Filter elements

Type 1., according to DIN 24550 and Hengst standard

RE 51515
Edition: 2021-04
Replaces: -

- Size 0040 ... 2500
- Pressure differential 30 or 60 bar
- Filter rating from 1 µm

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 configurations in RE 51548
- Cleanable wire mesh filter media
- Attainable oil cleanliness up to ISO 10/6/4 (ISO 4406)
- High dirt holding capacity and filtration performance due to multi-layer glass fiber technology and simultaneously a low initial pressure differential
- Extended product range for non-mineral oil based fluids
- Filter elements with high pressure differential stability

Contents

Ordering code
Filter element

01	02	03		04	05		06		07
1.			**–**			**–**	**0**	**–**	

Design

01	Filter element (for the admissible temperature ranges, refer to the "Technical data")	**1.**

Size

02	according to DIN 24550	**0040** **0063** **0100** **0160** **0250** **0400** **0630** **1000**
	according to Hengst standard	**0045** **0055** **0120** **0130** **0150** **0200** **0270** **2000** **2500**

Filter rating in µm

03	Nominal	Stainless steel wire mesh G, cleanable	**G10** **G25** **G40** **G60** **G100** **G200** **G500** **G800**
		Paper P, non-reusable, not cleanable Only configurable with a max. pressure differential of 60 bar *[870 psi]* Not available in combination with stainless steel material	**P10** **P25**
		Non-woven material, not cleanable	**VS25**
	Absolute (ISO 16889)	Glass fiber material, H...XL, non-reusable, not cleanable Only available in combination with stainless steel material	**H3XL** **H6XL** **H10XL** **H20XL**
		Glass fiber material PWR... generation 5, non-reusable, not cleanable Not available in combination with stainless steel material	**PWR1** **PWR3** **PWR6** **PWR10** **PWR20**
		Non-woven metal fiber M, non-reusable, not cleanable	**M5** **M10**
		Water absorbing AS, non-reusable, not cleanable Only configurable with a max. pressure differential of 30 bar *[435 psi]* Only suitable for use in HLP and HEES liquids	**AS3** **AS6** **AS10** **AS20**

Ordering code
Filter element

01	02	03		04	05		06		07
1.			**–**			**–**	**0**	**–**	

Pressure differential

04	max. admissible pressure differential of the filter element	30 bar *[435 psi]*	**A**
		60 bar *[870 psi]*, only configurable with selected frame sizes	**D**

Element design

05	Adhesive	Standard adhesive	**0**
		Special adhesive, improved temperature and media resistance Only configurable in connection with FKM seal	**H**
	Material	Standard material	**0**
		Stainless steel Only configurable in connection with special adhesive and FKM seal	**V**

Bypass valve

06	without	**0**

Seal

07	NBR	**M**
	FKM	**V**

Further filter ratings and seal materials are available upon request.
More detailed information on Hengst filter material configurations is available in RE 51548.

Filter design

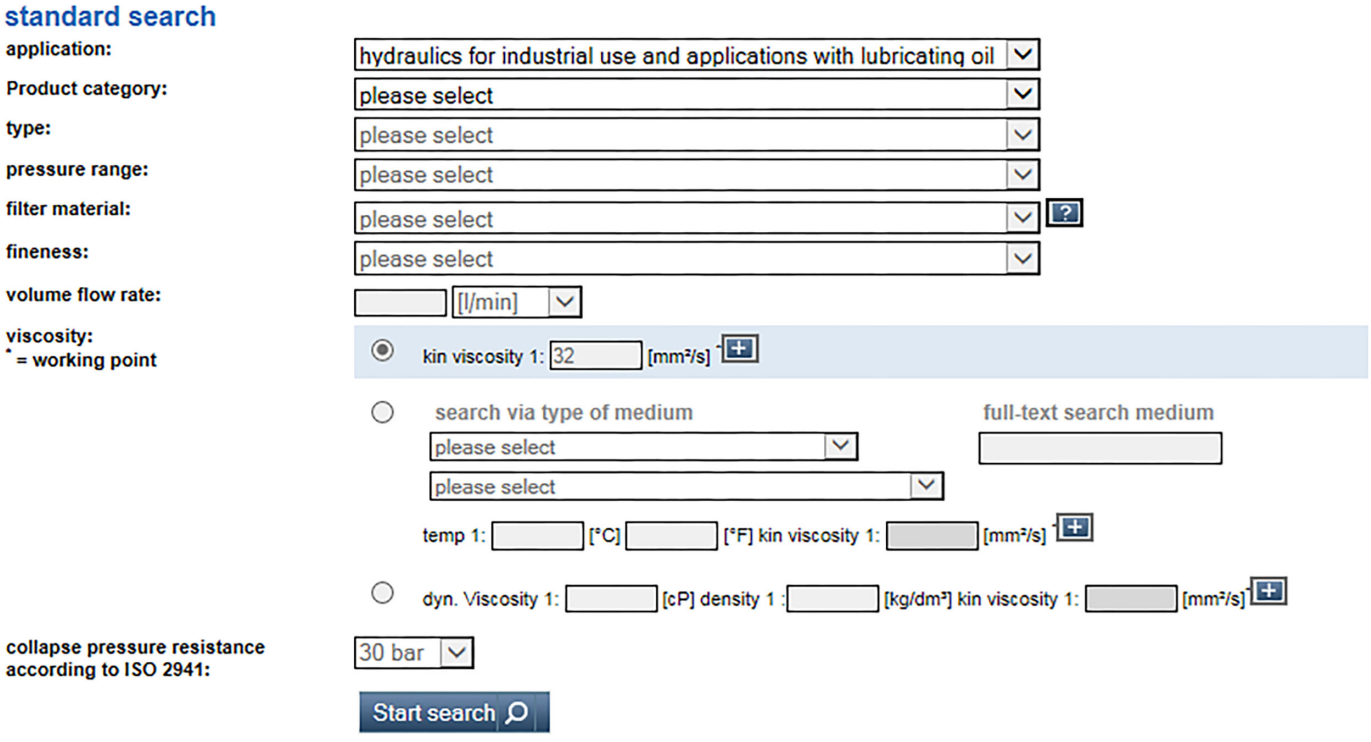
Easy selection of the filter size is made possible by the FilterSelect online tool. The filter can be designed using the operating pressure, flow and fluid system parameters. The required filter rating is based on the application, the sensitivity to contamination of the components and the environmental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

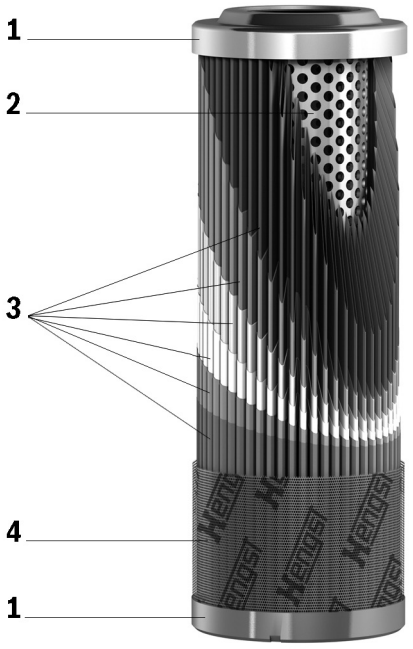
Link FilterSelect:
http://www.filterselect.de

Other languages can be selected using the page navigation.



Product description

The filter element is the central component of industrial filters. The actual filtration process takes part in the filter element. The main filter variables, such as retention capacity, dirt holding capacity and pressure loss are determined by the filter elements and the filter media used in them. Hengst filter elements are used for the filtration of hydraulic fluids in the hydraulic system as well as for the filtration of lubricants, 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).

With special versions, a perforated protective cage (4) is additionally laid around the filter element mat.

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).

The protective cage (4) allows for an even fluid flow around the filter element mat and, at the same time, provides mechanical protection against external damage.

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.

All 1st filter elements of the Hengst preferred program are made of zinc-free components thus preventing the formation of zinc-soap, in particular if water-containing fluids (HFA/HFC) and synthetic oils are used.

The use of zinc-free filter elements prevents early "element blocking", thus considerably increasing the life cycle of an element.

Therefore, Hengst filter elements can be used universally for typical hydraulic fluids and lubricants.

Technical data
(For applications outside these parameters, 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		Polyamide, tin-coated steel or tin-coated aluminum
	– Base of the filter element		Polyamide, tin-coated steel or tin-coated aluminum
	– Support tube of the filter element		Tin-coated steel
	– Seals		NBR or FKM

hydraulic		
Filtration direction		from the outside to the inside
Maximum pressure differential	bar *[psi]*	30 *[435]* or 60 *[870]*

Admissible operating temperature range, depending on material combination

		Operating temperature range °C *[°F]*		
Filter material configuration	**Code letter**	**Sealing material NBR "V"** adhesive (standard) "0" material (standard) "0"	**Sealing material FKM "M"** adhesive (standard) "0" material (standard) "0"	**High-temperature "HV-V"** adhesive (standard) "H" material (standard) "V"
Aquasorb	AS...	–0 ... +100 *[32 ... +212]*	–0 ... +100 *[32 ... +212]*	*not configurable*
Stainless steel wire mesh	G...	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*	–20 ... +170 *[–4 ... +338]*
Glass fiber material, H...XL	H...XL	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*	–20 ... +160 *[–4 ... +320]*
Glass fiber material PWR...	PWR...	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*	*not configurable*
Non-woven metal fiber	M...	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*	–20 ... +170 *[–4 ... +338]*
Filter paper	P...	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*	*not configurable*
Non-woven material	VS...	–40 ... +80 *[–40 ... +176]*	–20 ... +80 *[–4 ... +176]*	–20 ... +80 *[–4 ... +176]*

For temperatures up to 170 °C, the high-temperature configuration "...HV-V" is required.
That means:
- Filter element adhesive (special) "H"
- Filter element material (stainless steel) "V"
- Sealing material (FKM) "V"

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	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 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 of and swelling.

Assembly, commissioning, maintenance

When has the filter element to be replaced or cleaned?
As soon as the back pressure or the pressure differential set at the maintenance indicator is reached, the red pushbutton of the mechanical/visual maintenance indicator pops out. If an electronic switching element is provided, an electric signal will moreover sound. In this case, the filter element must be replaced or cleaned.
If the filter does not have a maintenance indicator, we recommend exchanging or cleaning filter elements after a maximum of 6 months.

Filter element exchange

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

Detailed instructions with regard to the filter element exchange can be found on 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!

- Filters are containers under pressure. Before opening the filter housing, check whether the system pressure in the filter has been decreased to ambient pressure. Only then may the filter housing be opened for maintenance.
- Filter elements must be unpacked outside ATEX zones

☞ **Notice:**

- Due to the high viscosity, the pre-set signal value of the visual maintenance indicator may be exceeded during cold start.
  After the operating temperature has been reached, the mechanical/visual indicator can be acknowledged manually. The electrical signal will go out after the operating temperature has been reached.
- If the maintenance indicator is disregarded, the disproportionally increasing pressure differential may damage the filter element (collapse).
- Information on dirt holding capacity characteristic values exclusively refer to the measurement results obtained under laboratory conditions according to ISO 16889. These may deviate from these measurements in real applications due to numerous influencing factors.
  According to the state of the art, products offering a higher dirt holding capacity according to ISO 16889 at a comparable filtration ratio $ß_{x(c)}$ are expected to achieve it also under real conditions.
- 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 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.

Directives and standardization

Product validation

Hengst filter elements are tested and quality-monitored according to different ISO test standards:

Filtration performance test (multipass test)	ISO 16889:2008-06
Δp (pressure loss) characteristic curves	ISO 3968:2001-12
Compatibility with hydraulic fluid	ISO 2943:1998-11
Collapse pressure test	ISO 2941:2009-04
Fluid Technology; Hydraulic Filter – Part 2; Assessment Criteria and Requirements	DIN 24550-2:2006-09

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.

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 acc. to DIN EN 80079-36.

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

	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 is an imperative requirement.
- Conductivity of the medium: at least 300 pS/m
- During filter element exchange, the packaging material is to be removed from the replacement element outside the potentially explosive area.
- Maintenance only by specialists, instruction by the machine end-user acc. to DIRECTIVE 1999/92/EC appendix II, section 1.1

Intended use

The filter elements serve as components in the sense of the EC Machinery Directive 2006/42/EC in hydraulic machinery for the separation of dirt particles.
The filter elements are 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 complying with the specified performance limits in the chapter "Technical data", extended operational durability/ load cycles upon request
- only with hydraulic fluids and the intended seals according to the chapter "Compatibility with hydraulic fluids"
- Use in potentially explosive areas according to the chapter "Directives and standardization"
- 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 improper and thus not admissible.
Improper use of the filter elements includes:

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

Notes

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