

# Spin-on filter according to Hengst standard:

## Type 50 SL 30 to 80D

**RE 51476**

Edition: 2021-04



- ▶ Nominal sizes: 30 to 80D
- ▶ Connection up to G1; SAE 10

### Features

Spin-on filters are used in hydraulic systems for separating solid material from fluids and lubricating oils.

They come with the following features:

- ▶ Filter for inline installation
- ▶ Optimized for mobile hydraulics, space-saving, service-friendly
- ▶ Installation in suction, pressure or return lines possible
- ▶ Special, highly efficient filter materials
- ▶ Filtration of ultra-fine particles and high dirt holding capacity
- ▶ Optional version with maintenance indicator
- ▶ Optional bypass valve integrated in the filter housing
- ▶ Spin-on element 82 with various connections available as spare part

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## Filter ordering code

01	02	03	04	05	06	07	08	09	10	11	12
50 SL			- S00	- 0				-		0	0

## Series

01	Spin-on filter	50 SL
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## Size

02	According to <b>Hengst standard</b> Model <b>with</b> UNF thread	30 45 60 80
	According to <b>Hengst standard</b> Model <b>with</b> UN thread	30D 45D 60D 80D

Filter grade in  $\mu\text{m}$ 

03	<b>Absolute</b> (ISO 16889; $\beta_{x(c)} \geq 200$ )	Glass fiber material, not cleanable	H3XL H6XL H10XL H20XL
	<b>Nominal</b>	Paper, not cleanable	P10 P25

## Pressure differential

04	Max. pressure differential of the filter element of 5 bar [72 psi]	S00
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## Magnet

05	<b>Without</b>	0
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## Bypass valve

06	<b>Without</b>	0
	Cracking pressure 2.5 bar [36.3 psi] – configurable with maintenance indicator M1.5	5
	Cracking pressure 3.5 bar [50.8 psi] – configurable with maintenance indicator M2.5	7

## Maintenance indicator

07	<b>Without</b>	0 <sup>1)</sup>
	Pressure differential indicator, electric	M

## Switching pressure

08	Switching pressure 1.5 bar [21.8 psi]	1.5		
	Switching pressure 2.5 bar [36.3 psi]	2.5		
09	<b>Installation size</b>	<b>50 SL 30; 45 (D)</b>	<b>50 SL 60; 80 (D)</b>	
	<b>Connection</b>			
	ISO 228	G3/4	G1	R0
	SAE J 1926	SAE 10 (7/8-14 UNF-2B)		U0

## Seal

10	NBR	M
	FKM	V

## Housing material

11	Standard material	0
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## Filter ordering code

01	02	03	04	05	06	07	08	09	10	11	12	
50 SL			-	S00	-	0			-		0	0

### Supplementary information

12	Without	0
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<sup>1)</sup> Without bypass valve cracking pressure 2.5 bar [36.3 psi] configurable

### Order example:

**50 SL 60 H10XL-S00-07M2,5-R0M00**

**Material no.: R928054914**

**Further models on request.**

## Preferred types

**50 SL, flow specification for 30 mm<sup>2</sup>/s [143 SUS]**

**Filter grade 10 µm**

Type	Flow in l/min [gpm] and $\Delta p = 0.5 \text{ bar}$ [7.25 psi] <sup>1)</sup>	Material no. Filter	Material no. Spin-on
50 SL 30 H10XL-S00-07M2,5-R0M00	25 [362.60]	R928054912	R928038865
50 SL 45 H10XL-S00-07M2,5-R0M00	40 [580.16]	R928054913	R928019444
50 SL 60 H10XL-S00-07M2,5-R0M00	90 [1305.36]	R928054914	R928019719
50 SL 80 H10XL-S00-07M2,5-R0M00	100 [1450.40]	R928054987	R928054791
50 SL 30D H10XL-S00-07M2,5-R0M00	25 [362.60]	R928054915	R928019173
50 SL 45D H10XL-S00-07M2,5-R0M00	40 [580.16]	R928054916	R928019180
50 SL 60D H10XL-S00-07M2,5-R0M00	90 [1305.36]	R928054917	R928019183
50 SL 80D H10XL-S00-07M2,5-R0M00	100 [1450.40]	R928054918	R928019720

<sup>1)</sup> Measured pressure differential across filter and measuring equipment in accordance with ISO 3968. The measured pressure differential at the maintenance indicator is lower.

## Filter design

Easy selection of the filter size is made possible by the FilterSelect online tool. The filter can be designed using the operating pressure, flow and fluid system parameters. The required filter rating is based on the application, the sensitivity to contamination of the components and the environmental conditions.

The program leads you through the menu on a step-by-step basis.

A documentation of the filter selection can finally be created in the form of a PDF file. This file contains the entered parameters, the designed filter with material number including spare parts, and the pressure loss curves.

Link FilterSelect:

<http://www.filterselect.de/>

Other languages can be selected using the page navigation.

### standard search

**application:** hydraulics for industrial use and applications with lubricating oil

**Product category:** please select

**type:** please select

**pressure range:** please select

**filter material:** please select

**fineness:** please select

**volume flow rate:**  [l/min]

**viscosity:**

kin viscosity 1:  [mm<sup>2</sup>/s]

search via type of medium full-text search medium

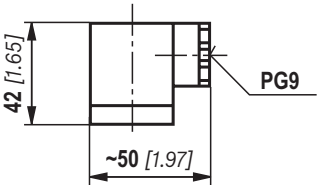
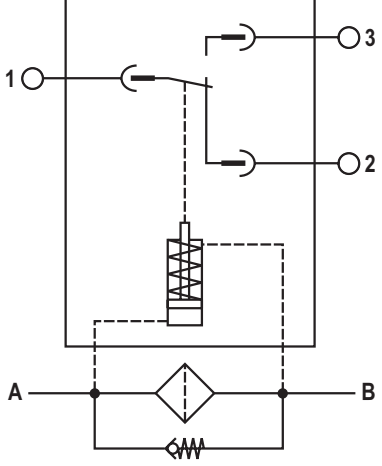
temp 1:  [°C]  [°F] kin viscosity 1:  [mm<sup>2</sup>/s]

dyn. viscosity 1:  [cP] density 1:  [kg/dm<sup>3</sup>] kin viscosity 1:  [mm<sup>2</sup>/s]

**collapse pressure resistance according to ISO 2941:**

## Symbols

(Dimensions in mm [inch])

Spare part	Drawing	Ordering code in the type key	Symbol
Optical/electrical with connector		M	

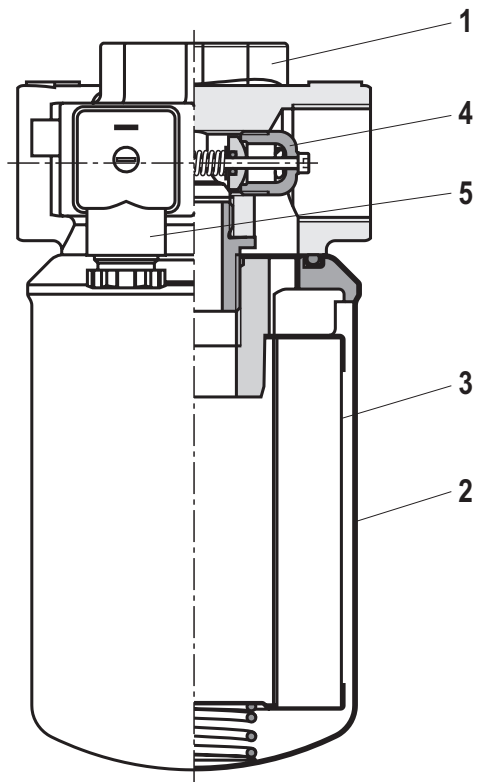
## Function, cross-section

The spin-on filter is suited for direct installation in pressure or return lines. It is installed upstream from components to be protected.

It consists primarily of a filter head (1), a threaded spin-on element (2) with built-in filter element (3). Optionally, a maintenance indicator (5) and a bypass valve (4) can also be configured for the filter.

The maintenance indicator housing is integrated in the filter head.

The fluid passes through the inlet to the spin-on element, where it is cleaned. Any dirt particles filtered out collect in the filter element. The filtered fluid then enters the hydraulic circuit through the outlet.




50 SL 30 ... 80D

**Technical data**

(Please consult us for applications outside these parameters)

General					
Installation position		Vertical			
Ambient temperature range		°C [°F]	-40 ... +65 [-40... +149]		
Storage conditions	▶ NBR seal	°C [°F]	-40 ... +65 [-40... +149]; max. relative air humidity: 65%		
	▶ FKM seal		-20 ... +65 [-4... +149]; max. relative air humidity: 65%		
Mass	Size		<b>30(D)</b>	<b>45(D)</b>	<b>60(D)</b>
	kg [lbs]		1.1 [2.4]	1.5 [3.3]	1.8 [4.0]
Flow	Size		<b>30(D)</b>	<b>45(D)</b>	<b>60(D)</b>
	l [US gal]		0.6 [0.16]	0.9 [0.24]	1.3 [0.34]
Material	▶ Filter head	Aluminum			
	▶ Spin-on element	Steel / aluminum			
	▶ Maintenance indicator	Aluminum / brass / plastic			

Hydraulic			
Max. operating pressure	▶ Filter head	bar [psi]	50 [725]
	▶ Spin-on element	bar [psi]	40 [580] <sup>1)</sup>
Hydraulic fluid temperature range		°C [°F]	-10 ... +100 [+14... +212]
 <b>Note about cold start:</b>		-40... -10 [-40...+14] During a cold start up, expect a sudden pressure increase and a flow of at least 50% in each case. A bypass valve is essential	
Min. medium conductivity		pS/m	300

Maintenance indicator		Pressure differential indicator, electric	
Letter order option		M	
Model		W...GW0200...	
Contact load, DC voltage	A <sub>max.</sub>	0.25	
Voltage range	V <sub>max.</sub>	175 AC/DC	
Max. switching power	VA	5	
Switching type	▶ 100 % signal	Changeover	
IP rating as per EN 60529		IP	65
Ambient temperature range		°C [°F]	-10 ... +85 [+14... +185]
Operating temperature		°C [°F]	-10 ... +100 [+14... +212]
For direct voltage above 24 V, spark extinguishing is to be provided for protecting the switching contacts.			
Mass	kg [lbs]	0.3 [0.66]	
Material	▶ Housing	Aluminum / Plastic/ Brass	
	▶ Seals	NBR or FKM	

1) Validation according to ISO 10771

**Technical data**

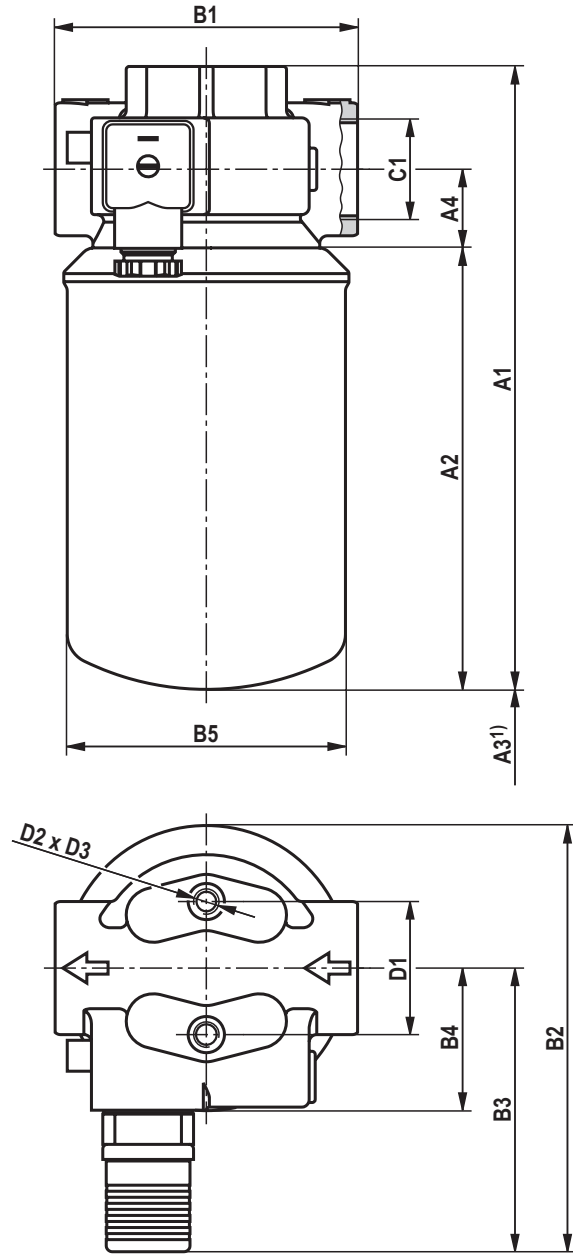
(Please consult us for applications outside these parameters)

Filter element			
Glass fiber material H...XL		Inorganic fiber-based single-use element	
		Filtration ratio as per ISO 16889 up to $\Delta p = 5 \text{ bar [72.5 psi]}$	Best oil cleanliness as per ISO 4406 [SAE-AS 4059]
Particle separation	H20XL	$\beta_{20}(c) \geq 200$	19/16/12 – 22/17/14
	H10XL	$\beta_{10}(c) \geq 200$	17/14/10 – 21/16/13
	H6XL	$\beta_6(c) \geq 200$	15/12/10 – 19/14/11
	H3XL	$\beta_5(c) \geq 200$	13/10/8 – 17/13/10
Pressure differential	► S00	bar [psi]	5 [72.5]

**Compatibility with permitted hydraulic fluids**

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

**Dimensions: 50 SL 30 ... 80D**  
(Dimensions in mm [inch])



Filter type	A1	A2	A3 <sup>1)</sup>	A4	B1	B2	B3	B4	ØB5	Connections		D1	D2	D3	Spin-on filter connection
										R0	U0				
50 SL 30	173	113	20 [0.79]	26 [1.02]	100 [3.94]	140 [5.51]	94 [3.70]	47 [1.85]	92±0.3 [3.62±0.01]	G3/4	SAE 10 (7/8-14 UNF)	44 [1.73]	M8	12 [0.47]	UNF 1"-12
50 SL 30D	[6.81]	[4.45]													UNF 1 3/8"-12
50 SL 45	209	149													UNF 1"-12
50 SL 45D	[8.23]	[5.87]								UNF 1 3/8"-12					
50 SL 60	275	215								UNF 1"-12					
50 SL 60D	[10.83]	[8.46]								UNF 1 3/8"-12					
50 SL 80D	300 [11.81]	240 [9.45]								G1					UNF 1 3/8"-12

<sup>1)</sup> Servicing height for spin-on element



## Spare parts ordering codes

### Spin-on element

01	02	03	04	05	06
82			- S00	- 0	-

### Spin-on element

01	Design	82
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### Size

02	According to <b>Hengst standard</b> Model <b>with</b> UNF thread	30 45 60 80
	According to <b>Hengst standard</b> Model <b>with</b> UN thread	30D 45D 60D 80D

### Filter grade in µm

03	<b>Absolute</b> (ISO 16889; $\beta_x(c) \geq 200$ )	Glass fiber material, not cleanable	H3XL H6XL H10XL H20XL
	<b>Nominal</b>	Paper, not cleanable	P10 P25

### Pressure differential

04	Max. pressure differential of the filter element of 5 bar [72 psi]	S00
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### Bypass valve

05	<b>Without</b> bypass valve	0
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### Seal

06	NBR	M
	FKM	V

### Order example:

82.45 H10XL-S00-0-M

Material no.: R928019444

### Preferred program spin-on filters

Spin-on filter type	Filter material/material no.	
	H10XL	P10
82.30...S00-0-M	R928038865	R928046556
82.45...S00-0-M	R928019444	R928025436
82.60...S00-0-M	R928019719	R928046571
82.80...S00-0-M	R928054791	R928054790

#### Note:

The maintenance indicator is not offered as a spare part as it is integrated in the filter head.

## Assembly, commissioning, maintenance

### Installation

- ▶ The max. operating pressure of the system must not exceed the max. operating pressure of the filter (see type plate).
- ▶ During assembly of the filter the flow direction (direction arrows) and the required servicing height of the spin-on element (see chapter "Dimensions") are to be considered.
- ▶ Element replacement is made easiest when the spin-on element is oriented downward with the installation position.
- ▶ Remove the plastic plugs from the filter inlet and outlet.
- ▶ The connection of the electrical maintenance indicator is via a mating connector that is attached to the maintenance indicator contacts and held by a screw.

### Commissioning

- ▶ Commission the system.

#### **Note:**

The filter has no bleeding mechanism.

### Maintenance

- ▶ If the switching operation is triggered in the electrical maintenance indicator, this means the spin-on element is contaminated and will require replacing. Spin-on elements must be replaced after 6 months at latest or a max. of 1,000 operating hours.
- ▶ The material number of the correct spin-on element is on the name plate of the complete filter. Verify that it matches the material number on the spin-on filter.
- ▶ Decommission the system.
- ▶ Release operating pressure on the system side.

#### **Note:**

The filter has no bleeding mechanism.

- ▶ Unscrew the spin-on element.
- ▶ Screw on the new spin-on element hand-tight.
- ▶ **Please note:**  
If necessary, carefully tighten it by 30° in the depressurized state (use a band wrench where necessary)
- ▶ Commission the system.
- ▶ If filter loosens between the spin-one element and filter head after commissioning, the spin-on element will need to be tightened up.

#### **Application notes:**

- ▶ Under dynamic loads, the spin-on element housing could be elastically deformed.
- ▶ Spin-on elements are not rigid.

### **WARNING!**

- ▶ Only install or remove when system is not pressurized.
- ▶ Tank is pressurized!
- ▶ Only remove spin-on element when it is not pressurized.
- ▶ Do not replace maintenance indicator when filter is pressurized.
- ▶ Failure to observe flow of direction during assembly will cause filter element to be damaged beyond repair. Particles will enter the system and damage downstream components.

#### **Important:**

- ▶ Only trained specialists may work on the filter.
- ▶ Proper function and safety are only guaranteed if original Hengst spin-on 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 (dimensions in mm [inch])

Series 50 SL...		30(D)	45(D)	60(D)	80(D)
Tightening screws with $\mu_{\text{total}} = 0.14$	Nm [lb-ft]	max. 30 [22]			
mounting screw		M8			
Minimum screw-in depth mounting	mm [inch]	8 [0.3]			

## 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:

Pressure pulse test	ISO 10771:2015-08
Filtration performance test (multipass test)	ISO 16889:2008-06
$\Delta p$ (pressure loss) characteristic curves	ISO 3968:2001-12
Compatibility with hydraulic fluid	ISO 2943:1998-11
Collapse pressure test	ISO 2941:2009-04

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

The spin-on filters for hydraulic applications according to 51476 are pressure holding equipment according to article 1, section 2.1.4 of the Pressure Equipment Directive 97/23/EC (PED). However, under Article 1 Section 3.6 PED, hydraulic filters are exempt from the PED if they are not classified higher than Category I (Guideline 1/19).

The fluids from the chapter “Compatibility with approved pressure fluids” were considered for the classification. The intended use is only permitted with fluids in group 2 and within the specified operating limits (see “Technical data”).

These filters do not receive a CE mark.

### Use in explosive areas according to Directive 94/9/EC (ATEX)

The spin-on filters without maintenance indicator according to 51476 are no equipment or components in the sense of directive 94/9/EC and are not provided with a CE mark. It has been proven with the ignition risk analysis that these spin-on filters do not have own ignition sources acc. to DIN EN 13463-1:2009.

The spin-on filters without maintenance indicators can be used for the following explosive areas:

	Zone suitability	
Gas	1	2
Dust	21	22

Complete filter without maintenance indicator			
Use /assignment		Gas 2G	Dust 2D
Assignment <sup>1)</sup>		Ex II 2G c IIC TX	Ex II 2D c IIC TX
Medium conductivity	pS/m	300	
Dust accumulation	min.	–	0.5 mm
	max.		

<sup>1)</sup> TX = max. temperature range: see chapter “Technical data”

## Directives and standardization

### WARNING!

- ▶ Explosion hazard due to high temperature! Temperature is based on temperature of medium in hydraulic circuit and cannot exceed this value. Take steps to make sure max. admissible ignition temperature is not exceeded in explosive area.
- ▶ When using the spin-on filters according to 51476 in explosive areas, sufficient equipotential bonding has to be ensured. Grounding the filter with mounting screws is recommended. It has to be noted in this connection that paintings and oxidic protective layers are not electrically conductive.
- ▶ During spin-on filter replacement, the packaging material is to be removed from the replacement element outside the potentially explosive area

### Important:

- ▶ Maintenance may only be performed by specialists on instruction of the owner in accordance with Directive 1999/92/EC Annex II Section 1.1.
- ▶ Functional and safety warranty is only applicable when using genuine Hengst spare parts

## Environmental safety and recycling

- ▶ The used spin-on element should be disposed of in accordance with the respective country-specific legal regulations of environmental protection.
- ▶ After completion of the filter life, the components of the filter, in accordance with the respective country-specific legal regulations of environmental protection, should be recycled.

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