

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

RD 51415

Edition: 2021-04

Replace: -



- ▶ Size according to Hengst standard:
1 - 25 to 8-250
- ▶ Connection G1 to DN250
- ▶ Operating temperature -40 °C to $+100\text{ °C}$ [-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

Contents

Features	1
Ordering code filter	2, 3
Preferred types	4
Symbol	4
Function, section	5
Technical data	6
Compatibility with permitted hydraulic fluids	6
Characteristic curves	7
Dimensions	8 ... 11
Ordering code spare parts	12
Assembly, commissioning, maintenance	13
Tightening torques	14
Directives and standardization	14

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	G1	G1 1/4	G1 1/2	G2	G2 1/2	G3	

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

Material no. R928018862

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

Material no. R928018835

Further versions are available on request.

Preferred types

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

Type	Material no. Filter	Material no. Replacement element
TLF I 1-25 P10-S00-000-00M00	R928018814	R928039681
TLF I 2-32 P10-S00-000-00M00	R928018817	R928039681
TLF I 3-40 P10-S00-000-00M00	R928018820	R928016621
TLF I 4-50 P10-S00-000-00M00	R928040890	R928016621
TLF I 5-65 P10-S00-000-00M00	R928018826	R928016621
TLF I 6-80 P10-S00-000-00M00	R928018829	R928016624
TLF I 7-125 P10-S00-000-00M00	R928018832	R928016627
TLF I 8-250 P10-S00-000-00M00	R928018835	R928016630

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

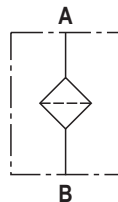
Type	Material no. Filter	Material no. Replacement element
TLF II 1-25 P10-S00-000-00M00	R928018838	R928039681
TLF II 2-32 P10-S00-000-00M00	R928018841	R928039681
TLF II 3-40 P10-S00-000-00M00	R928040622	R928016621
TLF II 4-50 P10-S00-000-00M00	R928018847	R928016621
TLF II 5-65 P10-S00-000-00M00	R928018850	R928016621
TLF II 6-80 P10-S00-000-00M00	R928018853	R928016624

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

Type	Material no. Filter	Material no. Replacement element
TLF III 1-25 P10-S00-000-00M00	R928018856	R928039681
TLF III 2-32 P10-S00-000-00M00	R928018859	R928039681
TLF III 3-40 P10-S00-000-00M00	R928018862	R928016621
TLF III 4-50 P10-S00-000-00M00	R928018865	R928016621
TLF III 5-65 P10-S00-000-00M00	R928018868	R928016621
TLF III 6-80 P10-S00-000-00M00	R928018871	R928016624
TLF III 7-125 P10-S00-000-00M00	R928028258	R928016627

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.

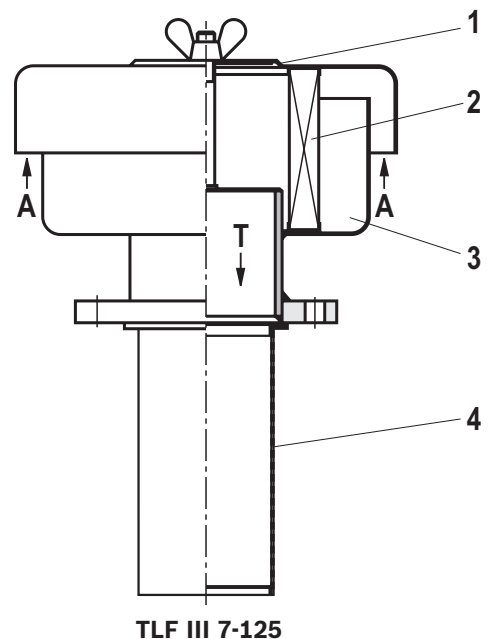
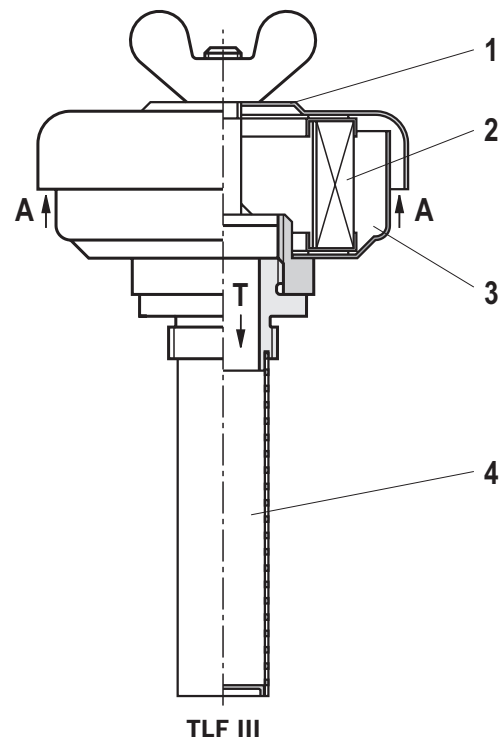
Design TLF III 1-25 to 7-125

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.



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 II 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	VDMA 24568
		HEES	
	- soluble in water	HEPG	VDMA 24568
Flame-resistant	- water-free	HFDU, HFDR	VDMA 24317
	- containing water	HFAS	DIN 24320
		HFAE	
	HFC	NBR	VDMA 24317

**Important information on hydraulic fluids:**

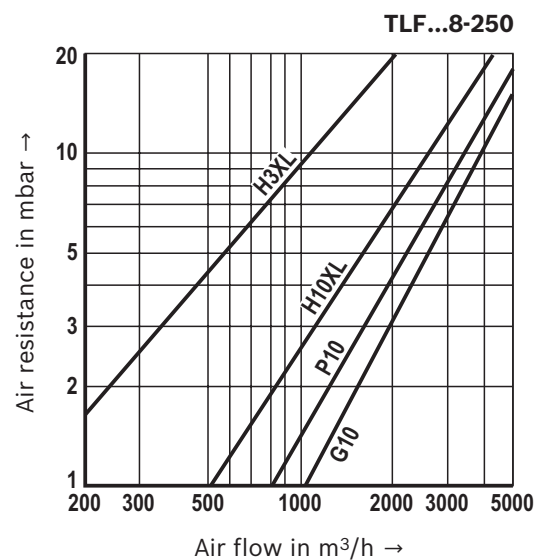
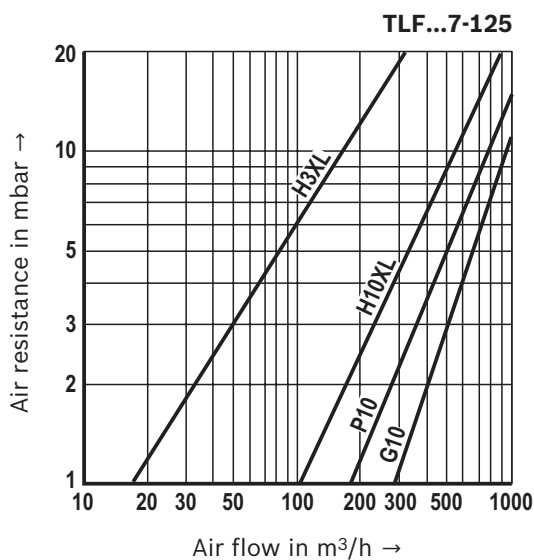
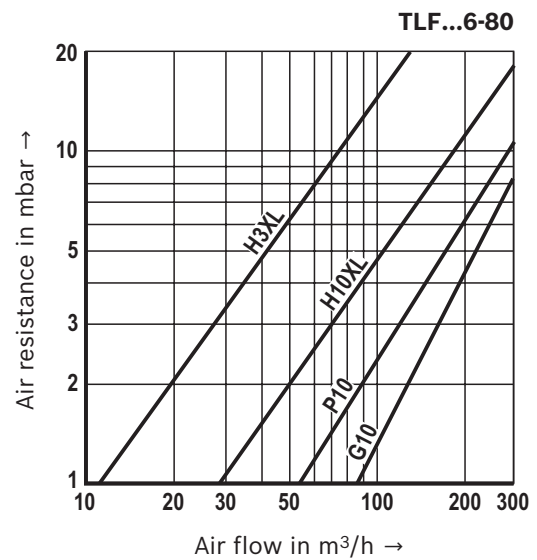
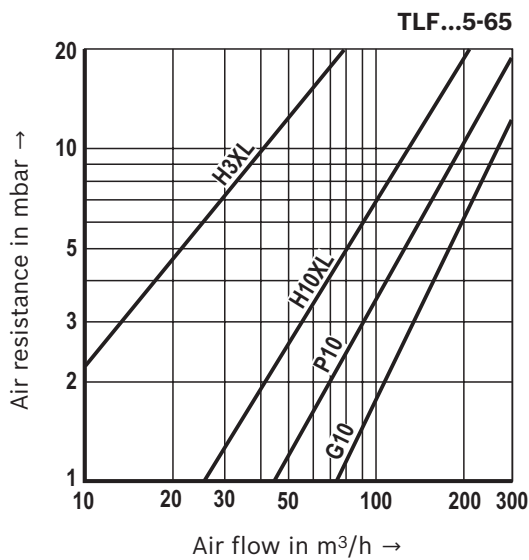
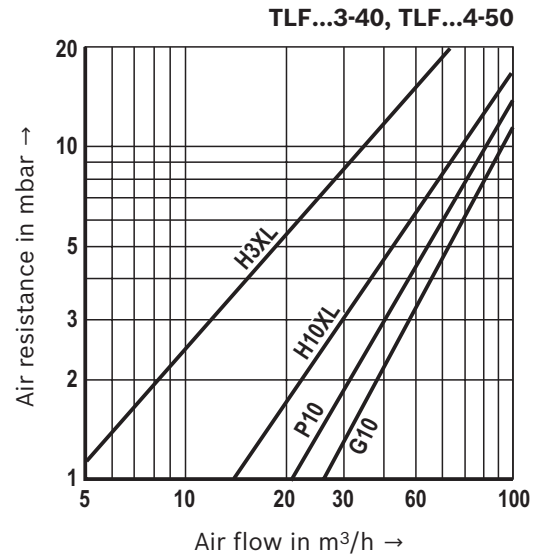
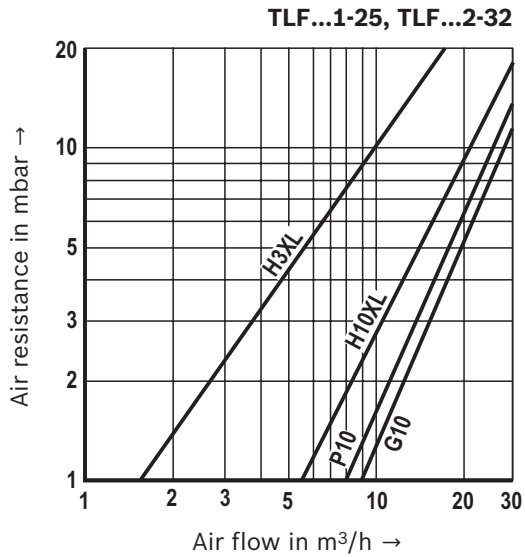
- ▶ For more information and data on the use of other hydraulic fluids, please refer to data sheet 90220 or contact us.
- ▶ Flame-resistant - containing water: due to possible chemical reactions with materials or surface coatings of machine and system components, the service life with these hydraulic 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.

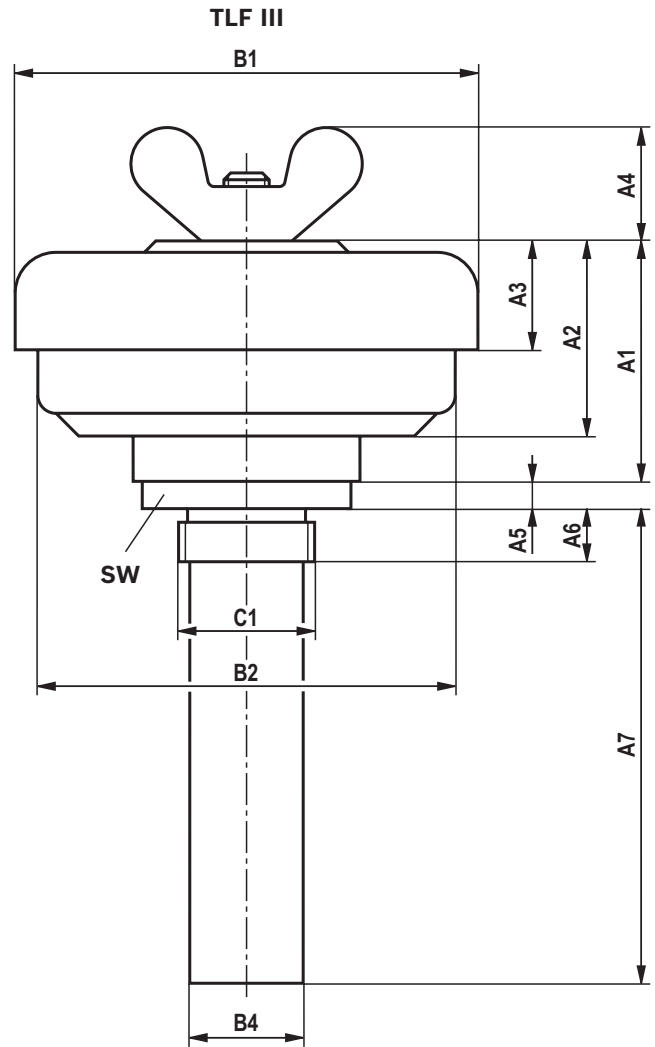
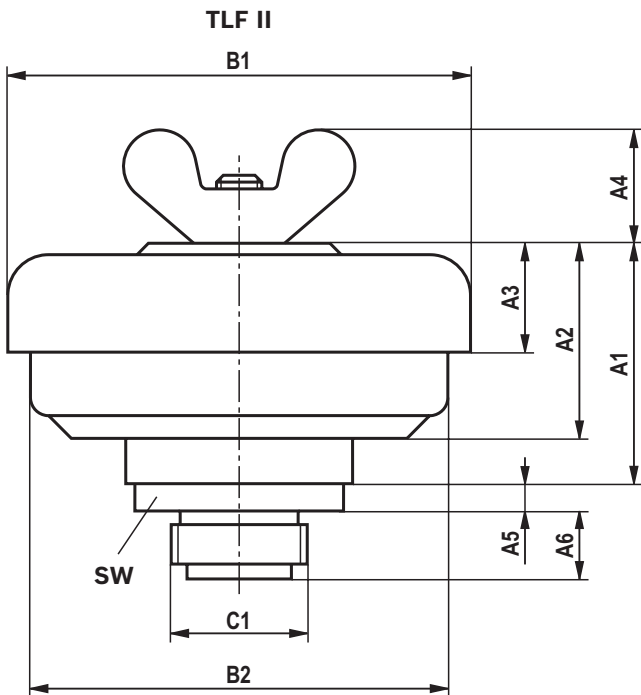
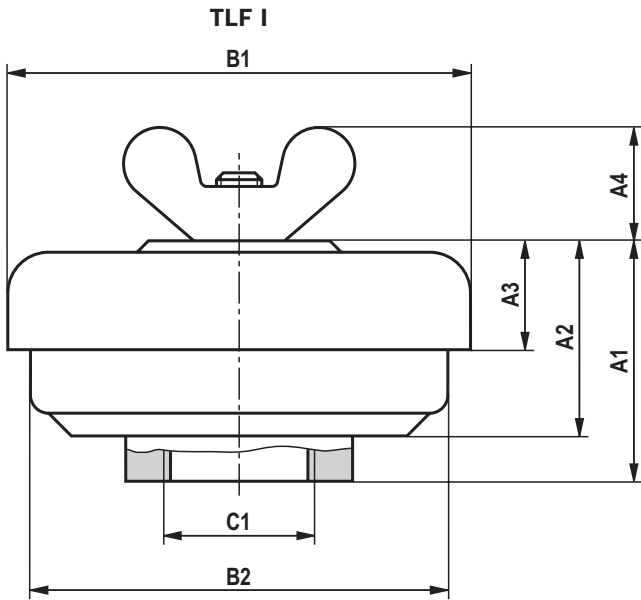
- ▶ Bio-degradable: If filter materials made of filter paper are used, the filter life may be shorter than expected due to material incompatibility and swelling.

Characteristic curves

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



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

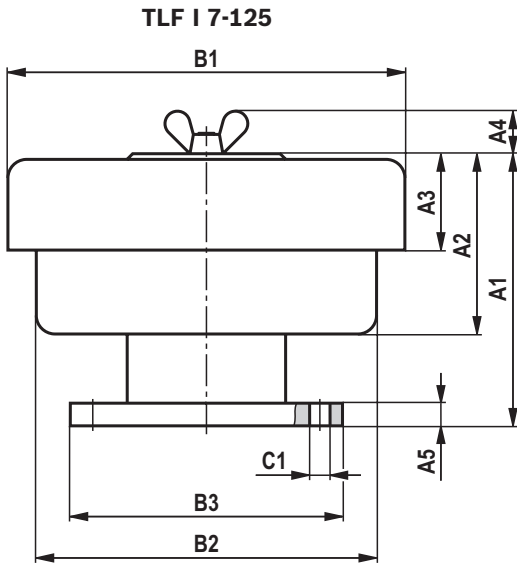


Dimensions: TLF I; II; III size 1-25 to 6-80

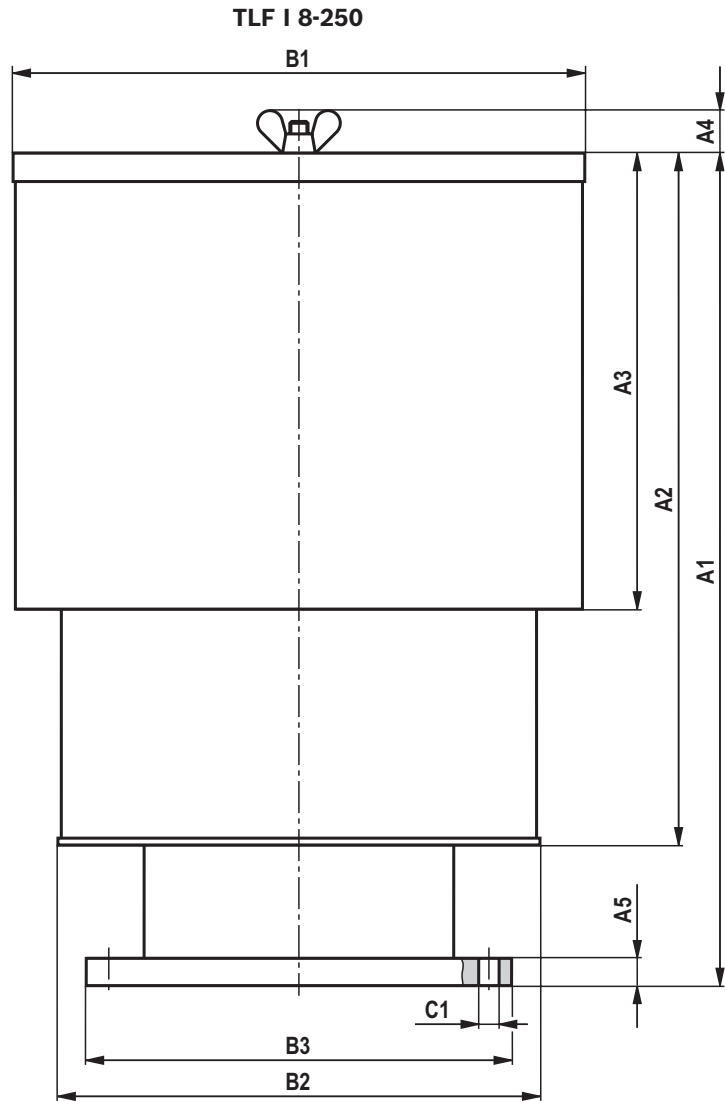
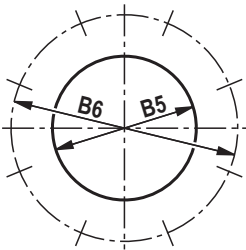
(dimensions in mm [in])

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]					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]			G1 1/2	60 [2.36]				
TLF II 4-50								8 [0.31]	28 [1.10]			G2	75 [2.95]				
TLF II 5-65								9 [0.35]	30 [1.18]			G 2 1/2	90 [3.54]				
TLF II 6-80	88 [3.46]	78 [3.07]	45 [1.77]					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]	-	-	G1	46 [1.81]				
TLF III 2-32	63 [2.48]											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								8 [0.31]	20 [0.79]			185 [7.28]			53 [2.09]	G2	75 [2.95]
TLF III 5-65								88 [3.46]	78 [3.07]			45 [1.77]	9 [0.35]	22 [0.87]	254 [10.00]	210 [8.27]	190 [7.48]
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]

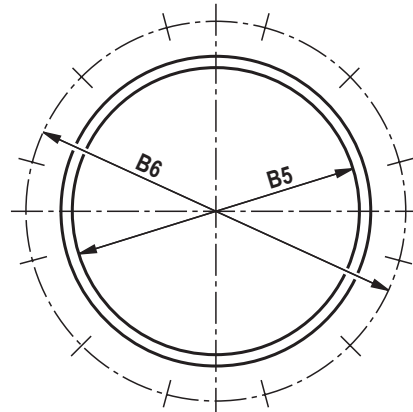
Dimensions: TLF I 7-125, 8-250
(dimensions in mm [in])



hole pattern

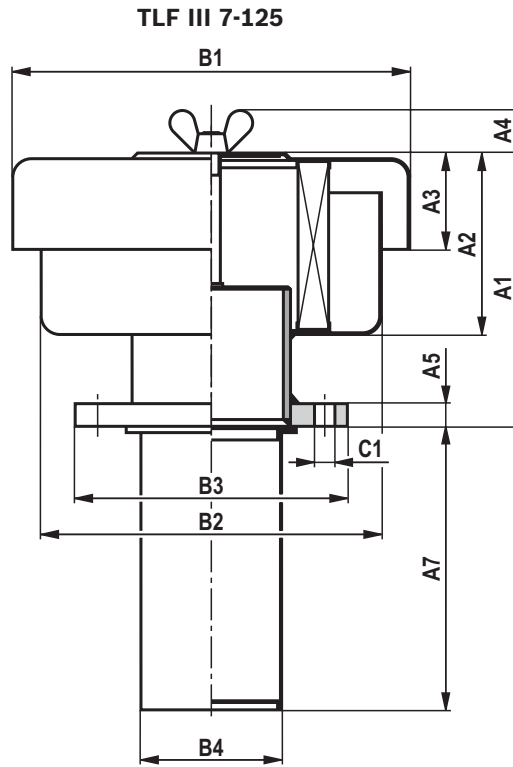


hole pattern

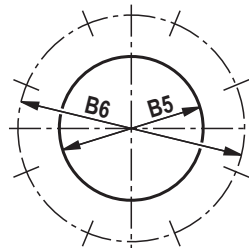


Type	A1	A2	A3	A4	A5	Ø B1	Ø B2	Ø B3	Ø B5	Ø B6	C1
TLF I 7-125	263 [10.35]	154 [6.06]	85 [3.35]	36 [1.42]	20 [0.79]	350 [13.78]	300 [11.81]	375 [14.76]	130 [5.12]	200 [7.87]	8x Ø 18 [8x Ø 0.71]
TLF I 8-250	734 [28.90]	620 [24.41]	402 [15.83]	37.5 [1.48]	24 [0.94]	502 [19.76]	419 [16.50]	-	253 [9.96]	335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

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



hole pattern



Type	A1	A2	A3	A4	A5	A7	Ø B1	Ø B2	Ø B3	Ø B4	Ø B5	Ø B6	C1
TLF 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

Material no.: R928039681

For detailed information on Hengst filter elements please refer to data sheet 51420.

Preferred program replacement elements

Filter element type	Filter material/material no. P10
7.002 P10-S00-0-M	R928039681
7.004 P10-S00-0-M	R928016621
7.006 P10-S00-0-M	R928016624
7.007 P10-S00-0-M	R928016627
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 Hengst 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 III 1-25 -6-80	TLF I 7-125 and 8-250; TLF III 7-125
Breathing filter Tightening torque with $\mu_{\text{total}} = 0.14$	Nm [<i>lbf-ft</i>]	Tighten by hand	Max. 20 [<i>14.8</i>]	80 ± 8 [<i>59 ± 5.9</i>]
Wing nut		Tighten by hand		

Directives and standardization

Product validation

Hengst filters, the filter elements built into them and filter accessories are tested and quality-monitored according to different ISO test standards:

Filtration performance test (multipass test)	ISO 16889:2008-06
Compatibility with hydraulic fluid	ISO 2943:1998-11

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

Classification according to the Pressure Equipment

Directive

Off-line tank breathing filters according to 51415 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.

Hengst Filtration GmbH
Hardtwaldstr. 43
68775 Ketsch, Germany
Phone +49 (0) 62 02 / 6 03-0
hydraulicfilter@hengst.de
www.hengst.com

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Hengst Filtration GmbH. It may not be reproduced or given to third parties without consent of Hengst Filtration GmbH. The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.