 in)	<b>254</b>
SNKK 305 (nominal size of 305 mm / 12.00 in)	<b>305</b>

Consult STAUFF for alternative nominal sizes and designs.

#### ③ Sealing Material

FPM (Viton®) **V**

#### ④ Electrical Function

SPDT (Single Pole Double Throw) contacts, 1 contact opens and 1 contact closes at contact level; Equipped with connector M12 **DD**

#### ⑤ Thermometer Option

Supplied without thermometer	<b>0</b>
Dial thermometer with probe (200 mm / 7.87 in) and a Celsius scale up to 100 °C	<b>T1C</b>
Dial thermometer with probe (300 mm / 11.81 in) and a Celsius scale up to 100 °C	<b>T2C</b>
Dial thermometer with probe (200 mm / 7.87 in) and a dual scale up to 100 °C / 200 °F	<b>T1CF</b>
Dial thermometer with probe (300 mm / 11.81 in) and a dual scale up to 100 °C / 200 °F	<b>T2CF</b>

#### ⑥ Banjo Bolt Size

Metric ISO thread M12 (standard option)	<b>12</b>
Metric ISO thread M10	<b>10</b>
Unified coarse thread 1/2–13 UNC	<b>U1</b>
Unified fine thread 1/2–20 UNF	<b>U2</b>
Unified extra-fine thread 1/2–28 UNEF	<b>U3</b>

#### ⑦ Thermo Switch / Temperature Sensor Option

Supplied without Thermo Switch / Temperature Sensor - Break Contact, opens at contact level (normally closed); Equipped with standard connector	<b>0</b>
Break Contact, opens at contact level (normally closed); Equipped with connector M12	<b>0D</b>
Make Contact, closes at contact level (normally open); Equipped with standard connector	<b>C</b>
Make Contact, closes at contact level (normally open); Equipped with connector M12	<b>CD</b>
Temperature Sensor TS-SNA/SNK-PT100; Equipped with connector M12	<b>PT100</b>

Thermo Switches / Temperature Sensors only available for banjo bolt size M12. Please see pages E8 and E9 for details.

#### ⑧ Switching Temperature

Contact switches at +60 °C / +140 °F	<b>60</b>
Contact switches at +70 °C / +158 °F	<b>70</b>
Contact switches at +80 °C / +176 °F	<b>80</b>
Contact switches at +90 °C / +194 °F	<b>90</b>

Only to be indicated when using a Thermo Switch.

Options T1C/CF and T2C/CF are not available for banjo bolt size M10 and not to be used in conjunction with Thermo Switches or Temperature Sensors. Please see page E8 for details.

### Characteristics

Visual / electrical fluid level indication in hydraulic reservoirs with maximum tank pressures not exceeding 1 bar / 14.5PSI; ideal for applications in which space is limited

#### Nominal Sizes and Designs

- 5 nominal sizes from 127 mm / 5.00 in to 305 mm / 12.00 in
- Compact design allows space-saving installation: Always 40 mm / 1.57 in shorter than Level Gauges SNK of the comparable nominal size
- Display either undivided (SNKK 127 ... 176) or subdivided by strut(s) into 2 (SNKK 254) or 3 sections (SNKK 305)

#### Media Compatibility

- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

#### Materials

- Housing made of Aluminium, black powder-coated
- Sight tube and plugs made of Polyamide (PA)
- Float made of Polyamide (PA)
- Sealings made of FPM (Viton®)

Special sight tube materials for improved UV or chemical resistance and use with special media (such as bio-degradable fluids, diesel oils, gasolines, etc.) as well as special sealing materials are available on request.

#### Electrical Specifications

- Magnetic float activates switch when fluid level drops below contact level within 60 mm / 2.36 in of lower banjo bolt
- Available as a SPDT (Single Pole Double Throw) contact
- Equipped with five-pin circular connector M12
- Direction of the electrical contact box is right to top by default

#### Technical Data

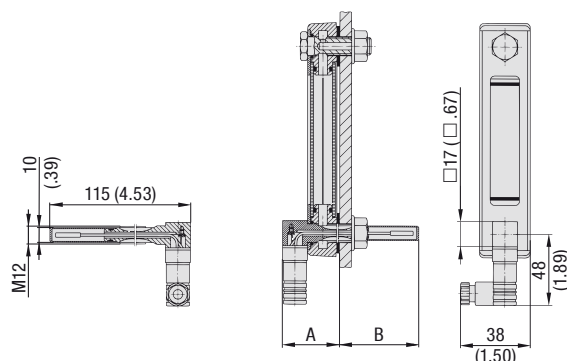
- IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time (IP 69K on request)
- Operating temperature range: -30 °C ... +80 °C / -22 °F ... +176 °F
- Recommended tightening torque: 8 N·m / 5.9 ft·lb
- Minimum lateral distance to other magnetic components and cables: 10 mm / .39 in

#### Accessories / Options

- Dial thermometers with probe and a Celsius or a dual Celsius / Fahrenheit scale with a temperature display range of up to +100 °C / +200 °F
- Thermo Switches
- Temperature Sensors

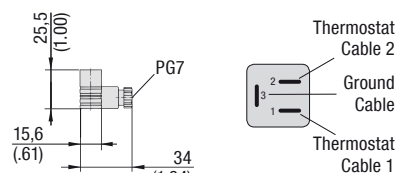
Please see pages E8 and E9 for details.

## Thermo Switch ▪ Type TS

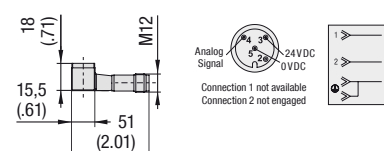


### Connection Details and Electrical Functions

**Types C and O:** Industrial standard connector (contact gap: 9,4 mm / .37 in), similar to DIN EN 175301-803-C / ISO 6952



**Types CD and OD:** Five-pin circular connector M12, A-coded, according to IEC 61076-2-101



### Characteristics

Fluid temperature measurement in conjunction with STAUFF Level Gauges SNA, SNK and SNKK

#### Installation

- Replaces the lower banjo bolt of the Level Gauge
- Available for bolt size M12 only
- Clearance hole: Ø13 mm / Ø.51 in

#### Materials

- Metal parts made of Steel (1.0718)
- Plastic parts made of glass-fibre reinforced Polyamide (PA)

#### Electrical Specifications (General)

- Thermo switch is activated when the fluid temperature reaches the respective switching temperature
- Available with switching temperatures of +60 °C / +140 °F, +70 °C / +158 °F, +80 °C / +176 °F or +90 °C / +194 °F (with a switching tolerance of ±5 °C / ±9 °F and a hysteresis of 35 °C / 63 °F)
- Available as a break contact (normally closed) or make contact (normally open)
- Either equipped with industrial standard connector (types C / O) or five-pin circular connector M12 (types CD / OD)
- Thermo switch can be rotated by 360° to its final direction

### Dimensions

	Dimensions (mm/in)	
	A	B
In conjunction with Level Gauge <b>SNA</b>	39 1.54	76 2.99
In conjunction with Level Gauge <b>SNK</b>	47 1.85	68 2.68
In conjunction with Level Gauge <b>SNKK</b>	47 1.85	68 2.68

#### Electrical Specifications (Alternating Current)

- Maximum voltage: 250 V, 2,5 (1,6) A, 50 Hz
- Maximum current at 2000 operations: 4,0 A at cos φ = 4,45 / 250 V, 135 °C
- Maximum current at 10000 operations: 2,5 A at cos φ = 1,00 / 250 V, 150 °C
- Minimum current: 20 mA

#### Electrical Specifications (Direct Current)

- Maximum voltage: 42 V

### Order Codes

**TS - SNA/SNK - 0 - 60**

① ② ③

#### ① Type

Thermo Switch TS for use with Level Gauges SNA, SNK and SNKK

**TS-SNA/SNK**

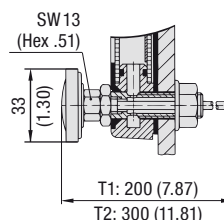
#### ② Electrical Function

Break contact, opens at switching temperature (normally closed); Equipped with standard connector	<b>0</b>
Break contact, opens at switching temperature (normally closed); Equipped with connector M12	<b>OD</b>
Make contact, closes at switching temperature (normally open); Equipped with standard connector	<b>C</b>
Make contact, closes at switching temperature (normally open); Equipped with connector M12	<b>CD</b>

#### ③ Switching Temperature

Contact switches at +60 °C / +140 °F	<b>60</b>
Contact switches at +70 °C / +158 °F	<b>70</b>
Contact switches at +80 °C / +176 °F	<b>80</b>
Contact switches at +90 °C / +194 °F	<b>90</b>

## Dial Thermometer with Probe ▪ Types T1/T2



### Characteristics

Visual fluid temperature measurement in conjunction with STAUFF Level Gauges SNA, SNK and SNKK

#### Nominal Sizes and Designs

- Probe lengths of 200 mm / 7.87 in or 300 mm / 11.81 in
- Scale diameter of 33 mm / 1.30 in

Please consult STAUFF for special versions.

#### Scale Options

- Celsius scale of 0°C ... +100 °C
- Dual Celsius / Fahrenheit scale of up to +100 °C / +200 °F

#### Materials

- Probe made of Stainless Steel V4A (1.4571)

#### Technical Data

- IP 65 protection rating: Dust tight and protected against water jets

#### Installation

- Requires a special banjo bolt (with internal M8 port for the dial thermometer with probe) to replace the lower standard banjo bolt of the Level Gauge
- Use suitable wrench SW 13 (Hex .51) to fasten; turning on the body itself may damage the product

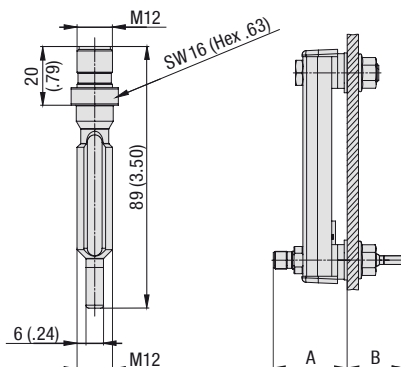
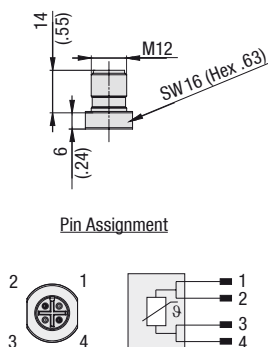
Please note that Dial Thermometers with Probe can only be ordered in conjunction with Level Gauges SNA, SNK and SNKK. Please see page E4 to E7 for details.



## Temperature Sensor ■ Type TS-SNA/SNK-PT100

### Connection Details and Electrical Functions

Four-pin circular connector M12,  
A-coded, according to IEC 61076-2-101



### Order Codes

**TS-SNA/SNK-PT100**

①

#### ① Type

Temperature Sensor PT100 **TS-SNA/SNK-PT100**

### Dimensions

	Dimensions (mm/in)	
	A	B
In conjunction with Level Gauge <b>SNA</b>	43,5 1.71	45,5 1.79
In conjunction with Level Gauge <b>SNK</b>	51 2.01	38 1.50
In conjunction with Level Gauge <b>SNKK</b>	51 2.01	38 1.50

### Technical Data

- Operating temperature range (for the connector area):  
-25 °C ... +80 °C / -13 °F ... +176 °F
- IP 68 protection rating: Dust tight and protected against powerful water jets; even immersion (beyond 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time

### Characteristics

Fluid temperature measurement in conjunction with STAUFF Level Gauges **SNA**, **SNK** and **SNKK**; Analysis of signals with **TS-SNA/SNK-PT100-D** Display / Evaluation Unit, **TS-SNA/SNK-PT100-C** Signal Converter or system-sided amplifier or transducer

#### Installation

- Replaces the lower banjo bolt of the Level Gauge
- Available for bolt size M12 only
- Clearance hole: Ø13 mm / Ø.51 in

#### Materials

- Metal parts (including all fluid-affected parts) made of Stainless Steel V2A (1.4305)

#### Electrical Specifications

- Measuring temperature range:  
-40 °C ... +150 °C / -40 °F ... +302 °F
- Platinum measuring element PT100 according to DIN EN 60751, class A
- Accuracy:  $\pm(0,15 K + 0,002 \times |t|)$
- Max. contact current: 2,0 mA
- Equipped with four-pin circular connector M12 with gold-plated contacts

### Order Codes

**TS-SNA/SNK-PT100-T-B**

①

②

③

#### ① Type

Temperature Sensor PT100 **TS-SNA/SNK-PT100**

#### ② Direct Adaptor

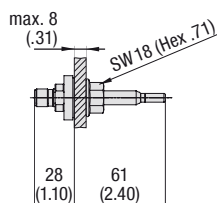
Direct installation set including M12 screw nut, gasket, front ring and O-ring

**T**

#### ③ Sealing Material

NBR (Buna-N®) (standard option) **B**  
FPM (Viton®) **V**  
EPDM **E**

The direct installation set can also be used in conjunction with Thermo Switches TS (see page E8). Please consult STAUFF for further information.



## Temperature Sensor with Direct Installation Set Type TS-SNA/SNK-PT100-T

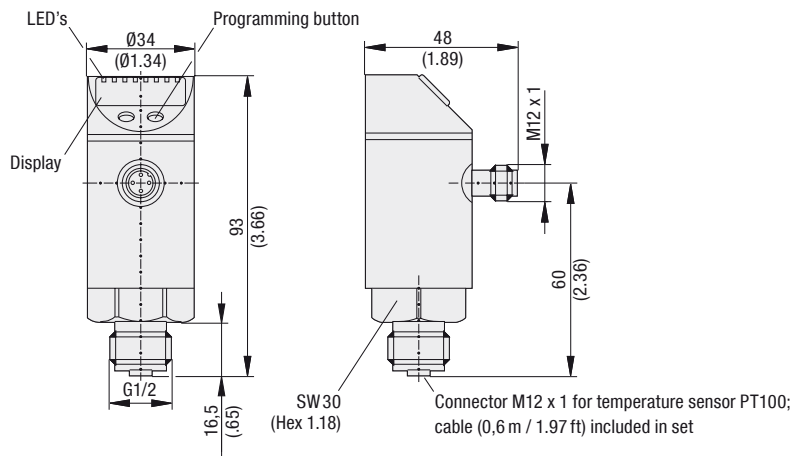
### Characteristics

Direct fluid temperature measurement without STAUFF Level Gauges **SNA**, **SNK** and **SNKK**; Analysis of signals with **TS-SNA/SNK-PT100-D** Display / Evaluation Unit, **TS-SNA/SNK-PT100-C** Signal Converter or system-sided amplifier or transducer

#### Installation

- Direct installation to the outer wall of the hydraulic reservoir or gearbox
- Compact design and easy installation
- Clearance hole: Ø13 mm / Ø.51 in

## Display / Evaluation Unit ■ Type TS-SNA/SNK-PT100-D



## Characteristics

Mobile or stationary fluid temperature indication and evaluation in conjunction with STAUFF Temperature Sensor TS-SNA/SNK-PT100

## Features

- Connection of temperature sensor as 4-wire sensor
- Display of the current system temperature in °C or °F with 4-digit alpha-numeric display
- Measuring temperature range: -40 °C ... +300 °C / -40 °F ... +572 °F (may be limited by connected sensor)
- Generation of 2 output signals according to parameter setting:  
Switching output - normally open / closed (programmable)  
Analog output - 4 ... 20 mA or 0 ... 10 V (scaleable)
- Provision of process data via IO-Link 1.0 (38.4 kBaud)
- Designed for bi-directional connection

## Electrical Specifications

- Operating voltage: 18 ... 32 VDC
- Current rating: 250 mA
- Voltage drop: <2 mA
- Response time of switching output: 130 ms
- Analog output: 4 ... 20 mA or 0 ... 10 V (scaleable)
- Accuracy of switching output:  $\pm 0,3\text{ °C} / \pm 0,54\text{ °F}$
- Accuracy of analog output:  $\pm 0,3\text{ °C} / \pm 0,54\text{ °F}$
- Resolution of switching output:  $0,1\text{ °C} / 0,18\text{ °F}$
- Resolution of analog output:  $0,1\text{ °C} / 0,18\text{ °F}$
- Resolution of display:  $0,1\text{ °C} / 0,18\text{ °F}$
- Temperature coefficient (of the span per 10 K): 0,1 %
- Short-circuit protection (pulsed)
- Protection against reverse polarity and overload
- Equipped with four-pin circular connector M12 with gold-plated contacts

## Technical Data

- IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time
- Operating temperature range: -25 °C ... +70 °C / -13 °F ... +158 °F

## Order Codes

**SET-TS-SNA/SNK-PT100-D**

①

## ① Type

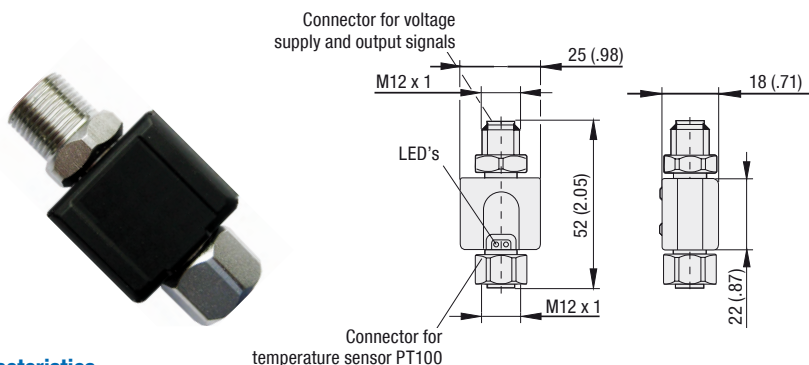
Complete set of Display / Evaluation Unit for use with Temperature Sensor TS-SNA/SNK-PT100

Complete sets include the following components:

- Display / Evaluation Unit TS-SNA/SNK-PT100-D
- Cable with M12 plug / M12 socket (0,6 m / 1.97 ft)
- External power supply unit 100 ... 240 V AC (50 ... 60 Hz) / 200 mA
- User manual (CD-ROM)

All components included in the complete set are also available as single parts. Consult STAUFF for further information.

## Signal Converter ■ Type TS-SNA/SNK-PT100-C



## Characteristics

Signal converter for use with STAUFF Temperature Sensor TS-SNA/SNK-PT100

## Features

- Converts the measured signal into a proportional analog signal: Analog output - 4 ... 20 mA (scaleable)
- Measuring temperature range (factory setting): -50 °C ... +150 °C / -58 °F ... +302 °F
- Provision of process data via IO-Link 1.0 (38.4 kBaud)
- Designed for bi-directional connection

## Electrical Specifications

- Operating voltage: 20 ... 32 VDC
- Analog output: 4 ... 20 mA (scaleable)
- Maximum load: 300 Ω
- Rise time analog output: 400 ms
- Accuracy of analog output:  $\pm 0,3\text{ °C} / \pm 0,54\text{ °F} + (\pm 0,1\text{ % of measuring span})$
- Resolution:  $\leq 0,1\text{ °C} / \leq 0,18\text{ °F}$
- Temperature coefficient (of the span per 10 K): 0,1 %
- Short-circuit protection (pulsed)
- Protection against reverse polarity and overload
- Equipped with four-pin circular connector M12 with gold-plated contacts

## Order Codes

**TS - SNA/SNK - PT100-C**

①

## ① Type

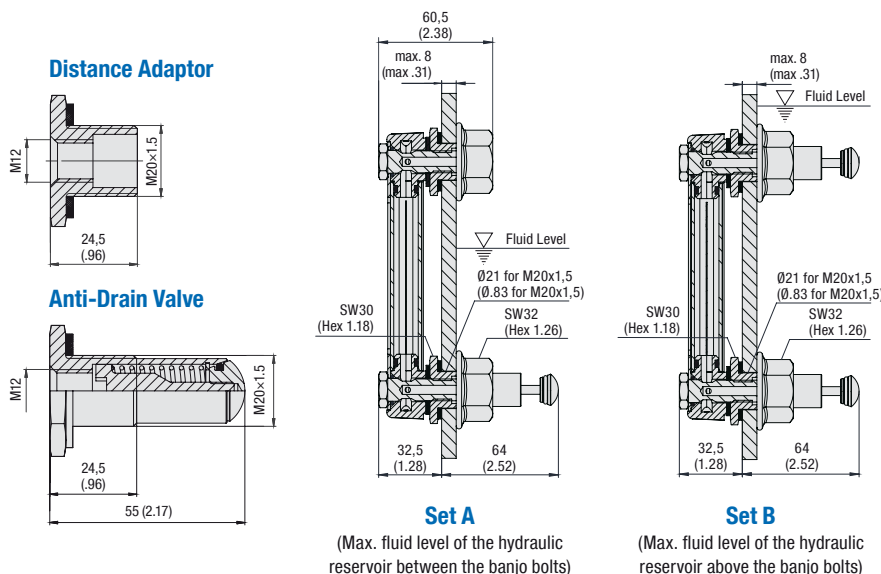
Signal Converter for use with Temperature Sensor TS-SNA/SNK-PT100

## Technical Data

- IP 67 protection rating: Dust tight and protected against powerful water jets; even immersion (up to 1 m / 3.28 ft) in water is possible under defined conditions of pressure and time
- Operating temperature range: -25 °C ... +70 °C / -13 °F ... +158 °F

Dimensional drawings: All dimensions in mm (in).

## Anti-Drain Valve ■ Type SDV-SNA/SNK



### Order Codes

**SDV-SNA/SNK - M12 - B - SS - A SET**

①

②

③

④

⑤

#### ① Type

Anti-Drain Valve for use with  
Level Gauges SNA, SNK and SNKK

**SDV-SNA/SNK**

#### ② Banjo Bolt Size

Metric ISO thread M12

**M12**

#### ③ Sealing Material

NBR (Buna-N®)

**B**

#### ④ Housing Material

Stainless Steel V2A (1.4301)

**SS**

#### ⑤ Set Type

Set A consisting of 1 anti-drain valve to be  
used with the lower banjo bolt and 1 distance  
adaptor to be used with the upper banjo bolt

**A SET**

Set B consisting of 2 anti-drain valves to be  
used with both banjo bolts

**B SET**

### Characteristics

Anti-drain valve to be used in conjunction with banjo bolts of level gauges, allowing these to be removed and replaced quickly and easily without spillage of fluid from the hydraulic reservoir

#### Features

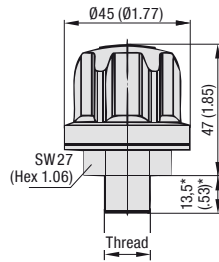
- Used in conjunction with either the lower or both the lower and the upper banjo bolts of the Level Gauge
- Distance adaptor for the upper banjo bolt available when the check valve is used with the lower banjo bolt only
- Available for bolt size M12 only

#### Materials

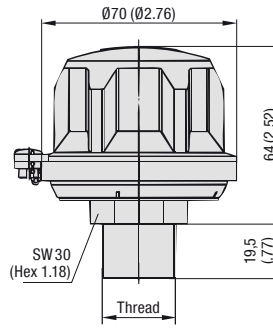
- Housing made of Stainless Steel V2A (1.4301)
- Hexagon head nuts made of Steel, zinc/nickel-plated (Fe/Zn Ni 6)
- Sealings made of NBR (Buna-N®)

Consult STAUFF for alternative materials.

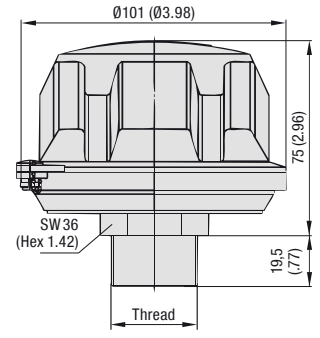
## Plastic Filler Breather ■ Types SPB 1 / 2 / 3 (Screw-In Version)

**SPB 1**

\* for thread type N12: 16,0 (.63)

**SPB 2**

(See page E16 for compact version SPBN)

**SPB 3**

### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Available with 3 different cap diameters
- Screw-in version, equipped with male BSP thread (ISO 228) or male NPT thread (ANSI B1.20.1)
- Operating temperature range:  
-40 °C ... +120 °C / -40 °F ... +248 °F

#### Materials

- Made of non-corrosive materials
- Body and cap made of glass-fibre reinforced Polyamide (PA)
- Sealings made of NBR (Buna-N®)

Consult STAUFF for alternative materials.

#### Accessories / Options

- Pressurisation up to 0,7 bar / 10 PSI (not available for SPB 1)
- Air filter element
- Anti-splash feature
- Plastic dipstick with integrated anti-splash feature

Please see page E14 for details.

#### Maximum Air Flow Rate

- 0,15 m³/min / 5.30 cfm for SPB 1
- 0,40 m³/min / 14.13 cfm for SPB 2
- 1,00 m³/min / 35.31 cfm for SPB 3

Please see page E15 for detailed air flow curves.

#### Oil Displacement

- 150 l/min / 40 US GPM for SPB 1
- 400 l/min / 106 US GPM for SPB 2
- 1000 l/min / 264 US GPM for SPB 3

#### Installation

- Recommended mounting spaces:  
Ø48 mm / Ø1.89 in for SPB 1,  
Ø90 mm / Ø3.54 in for SPB 2, and  
Ø122 mm / Ø4.80 in for SPB 3

### Thread Options

Thread	SPB 1	SPB 2	SPB 3	Code
Male BSP Thread (ISO 228)				
G1/4	●	○	○	B04
G3/8	●	●	○	B06
G1/2	●	●	●	B08
G3/4	○	●	●	B12
G1	○	○	●	B16

Thread	SPB 1	SPB 2	SPB 3	Code
Male NPT Thread (ANSI B1.20.1)				
1/4	●	○	○	N04
3/8	●	○	○	N06
1/2	●	○	○	N08
3/4	●	●	●	N12
1	○	○	●	N16

● Standard Option

### Order Codes

<b>SPB</b>	-	<b>S</b>	-	<b>2</b>	-	<b>10</b>	-	<b>B12</b>	-	<b>0</b>	-	<b>D200</b>
①		②		③		④		⑤		⑥		⑦

#### ① Type

Plastic Filler Breather **SPB**

#### ② Pressurisation

Without pressurisation	<b>S</b>
Pressurised at 0,2 bar / 3 PSI	<b>P1</b>
Pressurised at 0,35 bar / 5 PSI	<b>P2</b>
Pressurised at 0,7 bar / 10 PSI	<b>P3</b>

Type SPB 1 is only available without pressurisation.  
Please see page E14 for details.

#### ③ Version

Screw-in version; Cap diameter Ø45 mm (Ø1.77 in)	<b>1</b>
Screw-in version; Cap diameter Ø70 mm (Ø2.76 in)	<b>2</b>
Screw-in version; Cap diameter Ø101 mm (Ø3.98 in)	<b>3</b>

#### ④ Air Filter Element (Material / Micron Rating)

Without air filter element	<b>00</b>
10 µm Foam / PUR (standard option)	<b>10</b>
40 µm Foam / PUR	<b>40</b>
3 µm Inorganic Glass-Fibre, pleated	<b>E03</b>
10 µm Filter Paper, pleated	<b>L10</b>

Options E03 and L10 are only available for type SPB 3.  
Consult STAUFF for alternative materials / micron ratings.

#### ⑤ Connection Thread (Male)

G1/4 (for SPB 1 only)	<b>B04</b>
G3/8 (for SPB 1 and 2 only)	<b>B06</b>
G1/2 (for SPB 1, 2 and 3)	<b>B08</b>
G3/4 (for SPB 2 and 3 only)	<b>B12</b>
G1 (for SPB 3 only)	<b>B16</b>
1/4 NPT (for SPB 1 only)	<b>N04</b>
3/8 NPT (for SPB 1 only)	<b>N06</b>
1/2 NPT (for SPB 1 only)	<b>N08</b>
3/4 NPT (for SPB 1, 2 and 3)	<b>N12</b>
1 NPT (for SPB 3 only)	<b>N16</b>

#### ⑥ Anti-Splash Feature

With anti-splash feature (standard option)	<b>A</b>
Without anti-splash feature	<b>0</b>

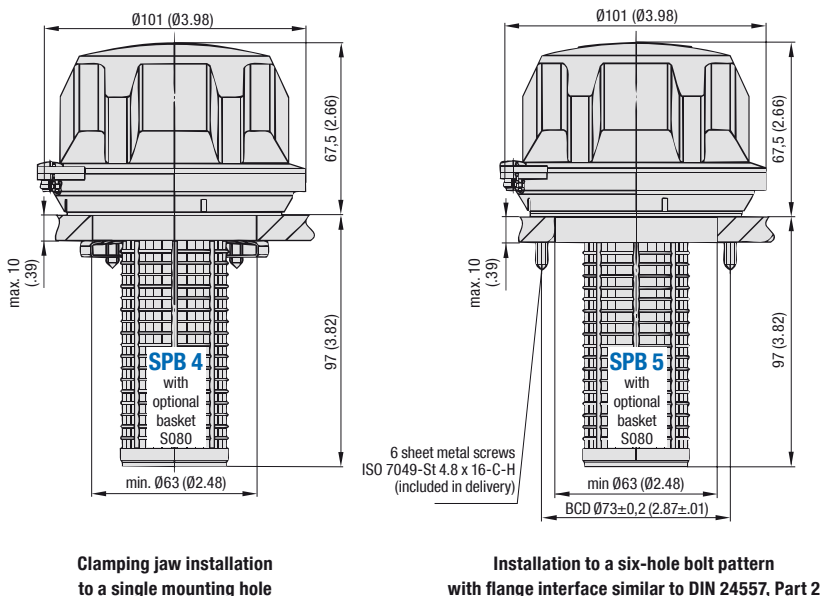
The anti-splash feature for the SPB 1, can only be achieved in conjunction with a dipstick, but is not available for the SPB 1 with connection sizes B04 and N04. Please see page E14 for details.

#### ⑦ Dipstick

Plastic dipstick (200 mm / 7.88 in) with integrated anti-splash feature	<b>D200</b>
Plastic dipstick (300 mm / 11.81 in) with integrated anti-splash feature	<b>D300</b>
Without dipstick	<b>-</b>

A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements. Please see page E14 for details.

## Plastic Filler Breather ■ Types SPB 4 / 5 (Flange Version)



### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Cap diameter of Ø101 mm / Ø3.98 in
- Either for clamping installation (with 3 clamping jaws and cross-drive screws) or with a six-hole bolt pattern
- Operating temperature range: -40 °C ... +120 °C / -40 °F ... +248 °F

#### Materials

- Made of non-corrosive materials
- Body and cap made of glass-fibre reinforced Polyamide (PA)
- Sealings made of NBR (Buna-N®)

Consult STAUFF for alternative materials.

#### Accessories / Options

- Plastic basket (800 µm)
- Pressurisation up to 0,7 bar / 10 PSI
- Air filter element
- Anti-splash feature
- Plastic dipstick with integrated anti-splash feature

Please see page E14 for details.

#### Maximum Air Flow Rate

- 1,00 m³/min / 35.31 cfm for SPB 4+5

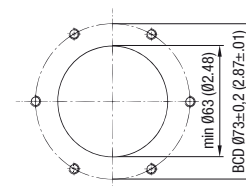
Please see page E15 for detailed air flow curves.

#### Oil Displacement

- 1000 l/min / 264 US GPM for SPB 4+5

#### Installation

- Recommended mounting space: Ø122 mm / Ø4.80 in
- Six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2 (type SPB 5):



- 6 sheet metal screws (ISO 7049-St 4.8 x 16-C-H) are included in delivery (type SPB 5); can be replaced by regular M5 socket cap screws (ISO 4762), if required
- Recommended diameters of the screw holes, depending on the sheet thickness of the reservoir (type SPB 5):  
Ø4,0 mm / Ø.16 in at a thickness of 1,20 mm / .05 in,  
Ø4,1 mm / Ø.16 in at a thickness of 2,00 mm / .08 in,  
Ø4,3 mm / Ø.17 in at a thickness of 4,00 mm / .16 in, and  
Ø4,4 mm / Ø.17 in at a thickness of 5,00 mm / .20 in

### Order Codes

SPB	-	S	-	4	-	10	-	X	-	A	-	D200
①		②		③		④		⑤		⑥		⑦

#### ① Type

Plastic Filler Breather **SPB**

#### ② Pressurisation

Without pressurisation **S**  
Pressurised at 0,2 bar / 3 PSI **P1**  
Pressurised at 0,35 bar / 5 PSI **P2**  
Pressurised at 0,7 bar / 10 PSI **P3**

Please see page E14 for details.

#### ③ Version

Bayonet version for clamping jaw installation to a single mounting hole; Cap diameter Ø101 mm (Ø3.98 in) **4**  
Bayonet Version with six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2; Cap diameter Ø101 mm (Ø3.98 in) **5**

#### ④ Air Filter Element (Material / Micron Rating)

Without air filter element **00**  
10 µm Foam / PUR (standard option) **10**  
40 µm Foam / PUR **40**  
3 µm Inorganic Glass-Fibre, pleated **E03**  
10 µm Filter Paper, pleated **L10**

Consult STAUFF for alternative materials / micron ratings.

#### ⑤ Basket Option

Plastic basket (105 mm / 4.13 in) **S080**  
Telescopic plastic basket **S200**  
(max. 205 mm / max. 8.07 in)  
Plastic basket with flange interface similar to DIN 24557, part 2 **S095P**  
(95 mm / 3.74 in)  
Without basket **X**

Option S095P is only available for type SPB 5.  
Please see page E14 for details.

#### ⑥ Anti-Splash Feature

With anti-splash feature (standard option) **A**  
Without anti-splash feature **0**

#### ⑦ Dipstick

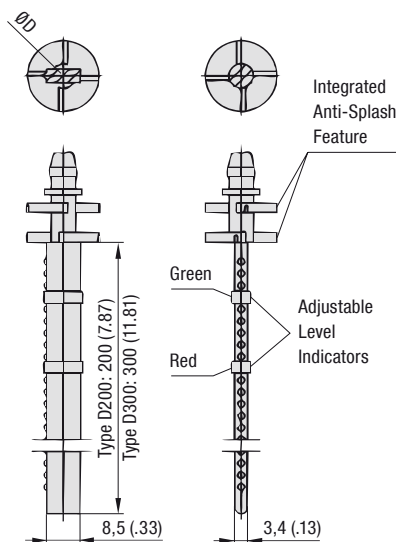
Plastic dipstick (200 mm / 7.88 in) with integrated anti-splash feature **D200**  
Plastic dipstick (300 mm / 11.81 in) with integrated anti-splash feature **D300**  
Without dipstick **-**

A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements. When choosing a combination of a basket and a dipstick, the dipstick has to be at least 15 mm / .59 in shorter than the basket.  
Please see page E14 for details.



## Plastic Dipstick • Types DS 1 / 2 / 3

### Anti-Splash Feature



For all Plastic Filler Breathers (except type SPB 1 with connection sizes B04 and N04), dipsticks made of Polyamide are available as an option. These dipsticks are available in 2 standard lengths of 200 mm / 7.87 in and 300 mm / 11.81 in and equipped with 2 adjustable level indicators in green and red colour.

A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements.

All dipsticks have an integrated anti-splash feature protecting the SPB from backspilling fluid and avoiding an early breakdown of the air filter element.

For Plastic Filler Breathers without dipstick, the anti-splash function can be achieved by an integrated concave baffle. The anti-splash feature for the SPB 1 (except the type SPB 1 with connection sizes B04 and N04), can only be achieved in conjunction with a dipstick.

Connection	Code	For Type	Suitable Dipstick*	ØD (mm/in)
Male BSP Thread (ISO 228)	G1/4	B04	SPB 1	Dipstick Option Not Available
	G3/8	B06	SPB 1+2	DS-1
	G1/2	B08	SPB 1-3	DS-2
	G3/4	B12	SPB 1+2	DS-3
	G1	B16	SPB 3	DS-3
Male NPT Thread (ANSI B1.20.1)	1/4	N04	SPB 1	Dipstick Option Not Available
	3/8	N06	SPB 1	DS-1
	1/2	N08	SPB 1	DS-2
	3/4	N12	SPB 1-3	DS-3
	1	N16	SPB 3	DS-3
Plastic Basket	S080	SPB 4+5	DS-3	18 / .71
	S095-P	SPB 5	DS-3	18 / .71
	S200	SPB 4+5	DS-3	18 / .71
w/o Basket	X	SPB 4+5	DS-3	18 / .71

\* When ordered separately, please add the length of the dipstick (in mm) to the ordering code (e.g. DS-2-300).

Please note: When choosing a combination of a dipstick and a basket (see below), the dipstick has to be at least 15 mm / .59 in shorter than the basket.

**Special designs and alternative materials available on request. Please consult STAUFF for further details.**

## Plastic Basket • Types S080 / S095-P / S200

For the Plastic Filler Breathers SPB 4 and SPB 5, different types of baskets are available as an option. All baskets have a reinforced 0.8 x 3.5 mm / .03 x .14 in mesh (800 µm), so that rough dirt particles are filtered out of the medium and a smooth flow into the tank is being ensured.

The **Plastic Basket S080** (length of 105 mm / 4.13 in) snaps into the breather housing and is suitable for the SPB 4 and SPB 5.

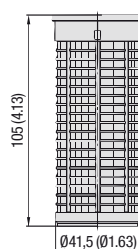
The **Plastic Basket S095-P** (length of 95 mm / 3.74 in) is equipped with a six-hole bolt pattern with flange interface similar to DIN 24557, part 2. It is suitable for the SPB 5 only and is installed between the breather housing of the SPB 5 and the reservoir.

The **Telescopic Plastic Basket S200** (maximum length of 205 mm / 8.07 in) is ideal to further improve the straining ability and oil flow-through and allowing longer dipstick lengths, where reservoir depth allows. It also snaps into the breather housing and is suitable for the SPB 4 and SPB 5.

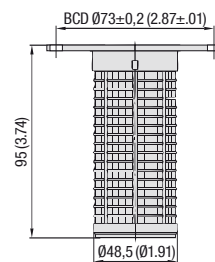
Please note: When choosing a combination of a dipstick (see above) and a basket, the dipstick has to be at least 15 mm / .59 in shorter than the basket.

**Special designs and alternative materials available on request. Please consult STAUFF for further details.**

**Plastic Basket S080** (for SPB 4+5)  
Material: Polypropylene (PP)

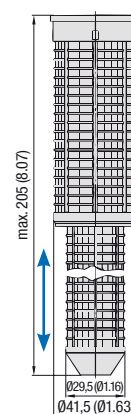


**Plastic Basket S095-P** (only for SPB 5)  
Material: Polyamide (PA)



Six-hole bolt pattern with flange interface according to DIN 24557, part 2

**Telescopic Plastic Basket S200** (for SPB 4+5)  
Material: Polypropylene (PP)



## Pressurisation

All Plastic Filler Breathers (except the type SPB 1) are also available as pressurised versions with pressure settings of 0.7 bar / 10 PSI, 0.35 bar / 5 PSI or 0.2 bar / 3 PSI. In order to achieve an air flow, the actual tank pressure has to exceed the chosen pressure setting of the Plastic Filler Breather.

When the fluid level inside the reservoir rises, no air is expelled from the reservoir until the pressurisation level is reached.

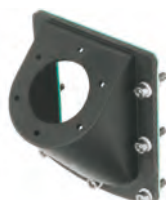
When the fluid level inside the reservoir falls, the tank pressure drops and air is drawn into the reservoir.

Due to less breathing, the service life of a filler breather and the oil can be increased by using the pressurisation feature. It also minimizes foaming and cavitation, and provides additional protection from moisture entering the reservoir which causes erosion and oil degradation.

## Further Accessories / Options



**Weld Riser • Type WR**  
Suitable for SPB 5  
(See page E25 for details)

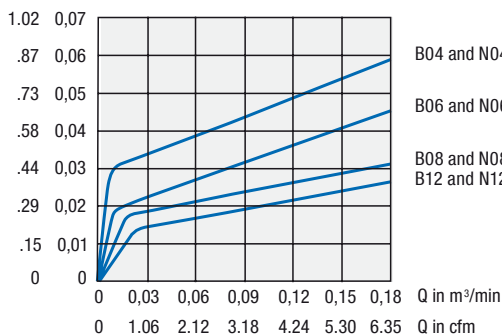


**Side Mount Bracket (Polyamide) • Type ASMB-1**  
Suitable for SPB 5  
(See page E24 for details)



**Side Mount Bracket (Aluminium) • Type ASMB-2**  
Suitable for SPB 5  
(See page E24 for details)

## Pressure Drop Flow Curves Plastic Filler Breathers

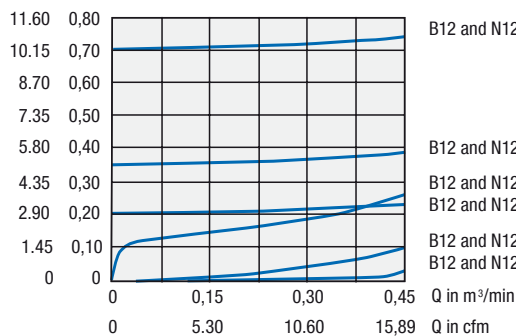
 $\Delta p$  in PSI  $\Delta p$  in bar


### Type SPB 1 (into / out of the tank)

B04 and N04 (into / out of the tank)

B06 and N06 (into / out of the tank)

B08 and N08 (into / out of the tank)  
B12 and N12 (into / out of the tank)

 $\Delta p$  in PSI  $\Delta p$  in bar


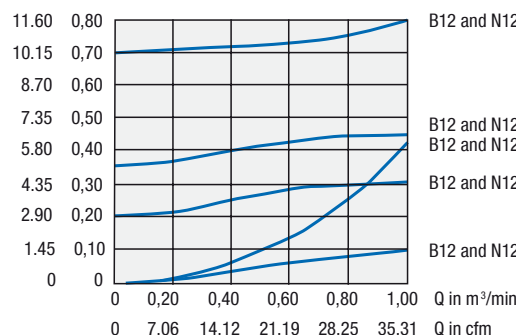
### Type SPB 2 (into / out of the tank)

B12 and N12 (out of the tank; pressurised at 0.7 bar / 10 PSI)

B12 and N12 (out of the tank; pressurised at 0.35 bar / 5 PSI)

B12 and N12 (into the tank; pressurised at 0.7 bar / 10 PSI, 0.35 bar / 5 PSI or 0.2 bar / 3 PSI)  
B12 and N12 (out of the tank; pressurised at 0.2 bar / 3 PSI)

B12 and N12 (out of the tank; without pressurisation)  
B12 and N12 (into the tank; without pressurisation)

 $\Delta p$  in PSI  $\Delta p$  in bar


### Type SPB 3 (into / out of the tank)

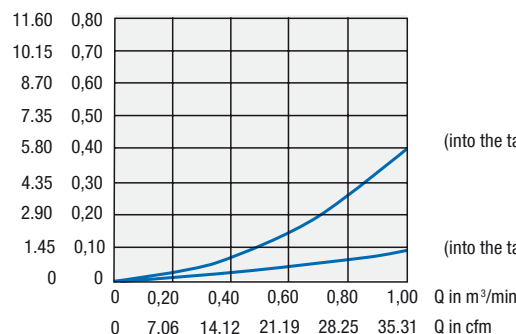
B12 and N12 (out of the tank; pressurised at 0.7 bar / 10 PSI)

B12 and N12 (out of the tank; pressurised at 0.35 bar / 5 PSI)

B12 and N12 (into the tank; pressurised at 0.7 bar / 10 PSI, 0.35 bar / 5 PSI or 0.2 bar / 3 PSI)

B12 and N12 (out of the tank; pressurised at 0.2 bar / 3 PSI)

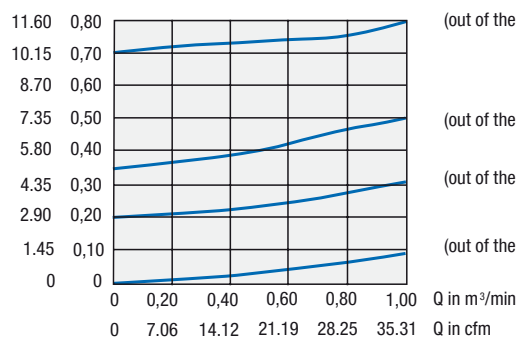
B12 and N12 (into / out of the tank; without pressurisation)

 $\Delta p$  in PSI  $\Delta p$  in bar


### Type SPB 4+5 (into the tank)

(into the tank; pressurised at 0.7 bar / 10 PSI, 0.35 bar / 5 PSI or 0.2 bar / 3 PSI)

(into the tank; without pressurisation)

 $\Delta p$  in PSI  $\Delta p$  in bar


### Type SPB 4+5 (out of the tank)

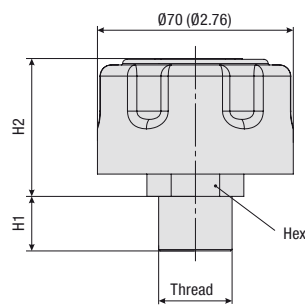
(out of the tank; pressurised at 0.7 bar / 10 PSI)

(out of the tank; pressurised at 0.35 bar / 5 PSI)

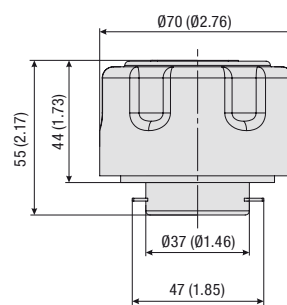
(out of the tank; pressurised at 0.2 bar / 3 PSI)

(out of the tank; without pressurisation)

## Plastic Filler Breather ■ Type SPBN (Compact Design; Screw-In or Bayonet Version)



**SPBN**  
Screw-In Version



**SPBN**  
Bayonet Version

### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments; ideal for applications in which space is limited

#### Features

- Cap diameter of Ø70 mm / Ø2.76 in
- Screw-in version, equipped with male BSP thread (ISO 228) or male NPT thread (ANSI B1.20.1)
- Bayonet version with a six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2
- Operating temperature range:  
–40 °C ... +120 °C / –40 °F ... +248 °F

#### Materials

- Body and cap made of glass-fibre reinforced Polyamide (PA)
- Socket made of Steel, zinc-plated
- Bayonet flange made of Steel, zinc-plated
- Basket made of Steel, zinc-plated or Polyamide (PA)
- Sealings made of NBR (Buna-N®)

Consult STAUFF for alternative materials.

#### Accessories / Options

- Mounting set including bayonet flange, steel or plastic basket (800 µm), gaskets and bolts
- Pressurisation up to 0,7 bar / 10 PSI
- Air filter element
- Anti-splash feature (for screw-in version only)
- Plastic dipstick with integrated anti-splash feature

Please see page E17 for details.

#### Maximum Air Flow Rate

- 0,40 m³/min / 14.13 cfm

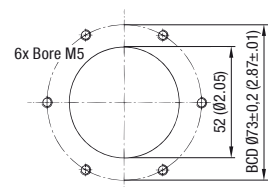
Please see page E17 for detailed air flow curves.

#### Oil Displacement

- 400 l/min / 106 US GPM

#### Installation

- Six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2 (bayonet version with mounting set):



- 6 slotted pan head screws (ISO 1580 M5 x 12-5.8) are included in delivery of the bayonet version with mounting set

### Dimensions (Screw-In Version)

Thread	Dimensions (mm/in)		
	H1	H2	Hex
Male G3/4 BSP (ISO 228)	19,5 .77	49,5 1.95	30 1.18
Male G1 BSP (ISO 228)	24 .95	49,5 1.95	36 1.42

### Order Codes

<b>SPBN</b>	<b>-</b>	<b>S</b>	<b>-</b>	<b>2</b>	<b>-</b>	<b>10</b>	<b>-</b>	<b>B12</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>D200</b>
①		②		③		④		⑤		⑥		⑦

#### ① Type

Plastic Filler Breather (Compact Design) **SPBN**

#### ② Pressurisation

Without pressurisation	<b>S</b>
Pressurised at 0,2 bar / 3 PSI	<b>P1</b>
Pressurised at 0,35 bar / 5 PSI	<b>P2</b>
Pressurised at 0,7 bar / 10 PSI	<b>P3</b>

Please see page E17 for details.

#### ③ Version

Cap diameter Ø70 mm (Ø2.76 in) **2**

#### ④ Air Filter Element (Material / Micron Rating)

Without air filter element	<b>00</b>
10 µm Foam / PUR (standard option)	<b>10</b>
40 µm Foam / PUR	<b>40</b>

Consult STAUFF for alternative materials / micron ratings.

#### ⑤ Connection

Screw-in version; Male G3/4 thread	<b>B12</b>
Screw-in version; Male G1 thread	<b>B16</b>
Screw-in version; Male 3/4 NPT thread	<b>N12</b>
Screw-in version; Male 1 NPT thread	<b>N16</b>
Bayonet version; Breather only	<b>BS</b>
Bayonet version; Breather including mounting set (with bayonet flange, gaskets and bolts)	<b>BM</b>
Bayonet version; Option BS and metal basket with flange interface (80 mm / 3.15 in)	<b>S080</b>
Bayonet version; Option BS and metal basket with flange interface (100 mm / 3.94 in)	<b>S100</b>
Bayonet version; Option BS and metal basket with flange interface (150 mm / 5.91 in)	<b>S150</b>
Bayonet version; Option BS and metal basket with flange interface (200 mm / 7.87 in)	<b>S200</b>
Bayonet version; Option BS and plastic basket with flange interface (95 mm / 3.74 in)	<b>S095P</b>

#### ⑥ Anti-Splash Feature

With anti-splash feature (standard option)	<b>A</b>
Without anti-splash feature	<b>0</b>

Please see page E17 for details.

#### ⑦ Dipstick

Plastic dipstick (200 mm / 7.88 in) with integrated anti-splash feature	<b>D200</b>
Plastic dipstick (300 mm / 11.81 in) with integrated anti-splash feature	<b>D300</b>
Without dipstick	<b>-</b>

A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements. Please see page E17 for details.

## Plastic Dipstick Anti-Splash Feature

For all Plastic Filler Breathers SPBN, dipsticks made of Polyamide are available as an option. These dipsticks are available in 2 standard lengths of 200 mm / 7.87 in and 300 mm / 11.81 in and equipped with 2 adjustable level indicators in green and red colour. A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements.

All dipsticks have an integrated anti-splash feature protecting the SPBN from backspilling fluid and avoiding an early breakdown of the air filter element. For Plastic Filler Breathers without dipstick, the anti-splash function can be achieved by an integrated concave baffle.

Please note: When choosing a combination of a dipstick and a basket, the dipstick has to be at least 15 mm / .59 in shorter than the basket.

**Special designs and alternative materials available on request.**  
**Please consult STAUFF for further details.**

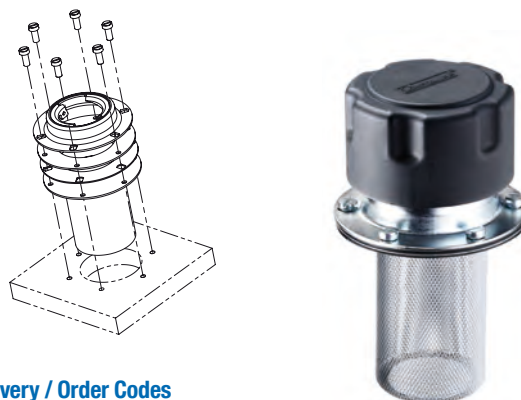
## Pressurisation

All Plastic Filler Breathers are also available as pressurised versions with pressure settings of 0,7 bar / 10 PSI, 0,35 bar / 5 PSI or 0,2 bar / 3 PSI. In order to achieve an air flow, the actual tank pressure has to exceed the chosen pressure setting of the Plastic Filler Breather.

When the fluid level inside the reservoir rises, no air is expelled from the reservoir until the pressurisation level is reached. When the fluid level inside the reservoir falls, the tank pressure drops and air is drawn into the reservoir.

Due to less breathing, the service life of a filler breather and the oil can be increased by using the pressurisation feature. It also minimizes foaming and cavitation, and provides additional protection from moisture entering the reservoir and which causes erosion and oil degradation.

## Mounting Set for Baskets (including Bayonet Flange, Gaskets and Bolts)



### Scope of Delivery / Order Codes

Mounting sets for baskets include the following components:

- 6 slotted pan head screws made of steel, zinc-plated (ISO 1580 M5 x 12-5.8)
- Bayonet flange made of steel, zinc-plated, with six-hole bolt pattern acc. to DIN 24557, part 2
- 2 gaskets made of NBR (Buna-N®) - one for underneath and one for on top of the basket
- Metal or plastic basket (only if required):
 

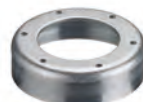
Metal basket (80 mm / 3.15 in):	<b>S-080-M-F-SPBN-BS-NBR</b>
Metal basket (100 mm / 3.94 in):	<b>S-100-M-F-SPBN-BS-NBR</b>
Metal basket (150 mm / 5.91 in):	<b>S-150-M-F-SPBN-BS-NBR</b>
Metal basket (200 mm / 7.87 in):	<b>S-200-M-F-SPBN-BS-NBR</b>
Plastic basket (95 mm / 3.74 in):	<b>S-095-P-F-SPBN-BS-NBR</b>
Without basket:	<b>Adapter-SPBN-BM-NBR</b>

Mounting sets can also be ordered as part of a complete breather assembly.  
Please see page E16 for details.

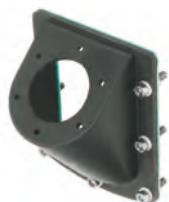
## Further Accessories / Options



**Extended Bayonet Flange - Type EBF**  
Suitable for SPBN; Bayonet Version BM  
(See page E25 for details)



**Weld Riser - Type WR**  
Suitable for SPBN; Bayonet Version BM  
(See page E25 for details)

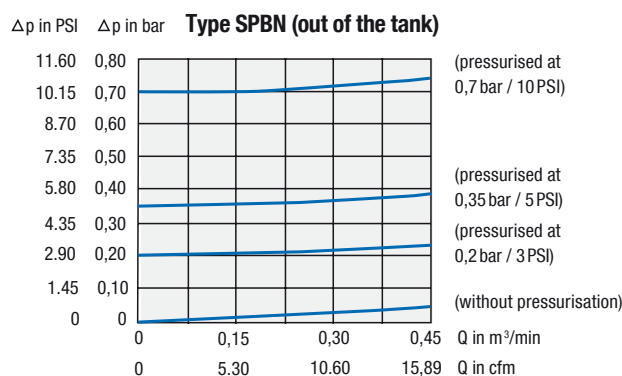
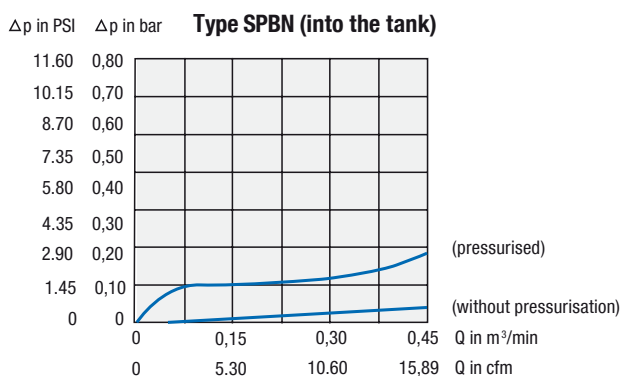


**Side Mount Bracket (Polyamide) - Type ASMB-1**  
Suitable for SPBN; Bayonet Version BM BM BM  
(See page E24 for details)

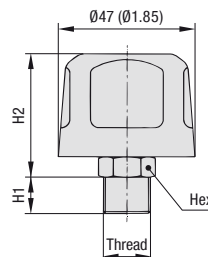


**Side Mount Bracket (Aluminium) - Type ASMB-2**  
Suitable for SPBN; Bayonet Version BM  
(See page E24e for details)

## Pressure Drop Flow Curves Plastic Filler Breathers



## Metal Filler Breather ▪ Type SMBT-47 (Screw-In Version)



### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Cap diameter of Ø47 mm / Ø1.85 in
- Screw-in version, equipped with male BSP thread (ISO 228) or male NPT thread (ANSI B1.20.1)
- Operating temperature range:  
-30 °C ... +120 °C / -22 °F ... +248 °F

#### Materials

- Breather cap made of Steel, zinc/nickel-plated (Fe/Zn Ni 6) and free of hexavalent chromium CrVI (standard option); chrome-plated and epoxy-coated versions available
- Threaded socket made of Steel, zinc-plated

Consult STAUFF for alternative materials.

#### Accessories / Options

- Air filter element

#### Maximum Air Flow Rate

- 0,40 m³/min / 14.13 cfm

Consult STAUFF for detailed air flow curves.

#### Oil Displacement

- 400 l/min / 106 US GPM

### Dimensions

Thread	Dimensions (mm/in)		
	H1	H2	Hex
Male G1/4 BSP (ISO 228)	10 .39	41 2.38	17 .67
Male G3/8 BSP (ISO 228)	13 .51	41 2.38	19 .74
Male G1/2 BSP (ISO 228)	14 .55	41 2.38	22 .88

Thread	Dimensions (mm/in)		
	H1	H2	Hex
Male 1/4 NPT (ANSI B1.20.1)	13 .51	41 2.38	17 .67
Male 3/8 NPT (ANSI B1.20.1)	15 .59	41 2.38	19 .74

Consult STAUFF for alternative threads.

### Order Codes

<b>SMBT</b>	-	<b>47</b>	-	<b>S</b>	-	<b>10</b>	-	<b>0</b>	-	<b>B08</b>
①		②		③		④		⑤		⑥

#### ① Type / Version

Metal Filler Breather; Screw-in version **SMBT**

#### ② Cap Diameter / Material / Surface Finishing

Cap diameter Ø47 mm (Ø1.85 in); Breather cap made of Steel, zinc/nickel-plated (standard option)	<b>47</b>
Cap diameter Ø47 mm (Ø1.85 in); Breather cap made of Steel, chrome-plated	<b>47C</b>
Cap diameter Ø47 mm (Ø1.85 in); Breather cap made of Steel, epoxy-coated	<b>47E</b>

#### ③ Label

With STAUFF logo (standard option)	<b>S</b>
Neutral design without any logo	<b>N</b>

#### ④ Air Filter Element (Material / Micron Rating)

Without air filter element	<b>00</b>
3 µm Filter Paper	<b>03</b>
10 µm Foam / PUR (standard option)	<b>10</b>
40 µm Foam / PUR	<b>40</b>

Consult STAUFF for alternative materials / micron ratings.

#### ⑤ Pressurisation

Without pressurisation (standard option) **0**

No pressurisation available for this cap diameter.

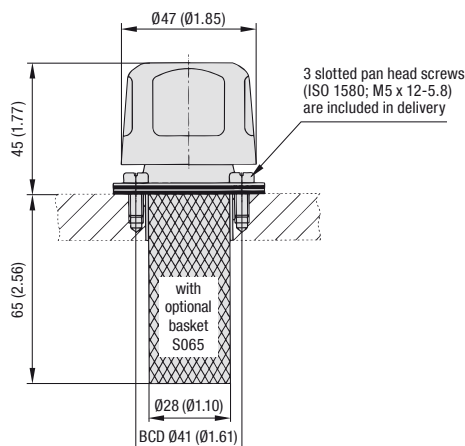
#### ⑥ Connection Thread (Male)

G1/4	<b>B04</b>
G3/8	<b>B06</b>
G1/2	<b>B08</b>
1/4 NPT	<b>N04</b>
3/8 NPT	<b>N06</b>

Consult STAUFF for alternative threads.



## Metal Filler Breather ▪ Type SMBB-47 (Bayonet Version)



### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Cap diameter of Ø47 mm / Ø1.85 in
- Bayonet version with a three-hole bolt pattern

#### Materials

- Breather cap made of Steel, zinc/nickel-plated (Fe/Zn Ni 6) and free of hexavalent chromium CrVI (standard option); chrome-plated and epoxy-coated versions available
- Bayonet flange made of Steel, zinc-plated
- Basket made of Steel, zinc-plated
- Sealings made of Cork

Consult STAUFF for alternative materials.

#### Accessories / Options

- Metal basket (800 µm)
- Air filter element

#### Maximum Air Flow Rate

- 0,40 m³/min / 14.13 cfm

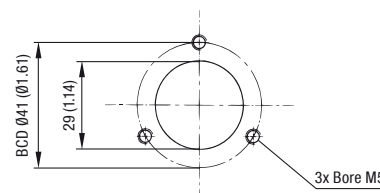
Consult STAUFF for detailed air flow curves.

#### Oil Displacement

- 400 l/min / 106 US GPM

#### Installation

- Three-hole bolt pattern for flange interfaces:



- 3 slotted pan head screws (ISO 1580 M5 x 12-5.8) are included in delivery; can be replaced by regular M5 bolts, if required

### Order Codes

<b>SMBB</b>	-	<b>47</b>	-	<b>S</b>	-	<b>10</b>	-	<b>0</b>	-	<b>C</b>	-	<b>S065</b>
①		②		③		④		⑤		⑥		⑦

#### ① Type / Version

Metal Filler Breather; Bayonet version **SMBB**

#### ② Cap Diameter / Material / Surface Finishing

Cap diameter Ø47 mm (Ø1.85 in); Breather cap made of Steel, zinc/nickel-plated (standard option)	<b>47</b>
Cap diameter Ø47 mm (Ø1.85 in); Breather cap made of Steel, chrome-plated	<b>47C</b>
Cap diameter Ø47 mm (Ø1.85 in); Breather cap made of Steel, epoxy-coated	<b>47E</b>

#### ③ Label

With STAUFF logo (standard option)	<b>S</b>
Neutral design without any logo	<b>N</b>

#### ④ Air Filter Element (Material / Micron Rating)

Without air filter element	<b>00</b>
3 µm Filter Paper	<b>03</b>
10 µm Foam / PUR (standard option)	<b>10</b>
40 µm Foam / PUR	<b>40</b>

Consult STAUFF for alternative materials / micron ratings.

#### ⑤ Pressurisation

Without pressurisation (standard option) **0**

No pressurisation available for this cap diameter.

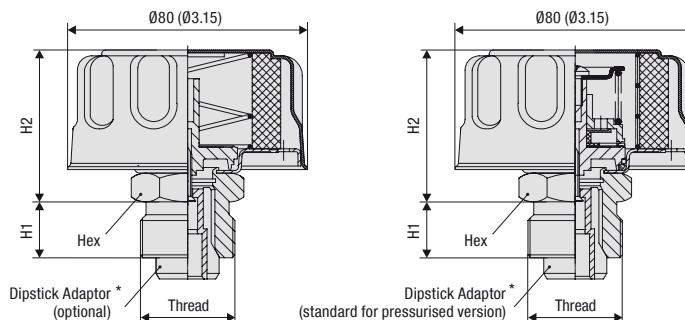
#### ⑥ Sealing Material

Cork (standard option) **C**

#### ⑦ Basket Option

Metal basket (65 mm / 2.56 in) **S065**  
Without basket **0**

## Metal Filler Breather ■ Type SMBT-80 (Screw-In Version)



Without Pressurisation

Pressurised

\* Please note: The dipstick adaptor is not available for connection threads G1/2 and 1/2 NPT.

### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Cap diameter of Ø80 mm / Ø3.15 in
- Screw-in version, equipped with male BSP thread (ISO 228) or male NPT thread (ANSI B1.20.1)
- Operating temperature range:  
-30 °C ... +120 °C / -22 °F ... +248 °F

#### Materials

- Breather cap made of Steel, zinc/nickel-plated (Fe/Zn Ni 6) and free of hexavalent chromium CrVI (standard option); chrome-plated and epoxy-coated versions available
- Threaded socket made of Steel, zinc-plated
- Dipstick adaptor made of Polyamide (PA)

Consult STAUFF for alternative materials.

#### Accessories / Options

- Pressurisation up to 0,7 bar / 10 PSI
- Air filter element
- Dipstick adaptor suitable for plastic dipstick DS-1 (not for connection threads G1/2 and 1/2 NPT)
- Plastic dipstick DS-1 with integrated anti-splash feature (not for connection threads G1/2 and 1/2 NPT)

#### Maximum Air Flow Rate

- 0,45 m³/min / 15.89 cfm

Consult STAUFF for detailed air flow curves.

#### Oil Displacement

- 450 l/min / 119 US GPM

### Dimensions

Thread	Dimensions (mm/in)		
	H1	H2	Hex
Male G1/2 BSP (ISO 228)	14 .55	54 2.13	24 .94
Male G3/4 BSP (ISO 228)	16 .63	54 2.13	30 1.18
Male G1 BSP (ISO 228)	19 .75	54 2.13	36 1.42

Thread	Dimensions (mm/in)		
	H1	H2	Hex
Male 1/2 NPT (ANSI B1.20.1)	14 .51	52,5 2.07	24 .94
Male 3/4 NPT (ANSI B1.20.1)	16 .59	52,5 2.07	30 1.18
Male G1 NPT (ANSI B1.20.1)	19 .75	52,5 2.07	36 1.42

### Order Codes

<b>SMBT</b>	<b>-</b>	<b>80</b>	<b>-</b>	<b>S</b>	<b>-</b>	<b>10</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>B08</b>	<b>-</b>	<b>0</b>
①		②		③		④		⑤		⑥		⑦

#### ① Type / Version

Metal Filler Breather; Screw-in version **SMBT**

#### ② Cap Diameter / Material / Surface Finishing

Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, zinc/nickel-plated (standard option)	<b>80</b>
Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, chrome-plated	<b>80C</b>
Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, epoxy-coated	<b>80E</b>

#### ③ Label

With STAUFF logo (standard option)	<b>S</b>
Neutral design without any logo	<b>N</b>

#### ④ Air Filter Element (Material / Micron Rating)

Without air filter element	<b>00</b>
3 µm Filter Paper	<b>03</b>
10 µm Foam / PUR (standard option)	<b>10</b>
40 µm Foam / PUR	<b>40</b>

Consult STAUFF for alternative materials / micron ratings.

#### ⑤ Pressurisation

Without pressurisation (standard option)	<b>0</b>
Pressurised at 0,35 bar / 5 PSI	<b>P2</b>
Pressurised at 0,7 bar / 10 PSI	<b>P3</b>

#### ⑥ Connection Thread (Male)

G1/2	<b>B08</b>
G3/4	<b>B12</b>
G1	<b>B16</b>
1/2 NPT	<b>N08</b>
3/4 NPT	<b>N12</b>
1 NPT	<b>N16</b>

Consult STAUFF for alternative threads.

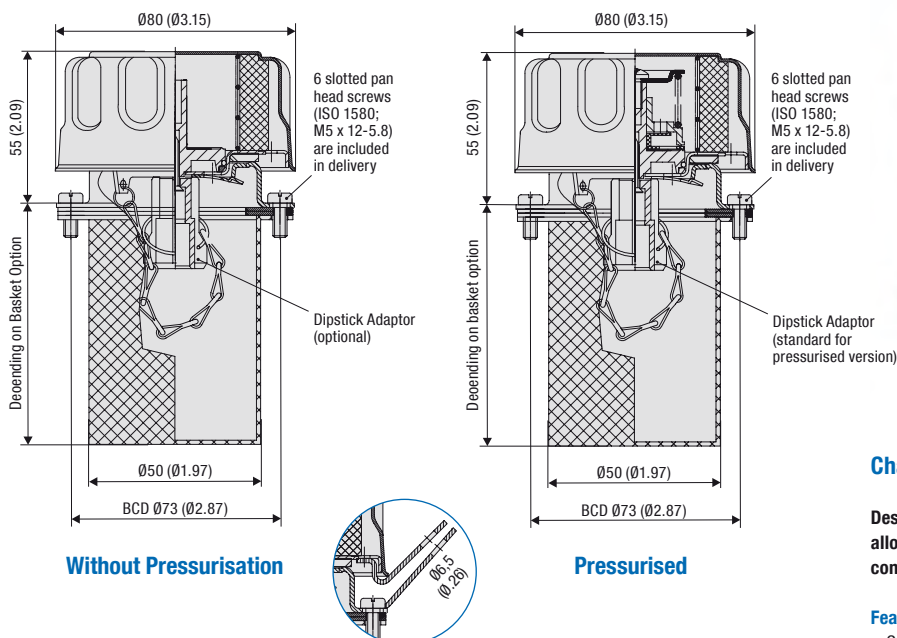
#### ⑦ Dipstick

Without dipstick (standard option)	<b>0</b>
With dipstick adaptor suitable for dipstick DS-1 (not for connection threads G1/2 and 1/2 NPT)	<b>A</b>
With dipstick adaptor and plastic dipstick DS-1 (300 mm / 11.81 in) with integrated anti-splash feature (not for connection threads G1/2 and 1/2 NPT)	<b>D300</b>

A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements.

Please note: The dipstick adaptor is required for the subsequent installation of plastic dipsticks DS-1 (see page E14 for details), and is included in delivery when ordering a pressurised version. The dipstick adaptor is not available for connection threads G1/2 and 1/2 NPT.

## Metal Filler Breather ▪ Type SMBB-80 (Bayonet Version)



**Locking Feature**  
(Recommended mounting space: Ø126 mm / Ø4.96 in)



### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

### Features

- Cap diameter of Ø80 mm / Ø3.15 in
- Bayonet version with a six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2

### Materials

- Breather cap made of Steel, zinc/nickel-plated (Fe/Zn Ni 6) and free of hexavalent chromium CrVI (standard option); chrome-plated and epoxy-coated versions available
- Bayonet flange made of Steel, zinc-plated
- Basket made of Steel, zinc-plated or Polyamide (PA)
- Dipstick adaptor made of Polyamide (PA)
- Sealings made of Cork (for filler breathers without pressurisation) or NBR (Buna-N®) (for pressurised filler breathers)

Consult STAUFF for alternative materials.

### Accessories / Options

- Metal or plastic basket (800 µm)
- Pressurisation up to 0,7 bar / 10 PSI
- Air filter element
- Locking feature
- Dipstick adaptor (suitable for plastic dipstick DS-1)
- Plastic dipstick with integrated anti-splash feature

### Maximum Air Flow Rate

- 0,45 m³/min / 15.89 cfm

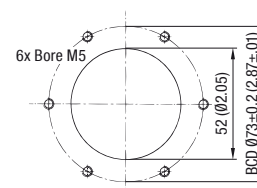
Consult STAUFF for detailed air flow curves.

### Oil Displacement

- 450 l/min / 119 US GPM

### Installation

- Six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2:



- 6 slotted pan head screws (ISO 1580 M5 x 12-5.8) are included in delivery; can be replaced by regular M5 bolts, if required

### Order Codes

<b>SMBB</b>	-	<b>80</b>	-	<b>S</b>	-	<b>L</b>	-	<b>10</b>	-	<b>0</b>	-	<b>C</b>	-	<b>S080</b>	-	<b>0</b>
1		2		3		4		5		6		7		8		9

#### ① Type / Version

Metal Filler Breather; Bayonet version **SMBB**

#### ② Cap Diameter / Material / Surface Finishing

Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, zinc/nickel-plated (standard option) **80**  
 Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, chrome-plated **80C**  
 Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, epoxy-coated **80E**

#### ③ Label

With STAUFF logo (standard option) **S**  
 Neutral design without any logo **N**

#### ④ Locking Feature

Without locking feature (standard option) **O**  
 With locking feature (see drawing above) **L**

#### ⑤ Air Filter Element (Material / Micron Rating)

Without air filter element **00**  
 3 µm Filter Paper **03**  
 10 µm Foam / PUR (standard option) **10**  
 40 µm Foam / PUR **40**

Consult STAUFF for alternative materials / micron ratings.

#### ⑥ Pressurisation

Without pressurisation (standard option) **0**  
 Pressurised at 0,35 bar / 5 PSI **P2**  
 Pressurised at 0,7 bar / 10 PSI **P3**

#### ⑦ Sealing Material

Cork (for filler breathers without pressurisation) **C**  
 NBR (Buna-N®) (for pressurised filler breathers) **B**

#### ⑧ Basket Option

Without basket **0**  
 Plastic basket (95 mm / 3.74 in) (standard option) **S095P**  
 Metal basket (80 mm / 3.15 in) **S080**  
 Metal basket (100 mm / 3.94 in) **S100**  
 Metal basket (150 mm / 5.91 in) **S150**  
 Metal basket (200 mm / 7.87 in) **S200**  
 Heavy duty metal basket (200 mm / 7.87 in) **S200HD**

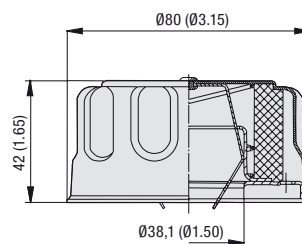
#### ⑨ Dipstick

Without dipstick (standard option) **0**  
 Dipstick adaptor (suitable for dipstick DS-1) **A**  
 With dipstick adaptor and plastic dipstick DS-1 (300 mm / 11.81 in) with integrated anti-splash feature **D300**

A shorter dipstick length can be achieved by simply cutting down the total length according to individual requirements.

Please note: The dipstick adaptor is required for the subsequent installation of plastic dipsticks DS-1 (see page E14 for details), and is content of delivery when ordering a pressurised version.

## Metal Breather ■ Type SMBP-80 (Push-On Version)



### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Cap diameter of Ø80 mm / Ø3.15 in
- Push-on version, suitable for pipe diameters up to 38 mm/ 1.50 in
- Operating temperature range:  
-30 °C ... +120 °C / -22 °F ... +248 °F

#### Materials

- Breather cap made of Steel, zinc/nickel-plated (Fe/Zn Ni 6) and free of hexavalent chromium CrVI (standard option); chrome-plated and epoxy-coated versions available

Consult STAUFF for alternative materials.

#### Accessories / Options

- Air filter element

#### Maximum Air Flow Rate

- 0,45 m³/min / 15.89 cfm

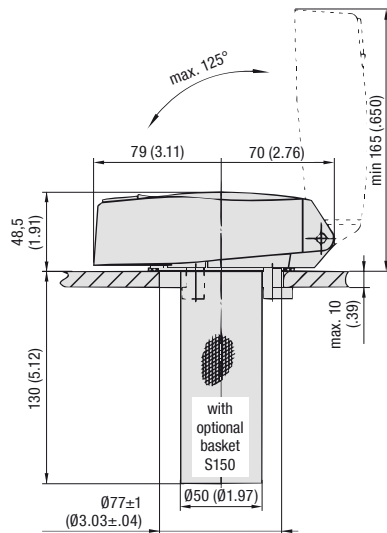
Consult STAUFF for detailed air flow curves.

#### Oil Displacement

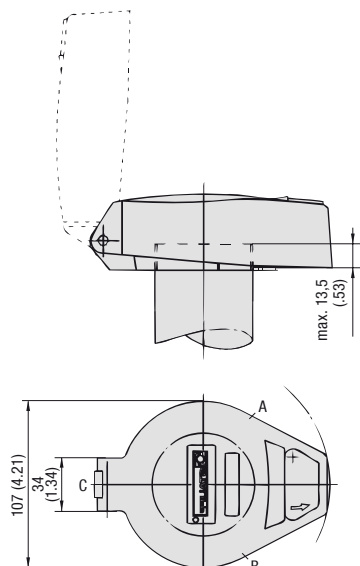
- 450 l/min / 119 US GPM

### Order Codes

SMBP - 80 - S - 10 - 0				
①	②	③	④	⑤
<b>① Type / Version</b> Metal Breather; Push-on version <b>SMBP</b>				
<b>② Cap Diameter / Material / Surface Finishing</b> Cap diameter Ø80 mm (Ø3.15 in); Breather cap made of Steel, zinc/nickel-plated (standard option) <b>80</b> Cap diameter Ø80 (Ø3.15 in); Breather cap made of Steel, chrome-plated <b>80C</b> Cap diameter Ø80 (Ø3.15 in); Breather cap made of Steel, epoxy-coated <b>80E</b>				
<b>③ Label</b> With STAUFF logo (standard option) <b>S</b> Neutral design without any logo <b>N</b>				
<b>④ Air Filter Element (Material / Micron Rating)</b> Without air filter element <b>00</b> 10 µm Foam / PUR (standard option) <b>10</b> 40 µm Foam / PUR <b>40</b>  Consult STAUFF for alternative materials / micron ratings.				
<b>⑤ Dipstick</b> Without dipstick (standard option) <b>0</b>				



Clamping Version



Threaded Version

Recommended mounting space: Ø162 mm / Ø6.38 in  
2 locking screws M6 x 6 (DIN 916) at positions A and B

Push-On Version

3 locking screws M6 x 6 (DIN 916) at positions A, B and C

## Lockable Metal Filler Breather ■ Type SMBL (Clamping, Threaded and Push-On Version)



Clamping version  
with metal basket  
(150 mm / 5.91 in)

### Characteristics

Designed to be used as lockable filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

### Features

- Available as clamping version (with 3 clamping jaws), as threaded version (with female BSP thread) or push-on version, suitable for stand pipe mounting with pipe diameters up to 77.5 mm/ 3.05 in (secured by 3 locking screws)
- Key-lockable cap (2 keys included)
- Lock protected by rotating flap
- Operating temperature range: -30 °C ... +100 °C / -22 °F ... +212 °F
- Air flow in both directions, one direction only or no direction

### Materials

- Breather cap made of Aluminium, lacquered (light-grey, RAL 9022)
- Breather body made of Aluminium, zinc-plated
- Basket made of Steel, zinc-plated or Polypropylene (PP)
- Sealings made of NBR (Buna-N®) (standard option); FPM (Viton®) sealed version available

Consult STAUFF for alternative materials.

### Accessories / Options

- Metal or (telescopic) plastic basket (800 µm)
- Air filter element

### Order Codes

<b>SMBL</b>	-	<b>C</b>	-	<b>10</b>	-	<b>1</b>	-	<b>S150</b>	-	<b>B</b>	-	<b>0</b>
①		②		③		④		⑤		⑥		⑦

#### ① Type

Lockable Metal Filler Breather **SMBL**

#### ② Version

Clamping version with 3 clamping jaws; Installation to a tank mounting hole of Ø77±1 mm / Ø3.03±.04 in **C**  
Threaded version with female G2 BSP thread **B32**  
Threaded version with female G2-1/2 BSP thread **B40**  
Push-on version for stand pipe mounting **P**

#### ③ Air Filter Element (Material / Micron Rating)

Without air filter element **00**  
10 µm Foam / PUR (standard option) **10**  
40 µm Foam / PUR **40**

Consult STAUFF for alternative materials / micron ratings.

#### ④ Air Flow

Air flow in both directions (standard option) **1**  
No air flow **2**  
Air flow only into the tank **3**

#### ⑤ Basket Option

Without basket **0**  
Metal basket (150 mm / 5.91 in) **S150**  
Plastic basket (80 mm / 3.15 in) **S080**  
Telescopic plastic basket (max. 205 mm / max. 8.07 in) **S200**

The baskets of the SMBB 47/80 series cannot be used in conjunction with the SMBL series.

#### ⑥ Sealing Material

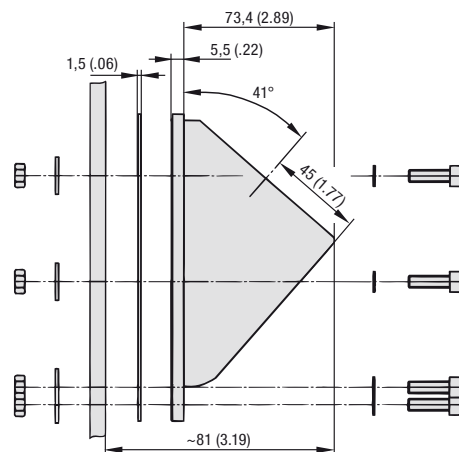
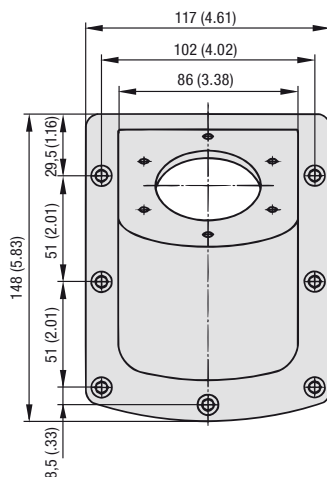
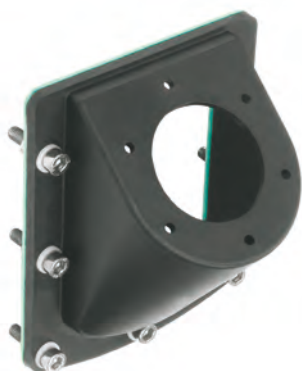
NBR (Buna-N®) (standard option) **B**  
FPM (Viton®) **V**

#### ⑦ Cap Design

Breather cap made of Aluminium, lacquered (light-grey, RAL 9022) **0**



## Side Mount Bracket - Type ASMB-1 (Polyamide Version)



### Characteristics

Lateral fastening of filler breathers with a six-hole flange connection similar to DIN 24557, part 2 to vertical or sloped walls of hydraulic reservoirs; ideal for applications in which space is limited

#### Suitability

- Suitable for Plastic Filler Breathers SPB 5 and SPBN (bayonet version) and Metal Filler Breathers SMBB 80

#### Materials

- Mounting bracket made of Polyamide (PA)
- Seal plate made of Klingerit
- Screws and hex nuts made of Steel, zinc-plated
- Washers made of Steel, zinc-plated
- Plastic spacers made of Polyamide (PA)

#### Scope of Delivery

- 1 mounting bracket
- 1 seal plate
- 7 socket cap screws M6 x 25 (ISO 4762)
- 7 plastic spacers 6,4 (DIN 125)
- 7 hex nuts M6 (ISO 4032)
- 7 washers 6,4 (DIN 9021)
- 6 sheet metal screws 4,8x13 (ISO 7049)

#### Installation

- Bolted to the side of the reservoir
- Bayonet flange of filler breather is placed on top
- Flange interface similar to DIN 24557, part 2 with 6 equally spaced mounting bores  $\varnothing 4,5$  mm /  $\varnothing .18$  in (BCD  $\varnothing 71 \pm 0,2$  mm /  $\varnothing 2.80 \pm .01$  in)

### Order Codes

SMBB-ASMB - 1	
①	②

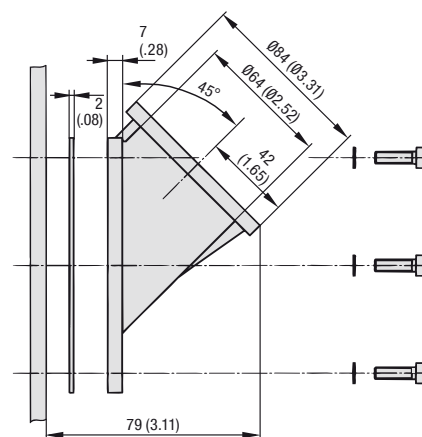
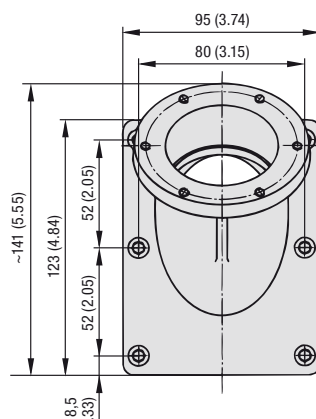
#### ① Type

Side Mount Bracket **SMBB-ASMB**

#### ② Housing Material

Polyamide (PA) **1**

## Side Mount Bracket - Type ASMB-2 (Aluminium Version)



### Characteristics

Lateral fastening of filler breathers with a six-hole flange connection similar to DIN 24557, part 2 to vertical or sloped walls of hydraulic reservoirs; ideal for applications in which space is limited

#### Suitability

- Suitable for Plastic Filler Breathers SPB 5 and SPBN (bayonet version) and Metal Filler Breathers SMBB 80

#### Materials

- Mounting bracket made of Aluminium
- Seal plate made of Flexoid
- Screws made of Steel, zinc-plated
- Plastic spacers made of Klingerit

#### Scope of Delivery

- 1 mounting bracket
- 1 seal plate
- 6 socket cap screws M6 x 20 (ISO 4762)
- 6 plastic spacers 6,4 (DIN 125)

#### Installation

- Bolted to the side of the reservoir
- Bayonet flange of filler breather is placed on top
- Flange interface similar to DIN 24557, part 2 with 6 equally spaced bores M5 (BCD  $\varnothing 73 \pm 0,2$  mm /  $\varnothing 2.87 \pm .01$  in)

### Order Codes

SMBB-ASMB - 2	
①	②

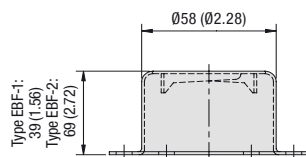
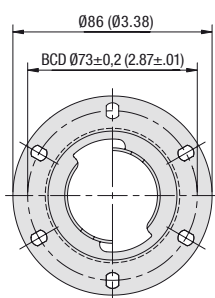
#### ① Type

Side Mount Bracket **SMBB-ASMB**

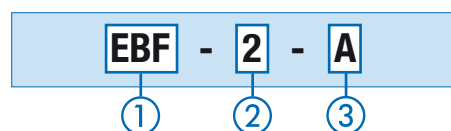
#### ② Housing Material

Aluminium **2**

## Extended Bayonet Flange ■ Type EBF



### Order Codes



#### ① Type

Extended Bayonet Flange **EBF**

#### ② Size

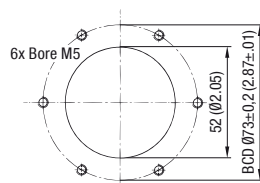
Total height of 39 mm (1.56 in) **1**  
Total height of 69 mm (2.72 in) **2**

#### ③ Anti-Splash Feature

Without anti-splash feature (standard option) **-**  
With anti-splash feature **A**

### Installation

- Six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2:



- Supplied without gaskets and bolts

### Characteristics

Designed to raise filler breathers either 39 mm / 1.56 in or 69 mm / 2.72 in above the actual mounting surface of the reservoir to prevent contamination from blocking the filter element

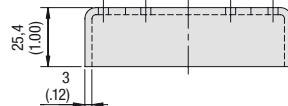
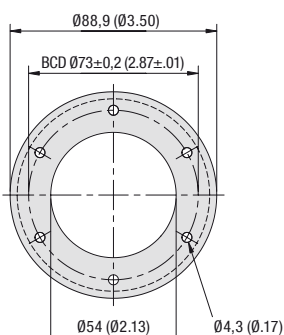
### Suitability

- Suitable for Metal Filler Breathers SMBB 80 and Plastic Filler Breathers SPBN (bayonet version)
- Replaces the existing bayonet flanges of these breathers

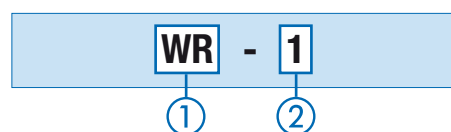
### Materials

- Bayonet flange made of Steel, zinc-plated

## Weld Riser ■ Type WR



### Order Codes



#### ① Type

Weld Riser **WR**

#### ② Size

Total height of 25,4 mm (1.00 in) **1**

### Materials

- Weld riser made of Steel, untreated

### Installation

- Welded to the top of the reservoir
- No requirement to drill and tap on the reservoir
- Bayonet flange of filler breather is placed on top

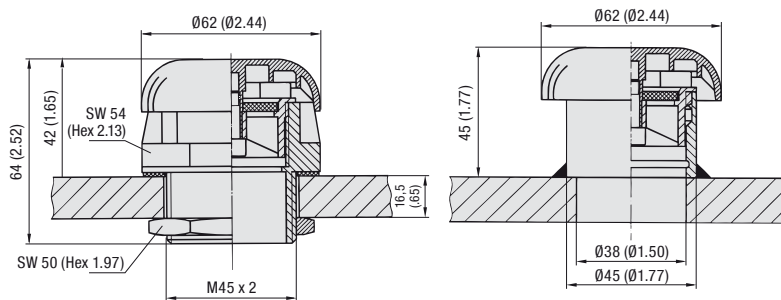
### Characteristics

Designed to raise filler breathers 25,4 mm / 1.00 in above the actual mounting surface of the reservoir to prevent contamination from blocking the filter element whilst eliminating the requirement to drill and tap on the reservoir

### Suitability

- Suitable for Metal Filler Breathers SMBB 80 as well as Plastic Filler Breathers SPB 5 and SPBN (bayonet version) and all components with a six-hole flange connection similar to DIN 24557, part 2

## Plastic Filler Breather ▪ Type SES (Screw-In or Welded Versions)



Screw-In Version

Welded Version

### Characteristics

Designed to be used as filler ports for hydraulic reservoirs, allowing the reservoir to breathe whilst protecting it from contamination found in harsh environments

#### Features

- Cap diameter of Ø62 mm / Ø2.44 in
- Screw-in version, equipped with male Metric ISO thread M45 x 2 and lock nut, or welded version with welding socket made of Steel (1.0718), untreated
- Supplied with 45 µm air filter element

#### Materials

- Breather cap made of Polyamide (PA)
- Breather body / stud made of Polyamide (PA)
- Nut (type SES 1) made of Steel (1.0718); Polyamide (PA) available on request
- Welding socket (type SES 2) made of Steel (1.0718), untreated; Stainless Steel (V2A) available on request
- Air filter element made of Sintered Bronze
- Basket made of Polyamide (PA)
- Dipstick made of Steel (1.0718)
- Sealings made of NBR (Buna-N®)

Consult STAUFF for alternative materials.

#### Accessories / Options

- Plastic basket (300 µm)
- Metal dipstick

#### Maximum Air Flow Rate

- 0,30 m³/min / 10.60 cfm

Consult STAUFF for detailed air flow curves.

#### Oil Displacement

- 300 l/min / 79 US GPM

### Order Codes

**SES** **1** - **M300**

① ② ③

#### ① Type

Plastic Filler Breather **SES**

#### ② Version

Screw-in version **1**  
Welded version **2**

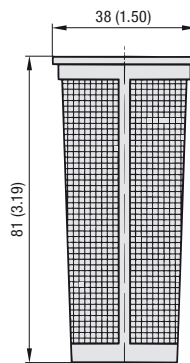
#### ③ Basket / Dipstick Option

Plastic basket (81 mm / 3.19 in) **S**  
Metal dipstick (300 mm / 11.81 in) **M300**  
Metal dipstick (500 mm / 19.69 in) **M500**  
Without basket / dipstick **-**

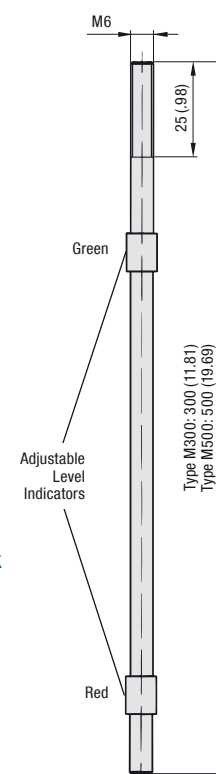
### Accessories

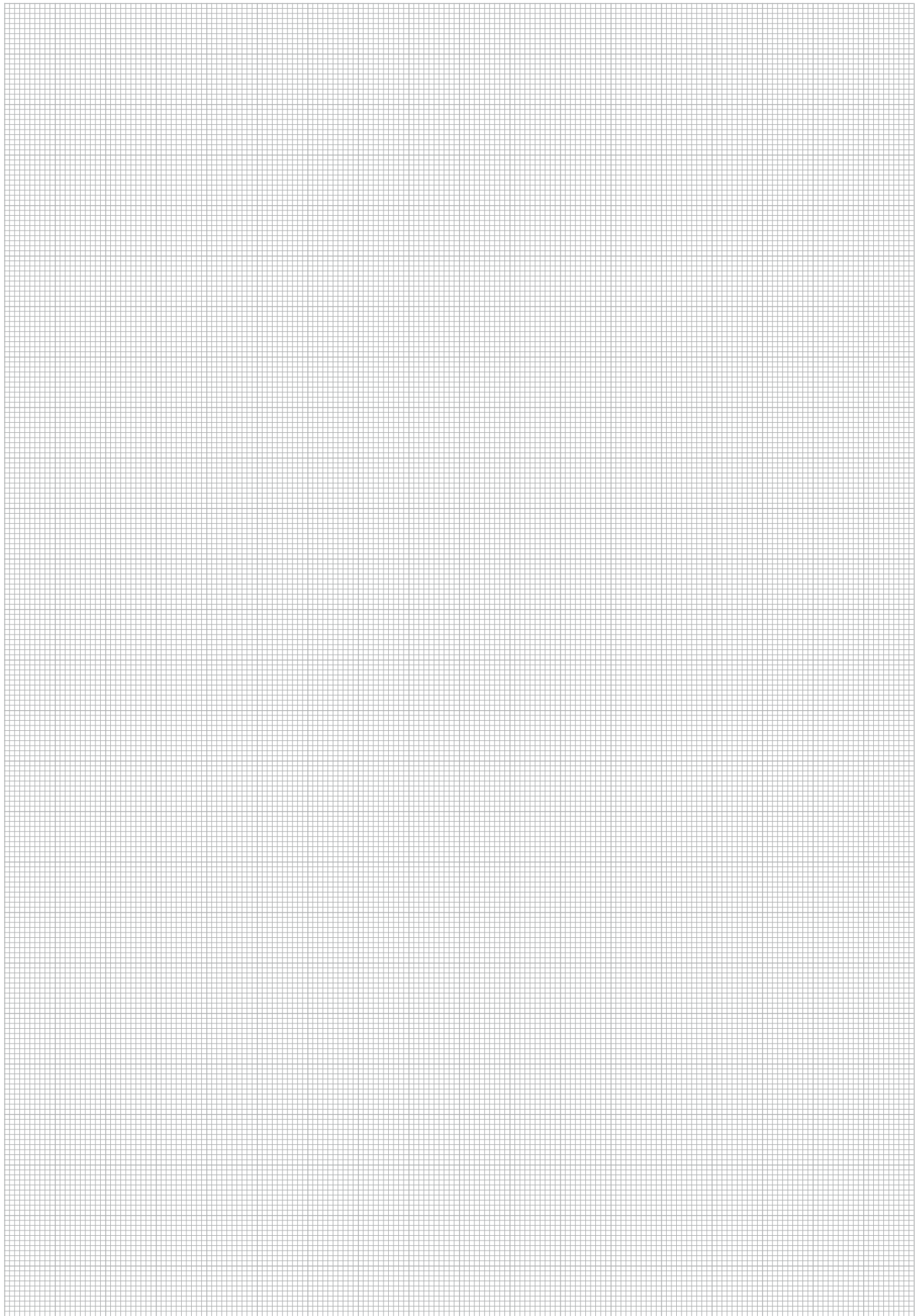


Plastic Basket

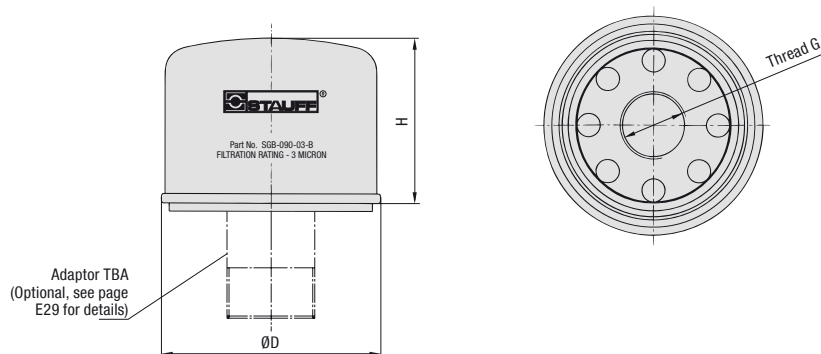


Metal Dipstick





## Giant Air Breather ■ Type SGB



### Characteristics

Originally designed to be used as replaceable air filter elements for STAUFF Desiccant Breathers, they can also be used as separate air filters for hydraulic reservoirs

#### Features

- Diameter of Ø68 mm / Ø2.68 in (SGB-060), Ø100 mm / Ø3.94 in (SGB-090) or Ø130 mm / Ø5.12 in (SGB-120)
- Equipped with female BSP thread (ISO 228)
- Including sealing made of NBR (Buna-N®)

#### Accessories / Options

- Adaptors (for direct installation on top of hydraulic reservoirs)

Please see page E29 for a selection of adaptors available, and consult STAUFF for further information.

#### Air Flow

- Maximum air flow rates:  
0,05 m³/min / 1.77 cfm for SGB-060,  
0,70 m³/min / 24.71 cfm for SGB-090, and  
1,50 m³/min / 52.97 cfm for SGB-120

### Dimensions and Filter Specifications

Type	Thread G*	Dimensions (mm/in)		Filter Material	Micron Rating	Filter Surface	Max. Air Flow Rate
SGB-060-03-B	Female M20 x 1,5 (ISO 13-2)	68	60	Synthetic Fibre	3 µm	415 cm²	0,05 m³/min
		2.68	2.36			63 in²	1.77 cfm
SGB-090-03-B	Female G3/4 BSP (ISO 228)	100	64	Synthetic Fibre	3 µm	752 cm²	0,70 m³/min
		3.94	2.52			115 in²	24.71 cfm
SGB-120-03-B	Female G1-1/4 BSP (ISO 228)	130	100	Synthetic Fibre	3 µm	2095 cm²	1,50 m³/min
		5.12	3.94			320 in²	52.97 cfm

\* Use adaptors TBA to change female BSP thread into male BSP or male NPT thread. Please see page E29 for details.

### Order Codes

SGB

-

090

-

03

-

B

-

A

①

②

③

④

⑤

① Type

Giant Air Breather

SGB

② Size

Diameter of Ø68 mm (Ø2.68 in)

060

Diameter of Ø100 mm (Ø3.94 in)

090

Diameter of Ø130 mm (Ø5.12 in)

120

③ Filter Material / Micron Rating

3 µm Synthetic Fibre

03

Consult STAUFF for alternative materials / micron ratings.

④ Connection Thread

Female BSP thread

(according to dimension table)

⑤ Adaptor Option

Without adaptor

With adaptor TBA-075-B

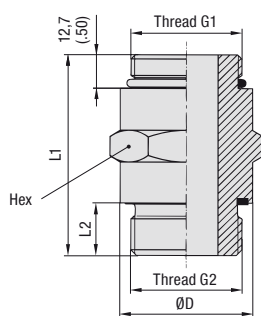
(for SGB-090-03-B) or

TBA-125-B (for SGB-120-03-B)

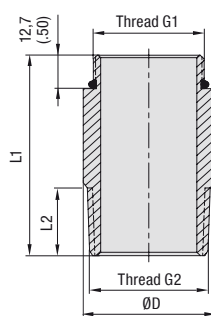
If required, Giant Air Breathers SGB can also be supplied in combination with a wide range of further adaptors. Please see page E29 for a selection of adaptors available, and consult STAUFF for further information.



## Breather Adaptor ▪ Type TBA



**TBA-038-B**  
**TBA-075-B**  
**TBA-125-B**



**TBA-075**  
**TBA-120**  
**TBA-125**



### Order Codes and Dimensions

Order Code	Thread G1	Thread G2	Dimensions (mm/in)				For Use with ...*
			L1	L2	ØD	Hex	
TBA-038-B	Male G3/8 BSP (ISO 228)	Male G3/8 BSP (ISO 228)	43	11	21,9	22	Desiccant Air Breathers SDB-061-CV
			1.69	.43	.86	.86	
TBA-075	Male 1-12 UNF (ANSI B1.1)	Male 3/4 NPT (ANSI B1.20.1)	51	20	27		Spin-On Series SF 65
			2.00	.79	1.05		
TBA-075-B	Male G3/4 BSP (ISO 228)	Male G3/4 BSP (ISO 228)	57	16	32	32	Giant Air Breathers SGB-090 Desiccant Air Breathers SVDB-093 Desiccant Air Breathers SVDB-096 Spin-On Series SF 35 Spin-On Series SF 36
			2.24	.63	1.26	1.26	
TBA-120	Male G1-1/4 BSP (ISO 228)	Male 1-1/4 NPT (ANSI B1.20.1)	76	22	42		Giant Air Breathers SGB-120 Spin-On Series SF 57 Spin-On Series SF 58
			3.00	.88	1.65		
TBA-125	Male 1-1/2-16 UN (ANSI B1.1)	Male 1-1/4 NPT (ANSI B1.20.1)	76	26	45		Spin-On Series SF 67
			3.00	1.01	1.77		
TBA-125-B	Male G1-1/4 BSP (ISO 228)	Male G1-1/4 BSP (ISO 228)	76	20	50	50	Giant Air Breathers SGB-120 Spin-On Series SF 57 Spin-On Series SF 58
			3.00	.79	1.97	1.97	

\* Please see Filtration Technology section from page C122 on for technical details on Spin-On filter elements.

### Characteristics

Adopts from female threaded Giant Air Breather or Spin-On Filter Element to a male thread, and thus allows for direct installation on top of hydraulic reservoirs

#### Features

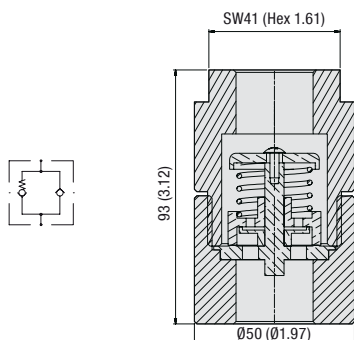
- Several thread combinations available to suit most common Spin-On filter elements
- Versions with male BSP threads on both ends are equipped with hex to simplify installation
- Sealings included in delivery

#### Materials

- Adaptor made of Steel, zinc-plated
- Sealings made of NBR (Buna-N®)

Consult STAUFF for alternative materials.

## Pressurised Breather Adaptor ▪ Type TBA-075-P2



### Characteristics

Increasing the service life and reducing maintenance intervals of tank filler breathers and desiccant breathers due to less breathing

#### Features

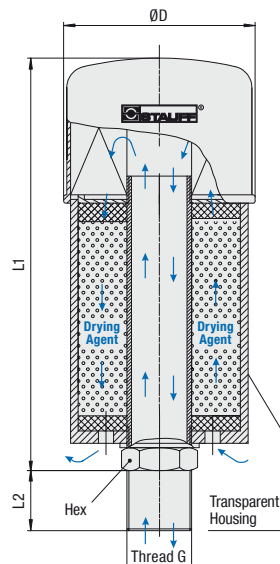
- Connections: Female G3/4 BSP threads (ISO 228)
- Pressurisation of 0,35 bar / 5 PSI (no air is expelled from the reservoir until the pressurisation level is reached)
- Suitable for use with various types of Desiccant Air Breathers including SDB-096/2, SDB-093/2, SVDB-096, SVDB-093 and SDB-096-CV as well as Tank Filler Breathers including SPB-2, SPB-3 and SMBT-80

#### Materials

- Housing made of Aluminium



## Desiccant Air Breather - Type SDB



## Drying Agent

Capable in changing colours  
with increasing moisture



## REPLACE

This product does not contain  
any dangerous substances  
according to EC Council  
directives 99/45/EC and  
2001/60/EC.

## Dimensions and Technical Data

Type	Thread G	Dimensions (mm/in)				Weight (g/lbs)		Volume (cm³/in³) Drying Agent	Max. Water Absorption (g/lbs)	Air Filter Elements				
		ØD	L1	L2	Hex	Complete Unit	Drying Agent			Type	Filter Material	Micron Rating	Filter Surface	Max. Air Flow Rate
SDB-093/2	Male G3/4 BSP (ISO 228)	100	160	20	32	1200	225	300	86	SGB-090-03-B	Synthetic Fibre	3µm	752 cm²	0,70 m³/min
		3.94	6.30	.79	1.26	2.65	.50	18.3	.19				115 in²	24.71 cfm
SDB-096/2	Male G3/4 BSP (ISO 228)	100	220	20	32	1500	450	600	172	SGB-090-03-B	Synthetic Fibre	3µm	752 cm²	0,70 m³/min
		3.94	8.66	.79	1.26	3.31	.99	36.6	.38				115 in²	24.71 cfm
SDB-121/2	Male G1-1/4 BSP (ISO 228)	130	256	>25	50	2700	750	1000	288	SGB-120-03-B	Synthetic Fibre	3µm	2095 cm²	1,50 m³/min
		5.12	10.08	>.98	1.98	5.92	1.65	61.0	.63				320 in²	52.97 cfm
SDB-122/2	Male G1-1/4 BSP (ISO 228)	130	366	>25	50	4000	1500	2000	576	SGB-120-03-B	Synthetic Fibre	3µm	2095 cm²	1,50 m³/min
		5.12	14.41	>.98	1.98	8.82	3.31	122.0	1.27				320 in²	52.97 cfm

## Characteristics

## Combination of air breather and water removal filter

When a reservoir or gearbox breathes, air containing water vapor is ingested into the system. Temperature fluctuations will cause this water vapor to condense which can speed up the oxidation of the fluid and lead to damage in the system.

While inhaling, Desiccant Air Breathers SDB first dry the air as it passes through the drying agent. The air then passes through a 3µm air filter element to remove any solid contamination particles.

As moisture is absorbed, the drying agent will gradually change from red to orange. When it is orange, replace the drying agent. If required, an optional visual indicator gives an indication of the status of the air breather. With the moisture absorbed, the oxidation process can be decreased and the lifetime of the oil and the entire machinery will be extended.

Desiccant Air Breathers SDB can also be re-fitted with a layer of active carbon (1/3) and a layer of regular drying agent (2/3) for vapor filtration.

## Features

- Available in 4 different sizes
- Diameter of Ø100 mm / Ø3.94 in or Ø130 mm / Ø5.12 in
- Refillable with drying agent (non-toxic ZR gel grain) or a mix of drying agent and active carbon
- Replaceable air filter element SGB
- Connection: Male BSP thread (ISO 228) on Stainless Steel tube
- Available with adaptor plate to simplify installation and to enable the use of a visual contamination indicator

## Accessories / Spare Parts

## Adaptor plate

- for SDB-093/2 and SDB-096/2:
- for SDB-121/2 and SDB-122/2:

AP-1  
AP-2

## Visual contamination indicator

- for all sizes (in conjunction with adaptor plate only): FM

## Drying agent refilling material (supplied in air tight container)

- for SDB-093/2 (300 cm³ / 18.3 in³): RD-093
- for SDB-096/2 (600 cm³ / 26.6 in³): RD-096
- for SDB-121/2 (1000 cm³ / 61.0 in³): RD-121
- for SDB-122/2 (2000 cm³ / 122.0 in³): RD-122

## Active carbon refilling material (supplied in air tight container)

- for SDB-093/2, SDB-096/2 and SDB-121/2 (300 cm³ / 18.3 in³): RC-093/096/121
- for SDB-122/2 (600 cm³ / 18.3 in³): RC-122

Please note: Use one layer of active carbon (1/3) and one layer of regular drying agent (2/3).

## Replacement air filter element (sealing included)

- for SDB-093/2 and SDB-096/2: SGB-090-03-B
- for SDB-121/2 and SDB-122/2: SGB-120-03-B

## Order Codes

SDB - 122/2 - RC - AP - FM				
①	②	③	④	⑤
<b>① Type</b> Desiccant Air Breather SDB				
<b>② Max. Water Absorption and Size</b> 86 g / .19 lbs at Ø100 mm / Ø3.94 in 093/2 172 g / .38 lbs at Ø100 mm / Ø3.94 in 096/2 288 g / .63 lbs at Ø130 mm / Ø5.12 in 121/2 576 g / 1.27 lbs at Ø130 mm / Ø5.12 in 122/2				
Please see table above for further technical details.				
<b>③ Drying Agent Material</b> Regular drying agent (standard option) - One layer of active carbon (1/3) and one layer of regular drying agent (2/3) for vapor filtration RC				
<b>④ Adaptor Plate</b> Without adaptor plate - With adaptor plate AP				
<b>⑤ Contamination Indicator</b> Without contamination indicator - With visual contamination indicator FM (in conjunction with adaptor plate AP only) FM				
Please see page E33 for details.				

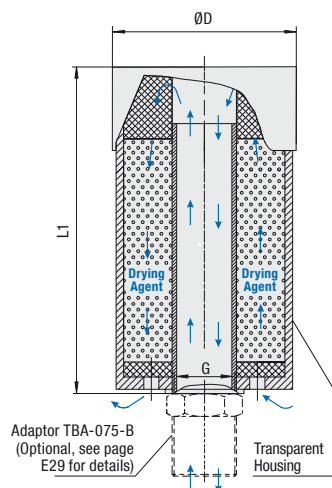
## Desiccant Air Breather (Economy Version) ▪ Type SVDB

### Drying Agent

Capable in changing colours with increasing moisture



This product does not contain any dangerous substances according to EC Council directives 99/45/EC and 2001/60/EC.



### Dimensions and Technical Data

Type	Thread G	Dimensions (mm/m)			Weight (g/lbs)		Volume (cm³/in³)	Max. Water Absorption (g/lbs)	Max. Air Flow Rate
		ØD	L1	L2	Complete Unit	Drying Agent	Drying Agent		
SVDB-093	Female G3/4 BSP (ISO 228)	94	109	18	400	225	300	86	0,70 m³/min
		3.70	4.68	.71	.88	.50	18.3	.19	24.71 cfm
SVDB-096	Female G3/4 BSP (ISO 228)	94	179	18	700	450	600	172	0,70 m³/min
		3.70	7.05	.71	1.54	.99	36.9	.38	24.71 cfm

### Characteristics

#### Combination of air breather and water removal filter

When a reservoir or gearbox breathes, air containing water vapor is ingested into the system. Temperature fluctuations will cause this water vapor to condense which can speed up the oxidation of the fluid and lead to damage in the system.

Desiccant Air Breathers SVDB are the light-weight alternative to the proven SDB series, offering an almost identical filtration and absorption performance.

While inhaling, Desiccant Air Breathers SVDB also first dry the air as it passes through the drying agent. The air then passes through a 10 µm coarse filter to remove any solid contamination particles.

As moisture is absorbed, the drying agent will gradually change from red to orange. When it is orange, replace the entire unit. If required, an optional visual indicator gives an indication of the status of the air breather. With the moisture absorbed, the oxidation process can be decreased and the lifetime of the oil and the entire machinery will be extended.

#### Features

- Light-weight alternative to the SDB series
- Available in 2 different sizes
- Diameter of Ø94 mm / Ø3.70 in
- Filled with drying agent (non-toxic ZR gel grain)
- Connection: Female BSP thread (ISO 228) in Plastic housing

Please note that neither the air filter element nor the drying agent can be replaced when saturated.

### Order Codes

<b>SVDB</b>	<b>-</b>	<b>096</b>	<b>-</b>	<b>A</b>	<b>-</b>	<b>AP</b>	<b>-</b>	<b>FM</b>
①		②		③		④		⑤

#### ① Type

Desiccant Air Breather (Economy Version) **SVDB**

#### ② Max. Water Absorption and Size

86 g / .19 lbs at Ø94 mm / Ø3.70 **093**  
172 g / .38 lbs at Ø94 mm / Ø3.70 **096**

Please see table above for further technical details.

#### ③ Connection Adaptor

Without connection adaptor **-**  
With connection adaptor TBA-075-B **A**

Please see page E29 for details.  
Consult STAUFF for alternative adaptors.

#### ④ Adaptor Plate

Without adaptor plate **-**  
With adaptor plate (in conjunction with connection adaptor A only) **AP**

#### ⑤ Contamination Indicator

Without contamination indicator **-**  
With visual contamination indicator FM (in conjunction with adaptor plate AP only) **FM**

Please see page E33 for details.

### Accessories / Spare Parts

#### Connection adaptor (see page E29 for details)

- for all sizes: **TBA-075-B**

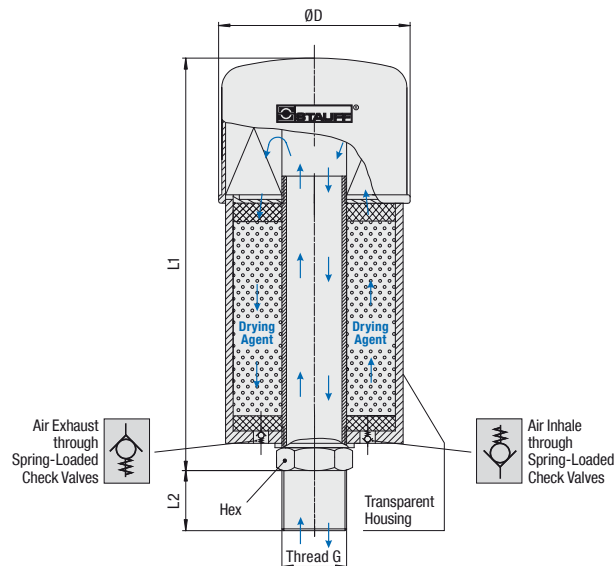
#### Adaptor plate

- for all sizes (in conjunction with adaptor plate only): **AP-1**

#### Visual contamination indicator

- for all sizes (in conjunction with adaptor plate only): **FM**

## Desiccant Air Breather with Check Valves ■ Type SDB-CV



### Drying Agent

Capable in changing colours with increasing moisture



This product does not contain any dangerous substances according to EC Council directives 99/45/EC and 2001/60/EC.

## Dimensions and Technical Data

Type	Thread G	Dimensions (mm/in)				Weight (g/lbs)		Volume (cm³/in³)	Max. Water Absorption	Air Filter Elements				
		ØD	L1	L2	Hex	Complete Unit	Drying Agent	Drying Agent	(g/lbs)	Type	Filter 67	Micron Rating	Filter Surface	Max. Air Flow Rate
SDB-061-CV	Female G3/8	68	143	14	22	350	75	100	29	SGB-060-03-B	Synthetic Fibre	3µm	415 cm²	0,05 m³/min
	BSP (ISO 228)	2.68	5.63	.55	.87	.77	.17	6.1	.06				63 in²	1.77 cfm
SDB-096-CV	Male G3/4	100	220	20	32	1500	450	600	172	SGB-090-03-B	Synthetic Fibre	3µm	752 cm²	0,70 m³/min
	BSP (ISO 228)	3.94	8.66	.79	1.26	3.31	.99	36.6	.38				115 in²	24.71 cfm
SDB-121-CV	Male G1-1/4	130	256	>25	50	2700	750	1000	288	SGB-120-03-B	Synthetic Fibre	3µm	2095 cm²	1,50 m³/min
	BSP (ISO 228)	5.12	10.08	>.98	1.98	5.92	1.65	61.0	.63				320 in²	52.97 cfm
SDB-122-CV	Male G1-1/4	130	366	>25	50	4000	1500	2000	576	SGB-120-03-B	Synthetic Fibre	3µm	2095 cm²	1,50 m³/min
	BSP (ISO 228)	5.12	14.41	>.98	1.98	8.82	3.31	122.0	1.27				320 in²	52.97 cfm

## Characteristics

**Combination of air breather and water removal filter with integrated check valves to increase the lifetime of the desiccant material; particularly suited for gearbox applications**

When a reservoir or gearbox breathes, air containing water vapor is ingested into the system. Temperature fluctuations will cause this water vapor to condense which can speed up the oxidation of the fluid and lead to damage in the system.

While inhaling, Desiccant Air Breathers SDB-CV first dry the air as it passes through the drying agent. The air then passes through a 3µm air filter element to remove any solid contamination particles.

Thanks to the spring-loaded check valves with an opening pressure of 0,01 bar / .15PSI, the drying agent will be isolated from the atmosphere unless inhaling or exhaling, which increases the lifetime of the Desiccant Air Breather SDB-CV as well

As moisture is absorbed, the drying agent will gradually change from red to orange. When it is orange, replace the drying agent. If required, an optional visual indicator (not for the SDB-061-CV) gives an indication of the status of the air breather. With the moisture absorbed, the oxidation process can be decreased and the lifetime of the oil and the entire machinery will be extended. Desiccant Air Breathers SDB-CV can also be re-fitted with a layer of active carbon (1/3) and a layer of regular drying agent (2/3) for vapor filtration.

### Features

- Available in 4 different sizes with diameter of Ø68 mm / Ø2.68 in, Ø100 mm / Ø3.94 in or Ø130 mm / Ø5.12 in
- Equipped with spring-loaded check valves in opposing directions with an opening pressure of 0,01 bar / .15PSI
- Refillable with drying agent (non-toxic ZR gel grain) or a mix of drying agent and active carbon
- Replaceable air filter element SGB
- Connection: BSP thread (ISO 228)

Please note: Using an Desiccant Air Breather with integrated spring-loaded check valves may cause an under or over pressure of 0,01 bar / .15PSI inside the system, which does not cause any problems for the majority of gearboxes and reservoirs. In case of doubt, please consult your equipment supplier.

## Accessories / Spare Parts

### Adaptor plate

- for SDB-096-CV:
- for SDB-121-CV and SDB-122-CV:

### Visual contamination indicator

- for SDB-096-CV, SDB-121-CV and SDB-122-CV (in conjunction with adaptor plate only):

### Drying agent refilling material (supplied in air tight container)

- for SDB-061-CV (100 cm³ / 6.1 in³): **RD-061**
- for SDB-096-CV (600 cm³ / 26.6 in³): **RD-096**
- for SDB-121-CV and SDB-122-CV (1000 cm³ / 61.0 in³): **RD-121**
- for SDB-122-CV (2000 cm³ / 122.0 in³): **RD-122**

### Active carbon refilling material (supplied in air tight container)

- for SDB-096-CV and SDB-121-CV (300 cm³ / 18.3 in³): **RC-093/096/121**
- for SDB-122-CV (600 cm³ / 18.3 in³): **RC-122**

Please note: Use one layer of active carbon (1/3) and one layer of regular drying agent (2/3).

### Replacement air filter element (sealing included)

- for SDB-061-CV: **SGB-060-03-B**
- for SDB-096-CV: **SGB-090-03-B**
- for SDB-121-CV and SDB-122-CV: **SGB-120-03-B**

## Order Codes

AP-1  
AP-2

<b>SDB</b>	<b>-</b>	<b>121</b>	<b>-</b>	<b>CV</b>	<b>-</b>	<b>RC</b>	<b>-</b>	<b>AP</b>	<b>-</b>	<b>FM</b>
①		②		③		④		⑤		⑥

### ① Type

Desiccant Air Breather **SDB**

### ② Max. Water Absorption and Size

29 g / .06 lbs at Ø68 mm / Ø2.68 in	<b>061</b>
172 g / .38 lbs at Ø100 mm / Ø3.94 in	<b>096</b>
288 g / .63 lbs at Ø130 mm / Ø5.12 in	<b>121</b>
576 g / 1.27 lbs at Ø130 mm / Ø5.12 in	<b>122</b>

Please see table above for further technical details.

### ③ Check Valves

With integrated spring-loaded check valves (0,01 bar / .15PSI) **CV**

### ④ Drying Agent 67

Regular drying agent (standard option) -  
One layer of active carbon (1/3) and one layer of regular drying agent (2/3) for vapor filtration **RC**

### ⑤ Adaptor Plate

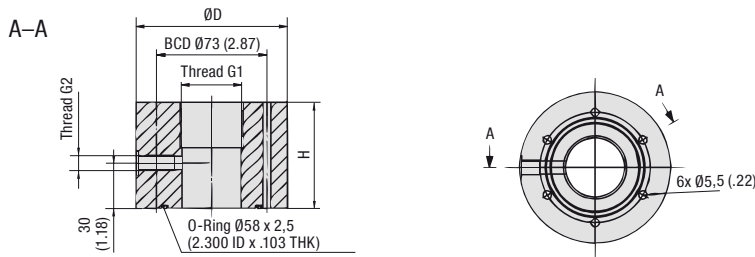
Without adaptor -  
With adaptor plate (not for SDB-061-CV) **AP**

### ⑥ Contamination Indicator

Without contamination indicator -  
With visual contamination indicator FM (in conjunction with adaptor plate AP only) **FM**

Please see page E33 for details.

## Adaptor Plate ■ Type AP



Desiccant Air Breather SDB with Adaptor Plate AP



### Characteristics

**Designed to simplify the installation of Desiccant Air Breathers and enable the use of a visual contamination indicator**

With Adaptor Plates AP, desiccant air breathers can be directly mounted to existing connections with a six-hole bolt pattern for flange interfaces similar to DIN 24557, part 2.

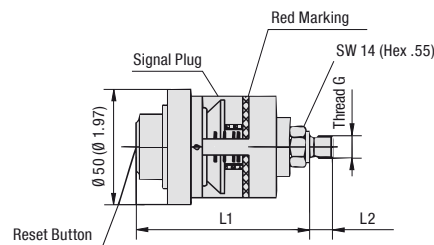
They are also equipped with a female G1/8 BSP thread (ISO 228) to connect with the Visual Contamination Indicator FM.

Adaptor Plates AP are made of Polyamide (PA). A blind plug, O-ring made of NBR (Buna-N®) and 6 socket cap screws (ISO 4762) are supplied with AP as a standard.

### Order Code and Dimensions

Order Code	Thread G1 (Breather Port)	Thread G2 (Indicator Port)	Dimensions <sup>(mm/in)</sup> H            ØD		Socket Cap Screws included	For Use with Desiccant Air Breathers
AP-1	Female G3/4 BSP (ISO 228)	Female G1/8 BSP (ISO 228)	50	88	M5 x 60 - 8.8 (Steel, zinc-plated)	SDB-096/2 SDB-093/2 SVDB-096 SVDB-093 SDB-096-CV
			1.98	3.46		
AP-2	Female G1-1/4 BSP (ISO 228)	Female G1/8 BSP (ISO 228)	70	100	M5 x 80 - 8.8 (Steel, zinc-plated)	SDB-121/2 SDB-122/2 SDB-121-CV SDB-122-CV
			2.76	3.94		

## Visual Contamination Indicator ■ Type FM



Desiccant Air Breather SDB with Adaptor Plate AP and Visual Contamination Indicator FM



### Characteristics

**Designed to indicate the status of air filter elements**

Visual Contamination Indicators FM – the so-called Filter Minders® – are connected to the female G1/8 BSP thread (ISO 228) of the Adaptor Plate AP and give a visual indication of the contamination level of the air filter element SGB. A red marking indicates when the air filter element has to be replaced.

Visual Contamination Indicators FM can be reset afterwards.

### Order Code and Dimensions

Order Code	Thread G	Dimensions (mm/in)	
		L1	L2
FM	Male G1/8 BSP (ISO 228)	75	10
		2.54	.39

#### Materials

- Housing made of Polycarbonate

#### Technical Data

- Operating temperature range:  
-40 °C ... +121 °F (-40 °F ... +250 °F)
- Accuracy: ±10% at red marking



Consult STAUFF for alternative types of monitoring devices (such as Graduated Switch Indicators FME, etc.).

## Oil Demister ■ Type TBA-OD

### Order Code and Dimensions

Order Code	Dimensions (mm/in)	
	Length	Diameter
TBA-075-B-OD-140	140	60
	5.51	2.36
TBA-075-B-OD-210	210	60
	8.27	2.36

### Characteristics

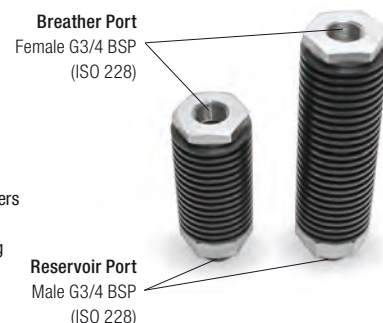
**Designed to prevent oil mist from leaving the hydraulic reservoir through air breathers**

#### Features

- Available in 2 different sizes with lengths of 140 mm / 5.51 in or 210 mm / 8.27 in
- Suitable for use with various types of Desiccant Air Breathers including SDB-096/2, SDB-093/2, SVDB-096, SVDB-093 and SDB-096-CV as well as Tank Filler Breathers including SPB-2, SPB-3 and SMBT-80

#### Materials

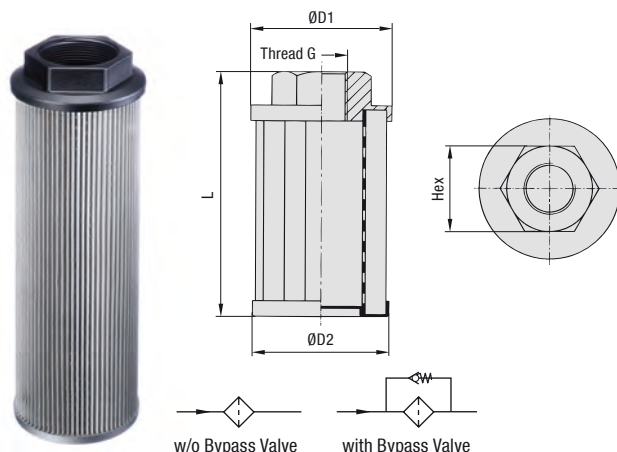
- Housing with cooling ribs made of Aluminium
- Threaded adaptors made of Steel



Dimensional drawings: All dimensions in mm (in).



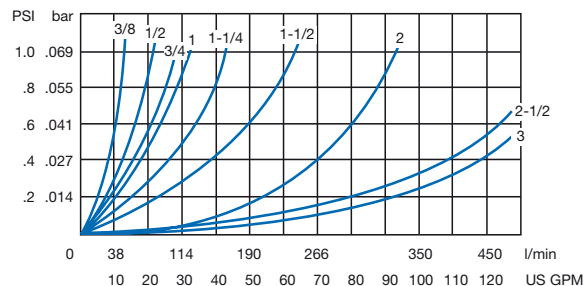
## Suction Strainer ▪ Type SUS (Polyamide End Cap)



## Flow Characteristics

### Nominal Flow Rate vs. Pressure Drop $\Delta P$

The following characteristics are valid for Mineral oils with a mass density of 0,85 kg/dm<sup>3</sup> and a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) at +38 °C / +100 °F.



## Characteristics

Designed as in-tank suction strainer elements for direct installation into suction lines of pumps; should always be installed below the minimum fluid level of the reservoir

### Features

- Available with female BSP thread (ISO 228) or female NPT thread (ANSI B1.20.1)
- Operating temperature range: -20 °C ... +100 °C / -4 °F ... +212 °F

### Media Compatibility

- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

### Materials

- Threaded end cap made of glass-fibre reinforced Polyamide (PA); see page E35 for version with Aluminium end cap
- Lower end cap and support tube made of Steel, zinc-plated
- Standard filter material is Stainless Steel Mesh (125 µm); alternative micron ratings of 60 µm and 250 µm on request

### Options

- Integrated bypass valve with an opening pressure of 0,2 bar (3 PSI) to reduce the risks of high-pressure drops that can be caused by contaminated strainer elements or high-viscosity fluids

**Special sizes, designs, materials and configurations are available on request. Consult STAUFF for details.**

Consult STAUFF for alternative materials.

## Dimensions and Technical Data (Female BSP Threaded Version)

Group Size	Thread G	Dimensions (mm/in)				Filter Surface	Max. Flow Rate
		ØD1	ØD2	L	Hex		
040 - B06F - 075	G3/8 BSP	39,5 1.56	38,5 1.53	75 2.93	22 .87	279 cm <sup>2</sup> 43 in <sup>2</sup>	12 l/min 3.1 US GPM
050 - B06F - 067	G3/8 BSP	50 1.97	49 1.93	67 2.64	26 1.02	296 cm <sup>2</sup> 46 in <sup>2</sup>	12 l/min 3.1 US GPM
050 - B08F - 105	G1/2 BSP	50 1.97	49 1.93	105 4.13	26 1.02	518 cm <sup>2</sup> 80 in <sup>2</sup>	15 l/min 3.9 US GPM
068 - B12F - 105	G3/4 BSP	68 2.68	66 2.60	105 4.13	34 1.34	676 cm <sup>2</sup> 105 in <sup>2</sup>	25 l/min 6.5 US GPM
068 - B16F - 140	G1 BSP	68 2.68	66 2.60	140 5.51	42 1.65	930 cm <sup>2</sup> 144 in <sup>2</sup>	50 l/min 13.0 US GPM
088 - B20F - 140	G1-1/4 BSP	88 3.46	85 3.35	140 5.51	50 1.97	1172 cm <sup>2</sup> 182 in <sup>2</sup>	65 l/min 16.9 US GPM
088 - B24F - 140	G1-1/2 BSP	88 3.46	85 3.35	140 5.51	60 2.36	1172 cm <sup>2</sup> 182 in <sup>2</sup>	140 l/min 36.4 US GPM
102 - B24F - 200	G1-1/2 BSP	102 4.02	100 3.94	200 7.87	72 2.83	2427 cm <sup>2</sup> 376 in <sup>2</sup>	140 l/min 36.4 US GPM
102 - B32F - 200	G2 BSP	102 4.02	100 3.94	200 7.87	72 2.83	2427 cm <sup>2</sup> 376 in <sup>2</sup>	230 l/min 59.8 US GPM
102 - B32F - 225	G2 BSP	102 4.02	100 3.94	225 8.86	72 2.83	2811 cm <sup>2</sup> 436 in <sup>2</sup>	230 l/min 59.8 US GPM
102 - B32F - 260	G2 BSP	102 4.02	100 3.94	260 10.24	72 2.83	3249 cm <sup>2</sup> 504 in <sup>2</sup>	230 l/min 59.8 US GPM
102 - B32F - 300	G2 BSP	102 4.02	100 3.94	300 11.81	72 2.83	3798 cm <sup>2</sup> 589 in <sup>2</sup>	230 l/min 59.8 US GPM
131 - B40F - 191	G2-1/2 BSP	131 5.16	128 5.04	191 10.24	86 3.39	2430 cm <sup>2</sup> 377 in <sup>2</sup>	340 l/min 88.4 US GPM
131 - B40F - 212	G2-1/2 BSP	131 5.16	128 5.04	212 8.35	86 3.39	2748 cm <sup>2</sup> 426 in <sup>2</sup>	340 l/min 88.4 US GPM
131 - B48F - 272	G3 BSP	131 5.16	128 5.04	272 10.71	96 3.78	3626 cm <sup>2</sup> 562 in <sup>2</sup>	400 l/min 104 US GPM
150 - B32F - 151	G2 BSP	150 5.91	145 5.71	151 5.94	70 2.76	1812 cm <sup>2</sup> 281 in <sup>2</sup>	400 l/min 104 US GPM

## Dimensions and Technical Data (Female NPT Threaded Version)

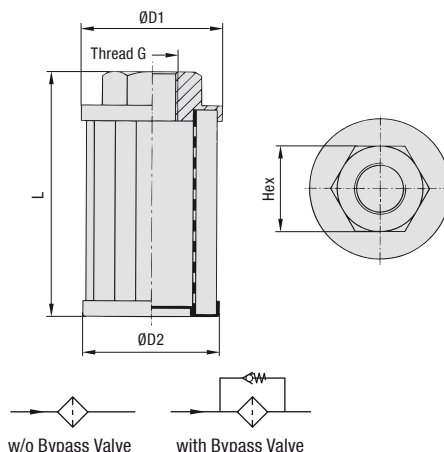
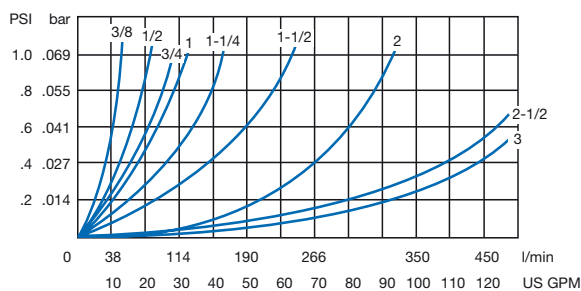
Group Size	Thread G	Dimensions (mm/in)				Filter Surface	Max. Flow Rate
		ØD1	ØD2	L	Hex		
050 - N06F - 067	3/8 NPT	50 1.97	49 1.93	67 2.64	26 1.02	296 cm <sup>2</sup> 46 in <sup>2</sup>	12 l/min 3.1 US GPM
050 - N06F - 090	3/8 NPT	50 1.97	49 1.93	90 3.54	26 1.02	430 cm <sup>2</sup> 67 in <sup>2</sup>	12 l/min 3.1 US GPM
050 - N08F - 105	1/2 NPT	50 1.97	49 1.93	105 4.13	26 1.02	518 cm <sup>2</sup> 80 in <sup>2</sup>	15 l/min 3.9 US GPM
068 - N12F - 105	3/4 NPT	68 2.68	66 2.60	105 4.13	34 1.34	676 cm <sup>2</sup> 105 in <sup>2</sup>	25 l/min 6.5 US GPM
068 - N16F - 140	1 NPT	68 2.68	66 2.60	140 5.51	42 1.65	930 cm <sup>2</sup> 144 in <sup>2</sup>	50 l/min 13.0 US GPM
088 - N20F - 140	1-1/4 NPT	88 3.46	85 3.35	140 5.51	50 1.97	1172 cm <sup>2</sup> 182 in <sup>2</sup>	65 l/min 16.9 US GPM
088 - N20F - 195	1-1/4 NPT	88 3.46	85 3.35	195 7.68	60 2.36	1709 cm <sup>2</sup> 265 in <sup>2</sup>	65 l/min 16.9 US GPM
088 - N24F - 140	1-1/2 NPT	88 3.46	85 3.35	140 5.51	60 2.36	1172 cm <sup>2</sup> 182 in <sup>2</sup>	140 l/min 36.4 US GPM
088 - N24F - 226	1-1/2 NPT	88 3.46	85 3.35	226 8.90	60 2.36	2012 cm <sup>2</sup> 312 in <sup>2</sup>	140 l/min 36.4 US GPM
088 - N24F - 260	1-1/2 NPT	88 3.46	85 3.35	260 10.24	60 2.36	2344 cm <sup>2</sup> 363 in <sup>2</sup>	140 l/min 36.4 US GPM
102 - N24F - 200	1-1/2 NPT	102 4.02	100 3.94	200 7.87	72 2.83	2427 cm <sup>2</sup> 376 in <sup>2</sup>	140 l/min 36.4 US GPM
102 - N32F - 260	2 NPT	102 4.02	100 3.94	260 10.24	72 2.83	3249 cm <sup>2</sup> 504 in <sup>2</sup>	230 l/min 59.8 US GPM
131 - N40F - 212	2-1/2 NPT	131 5.16	128 5.04	212 8.35	86 3.39	2748 cm <sup>2</sup> 426 in <sup>2</sup>	340 l/min 88.4 US GPM
131 - N48F - 272	3 NPT	131 5.16	128 5.04	272 10.71	96 3.78	3626 cm <sup>2</sup> 562 in <sup>2</sup>	400 l/min 104 US GPM

## Suction Strainers ■ Type SUS (Aluminium End Cap)

### Flow Characteristics

#### Nominal Flow Rate vs. Pressure Drop $\Delta P$

The following characteristics are valid for Mineral oils with a mass density of 0,85 kg/dm<sup>3</sup> and a kinematic viscosity of 30 mm<sup>2</sup>/s (cSt) at +38 °C / +100 °F.



### Characteristics

Designed as in-tank suction strainer elements for direct installation into suction lines of pumps; should always be installed below the minimum fluid level of the reservoir

#### Features

- Available with female NPT thread (ANSI B1.20.1)
- Operating temperature range: -20 °C ... +100 °C / -4 °F ... +212 °F

#### Media Compatibility

- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

#### Materials

- Threaded end cap made of Aluminium; see page E34 for version with Polyamide (PA) end cap
- Lower end cap and support tube made of Steel, zinc-plated
- Filter material made of Stainless Steel Mesh (125 µm); alternative micron ratings of 60 µm and 250 µm on request

Consult STAUFF for alternative materials.

#### Options

- Integrated bypass valve with an opening pressure of 0,2 bar (3 PSI) to reduce the risks of high-pressure drops that can be caused by contaminated strainer elements or high-viscosity fluids

Special sizes, designs, materials and configurations are available on request. Consult STAUFF for details.

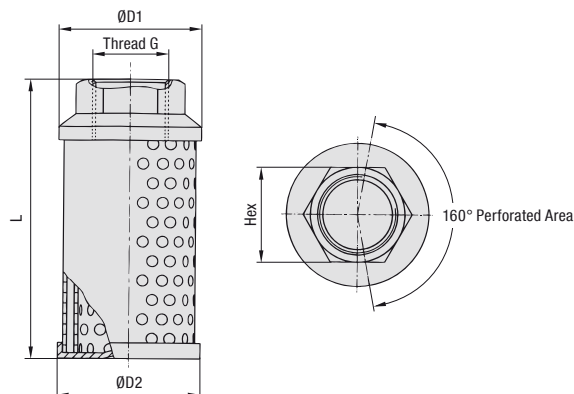
### Dimensions and Technical Data (Female NPT Threaded Version)

Group Size	Thread G	Dimensions (mm/in)				Filter Surface	Max. Flow Rate
		ØD1	ØD2	L	Hex		
050 - N06F - 067	3/8 NPT	50	49	67	26	296 cm <sup>2</sup>	12 l/min
		1.97	1.93	2.64	1.02	46 in <sup>2</sup>	3.1 US GPM
050 - N06F - 090	3/8 NPT	50	49	90	26	430 cm <sup>2</sup>	12 l/min
		1.97	1.93	3.54	1.02	67 in <sup>2</sup>	3.1 US GPM
050 - N08F - 105	1/2 NPT	50	49	105	26	518 cm <sup>2</sup>	15 l/min
		1.97	1.93	4.13	1.02	80 in <sup>2</sup>	3.9 US GPM
068 - N12F - 105	3/4 NPT	68	66	105	34	676 cm <sup>2</sup>	25 l/min
		2.68	2.60	4.13	1.34	105 in <sup>2</sup>	6.5 US GPM
068 - N16F - 140	1 NPT	68	66	140	42	930 cm <sup>2</sup>	50 l/min
		2.68	2.60	5.51	1.65	144 in <sup>2</sup>	13.0 US GPM
088 - N20F - 140	1-1/4 NPT	88	85	140	50	1172 cm <sup>2</sup>	65 l/min
		3.46	3.35	5.51	1.97	182 in <sup>2</sup>	16.9 US GPM
088 - N20F - 195	1-1/4 NPT	88	85	195	60	1709 cm <sup>2</sup>	65 l/min
		3.46	3.35	7.68	2.36	265 in <sup>2</sup>	16.9 US GPM
088 - N24F - 140	1-1/2 NPT	88	85	140	60	1172 cm <sup>2</sup>	140 l/min
		3.46	3.35	5.51	2.36	182 in <sup>2</sup>	36.4 US GPM
088 - N24F - 226	1-1/2 NPT	88	85	226	60	2012 cm <sup>2</sup>	140 l/min
		3.46	3.35	8.90	2.36	312 in <sup>2</sup>	36.4 US GPM
088 - N24F - 260	1-1/2 NPT	88	85	260	60	2344 cm <sup>2</sup>	140 l/min
		3.46	3.35	10.24	2.36	363 in <sup>2</sup>	36.4 US GPM
088 - N32F - 260	2 NPT	88	85	260	70	2344 cm <sup>2</sup>	230 l/min
		3.46	3.35	10.24	2.76	363 in <sup>2</sup>	59.8 US GPM
150 - N40F - 213	2-1/2 NPT	150	145	213	90	2741 cm <sup>2</sup>	340 l/min
		5.91	5.71	8.39	3.54	425 in <sup>2</sup>	88.4 US GPM
150 - N48F - 272	3 NPT	150	145	272	100	3625 cm <sup>2</sup>	400 l/min
		5.91	5.71	10.71	3.94	562 in <sup>2</sup>	104 US GPM

### Order Codes

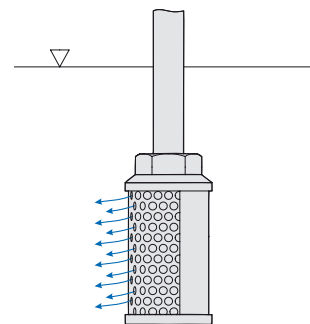
SUS	P	088 - B24F - 140	125	0
1	2	3	4	5
1 Type	Suction Strainer for direct installation into suction lines of pumps			
2 Material of Threaded End Cap	Glass-fibre reinforced Polyamide Aluminium (for female NPT threaded version only)			
3 Group Size	Select 'Group Size' from corresponding column in dimensional tables			
The group size is defined by the diameter ØD1 of the threaded end cap, the thread code (type and size) and the total length of the suction strainer element (e.g. 040-B06F-075).				
4 Filter Material / Micron Rating	Stainless Steel Mesh, 125 µm (standard option) Stainless Steel Mesh, 60 µm Stainless Steel Mesh, 250 µm			
Consult STAUFF for alternative materials / micron ratings.				
5 Bypass Option	Without bypass valve (standard option) Integrated bypass valve with opening pressure of 0.2 bar (3 PSI)			

## Diffuser ▪ Type SRV



### Installation

Installation below the minimum fluid level of the reservoir with the plain area facing the pump inlet



### Characteristics

Designed for direct installation into return lines to reduce fluid aeration, foaming and noise; should always be installed below the minimum fluid level

#### Features

- Available with female BSP thread (ISO 228) or female NPT thread (ANSI B1.20.1)
- Operating temperature range: -20°C ... +100°C / -4°F ... +212 °F
- Max. working pressure: 20 bar / 290 PSI

#### Media Compatibility

- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

#### Construction and Materials

- 2 concentric tubes with inner spaced holes
- Threaded end cap made of Aluminium
- Other components made of Steel, zinc-plated

Special sizes, designs, materials and configurations are available on request. Consult STAUFF for details.



Diffusers SRV are ideally suited for use with STAUFF Return Line Filters of the RF series with threaded connection.

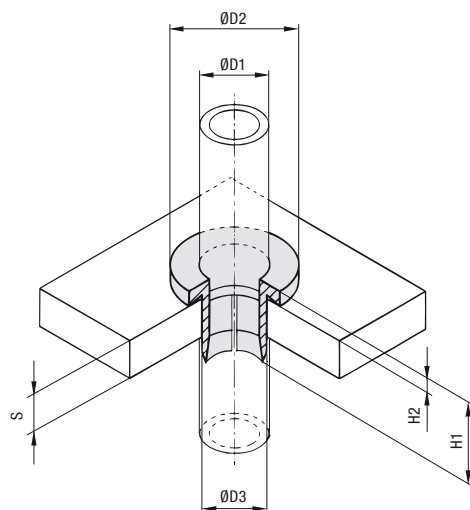
For details, please see Filtration Technology section from page C71 on.

### Dimensions and Order Codes (Female BSP Threaded Version)

Order Code	Thread G	Dimensions (mm/in)				Max. Flow Rate
		ØD1	ØD2	L	Hex	
SRV - 050 - B12	G3/4	64 2.52	62 2.44	109 4.29	36 1.42	50 l/min 13 US GPM
SRV - 114 - B16	G1	64 2.52	62 2.44	139 5.47	46 1.81	114 l/min 30 US GPM
SRV - 200 - B20	G1-1/4	86 3.39	84 3.31	139 5.47	60 2.36	200 l/min 52 US GPM
SRV - 227 - B24	G1-1/2	86 3.39	84 3.31	200 7.87	60 2.36	227 l/min 59 US GPM
SRV - 454 - B32	G2	86 3.39	84 3.31	260 10.24	70 2.76	454 l/min 118 US GPM
SRV - 650 - B40	G2-1/2	150 5.91	148 5.83	212 8.35	90 3.54	650 l/min 169 US GPM
SRV - 950 - B48	G3	150 5.91	148 5.83	272 10.71	100 3.94	950 l/min 247 US GPM

### Dimensions and Order Codes (Female NPT Threaded Version)

Order Code	Thread G	Dimensions (mm/in)				Max. Flow Rate
		ØD1	ØD2	L	Hex	
SRV - 050 - N12	3/4 NPT	64 2.52	62 2.44	109 4.29	36 1.42	50 l/min 13 US GPM
SRV - 114 - N16	1 NPT	64 2.52	62 2.44	139 5.47	46 1.81	114 l/min 30 US GPM
SRV - 200 - N20	1-1/4 NPT	86 3.39	84 3.31	139 5.47	60 2.36	200 l/min 52 US GPM
SRV - 227 - N24	1-1/2 NPT	86 3.39	84 3.31	200 7.87	60 2.36	227 l/min 59 US GPM
SRV - 454 - N32	2 NPT	86 3.39	84 3.31	260 10.24	70 2.76	454 l/min 118 US GPM
SRV - 650 - N40	2-1/2 NPT	150 5.91	148 5.83	212 8.35	90 3.54	650 l/min 169 US GPM
SRV - 950 - N48	3 NPT	150 5.91	148 5.83	272 10.71	100 3.94	950 l/min 247 US GPM



## Return Line Bushing ■ Type SRF



### Dimensions

Outside Diameter ØD1 (mm) (in)	Nominal Bore (in)	Dimensions (mm/in) ØD2 H1 H2	Wall Thickness (mm/in) S	Mounting Bore (mm/in) ØD3
6	1/4	18 22 4 .71 .87 .16	4 ... 12 .16 ... .47	10 .39
8	5/16	20 22 4 .79 .87 .16	4 ... 12 .16 ... .47	12 .47
10	3/8	22 22 4 .87 .87 .16	4 ... 12 .16 ... .47	14 .55
12	1/2	24 22 4 .94 .87 .16	4 ... 12 .16 ... .47	16 .63
14		26 22 4 1.02 .87 .16	4 ... 12 .16 ... .47	18 .71
15		28 22 4 1.10 .87 .16	4 ... 12 .16 ... .47	20 .79
16	5/8	28 22 4 1.10 .87 .16	4 ... 12 .16 ... .47	20 .79
18		30 22 4 1.18 .87 .16	4 ... 12 .16 ... .47	22 .87
20	3/4	32 22 4 1.26 .87 .16	4 ... 12 .16 ... .47	24 .94
22	7/8	34 22 4 1.34 .87 .16	4 ... 12 .16 ... .47	26 1.02
25	1	38 22 4 1.50 .87 .16	4 ... 12 .16 ... .47	30 1.18
28		41 22 4 1.61 .87 .16	4 ... 12 .16 ... .47	33 1.30
30		43 22 4 1.69 .87 .16	4 ... 12 .16 ... .47	34 1.39
35		48 22 4 1.89 .87 .16	4 ... 12 .16 ... .47	40 1.57
38	1-1/2	51 22 4 2.01 .87 .16	4 ... 12 .16 ... .47	43 1.70
42		55 22 4 2.17 .87 .16	4 ... 12 .16 ... .47	47 1.85

### Characteristics

Designed as tubular support, vibration and noise absorber and protection element for rigid return lines entering the hydraulic reservoir

#### Features

- For all commonly available Metric and imperial pipe and tube diameters from 6 ... 42 mm and 1/4 ... 1-1/2 in
- Easy installation
- Chemically resistant against oil and solvents

#### Media Compatibility

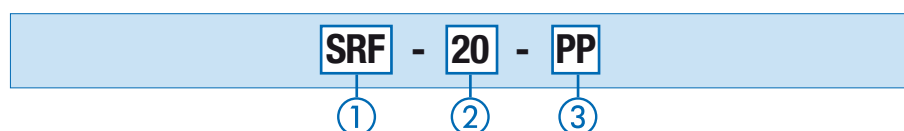
- Suitable for use with Mineral and Petroleum based hydraulic fluids (HL and HLP)

#### Materials

- Bushing made of Polypropylene (PP) or Thermoplastic Elastomer (TPE) with a hardness degree of 87 Shore-A

Consult STAUFF for alternative materials.

### Order Codes



#### ① Type

Return Line Bushing **SRF**

#### ② Pipe / Tube Diameter

Outside diameter pipe / tube ØD1 in mm (according to dimension table) **20**

#### ③ Material

Polypropylene (PP) in natural colour **PP**  
Thermoplastic Elastomer (TPE) in black colour **SA**

Consult STAUFF for alternative materials.

## Pipe, Tube and Hose Cleaning System



### Characteristics

**Simple and low cost solution for the removal of unwanted contaminant from the inside surfaces of pipes, tubes and hoses**

The STAUFF Clean system comprises of a pneumatic launcher and a range of specially designed nozzles. The launcher uses standard industrial compressed air in pressure between 6 and 8 bar / 87 and 116 PSI to propel a foam projectile through the nozzle and into the hose, tube or pipe to be cleaned. This provides a safe and environmentally friendly tool that requires little formal expertise to operate and apply.

The launcher is the part of the system that controls the air supply to propel the projectile from start to finish of the cleaning job.

The nozzles are specially designed to affect an airtight seal on any pipe, tube or hose with or without end fittings. Its main purpose is to compress the foam projectile allowing it to enter the internal diameter of the pipe, tube or hose to be cleaned.

The projectile is the part of the system that does the cleaning: The foam projectile is sized to be approximately 15 % larger than the internal diameter of the pipe, tube or hose to be cleaned. The compression of the projectile against the internal wall cleans the internal surface and expels any loose contaminants from the end of the pipe, tube or hose.

The STAUFF Clean System is available as separate components or in a variety of kit forms comprising various nozzle types, adaptor and launcher, all contained in a heavy duty carrying case.

## Launchers / Launcher Kits



### Characteristics

#### Features

- Pneumatic pistol-grip launcher
- Light-weight and ergonomic design
- Easy to operate and apply
- Connection to air supply with quick release coupling
- Suitable for any type of nozzle
- Delivered separately or in a variety of kit forms including carrying case, adaptor ring and nozzles (if required)

#### Technical Data

- Air compressor requirement: 6 ... 8 bar / 87 ... 116 PSI
- Effective air volume: 250 ... 400 l/min / 66 ... 106 US GPM

### Order Codes

- |                                                   |                  |
|---------------------------------------------------|------------------|
| ▪ Launcher only                                   | <b>SC-LG-1</b>   |
| ▪ Launcher kit without nozzles                    | <b>SC-LK-1</b>   |
| ▪ Launcher kit with set of 10 Universal nozzles   | <b>SC-10UV-K</b> |
| ▪ Launcher kit with set of 18 Metric Tube nozzles | <b>SC-18MT-K</b> |
| ▪ Launcher kit with set of 10 JIC nozzles         | <b>SC-10J-K</b>  |
| ▪ Launcher kit with set of 7 BSP nozzles          | <b>SC-7B-K</b>   |
| ▪ Launcher kit with set of 7 NPT nozzles          | <b>SC-7N-K</b>   |
| ▪ Adaptor ring                                    | <b>SC-UV-AR</b>  |

Consult STAUFF for special connection adaptors and couplings.

## Nozzles / Nozzle Sets



If required, nozzles can also be supplied separately. Consult STAUFF for availability and order codes.

### Universal Nozzle Set (Order Code: SC-10UV-S)

The Universal Nozzle is designed with a tapered seat that will allow it to suit for 90% of applications, including Hose, Tube and Pipe, with or without fittings, in hydraulic and pneumatic pipe systems, condenser tubes, boiler tubes and food lines.

The Universal Nozzle kit fits all and will accommodate applications with JIC, SAE and BSP end fittings.

The set of 10 nozzles consists of the following sizes: 6 mm, 8 mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm, 32 mm, 38 mm and 50 mm.

### Metric Tube Nozzle Set (Order Code: SC-18MT-S)

The Metric Tube Nozzle is intended for use specifically with Metric sized tube and is designed to fit over the outside of the tube or pipe being cleaned.

The inside diameter of the nozzle is reduced to match the inside diameter of the tube. The nozzles are machined from solid bar stock and designed for superior strength.

The set of 18 nozzles consist of the following Metric OD sizes: 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 15 mm, 16 mm, 18 mm, 20 mm, 22 mm, 25 mm, 28 mm, 30 mm, 35 mm, 38 mm, 42 mm, 50 mm and 60 mm.

### JIC Nozzle Set (Order Code: SC-10J-S)

The JIC Nozzle is designed specifically for use with JIC and SAE type fittings. The nozzles are machined to accommodate both male and female configuration, ensuring a perfect airtight seal every time.

The set of 10 nozzles consist of the following sizes: 6 mm, 8 mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm, 32 mm, 38 mm and 50 mm.

### BSP Nozzle Set (Order Code: SC-7B-S)

The BSP Nozzle is designed specifically for BSP configuration fittings. The nozzles are machined to accommodate both male and female configurations, ensuring a perfect airtight seal every time.

The set of 7 nozzles consist of the following sizes: 6 mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm and 32 mm.

### NPT Nozzle Set (Order Code: SC-7N-S)

The NPT Nozzle is designed specifically for NPT configuration fittings. The nozzles are machined to accommodate both male and female configurations, ensuring a perfect airtight seal every time.

The set of 7 nozzles consist of the following sizes: 1/4 in, 3/8 in, 1/2 in, 5/8 in, 3/4 in, 1 in and 1-1/4 in.



## Projectiles



### Standard Series (S)

Standard Series Projectiles are intended for the cleaning of hose, tube or pipe without end fittings or restrictions.

### Coupling Series (C)

Coupling Series Projectiles are intended for the cleaning of hose assemblies (hose with end fittings, adjustments, etc.) or the removal of loose particles from pipe or tube.

### Abrasive Series (A)

Abrasive Series Projectiles are intended for the cleaning of metal pipe and tube to remove light rust and scale. They are recognised by the abrasive pad fixed to one end of the projectile.

### Grinding Series (G)

Grinding Series Projectiles are intended for the cleaning of metal pipe and tube to remove medium and heavy rust and build up from the internal surface. They are coated in Silicon Carbide.

Pipe O.D. (mm)	Pipe/Hose I.D. (mm/in)	Order Codes Standard Series (S)	Order Codes Coupling Series (C)	Order Codes Abrasive Series (A)	Order Codes Grinding Series (G)	Packaging Units (Projectiles / Order Unit)
07	4,8 3/16	SC-S-07	SC-C-07	SC-A-07	SC-G-07	100
09	6,35 1/4	SC-S-09	SC-C-09	SC-A-09	SC-G-09	100
10	6,35 1/4	SC-S-10	SC-C-10	SC-A-10	SC-G-10	100
12	7,9 5/16	SC-S-12	SC-C-12	SC-A-12	SC-G-12	100
14	9,5 3/8	SC-S-14	SC-C-14	SC-A-14	SC-G-14	100
16	11,1 7/16	SC-S-16	SC-C-16	SC-A-16	SC-G-16	100
18	12,7 1/2	SC-S-18	SC-C-18	SC-A-18	SC-G-18	100
20	14,28 9/16	SC-S-20	SC-C-20	SC-A-20	SC-G-20	100
22	15,88 5/8	SC-S-22	SC-C-22	SC-A-22	SC-G-22	100
26	19,05 3/4	SC-S-26	SC-C-26	SC-A-26	SC-G-26	50
28	20,64 13/16	SC-S-28	SC-C-28	SC-A-28	SC-G-28	50
30	22,23 7/8	SC-S-30	SC-C-30	SC-A-30	SC-G-30	40
33	25,4 1	SC-S-33	SC-C-33	SC-A-33	SC-G-33	40
36	26 / 27 1-1/16	SC-S-36	SC-C-36	SC-A-36	SC-G-36	30
38	28,58 1-1/8	SC-S-38	SC-C-38	SC-A-38	SC-G-38	30
40	31,75 1-1/4	SC-S-40	SC-C-40	SC-A-40	SC-G-40	30
45	34,93 1-3/8	SC-S-45	SC-C-45	SC-A-45	SC-G-45	20
50	38,1 1-1/2	SC-S-50	SC-C-50	SC-A-50	SC-G-50	20
55	44,45 1-3/4	SC-S-55	SC-C-55	SC-A-55	SC-G-55	15
60	50,8 2	SC-S-60	SC-C-60	SC-A-60	SC-G-60	10

Please note: For optimum cleaning, it is recommended that projectiles are used once and then discarded.

Safety note: A mesh collection bag should be secured to the pipe, tube or hose exit to avoid possible injury to personnel by the projectile exiting at high velocity.

Always wear protective safety glasses, ear protection and a dust mask when operating this device.

