HARLEX

Tank breathing filters

Type TLF I 1-25 to 8-250; TLF II 1-25 to 6-80; TLF III 1-25 to 7-125

- Size according to **standard:** 1 - 25 to 8-250
- Connection G1 to DN250
- Operating temperature –40 °C to +100 °C *[–40 °F to 212 °F]*

Features

The breathing filters are used in hydraulic systems for breathing and bleeding air from the hydraulic tank. They are mounted directly on the tank.

They distinguish themselves by the following:

- Highly efficient, special filter material
- Filtration of ultra-fine particles and high dirt holding capacity
- Use of Aquasorb filter material minimizes the risk of corrosion in the hydraulic tank
- Standard filling strainer in version TLF III
- Replaceable filter element

Ordering code filter

Size 1-25 to 6-80

01	02	03	04		05		06	07	08		09	10	11	12
TLF				**–**	**S00**	**–**	**0**	**0**	**0**	**–**	**00**		**0**	**0**

Series

01	Tank breathing filters	**TLF**

Connection

02	Internal thread	**I**
	Male thread	**II**
	Male thread and filling strainer	**III**

Size

03	TLF ...	**1-25** **2-32** **3-40** **4-50** **5-65** **6-80**

Filter rating in µm

04	Glass fiber material, not cleanable	Air retention, ASHRAE 52.1, test dust SAE fine: 95% for particles > 0.3 µm	**H10XL**
	Nominal Filter paper, not cleanable	Air retention, ASHRAE 52.1, test dust SAE fine: 95% for particles > 1.24 µm	**P10**

Pressure difference

05	Max. admissible pressure differential of the filter element of 1 bar *[14.5 psi]*	**S00**

Solenoid

06	**Without** solenoid	**0**

Valve

07	**Without** valve	**0**

Maintenance indicator

08	**Without** maintenance indicator	**0**

Connection

09	**Frame size**	**1-25**	**2-32**	**3-40**	**4-50**	**5-65**	**6-80**	**00**
	Connection	G3	G1	G1 1/4	G1 1/2	G2	G2 1/2	

Seal

10	NBR seal	**M**
	FKM seal	**V**

Material

11	Standard	**0**

Supplementary information

12	**Without** supplementary information	**0**

Order example:
TLF III 3-40 P10-S00-000-00M00

Further versions are available on request.

Ordering code filter

Size 7-125 to 8-250

01	02	03	04		05		06	07	08		09	10	11	12
TLF				–	**S00**	–	**0**	**0**	**0**	–	**00**		**0**	**0**

Series

01	Tank breathing filters	**TLF**

Connection

02	DIN flange	**I**
	DIN-flange and filling strainer	**III**

Size

03	TLF I; TLF III	**7-125**
	TLF I	**8-250**

Filter rating in µm

04	Glass fiber material, not cleanable	Air retention, ASHRAE 52.1, test dust SAE fine: 95% for particles > 0.3 µm	**H10XL**
	Nominal Filter paper, not cleanable	Air retention, ASHRAE 52.1, test dust SAE fine: 95% for particles > 1.24 µm	**P10**

Pressure difference

05	Max. admissible pressure differential of the filter element of 1 bar *[14.5 psi]*	**S00**

Solenoid

06	**Without** solenoid	**0**

Valve

07	**Without** valve	**0**

Maintenance indicator

08	**Without** maintenance indicator	**0**

Connection

09	**Frame size**	**7-125**	**8-250**	**00**
	Connection	DIN 2573 DN125	DIN 2573 DN250	

Seal

10	NBR seal	**M**
	FKM seal	**V**

Material

11	Standard	**0**

Supplementary information

12	**Without** supplementary information	**0**

Order example:
TLF I 8-250 P10-S00-000-00M00

Further versions are available on request.

Preferred types

Tank breathing filters TLF I, filter rating **paper 10 µm**

Type
TLF I 1-25 P10-S00-000-00M00
TLF I 2-32 P10-S00-000-00M00
TLF I 3-40 P10-S00-000-00M00
TLF I 4-50 P10-S00-000-00M00
TLF I 5-65 P10-S00-000-00M00
TLF I 6-80 P10-S00-000-00M00
TLF I 7-125 P10-S00-000-00M00
TLF I 8-250 P10-S00-000-00M00

Tank breathing filters TLF II, filter rating **paper 10 µm**

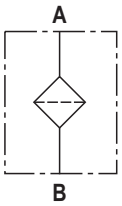
Type
TLF II 1-25 P10-S00-000-00M00
TLF II 2-32 P10-S00-000-00M00
TLF II 3-40 P10-S00-000-00M00
TLF II 4-50 P10-S00-000-00M00
TLF II 5-65 P10-S00-000-00M00
TLF II 6-80 P10-S00-000-00M00

Tank breathing filters TLF III, filter rating **paper 10 µm**

Type
TLF III 1-25 P10-S00-000-00M00
TLF III 2-32 P10-S00-000-00M00
TLF III 3-40 P10-S00-000-00M00
TLF III 4-50 P10-S00-000-00M00
TLF III 5-65 P10-S00-000-00M00
TLF III 6-80 P10-S00-000-00M00
TLF III 7-125 P10-S00-000-00M00

Symbol

Tank breathing filters



Function, section

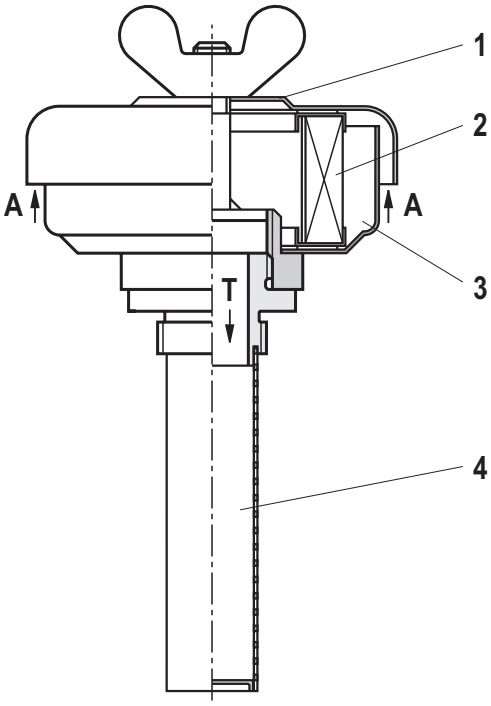
The tank breathing filter guarantees air exchange in the fluid tank. Depending on the machine cycles, air can be pulled into the tank with contamination when a breather filter is not used. A tank breather filter will accomplish both the pressure equalization and air filtration preventing contamination from entering the tank through the air exchange.
It basically consists of a threaded cover (1), a filter element (2) and a bottom housing (3) to accommodate the filter element.
The contaminated air is transported through the filter element into the hydraulic tank (T) via the opening (A).
Only filtered air enters the tank. Escaping air is also directed through the filter element.

Version TLF I 1-25 to 8-250
Sizes 1-25 to 6-80 have an internal thread, sizes 7-125 and 8-250 have a flange.

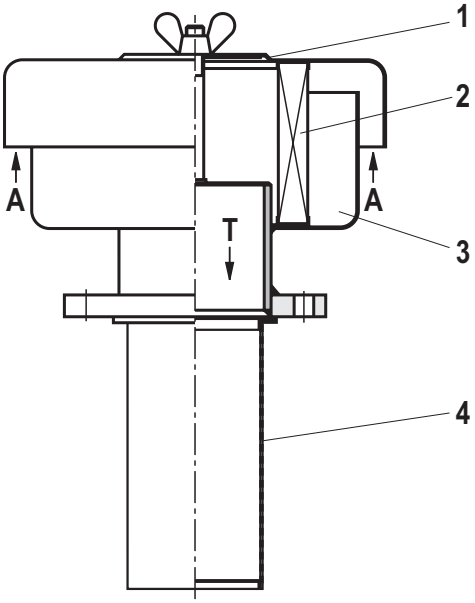
Version TLF II 1-25 to 6-80
All sizes have a male thread.

Design TLF III 1-25 to 7-125
Sizes 1-25 to 6-80 have a male thread, sizes 7-125 and 8-250 have a flange.
Version III also has a 130 µm filling strainer (4).

When air humidity is high or when there are large temperature variations, the exchanged air may condense and promote the oxidation process of the oil. This leads to corrosion and damage to the fluid tank.
In this case, we recommend use of our “AS10” water-absorbent filter material to dry the incoming air.



TLF III



TLF III 7-125

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

General									
Installation position			Tank structure						
Operating temperature		°C *[°F]*	–40 °C ... +100 °C *[–40 °F ... 212 °F]*						
Ambient temperature range		°C *[°F]*	–40 ... +65 *[–40 ... +149]*						
Storage conditions	▶ NBR seal	°C *[°F]*	–40 ... +65 *[–40 ... +149]*; max. relative air humidity of 65%						
	▶ FKM seal	°C *[°F]*	–20 ... +65 *[–4 ... +149]*; max. relative air humidity of 65%						
Weight		Size	**TLF I 1-25**	**TLF I 2-32**	**TLF I 3-40**	**TLF I 4-50**	**TLF I 5-65**	**TLF I 6-80**	**TLF I 7-125**
		kg *[lbs]*	0.5 *[1.1]*	0.6 *[1.3]*	2.0 *[4.4]*	1.6 *[3.5]*	1.5 *[3.3]*	2.4 *[5.3]*	11.4 *[25.1]*
		Size	**TLF I 8-250**	**TLF II 1-25**	**TLF II 2-32**	**TLF II 3-40**	**TLF II 4-50**	**TLF II 5-65**	**TLF II 6-80**
		kg *[lbs]*	51.0 *[112.4]*	0.6 *[1.3]*	0.7 *[1.5]*	2.3 *[5.1]*	1.7 *[3.8]*	1.8 *[4.0]*	2.7 *[6.0]*
		Size	**TLF III 1-25**	**TLF III 2-32**	**TLF III 3-40**	**TLF III 4-50**	**TLF III 5-65**	**TLF III 6-80**	**TLF III 7-125**
		kg *[lbs]*	0.7 *[1.5]*	0.8 *[1.8]*	2.4 *[5.3]*	1.8 *[4.0]*	1.6 *[3.5]*	2.5 *[5.5]*	11.6 *[25.6]*
Material	▶ Filter cover		Polyamide (sizes 1-25 and 2-32), tin-coated steel (NG 3-40 to 8-250)						
	▶ Lower filter part		Tin-coated steel (version I), aluminum / tin-coated steel (versions II and III)						
	▶ Filling strainer		Stainless steel / aluminum						
	▶ Seals		NBR or FKM						

Compatibility with permitted hydraulic fluids

TLF II, TLF III 1-25 to 7-125

Hydraulic fluid	Classification	Suitable sealing materials	Standards
Mineral oil	HLP	NBR	DIN 51524

Other fluids upon request

TLF I

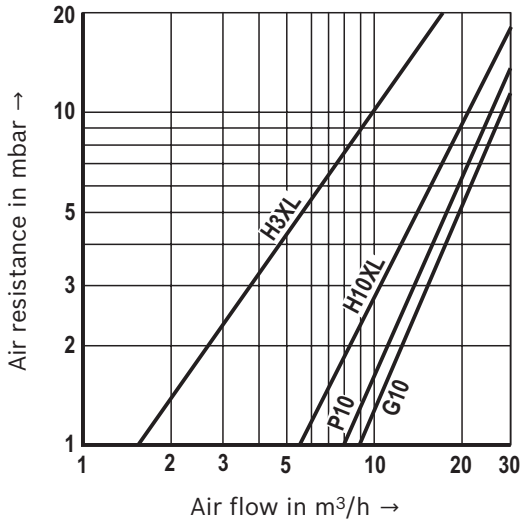
Hydraulic fluid		Classification	Suitable sealing materials	Standards
Mineral oil		HLP	NBR	DIN 51524
Bio-degradable	– insoluble in water	HETG	NBR	VDMA 24568
		HEES	FKM	
	– soluble in water	HEPG	FKM	VDMA 24568
Flame-resistant	– water-free	HFDU, HFDR	FKM	VDMA 24317
	– containing water	HFAS	NBR	DIN 24320
		HFAE	NBR	
		HFC	NBR	VDMA 24317

☞ **Important information on hydraulic fluids:**
- For more information and data on the use of other hydraulic fluids, please refer to data sheet or contact us.
- **Flame-resistant - containing water**: due to possible chemical reactions with materials or surface coatings of machine and system components, the service life with these hydraulic fluids may be less than expected.
  Filter materials made of filter paper (cellulose) must not be used, filter elements with glass fiber material must be used instead.
- **Bio-degradable:** If filter materials made of filter paper are used, the filter life may be shorter than expected due to material incompatibility and swelling.

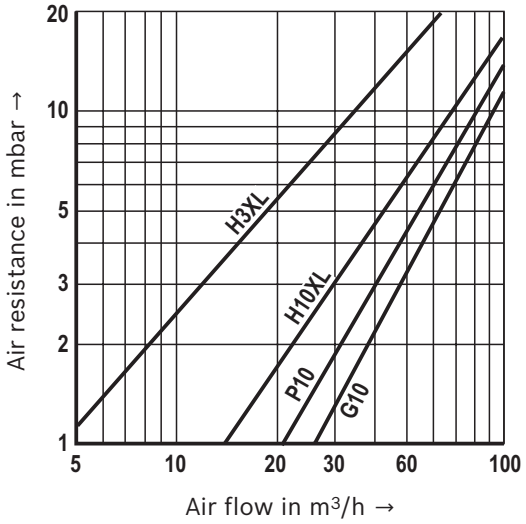
Characteristic curves

(measured at test temperature = 20 °C *[68 °F]*)

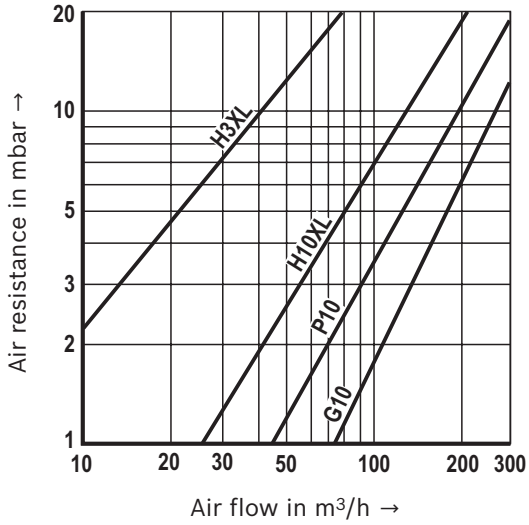
TLF...1-25, TLF...2-32



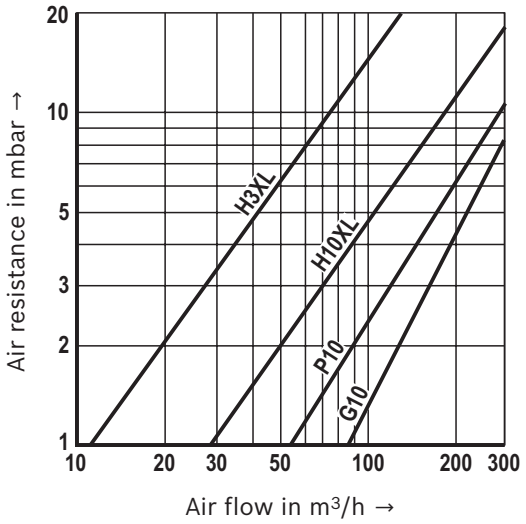
TLF...3-40, TLF...4-50



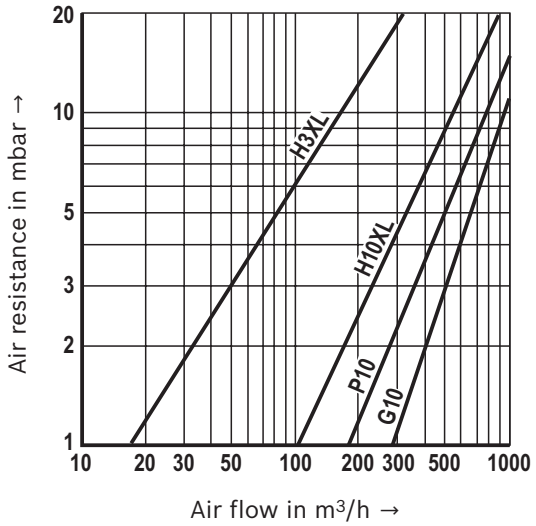
TLF...5-65



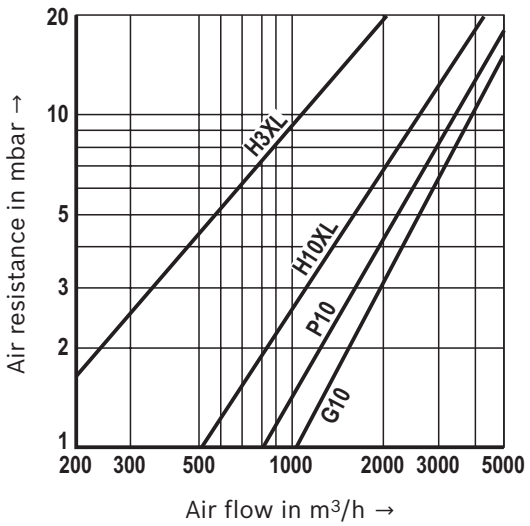
TLF...6-80



TLF...7-125

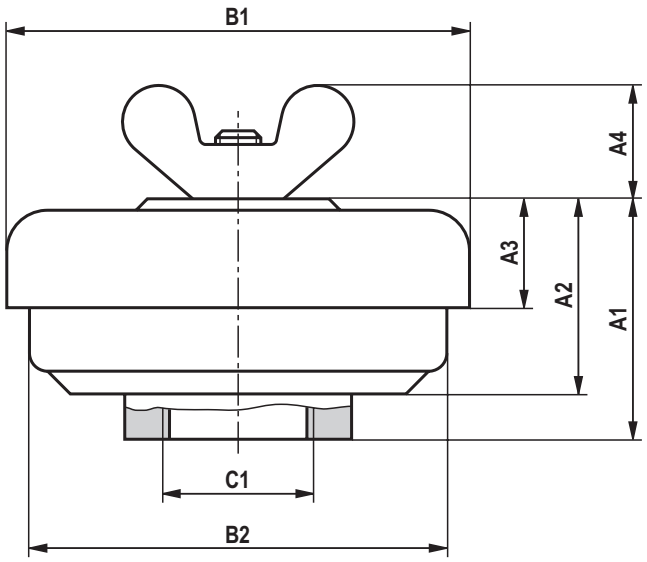


TLF...8-250

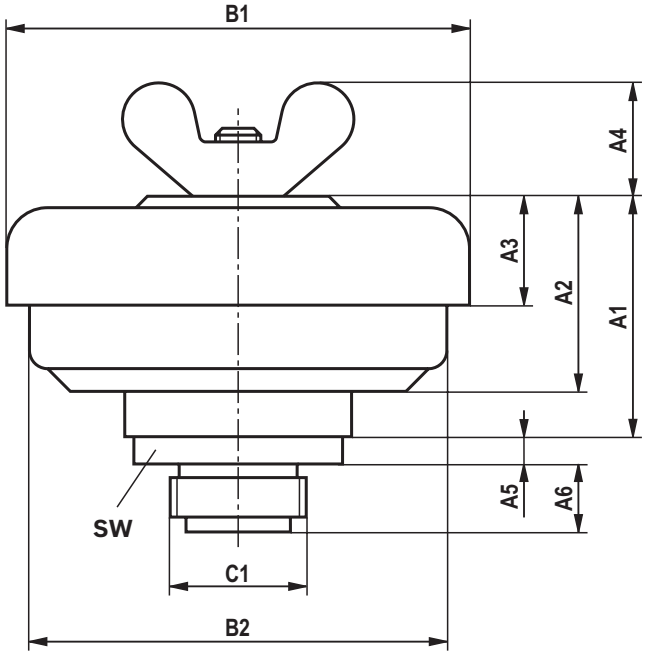


Dimensions: TLF I; II; III size 1-25 to 6-80
(dimensions in mm *[in]*)

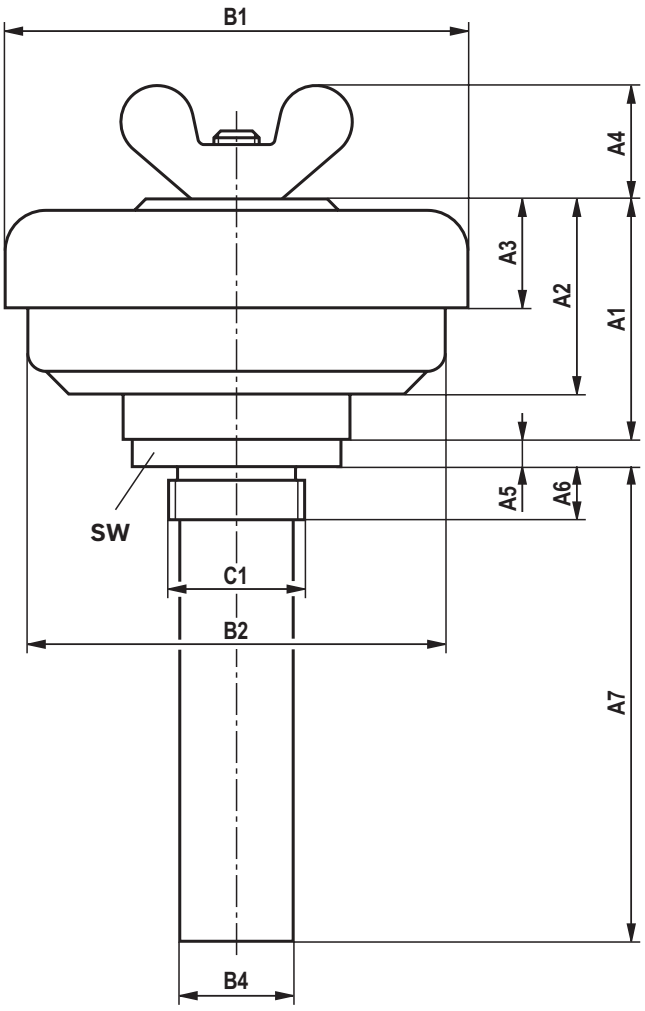
TLF I



TLF II



TLF III



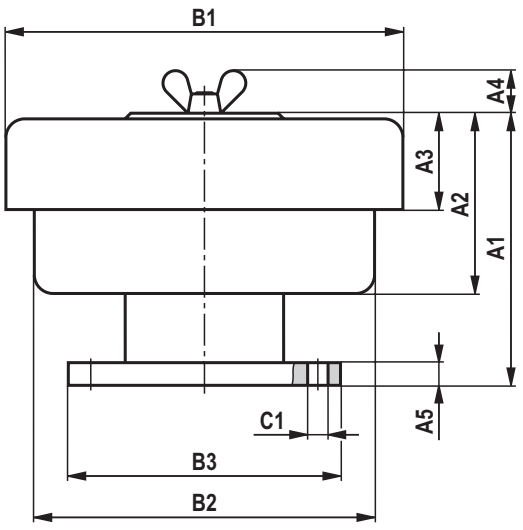
Dimensions: TLF I; II; III size 1-25 to 6-80
(dimensions in mm *[in]*)

Type	A1	A2	A3	A4	A5	A6	A7	Ø B1	Ø B2	Ø B3	Ø B4	C1	SW
TLF I 1-25	53 *[2.09]*	43 *[1.69]*	24 *[0.94]*	25 *[0.98]*	–	–	–	104 *[4.09]*	92 *[3.62]*	–	–	G1	–
TLF I 2-32	63 *[2.48]*											G1 1/4	
TLF I 3-40	90 *[3.54]*	80 *[3.15]*	46 *[1.81]*					177 *[6.97]*	162 *[6.38]*			G1 1/2	
TLF I 4-50												G2	
TLF I 5-65												G2 1/2	
TLF I 6-80	88 *[3.46]*	78 *[3.07]*	45 *[1.77]*					210 *[8.27]*	190 *[7.48]*	240 *[9.45]*		G3	
TLF II 1-25	53 *[2.09]*	43 *[1.69]*	24 *[0.94]*	25 *[0.98]*	6 *[0.24]*	25 *[0.98]*	–	104 *[4.09]*	92 *[3.62]*	–	–	G1	46 *[1.81]*
TLF II 2-32	63 *[2.48]*											G1 1/4	55 *[2.17]*
TLF II 3-40	90 *[3.54]*	80 *[3.15]*	46 *[1.81]*		7 *[0.28]*	26 *[1.02]*		177 *[6.97]*	162 *[6.38]*			G1 1/2	60 *[2.36]*
TLF II 4-50												G2	75 *[2.95]*
TLF II 5-65					8 *[0.31]*	28 *[1.10]*						G 2 1/2	90 *[3.54]*
TLF II 6-80	88 *[3.46]*	78 *[3.07]*	45 *[1.77]*		9 *[0.35]*	30 *[1.18]*		210 *[8.27]*	190 *[7.48]*			G3	105 *[4.13]*
TLF III 1-25	53 *[2.09]*	43 *[1.69]*	24 *[0.94]*	25 *[0.98]*	6 *[0.24]*	17 *[0.67]*	107 *[4.21]*	104 *[4.09]*	92 *[3.62]*	–	28 *[1.10]*	G1	46 *[1.81]*
TLF III 2-32	63 *[2.48]*						131 *[5.16]*				34 *[1.34]*	G1 1/4	55 *[2.17]*
TLF III 3-40	90 *[3.54]*	80 *[3.15]*	46 *[1.81]*		7 *[0.28]*	18 *[0.71]*	155 *[6.10]*	177 *[6.97]*	162 *[6.38]*		42 *[1.65]*	G1 1/2	60 *[2.36]*
TLF III 4-50							185 *[7.28]*				53 *[2.09]*	G2	75 *[2.95]*
TLF III 5-65					8 *[0.31]*	20 *[0.79]*	217 *[8.54]*				67 *[2.64]*	G2 1/2	90 *[3.54]*
TLF III 6-80	88 *[3.46]*	78 *[3.07]*	45 *[1.77]*		9 *[0.35]*	22 *[0.87]*	254 *[10.00]*	210 *[8.27]*	190 *[7.48]*		82 *[3.23]*	G3	105 *[4.13]*

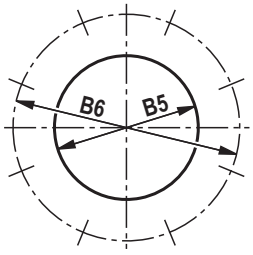
Dimensions: TLF I 7-125, 8-250

(dimensions in mm *[in]*)

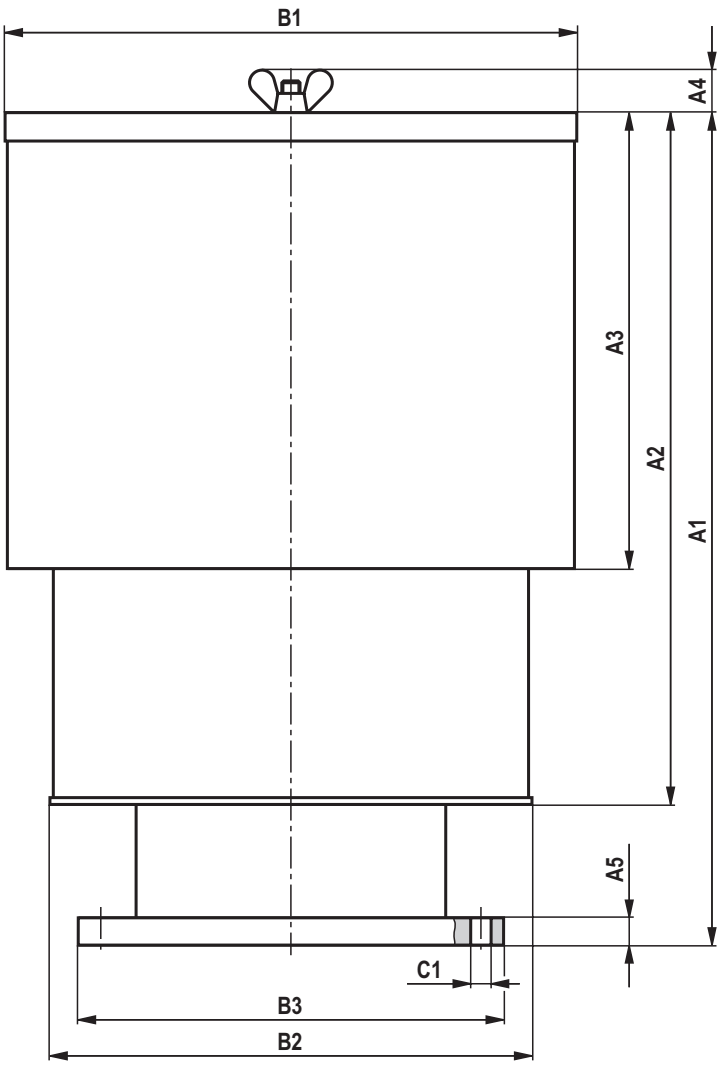
TLF I 7-125



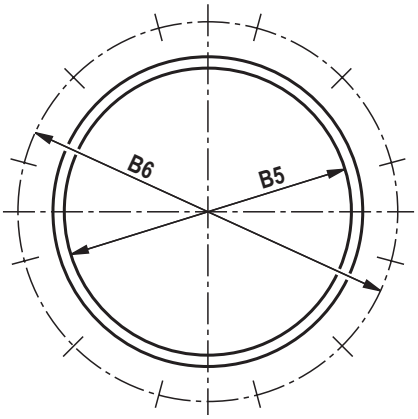
hole pattern



TLF I 8-250



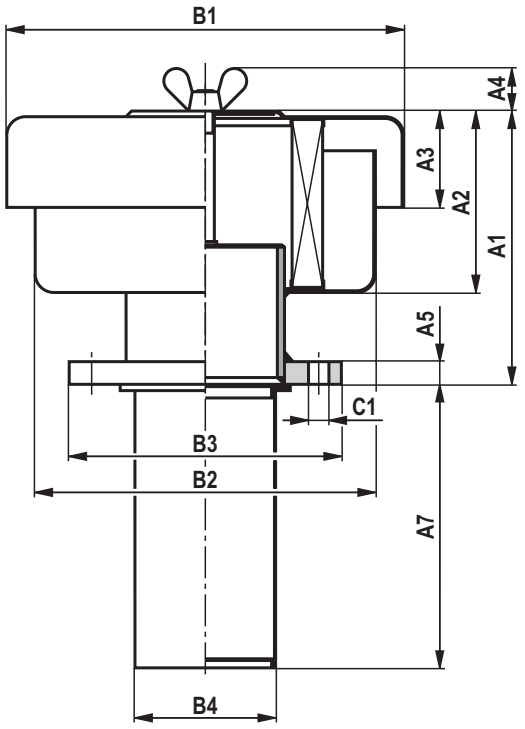
hole pattern



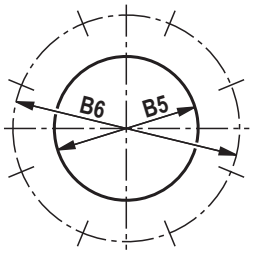
Type	A1	A2	A3	A4	A5	Ø B1	Ø B2	Ø B3	Ø B5	Ø B6	C1
TLF I 7-125	263 *[10.35]*	154 *[6.06]*	85 *[3.35]*	36 *[1.42]*	20 *[0.79]*	350 *[13.78]*	300 *[11.81]*	375 *[14.76]*	130 *[5.12]*	200 *[7.87]*	8x Ø 18 *[8x Ø 0.71]*
TLF I 8-250	734 *[28.90]*	620 *[24.41]*	402 *[15.83]*	37.5 *[1.48]*	24 *[0.94]*	502 *[19.76]*	419 *[16.50]*	–	253 *[9.96]*	335 *[13.19]*	12x Ø 18 *[12x Ø 0.71]*

Dimensions: TLF III 7-125
(dimensions in mm *[in]*)

TLF III 7-125



hole pattern



Type	A1	A2	A3	A4	A5	A7	Ø B1	Ø B2	Ø B3	Ø B4	Ø B5	Ø B6	C1
TFL III 7-125	263 *[10.35]*	154 *[6.06]*	85 *[3.35]*	36 *[1.42]*	20 *[0.79]*	250 *[9.84]*	350 *[13.78]*	300 *[11.81]*	240 *[9.45]*	124 *[4.88]*	130 *[5.12]*	200 *[7.87]*	8x Ø 18 *[8x Ø 0.71]*

Ordering code spare parts

Filter element

01	02	03		04		05		06
7.			**–**	**S00**	**–**	**0**	**–**	

Filter element

01	Design	**7.**

Size

02	TLF ... 1-25; 2-32	**002**
	TLF ... 3-40; 4-50; 5-65	**004**
	TLF ... 6-80	**006**
	TLF I 7-125; TLF III 7-125	**007**
	TLF I 8-250	**008**

Filter rating in µm			**Air retention, ASHRAE 52.1, test dust SAE fine**	
03		Glass fiber material, not cleanable	95% for particles > 0.3 µm	**H10XL**
	Nominal	Filter paper, not cleanable	95% for particles > 1.24 µm	**P10**

Pressure difference

04	Max. admissible pressure differential of the filter element of 1 bar *[14.5 psi]*	**S00**

Bypass valve

05	**Without** bypass valve	**0**

Seal

06	NBR seal	**M**
	FKM seal	**V**

Order example:
7.002 P10-S00-0-M

For detailed information on filter elements please refer to data sheet.

Preferred program replacement elements

Filter element type
7.002 P10-S00-0-M
7.004 P10-S00-0-M
7.006 P10-S00-0-M
7.007 P10-S00-0-M
7.008 P10-S00-0-M

Assembly, commissioning, maintenance

Assembly

- The filter connection must correspond to the tank connection.
- If the size is TLF ... 7 or the TLF I 8 version is used (version with DIN flanges), the hole pattern (DIN 2573) of the tank must be compared to the dimensions from the “Dimensions” chapter prior to installation.
- Install the filter on the tank.
- When installing the filter, the required servicing height of the replacement filter must be taken into account.
- For servicing reasons, we recommend installing the filter in a vertical position.
- All filter components must be tightened manually.

Commissioning

- It is not necessary to commission the filter.

Maintenance

Exchange of the filter element

- No maintenance indicator is provided, but the filter element must be changed at minimum every 6 months.
- Since the ambient conditions are very different depending on the place of installation, we recommend considering more frequent replacement of the filter element according to the specific installation conditions for TLF tank breathing filters.

☞ **Notice:**
Vacuum switch (upon request) for monitoring the suction pressure can be mounted on the tank separately.

⚠ WARNING!
▶ The filter must not be operated without a filter element

☞ **Notes:**

- All work on the filter must be performed by trained specialists.
- Proper function and safety are only guaranteed if original filter elements and spare parts are used.
- Warranty becomes void if the delivered item is changed by the ordering party or third parties or improperly mounted, installed, maintained, repaired, used or exposed to environmental condition that do not comply with the installation conditions.

Tightening torques

Series		TLF I 1-25 -6-80	TLF II 1-25 -6-80	TLF I 7-125 and 8-250; TLF III 7-125
Breathing filter Tightening torque with μ_{total} = 0.14	Nm *[lbf-ft]*	Tighten by hand	Max. 20 *[14.8]*	80 ± 8 *[59 ± 5.9]*
Wing nut		Tighten by hand		

Directives and standardization

Classification according to the Pressure Equipment Directive

Off-line tank breathing filters according are not classified as devices or components for the purpose of the Pressure Equipment Directive 97/23/EC (PED).

Directive 94/9/EC (ATEX)

According to the assessment of the risk of ignition, the tank breathing filters must not be used in explosive areas.