Filter elements

Type 20., according to Hengst standard

RE 51525
Edition: 2023-02
Replaces: 2021-04

- Nominal size 0051 ... 1051
- Differential pressure 20 bar
- Filter rating from 1 µm
- For tank mounted return line filters 25TE

Features

- Filter media made of glass fiber material (optionally water absorbing), filter paper and wire mesh 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

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Ordering code
Filter element for tank mounted return line filters 25TE

01	02	03		04		05		06
20.			**–**	**E00**	**–**		**–**	

Design

01	Filter element (for the permissible temperature ranges, refer to chapter "Technical data")	**20.**

Nominal size

02	according to Hengst standard	**0051** **0101** **0151** **0201** **0301** **0351** **1051**

Filter rating in µm

03	Absolute (ISO 16889)	Glass fiber material PWR... Generation 5, not reusable, not cleanable	**PWR3** **PWR6** **PWR10** **PWR20**
	Nominal	Stainless steel wire mesh G, cleanable	**G10** **G25** **G40** **G60** **G100**
		Paper P, not reusable, not cleanable	**P10** **P25**
		Water absorbing AS, not reusable, not cleanable Only suitable for use in HLP and HEES fluids	**AS6** **AS10** **AS20**

Differential pressure

04	max. permissible differential pressure of the filter element	20 bar *[290 psi]*	**E00**

Bypass valve

05	with	**6**
	without	**0**

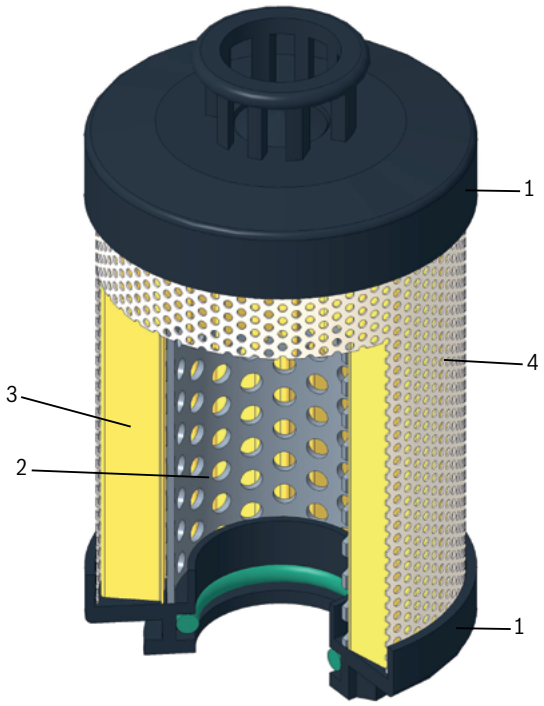
Seal

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

Further filter ratings are available on request.
More detailed information on Hengst filter material configuration is available in RE 51548.

Product description

The filter element is the main building block of industrial filtration. It is in the filter element where the actual filtration takes place.
According to the large range of different housing designs and sizes, there is also a large number of different sizes and designs of inserted filter elements.
The main filter variables, such as retention capacity, dirt holding capacity and pressure loss are determined by the construction of the filter elements and the filter media used.
Further information on the characteristic values and filter media is available in RE 51548.
Hengst filter elements are used for filtration of various hydraulic fluids, lubricants and other industrial fluids and gases, depending on the series.



The filtration is usually realized from the outside to the inside of the filter element The fluid or gas must flow from the dirt side through the filter element into the clean side. However, in some applications the filtration is also realized from the inside to the outside of the filter element

In general, Hengst filter elements consist of a combination of star-like, pleated filter media (3) called filter element mesh-pack.
The filter element mesh-pack is wrapped around a perforated support tube (2) which gives the set-up the required stability to withstand high differential pressures.

The filter element mesh-pack wrapped around the support tube is glued to the joint and the two end caps (1) and therefore sealed between the dirt and the clean side. Sealing between the filter element and the filter housing is effectively done by means of seals on the spigot.

The protective sleeve (4), which is only used for special filter element series, allows for a uniform flow pattern around the filter element mesh-pack and, at the same time, provides mechanical protection against external damage.

Moreover, some series can optionally be equipped with a bypass valve which passes the flow by the filter element in case of an increased pressure and therefore prevents a critical pressure build-up.

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		Polyamide
	– Base of the filter element		Polyamide
	– Support tube of the filter element		Tin-coated steel
	– Seals		NBR or FKM
	– Protective sleeve		Polyester

hydraulic		
Filtration direction		from the outside to the inside
Maximum differential pressure	bar *[psi]*	20 *[290]*

Permissible operating temperature range, depending on material combination

		Operating temperature range °C *[°F]*	
Filter material configuration	**Code letter**	**Sealing material NBR "M"** Adhesive (standard) "0" Material (standard) "0"	**Sealing material (FKM) "V"** Adhesive (standard) "0" Material (standard) "0"
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 PWR...	PWR...	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*
Filter paper	P...	–40 ... +100 *[–40 ... +212]*	–20 ... +100 *[–4 ... +212]*

Compatibility with permitted hydraulic fluids

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 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 should the filter element be replaced or cleaned?
As soon as the back pressure setting of the maintenance indicator has been reached, the red pushbutton of the mechanical/visual maintenance indicator pops out. If an electronic maintenance indicator is provided, an electric signal will sound. In this event, the filter element should 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 exchange

- For single filters:
  Switch off the system and discharge the filter on the pressure side.

Detailed instructions with regard to the filter element exchange 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!

- 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 at cold start conditions, the pre-set signal value of the visual maintenance indicator may be exceeded at start-up.
  Once the operating temperature has been reached, the mechanical/visual indicator can be reset manually. The electrical signal will reset once the operating temperature has been reached.
- If the maintenance indicator alarm is disregarded, the disproportional, increasing differential pressure 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 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 $ß_{x(c)}$, 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).

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
Δ*p* (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 atmospheres 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 marking.
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 atmospheres, ATEX suitability of the complete filter assembly 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 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.