

# Filter elements

RE 51420/10.10

1/14

## Type 1. and 2. elements

Sizes according to **DIN 24550**: 0040 to 1000  
 According to Rexroth standard: 0003 to 0270  
 Collapse pressure resistance up to 330 bar [up to 4786 psi]  
 Filter rating: 1 to 1500  $\mu\text{m}$   
 Filter area: up to 4.8 m<sup>2</sup> [up to 7440 in<sup>2</sup>]  
 Filtration quotient: up to  $\beta_{x(c)} \geq 1000$   
 Operating temperature: -10 °C to 100 °C [14 °F to 212 °F]



filter\_53\_gruppe

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## Features

- Filter media for a number of applications
- Made of micro glass, filter paper, wire mesh, fleece material and metal fiber fleece
- Cleanable filter media
- Attainable oil cleanliness up to ISO 12/8/3 (ISO 4406)
- Filtration quotient up to  $\beta_{x(c)} \geq 1000$  (ISO 16889)
- High contamination retention through multi-layer fiberglass technology
- Low initial pressure differential (ISO 3968)
- Complete range according to DIN 24550
- Worldwide sales
- Product and user support by fluid and filter analysis (residue analysis)

## Ordering code

of filter element type 1.

1.		-		0		
<b>Filter element Design</b>	= 1.					<b>Seal</b> <sup>2)</sup> M = NBR seal V = FKM seal
<b>Size</b> according to DIN 24550 = 0040, 0063, 0100, 0160, 0250, 0400, 0630, 1000 according to Rexroth Standard = 0130, 0150, 0045, 0055, 0120, 0200, 0270						<b>Bypass valve</b> 0 = at filter element always 0
<b>Reusable (cleanable)</b>						<b>Element model</b> 0... = Standard adhesive $T_{max} = 100\text{ °C}$ [212 °F] H... = Adhesive resistant to cooling agents $T_{max} = 160\text{ °C}$ [320 °F] ...0 = Standard material ...V = Stainless steel 1.4571
<b>Filtration rating</b> <sup>1)</sup> in $\mu\text{m}$ <b>nominal</b> Stainless steel wire mesh, cleanable G10, G25, G40, G60, G100, G250, = G...						<b>Pressure differential</b> Max. admissible pressure differential of the filter element C = 160 bar [2321 psi] A = 30 bar [435 psi]
<b>absolute (ISO 16889)</b> Metal fiber fleece, cleanable to a limited extent M5, M10, M15 = M...						
<b>One-way (not cleanable)</b>						
<b>nominal</b> Filter paper P10, P25 = P...						
Fleece material VS25, VS40, VS60 = VS...						
<b>absolute (ISO 16889)</b> Micro glass H1XL, H3XL, H6XL, H10XL, H20XL = H...XL Resistance to cooling agents = H...XLK						
<b>water absorbing</b> AS3, AS6, AS10, AS20 = AS...						

Order example:

1.0040 H10XL-A00-0-M

Material no.: R928005837

<sup>1)</sup> Other filtration ratings upon request

<sup>2)</sup> Other seal materials upon request

## Standard types

Filter element type 1. Standard types, NBR seal

Type	Material no. of filter element, filtration rating in $\mu\text{m}$		
	H10XL	H6XL	H3XL
1.0040 H..XL-A00-0-M	R928005837	R928005836	R928005835
1.0063 H..XL-A00-0-M	R928005855	R928005854	R928005853
1.0100 H..XL-A00-0-M	R928005873	R928005872	R928005871
1.0130 H..XL-A00-0-M	R928037180	R928045104	R928037178
1.0150 H..XL-A00-0-M	R928037183	R928037182	R928037181
1.0160 H..XL-A00-0-M	R928005891	R928005890	R928005889
1.0250 H..XL-A00-0-M	R928005927	R928005926	R928005925
1.0400 H..XL-A00-0-M	R928005963	R928005962	R928005961
1.0630 H..XL-A00-0-M	R928005999	R928005998	R928005997
1.1000 H..XL-A00-0-M	R928006035	R928006034	R928006033

## Ordering code

of filter element type 2.

### Filter element

Design

= 2.

### Size

according to DIN 24550

= 0040, 0063, 0100, 0160,  
0250, 0400, 0630, 1000

according to Rexroth Standard

= 0004 <sup>1)</sup> 0130, 0150

### Reusable (cleanable) Filtration rating <sup>2)</sup> in µm

#### nominal

Stainless steel wire mesh, cleanable

G10, G25, G40, G60, G100, G200,

= G...

#### absolute (ISO 16889)

Metal fiber fleece, cleanable to a limited extent

M5, M10, M15

= M...

### One-way (not cleanable)

#### nominal

Filter paper

P10, P25

= P...

Fleece material

VS25, VS40, VS60

= VS...

#### absolute (ISO 16889)

Micro glass

H1XL, H3XL, H6XL,

H10XL, H20XL

= H...XL

Resistance to cooling agents

= H...XLK

#### water absorbing

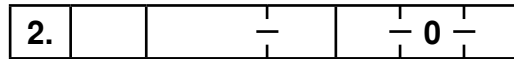
AS3, AS6, AS10, AS20

= AS...

<sup>1)</sup> Filter size 0003 = filter element size 0004

<sup>2)</sup> Other filtration ratings upon request

<sup>3)</sup> Other seal materials upon request



M =

V =

0 =

### Seal <sup>3)</sup>

NBR seal

FKM seal

### Bypass valve

at filter element always 0

### Element model

0... = Standard adhesive  $T_{max} = 100\text{ °C}$  [212 °F]

H... = Adhesive resistant to cooling agents  
 $T_{max} = 160\text{ °C}$  [320 °F]

...0 =

Standard material

...V =

Stainless steel 1.4571

### Pressure differential

Max. admissible pressure differential of the filter element

B =

330 bar [4786 psi]

A =

30 bar [435 psi]

### Order example:

2.0040 H10XL-A00-0-M

Material no.: R928006647

## Standard types

### Filter element type 2. Standard types, NBR seal

Type	Material no. of filter element, filtration rating in µm		
	H10XL	H6XL	H3XL
2.0040 H..XL-A00-0-M	R928006647	R928006646	R928006645
2.0063 H..XL-A00-0-M	R928006701	R928006700	R928006699
2.0100 H..XL-A00-0-M	R928006755	R928006754	R928006753
2.0130 H..XL-A00-0-M	R928022276	R928022275	R928022274
2.0150 H..XL-A00-0-M	R928022285	R928022284	R928022283
2.0160 H..XL-A00-0-M	R928006809	R928006808	R928006807
2.0250 H..XL-A00-0-M	R928006863	R928006862	R928006861
2.0400 H..XL-A00-0-M	R928006917	R928006916	R928006915
2.0630 H..XL-A00-0-M	R928006971	R928006970	R928006969
2.1000 H..XL-A00-0-M	R928007025	R928007024	R928007023

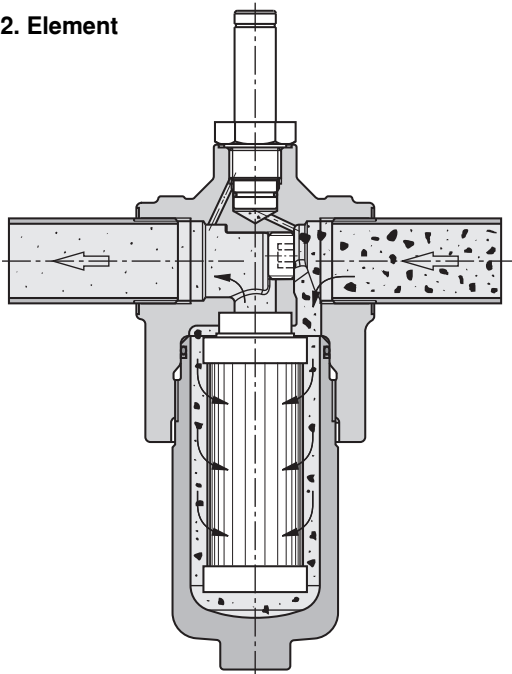
## Assignment of filter element to current filter series

Element design (type)	Series	Application	Data sheet no. <sup>1)</sup>
1.	40FLE(N)	Inline filter	51401
	100FLE(N)		51402
	40FLD(N)	Duplex filter	51408
	100FLD(N)		51409
	40FLDK(N)		51407
	10TE(N)	Tank mounted return line filter	51424
	10FRE(N)		51425
2.	40 / 100LE(N)	Inline filter	51400
	245LE(N)		51421
	350LE(N)		51422
	445LE(N)		51423
	16FE		51403
	40 / 160LD(N)	Duplex filter	51406
	400LD(N)		51429
	16FD		51410
	250 / 450FE(N)	Block mounting filter	51405
	245PSF(N)		51418
	350PSF(N)		51419
	450PBF(N)		51417

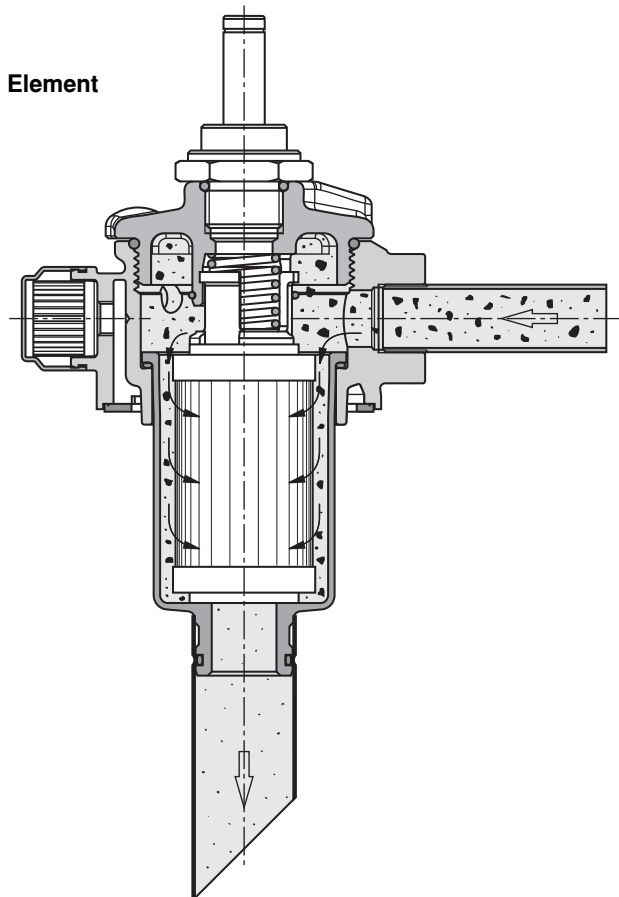
<sup>1)</sup> For further information, please refer to the according data sheet.

### Schematic illustration of flow and filtration process

2. Element



1. Element



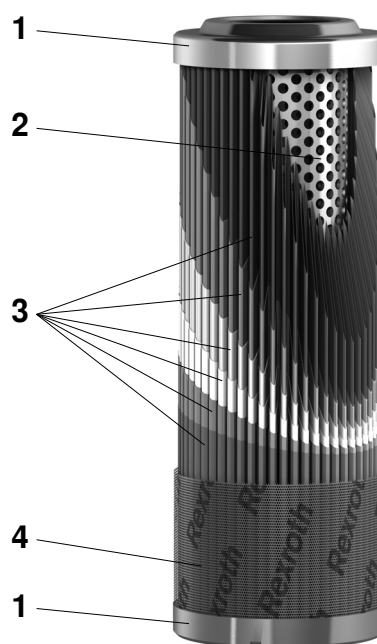
## Function, structure

The filter element is the central part of industrial filters. The actual filtration process takes part in the filter element. The applied filter elements and the filter media used in the filter elements determine the major filter characteristics such as retention capacity, contamination retention and pressure loss. Rexroth 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 radially pleated filter media (3) which are laid around a perforated supporting tube (2). The filter element is vertically sealed by means of a 2-component adhesive. A perforated protective cage (4) is laid around the filter mat (depending on the model). Supporting tube and filter mat are glued to both end discs (1). The protective cage allows for a continuous fluid flow around the filter mat and, at the same time, provides mechanical protection against external damage. Seal rings and/or profile seals are provided between the filter element and the filter housing as a sealing.

All filter elements of the Rexroth standard product range are made of zinc-free parts thus preventing the formation of zinc soap, in particular if water-containing fluids (HFA/HFC) and synthetic oils are used. Moreover, many manufacturers of construction and agricultural machinery stipulate the use of zinc-free machine elements for rapidly biodegradable hydraulic oils.

With regard to the aforementioned fluids, the use of zinc-free filter elements prevents early "element blocking", thus considerably increasing the lifetime of the elements. Therefore, Rexroth filter elements can be used universally for typical hydraulic fluids and lubricants.



## Filter characteristics

### Filtration rating and attainable oil cleanliness

The main goal when using industrial filters is not only the direct protection of machine components but to attain the required oil cleanliness. Oil cleanliness is defined on the basis

of oil purity classes which classify how the amount of particles of the existing contamination is distributed in the operating fluid.

### Filter capacity

#### Filtration quotient $\beta_{x(c)}$ ( $\beta$ value)

The retention capacity of hydraulic filters with regard to contamination in a hydraulic system is characterized by the so-called filtration quotient  $\beta_{x(c)}$ . This variable thus represents the major performance feature of hydraulic filters. This variable is measured within the framework of the multipass test, and is the average value of the determined initial and final differential pressure according to ISO 16889 using ISOMTD test dust.

The filtration quotient  $\beta_{x(c)}$  is defined as the quotient of the number of particles larger than the viewed particle size before/after filtration.

#### Contamination retention

It is also measured using the multipass test and determines the amount of test dust ISOMTD which is fed to the filter medium until a certain pressure increase has been reached.

#### Pressure loss (also differential pressure or delta p)

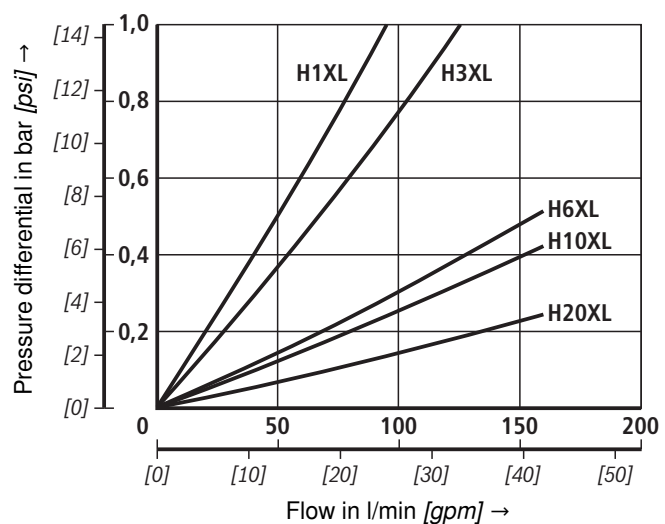
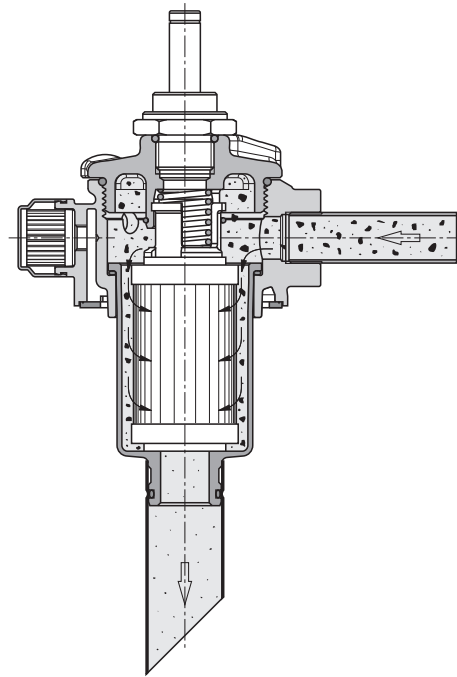
The pressure loss of the filter element is the major variable for the determination of the filter size. The variables are recommended values of the filter manufacturer or specifications of the filter user. This variable depends on many factors including: the rating of the filter medium, its geometry and arrangement in the filter element, filter area, the operational viscosity of fluids and flow.

The term "delta p" is often also expressed with the symbol " $\Delta p$ ".

When dimensioning the filter, an initial pressure loss is determined which must not be exceeded by the new filter element on the basis of the aforementioned conditions.

Upon request you will be provided with the program "BOSCH REXROTH FILTERSELECT". With this program you can easily determine the dimensions of the Rexroth filter element and the complete filter by means of initial  $\Delta p$  or pressure loss.

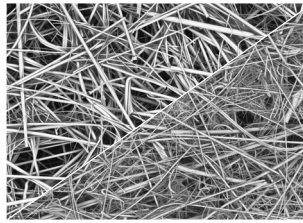
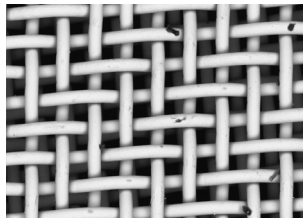
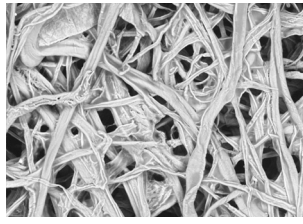
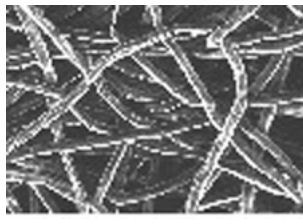
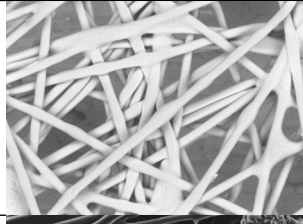
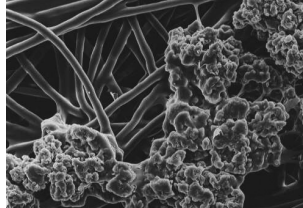
The following diagram shows the typical pressure loss behavior of filter elements with different filter media at different flow for a viscosity of 30 mm<sup>2</sup>/s [150 SUS].



## Filter media

### Overview

Depending on the application and requirements, different filter media in different filtration ratings are used for the separation of particles.

Filter medium/ design	Filter rating/ mesh size	Application	Filter medium- rating <sup>1)</sup> in $\mu\text{m}$	Electron microscope image
<b>H...XL, micro glass</b> Depth filter, combination of inorganic micro glass filter medium High degree of contamination retention due to multi-layer technology.	Filter rating: 1/3/6/10/20 $\mu\text{m}$ "absolute". Test according to ISO 16889.	For highest pureness demands in hydraulic fluids and lubricants. Not cleanable.	H1XL H3XL H6XL H10XL H20XL	
<b>G..., stainless steel wire mesh material 1.4401 or 1.4571</b> Surface filter made of stainless steel wire mesh with supporting tissue.	Mesh size: 10-1000 $\mu\text{m}$ .	For protection, surface, coarse and pre-filtration. Cleanable, with back-wash mechanism.	G10 G100 G25 G250 G40 G500 G60 G800	
<b>P..., filter paper</b> Inexpensive depth filter made of filter paper with supporting tissue. Made of specially impregnated cellulose fiber preventing humidity and swelling.	Nominal filter rating: 10/25 $\mu\text{m}$ .	For coarse filtration and pre-filtration. Not cleanable.	P10 P25	
<b>M..., metal fiber fleece material 1.4404</b> Depth filter made of stainless steel fibers with supporting mesh.	Filter rating: 5/10/15 $\mu\text{m}$ "absolute" according to ISO 16889.	For highest cleanliness requirements for aggressive industrial and chemical fluids subjected to high operating temperatures. Not cleanable.	M5 M10 M15	
<b>VS..., fleece material</b> Surface filter made of extremely solid fiber composite in the form of polyethylene-covered polypropylene fibers.	Filter rating: 25/40/60 $\mu\text{m}$ nominal.	Surface, coarse and pre-filtration, in particular recommended for cooling lubricants. Not cleanable.	VS25 VS40 VS60	
<b>AS..., water-absorbing</b> Depth filter, fleece material with water-absorbing material, combined with micro glass filter media.	Filter rating: 1/3/6/10/20 $\mu\text{m}$ "absolute" according to ISO 16889.	Dehumidification of hydraulic oil, lubricating oil and air. Not cleanable.	AS1 AS3 AS6 AS10 AS20	

<sup>1)</sup> Other filtration ratings upon request

## Filter media

### Technical data

#### Micro glass, H...XL

If professionally dimensioned and applied, the Rexroth micro glass filter medium achieves a high degree of pureness for hydraulic fluids, lubricants as well as for chemical and industrial fluids. Due to its defined retention capacity (ISO 16889), it offers a highly effective protection for machines and system components which are sensitive to contamination.

- Micro glass depth filter made of inorganic glass fiber material (micro glass)
- Absolute filtration / defined retention capacity according to ISO 16889
- High degree of contamination retention due to multi-layer construction
- One-way filter (not cleanable due to the depth filtration effect)
- Attainable oil pureness classes according to ISO 4406 up to ISO code 12/8/3 and better

#### Filtration rating and attainable oil cleanliness

The following table provides recommendations for the selection of a filter medium in dependency of the application and

indicates the average oil cleanliness class attainable according to ISO 4406 or SAE-AS 4059.

Application	Recommended oil cleanliness according to ISO 4406 [SAE-AS 4059]	Recommended filter medium
Systems with components which are very sensitive to contamination, and with high availability. <b>Filling of servo systems</b>	≤ 16/12/9 (3)	H1XL
Systems with components which are very sensitive to contamination, and with very high availability. <b>Servo valve technology</b>	≤ 18/13/10 (5)	H3XL
Systems with <b>proportional valves</b>	≤ 19/14/11 (6)	H6XL
Modern industrial hydraulic systems <b>directional valves</b>	≤ 20/16/13 (8)	H10XL
Industrial hydraulic systems with major tolerances and minor sensitivity to contamination	≤ 21/17/14 (10)	H20XL

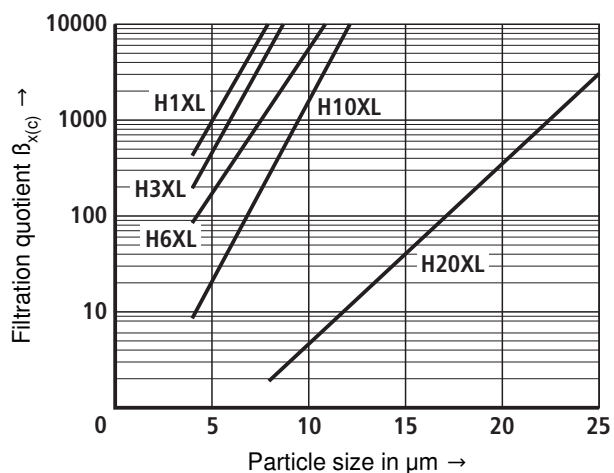
#### Filtration quotient $\beta_{x(c)}$ ( $\beta$ value)

Typical  $\beta$  values up to 2.2 bar [31.9 psi]  $\Delta p$  pressure increase at the filter element <sup>1)</sup>

Filter medium	Particle size "x" for different $\beta$ values, measurement according to ISO 16889		
	$\beta_{x(c)} \geq 75$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
H1XL	< 4.0 $\mu\text{m}(c)$	< 4.0 $\mu\text{m}(c)$	< 4.0 $\mu\text{m}(c)$
H3XL	4.0 $\mu\text{m}(c)$	< 4.5 $\mu\text{m}(c)$	5.0 $\mu\text{m}(c)$
H6XL	4.8 $\mu\text{m}(c)$	5.5 $\mu\text{m}(c)$	7.5 $\mu\text{m}(c)$
H10XL	6.5 $\mu\text{m}(c)$	7.5 $\mu\text{m}(c)$	9.5 $\mu\text{m}(c)$
H20XL	18.5 $\mu\text{m}(c)$	20.0 $\mu\text{m}(c)$	22.0 $\mu\text{m}(c)$

<sup>1)</sup> Filtration quotient  $\beta_{x(c)}$  for other filter media upon request

#### Filtration quotient $\beta_{x(c)}$ depending on particle size $\mu\text{m}(c)$





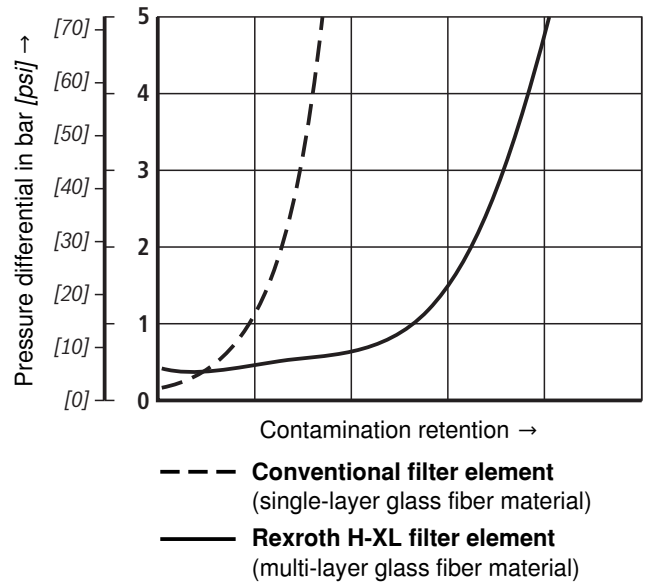
## Filter media

Further information with regard to the Rexroth filter element technology as well as to contamination and oil cleanliness control can be found in our publications or specific brochures.

### Contamination retention

Compared to conventional filter media with insertion technology, the Rexroth H-XL micro glass features a high degree of contamination retention because it is made of two separate filter layers connected in series.

### Superior contamination retention of H-XL filter elements



### Stainless steel wire mesh, G...

There is a comprehensive field of applications for wire mesh filter media. Not only pre-filtration is possible, but also the filtration of lubricating oils, hydraulic oils, coolants and water-like fluids.

Wire mesh G10 - G40

As surface filters, these materials are generally cleanable. Due to their fine mesh, however, cleaning is more difficult than with coarser filter mesh. Therefore, we recommend cleaning the filters in an ultrasonic bath.

Wire mesh G60 - G800

Due to their coarser mesh size, the cleaning of these filters is easier.

- Surface filter made of stainless steel wire mesh
- Reusable, cleanable
- Star-like folded design: Single-layer or two- or three-layer design
- Supporting mesh: Epoxy-coated wire mesh or stainless steel wire mesh

Filter medium	Version	Mesh size	Attainable oil cleanliness <sup>1)</sup>
G10	Special Dutch weave	10 µm nom.	nom. 20/18/13...21/20/15
G25	Woven roving	25 µm nom.	No details, only suitable for coarse filtration (particle size ≥ 25 µm)
G40	Woven roving	40 µm nom.	
G60 - G800	Plain woven tissue	no details	

<sup>1)</sup> According to ISO 4406 for particles ≥ 4 µm(c), ≥ 6 µm(c) and ≥ 14 µm(c)

### Metal fiber fleece, M...

With metal fiber fleece you can attain high cleanliness for special fluids or at high operating temperatures. Due to its absolute filtration according to ISO 16889, metal fiber fleece also offers effective protection for machinery parts which are sensitive to contamination. As metal fiber fleece consists of firmly meshed and bound stainless steel fibers, it is also classified as depth filter medium and is thus not cleanable.

- Absolute filtration according to ISO 16889
- Depth filter made of stainless steel fibers
- One-way filter
- Oil cleanliness according to ISO 4406 up to an ISO cleanliness class of 15/13/10 and better
- Star-like folded design: Two- or three-layer design
- Supporting mesh: Epoxy or stainless steel wire mesh

Filter medium	Particle size for filtration ratio > 75 <sup>1)</sup>	Attainable oil cleanliness <sup>2)</sup>
M5	5 µm	16/13/10...20/15/11
M10	10 µm	18/14/10...21/17/13
M15	15 µm	19/16/12...21/18/14

<sup>1)</sup> According to ISO 16889

<sup>2)</sup> According to ISO 4406

## Filter media

### Cleaning of filter elements

#### Cleaning or replacement

Before cleaning a G or M element, you must first dismantle the filter element and then check whether it makes sense to clean the element. If the tissue of M materials or materials finer than G40 contains e.g. much fibrous substances, effective and complete cleaning is not possible in many cases. Filter mesh which has visible defects due to frequent cleaning must

be replaced. In general: The finer the mesh, the thinner the wire. Therefore, especially fine mesh must be cleaned gently to protect the material. You must avoid cracks in the folds of the wire mesh and the metal fiber fleece. Otherwise, the filter capacity will be insufficient.

#### Cleaning frequency

Experience has shown that filter elements made of G10, G25 and G40 can be cleaned up to ten times.

Filter mesh > 60 µm can usually be reused more than ten times. Reusability, however, very much depends on the type of contamination as well as on pressure load (final  $\Delta p$  before dismantling the filter element).

For maximum reusability, we therefore recommend replacing in particular the fine mesh and the M material at a final  $\Delta p$  of 2.2 bar [31.9 psi] at the latest. Due to the given reasons, the aforementioned values must be regarded as reference values for which we do not assume any liability.

### Recommendations for cleaning

#### Manual and simple cleaning method for G... elements

Approach	Wire mesh G10, G25, G40	Wire mesh G60 - G800
Chemical pre-cleaning	Let the filter element drain for approx. 1 hour after disassembly. Bathe in solvent afterwards.	
Mechanical pre-cleaning	Remove rough dirt with a brush or scrubber. Do not use hard or pointed objects which could damage the filter medium.	
Mechanical/ chemical main cleaning	Put pre-cleaned element in an ultrasonic bath with special solvent. Clean the element in the ultrasonic bath until any visible contamination is removed.	Evaporate with hot washing solution (water with anticorrosive agent)
Test	Visually check the material for damage. Replace the filter element if you identify obvious damages.	
Preservation	After drying, you must spray the cleaned element with preservatives and store it sealed against dust in a plastic foil.	

#### Automated cleaning for G... elements

Approach	Wire mesh G10, G25, G40, G60 – G800
Chemical pre-cleaning	Let the filter element drain for approx. 1 hour after disassembly. Bathe in solvent afterwards.
Mechanical/ chemical main cleaning	By means of special cleaning systems for filter elements. Most of these systems are provided with a fully automated and combined cleaning mechanism including ultrasound as well as mechanical and chemical cleaning processes. This allows for best possible cleaning results with gentle cleaning processes.

## Filter media

### Filter paper, P...

Filter paper is used for the filtration of lubricating oil and for pre-filtration. Filter paper has the following characteristics:

- Depth filter made of cellulose fibers
- Specially impregnated against swelling caused by moisture

- Star-like folded design: Single-layer or two- or three-layer design
- Supporting mesh: Epoxy-coated wire mesh

Filter medium	Filtration ratio $\beta$ values <sup>1)</sup>	Retention rate <sup>1)</sup>	Attainable oil cleanliness <sup>2)</sup>
P10	$\beta_{10(c)} > 2.0$	50 %	20/19/14...22/20/15
P25	$\beta_{10(c)} > 1.25$	20 %	21/20/15...22/21/16

<sup>1)</sup> According to ISO 16889

<sup>2)</sup> According to ISO 4406

### Fleece material, VS...

The VS fleece material allows for the filtration of cooling lubricants as well as of water and water media. Moreover, this filter medium can be used for the filtration of emulsions or in general for pre-filtration.

- Depth filter material made of polyolefin fibers
- Binder-free
- Heat-set
- Extremely tearproof
- Cleanable and reusable in accordance with the type of filtered contamination

- Not cleanable in case of fibrous contamination.
- Star-like folded design: One- or two-layer design
- Supporting mesh: Epoxy-coated or stainless steel wire mesh.

Filter medium	Nominal filter rating
VS 25	25 $\mu\text{m}$
VS 40	40 $\mu\text{m}$
VS 60	60 $\mu\text{m}$

### Water-absorbing, AS...

Rexroth Aquasorb filter elements absorb free water from hydraulic fluids and lubricating oils, and dehumidify air. Even in low concentrations above the saturation point of oil, water may accelerate oil aging due to oxidation resulting in increased corrosion and wear. Together with certain oil additives, water may also change the characteristics of oil or cause the formation of solid, slime-like substances which will result in the premature blockage of the pores of the applied filters. The combination of glass fiber filter media additionally

allows for the highly efficient separation of contamination.

- ISO 16889 absolute filtration
- Surface filter made of water-absorbing filter fleece
- Combined with micro glass filter medium
- One-way filter
- Star-like folded design: Multi-layer design
- Supporting mesh: Epoxy-coated or stainless steel wire mesh

Filter medium	Particle size $\beta_{x(c)} = 200$ <sup>1)</sup>	Particle size $\beta_{x(c)} = 1000$ <sup>1)</sup>	Attainable oil cleanliness <sup>2)</sup>
AS3	4.5 $\mu\text{m}(c)$	5.0 $\mu\text{m}(c)$	13/10/8...17/13/10
AS6	5.5 $\mu\text{m}(c)$	7.5 $\mu\text{m}(c)$	15/12/10...19/14/11
AS10	7.5 $\mu\text{m}(c)$	9.5 $\mu\text{m}(c)$	17/14/10...21/16/13
AS20	20 $\mu\text{m}(c)$	22 $\mu\text{m}(c)$	19/16/12...22/17/14

<sup>1)</sup> According to ISO 16889

<sup>2)</sup> According to ISO 4406

## Filter media

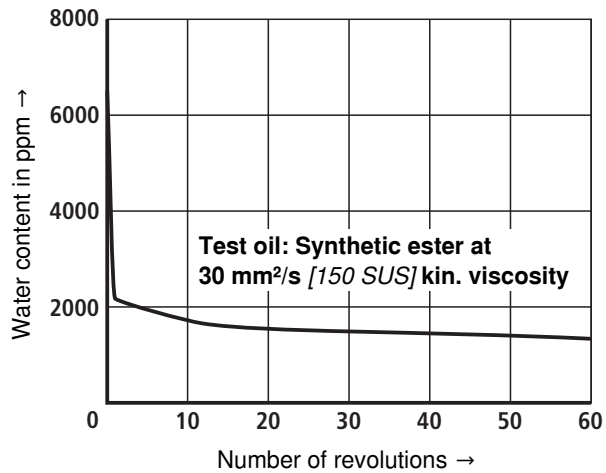
### Functional principle

Equally to Rexroth industrial filter elements, Rexroth Aquasorb filter elements are star-like folded. However, they contain a fleece material layer with water-binding substances in the form of fine granulates. Depending on filtration rating, the appropriate glass fiber filter medium (1 µm - 20 µm) is mounted behind this fleece material.

### Efficiency

The efficiency of Rexroth Aquasorb elements has been proven by internal tests and scientific studies at an independent institute. Upon request, we can provide the test results at any time. The water content (free water) can be reduced down to the saturation point of the oil. Efficiency and the degree of water absorption depend on the load on the filter surface, oil viscosity and oil temperature. Below you can find values for water absorption and how they change at higher viscosity.

**Reduction of the water content of hydraulic oils with AS filter elements**



Typical water absorption for a range of Rexroth filter elements

Filter element	Rated flow <sup>1)</sup> in l/min [US gal/min]	Water absorption <sup>2)</sup> in ml [US gal]
1.0400	40 [10.6]	511 [0.13]
1.0270	267 [70.7]	3454 [0.91]
2.0400	28 [7.4]	365 [0.09]

<sup>1)</sup> Maximum recommended flow

<sup>2)</sup> Water absorption of free, unbound water at  $\leq 15 \text{ mm}^2/\text{s}$  [0.023 in<sup>2</sup>/s] and the specified rated flow

### Dimensioning and application

Rexroth Aquasorb elements must be dimensioned so that an initial pressure loss of 0.2 bar [2.9 psi] is not exceeded. Preferably, they must be used as bypass filters in the low pressure range of < 5 bar [72.5 psi]. Filter elements must be replaced at a differential pressure of max. 2.2 bar [31.9 psi].

You can also use the dimensioning program "BOSCH REXROTH FILTERSELECT" for the dimensioning of Rexroth Aquasorb filter elements.

Water absorption in dependence of oil viscosity

Oil viscosity in mm <sup>2</sup> /s [in <sup>2</sup> /s]	Water absorption
15 <sup>1)</sup> [0.023]	100% (= reference point)
30 [0.047]	70 %
46 [0.071]	58 %
120 [0.186]	38 %

<sup>1)</sup> Reference viscosity

## Compatibility with hydraulic fluids

### Seal material for hydraulic fluids

Mineral oil			Ordering code
Mineral oil	HLP	according to DIN 51524	M
Flame-resistant hydraulic fluids			Ordering code
Emulsions	HFA-E	according to DIN 24320	M
Synthetic water solutions	HFA-S	according to DIN 24320	M
Water solutions	HFC	according to VDMA 24317	M
Phosphoric acid esters	HFD-R	according to VDMA 24317	V
Organic esters	HFD-U	according to VDMA 24317	V
Fast biodegradable hydraulic fluid			Ordering code
Triglycerides (rape seed oil)	HETG	according to VDMA 24568	M
Synthetic esters	HEES	according to VDMA 24568	V
Polyglycols	HEPG	according to VDMA 24568	V

## Installation, operating and maintenance instructions

### When must the filter element be exchanged or cleaned respectively?

As soon as the dynamic pressure or the pressure differential set at the maintenance indicator is reached, the red button of the opto-mechanical maintenance indicator pops out. If an electronic switching element is provided, an electric signal will sound. In this case, the filter element must be replaced or cleaned.

Filter elements should be replaced or cleaned after max. 6 months.

#### Note:

Depending on the dimensioning of the filter size, the maintenance indicator can reach the set dynamic pressure or pressure differential already during start-up. In this case, the opto-mechanical indicator must be manually acknowledged. The electric signal will stop after the operating temperature has been reached.

If the maintenance indicator is disregarded, the disproportionately increasing pressure differential may damage the filter element (collapse).

### Filter element replacement

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

#### Warning:

Filters are containers under pressure. Before opening the filter housing, you must check whether the system pressure on the filter has decreased to ambient pressure. Only then may the filter housing be opened for maintenance.

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

## Quality and standards

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

Filter performance test (multipass test)	ISO 16889
$\Delta p$ (pressure loss) characteristic curves	ISO 3968
Compatibility with hydraulic liquid	ISO 2943
Collapse pressure test	ISO 2941

The development, manufacture and assembly of Rexroth industrial filters and Rexroth filter elements is carried out within the framework of a certified quality management system in accordance with ISO 9001:2000.

## Notes

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