

# Filter elements

## Type 7., according to Hengst standard

**RE 51523**

Edition: 2022-10

Replaces: 2021-04



- Nominal size 0002 ... 0008
- Differential pressure 1 bar
- Filter rating 1 µm
- For tank breathing filters TLF

### Features

- Filter media made of glass fiber material (optionally water absorbing), filter paper, wire mesh, non-woven material and non-woven metal fiber for various fields of application. Information on filter material configuration is available in RE 51548
- Cleanable wire mesh filter media
- Attainable oil cleanliness class of up to ISO 10/6/4 (ISO 4406)
- High dirt holding capacity and filtration performance due to multi-layer glass fiber technology and simultaneous low initial differential pressure
- Extended product range for non-mineral oil based fluids
- Filter elements with high differential pressure stability

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**Ordering code****Filter element for tank breathing filters TLF**

01	02	03	04	05	06
7.			-	0	-

**Design**

01 Filter element (for the permissible temperature ranges, refer to chapter "Technical data")	7.
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**Size**

02 according to Hengst standard	0002 0004 0006 0007 0008
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**Filter rating in  $\mu\text{m}$** 

03 Nominal	Stainless steel wire mesh G, cleanable	G10 G60 G100
	Paper P, not reusable, not cleanable Only configurable with a max. differential pressure of 60 bar [870 psi] Not available in combination with stainless steel material	P10 P25
Absolute (ISO 16889)	Glass fiber material H...XL, not reusable, not cleanable Only available in combination with stainless steel material	H3XL H10XL H20XL

**Differential pressure**

04	max. permissible differential pressure of the filter element	1 bar [14.5 psi] - Material: standard	S00
		1 bar [14.5 psi] - Material: stainless steel	S0V

**Bypass valve**

05	without	o
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**Seal**

06	NBR	M
	FKM	V

**Further filter ratings and seal materials are available on request.**

**More detailed information on Hengst filter material configurations is available in RE 51548.**

## Product description

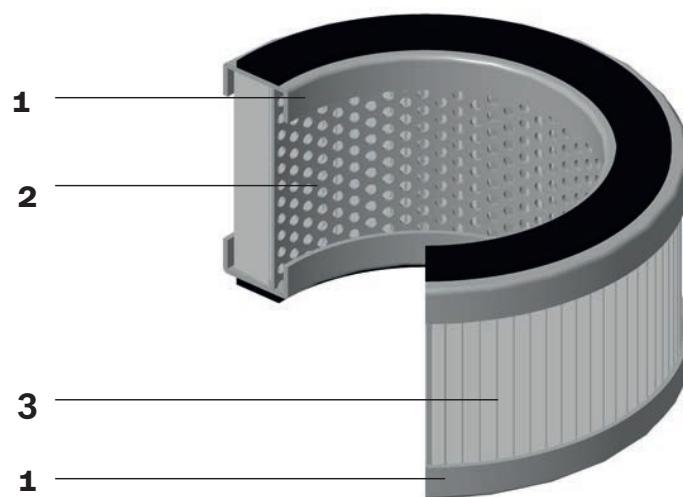
The filter element is the main building block of industrial filters. It is in the filter element where the actual filtration takes place. The main filter variables, such as retention capacity, dirt holding capacity and pressure loss are determined by the filter elements used and the filter media used therein. Hengst filter elements are used for the filtration of various hydraulic fluids, lubrication fluids, other industrial fluids and gases.

Filter elements consist of a combination of star-like pleated filter media (3) which are laid around a perforated support tube (2).

In longitudinal direction, the filter element is sealed using a 2-component adhesive and support tube and filter element mat are connected with both end disks (1).

Sealing between the filter element and the filter housing is effected by means of one or two seals. There is generally flow from the outside to the inside.

If HFA/HFC and synthetic oils are used, a filter element made of stainless steel has to be used.



## Technical data

(For applications outside these values, please consult us!)

general			
Storage conditions	– Seal NBR	°C [°F]	40 ... +65 [-40 ... +149]; max. relative air humidity 65%
	– Seal FKM	°C [°F]	20 ... +65 [-4 ... +149]; max. relative air humidity 65%
Material	– Cover of the filter element		Galvanized steel or stainless steel
	– Base of the filter element		Galvanized steel or stainless steel
	– Support tube of the filter element		Galvanized steel or stainless steel
	– Seals		NBR or FKM

## hydraulic

Filtration direction	from the outside to the inside
Maximum differential pressure	bar [psi] 1 [14.5]

## Permissible operating temperature range, depending on material combination

		Operating temperature range °C [°F]	
Filter material configuration	Code letter	Sealing material NBR "M"	Sealing material (FKM) "V"
Aquasorb	AS...	-0 ... +100 [32 ... +212]	-0 ... +100 [32 ... +212]
Stainless steel wire mesh	G...	-40 ... +100 [-40 ... +212]	-20 ... +100 [-4 ... +212]
Glass fiber material H...XL	H...XL	-40 ... +100 [-40 ... +212]	-20 ... +100 [-4 ... +212]
Glass fiber material PWR...	PWR...	-40 ... +100 [-40 ... +212]	-20 ... +100 [-4 ... +212]
Non-woven metal fiber	M...	-40 ... +100 [-40 ... +212]	-20 ... +100 [-4 ... +212]
Filter paper	P...	-40 ... +100 [-40 ... +212]	-20 ... +100 [-4 ... +212]
Non-woven material	VS...	-40 ... +80 [-40 ... +176]	-20 ... +80 [-4 ... +176]

## Compatibility with permitted hydraulic fluids

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

### Important information on hydraulic fluids!

► For further 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 P may not be used, filter elements with glass fiber filter material are to 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.

## Assembly, commissioning, maintenance

### When must the filter element be replaced or cleaned?

As soon as the back pressure or the differential pressure setting of the maintenance indicator has been reached, the red pushbutton of the mechanical/visual maintenance indicator pops out. If an electronic switching element is present, an electric signal will be generated. In this case, the filter element must be replaced or cleaned. It is not advisable to operate a filter housing without a filter element maintenance indicator, however, in the event that the filter housing is not fitted with an indicator, we recommend changing or cleaning the filter elements at least every 6 months.

### Filter element replacement

- For single filters: Switch off the system and discharge the filter on the pressure side.
- For duplex switch filters: See relevant maintenance instructions according to the data sheet.

Detailed instructions with regard to the filter element replacement can be found in the data sheet of the relevant filter series.

## Environment and recycling

- The used filter element has to be disposed of according to the country-specific legal regulations for environmental protection.

### ⚠ WARNING!

- Oil tanks and their vent filters may have higher temperatures. Operating personnel must wear suitable personal protective equipment and comply with the operating regulations.
- Filter elements must be unpacked outside ATEX zones

### ☞ Notice:

- Information on dirt holding capacity characteristic values exclusively refers to the measurement results obtained under laboratory conditions according to ISO 16889. These may deviate from measurements obtained in real applications due to various influencing factors.

It is expected that a higher comparable dirt holding capacity, according to ISO 16889 at a comparable filtration ratio  $\beta_{x(c)}$ , can be achieved under real operating conditions.

- Warranty expires in the event that the delivered item is changed by the ordering party or third parties or improperly mounted, installed, maintained, repaired, used or exposed to environmental conditions that do not comply with the installation conditions.
- Technical characteristic values such as retention rate and dirt holding capacity have been determined at a temperature of 40 °C (+/- 5 °C).

## Guidelines and standards

### Product validation

Hengst filter elements are tested and quality-controlled according to various ISO test standards:

Filtration performance test (multipass test)	ISO 16889:2008-06
$\Delta p$ (pressure loss) characteristic curves	ISO 3968:2001-12
Hydraulic fluid compatibility	ISO 2943:1998-11
Collapse pressure test	ISO 2941:2009-04
Fluid power, hydraulic filters, part 2, evaluation criteria and requirements	DIN 24550-2:2006-09

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

### Use in potentially explosive areas according to Directive 2014/34/EU (ATEX):

The filter elements are not equipment or components in the sense of Directive 2014/34/EU and are not provided with the CE mark.

It has been proven with the ignition risk analysis that these filter elements do not have own ignition sources according to DIN EN ISO 80079-36.

The filter elements can be used for the following potentially explosive atmospheres:

	Zone suitability	
Gas	1	2
Dust	21	22

#### **WARNING!**

- ▶ For use of the filter elements in potentially explosive areas, ATEX suitability of the complete filter assembly is an imperative requirement.
- ▶ Conductivity of the medium: at least 300 pS/m.
- ▶ During filter element replacement, the packaging material is to be removed from the replacement element outside the potentially explosive atmosphere.
- Maintenance to be conducted only by specialists, as per the instruction by the machine end-user according to DIRECTIVE 1999/92/EC appendix II, section 1.1

## Intended use

The filter elements serve as components as per the EC Machinery Directive 2006/42/EC in hydraulic machinery for the separation of dirt particles.

The filter elements are to be used under the following boundary conditions and limits:

- Only in hydraulic systems with fluids of group 2, according to Pressure Equipment Directive 2014/68/EU
- Only according to the application and environmental conditions in the chapter "Technical data"
- Only in compliance with the specified performance limits in the section "Technical data"; extended operational durability/load cycles on request
- Only with hydraulic fluids and the intended seals according to the section "Compatibility with hydraulic fluids"
- Use in potentially explosive atmospheres according to the chapter "Guidelines and standards"
- Compliance with application and environmental conditions according to the technical data
- Compliance with the specified performance limits
- The filter elements are intended exclusively for professional use and not for private use.

## Improper use

Any use deviating from the intended use is deemed as improper and thus not permissible.

Improper use of the filter elements includes:

- Incorrect storage
- Incorrect transport
- Lack of cleanliness during storage and assembly
- Incorrect installation
- Use of inappropriate/non-permissible hydraulic fluids
- Exceedance of the specified maximum pressures and load cycles
- Operation outside the approved temperature range
- Installation and operation in impermissible device group and category

Hengst Filtration GmbH does not assume any liability for damage caused by improper use. The user assumes all risks involved with improper use.