

Filter elements

Type 1.; 2.; 4.; 6.; 7. and 20. filter elements

RE 51420

Edition: 2014-12

Replaces: 05/14



HAD8040_d

- ▶ Sizes according to **DIN 24550**:
1. and 2. 0040 ... 1000
- ▶ Additional sizes:
1.0045 ... 2500; 2.0130; 2.0150
4.06 ... 4.20; 6.56 ... 560; 7.002 ... 008
20.0101 ... 1051
- ▶ Pressure differential resistance up to 330 bar [4786 psi]
- ▶ Filter rating: 1 to 800 μm
- ▶ Filter area: up to 4.8 m² [7440 in²]
- ▶ Operating temperature: -10 °C ... +100 °C [+14 °F ... +212 °F]

Features

- ▶ Filter media for numerous application ranges made of glass fiber material (water-absorbing also available), filter paper, wire mesh, fleece material and metal fiber fleece
- ▶ 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 (ISO 3968)
- ▶ Extended product range for non-mineral oil based fluids
- ▶ Filter elements with high pressure differential stability

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Ordering code

Filter element

Filter element type 1.

01	02	03	04	05	06	07	08
1.			-			-	0

Filter element ¹⁾

01	Design	1.
----	--------	----

Size

02	In accordance with DIN 24550	0040 0063 0100 0160 0250 0400 0630 1000
	In accordance with Bosch Rexroth standard	0045 0055 0120 0130 0150 0200 0270 2000 2500

Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100 G200 G500 G800
		Filter paper, non-reusable (not cleanable)	P10 P25
		Fleece material, non-reusable (not cleanable)	VS25 VS40 VS60
	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H1XL H3XL H6XL H10XL H20XL
		Metal fiber fleece, non-reusable (not cleanable)	M5 M10
	Water absorbing	Non-reusable (not cleanable)	AS3 ²⁾ AS6 ²⁾ AS10 ²⁾ AS20 ²⁾

Pressure differential

04	Max. admissible pressure differential of the filter element of 30 bar [435 psi]	A
	Max. admissible pressure differential of the filter element of 160 bar [2321 psi]	C

Ordering code Filter element

Filter element type 1.

01	02	03	04	05	06	07	08
1.			-			-	0

Element design

05	Standard adhesive	0
	Special adhesive	H ³⁾

Element design

06	Standard material	0
	Stainless steel 1.4571	V ⁴⁾

Bypass valve

07	Without bypass valve	0
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Seal

08	NBR seal	M
	FKM seal	V

1) For the admissible temperature ranges, see chapter "Technical data".

2) Only configurable with pressure differential A = 30 bar [435 psi]

3) Improved temperature and media resistance, only in conjunction with FKM "V" seal.

4) Only in conjunction with "H" special adhesive and FKM "V" seal

Order example:

1.0040 H10XL-A00-0-M

Material no.: R928005837

Other filter ratings and seal materials upon request.

Ordering code

Filter element

Filter element type 2.

01	02	03	04	05	06	07	08
2.			-			-	0 -

Filter element ¹⁾

01	Design	2.
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Size

02	In accordance with DIN 24550	0040 0063 0100 0160 0250 0400 0630 1000
	In accordance with Bosch Rexroth standard	0130 0150

Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100 G200 G500 G800
		Filter paper, non-reusable (not cleanable)	P10 P25
		Fleece material, non-reusable (not cleanable)	VS25 VS40 VS60
	Absolute (ISO 16889; $\beta_{x(e)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H1XL H3XL H6XL H10XL H20XL
		Metal fiber fleece, non-reusable (not cleanable)	M5 M10
	Water absorbing	Non-reusable (not cleanable)	AS3 ²⁾ AS6 ²⁾ AS10 ²⁾ AS20 ²⁾

Pressure differential

04	Max. admissible pressure differential of the filter element of 30 bar [435 psi]	A
	Max. admissible pressure differential of the filter element of 330 bar [4786 psi]	B

Ordering code Filter element

Filter element type 2.

01	02	03	04	05	06	07	08
2.			-			-	0

Element design

05	Standard adhesive	0
	Special adhesive	H ³⁾

Element design

06	Standard material	0
	Stainless steel 1.4571	V ⁴⁾

Bypass valve

07	Without bypass valve	0
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Seal

08	NBR seal	M
	FKM seal	V

1) For admissible temperature ranges, see chapter, "Technical data".

2) Only configurable with pressure differential A = 30 bar [435 psi]

3) Improved temperature and media resistance, only in conjunction with FKM "V" seal

4) Only in conjunction with "H" special adhesive and FKM "V" seal

Order example:

2.0040 H10XL-A00-0-M

Material no.: R928006647

Other filter ratings and seal materials upon request.

Ordering code

Filter element

Filter element type 2.Z for 320PZR sandwich plate filter

01	02	03	04	05	06		
2.Z			-	B00	0	-	

Filter element ¹⁾

01	Design	2.Z
----	--------	------------

Size

02	In accordance with Bosch Rexroth standard	025 075 125
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Filter rating in μm

03	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H3PZ H6PZ H10PZ H20PZ
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Pressure differential

04	Max. admissible pressure differential of the filter element of 330 bar [4786 psi]	B00
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Bypass valve

05	Without bypass valve	0
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Seal

06	NBR seal	M
	FKM seal	V

¹⁾ For admissible temperature ranges, see chapter, "Technical data"

Order example:

2.Z125 H10PZ-B00-0-M

Material no.: R928051781

Ordering code Filter element

Filter element type 2.0058 and 2.0059
for 16 FE inline filter and 16 FD duplex filter

01	02	03	04	05	06
2.			- A00 -		

Filter element ¹⁾

01	Design	2.
----	--------	----

Size

02	In accordance with Bosch Rexroth standard	0058 0059
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Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100 G200 G500 G800
		Filter paper, non-reusable (not cleanable)	P10 P25
		Fleece material, non-reusable (not cleanable)	VS25 VS40 VS60
	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H1XL H3XL H6XL H10XL H20XL
	Water absorbing	Non-reusable (not cleanable)	AS3 AS6 AS10 AS20

Pressure differential

04	Max. admissible pressure differential of the filter element of 30 bar [435 psi]	A00
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Bypass valve

05	Filter element without bypass valve	0
	Filter element with bypass ventill – cracking pressure of 3 bar [43.5 psi]	6

Seal

06	NBR seal	M
	FKM seal	V

¹⁾ For admissible temperature ranges, see chapter, “Technical data”

Order example:

2.0058 H10XL-A00-6-M

Material no. R928007115

Other filter ratings and seal materials upon request

Ordering code

Filter element

Filter element type 4.

For 20 L inline filter

01	02	03	04	05	06	07	08
4.			-	A		-	0

Filter element ¹⁾

01	Design	4.
----	--------	----

Size

02	In accordance with Bosch Rexroth standard	06 10 20
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Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100 G200 G500 G800
		Filter paper, non-reusable (not cleanable)	P10 P25
	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H1XL H3XL H6XL H10XL H20XL

Pressure differential

04	Max. admissible pressure differential of the filter element of 30 bar [435 psi]	A
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Element design

05	Standard adhesive	0
	Special adhesive	H ²⁾

Element design

06	Standard material	0
	Stainless steel 1.4571	V ³⁾

Bypass valve

07	Without bypass valve	0
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Seal

08	NBR seal	M
	FKM seal	V

¹⁾ For admissible temperature ranges, see chapter "Technical data"

²⁾ Improved temperature and media resistance,
only in conjunction with FKM "V" seal

³⁾ Only in conjunction with "H" special adhesive and FKM "V" seal

Order example:

4.20 H10XL-A00-0-M

Material no.: R928046366

Other filter ratings and seal materials upon request.

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Ordering code Filter element

Filter element type 6.

For SE housing suction filter

01	02	03	04	05	06
6.			- S00	- 0	- 0

Filter element ¹⁾

01	Design	6.
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Size

02	In accordance with Bosch Rexroth standard	56 90 140 225 360 460 560
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Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100 G200 G500 G800
		Filter paper, non-reusable (not cleanable)	P10 P25
		Fleece material, non-reusable (not cleanable)	VS25 VS40 VS60
	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H1XL H3XL H6XL H10XL H20XL

Pressure differential

04	Admissible pressure differential of the filter element of 1 bar [14.5 psi]	S00
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Bypass valve

05	Without bypass valve	0
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Seal

06	Without seal	0
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¹⁾ For admissible temperature ranges, see chapter "Technical data"

Order example:

6.140 H10XL-A00-0-0

Material no.: R928019715

Other filter ratings and seal materials upon request.

Ordering code

Filter element

Filter element type 7.

For TLF tank breathing filter

01	02	03	04	05	06
7.			-	-	0

Filter element ¹⁾

01	Design	7.
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Size

02	In accordance with Bosch Rexroth standard	002 004 006 007 008
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Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100 G200 G500 G800
		Filter paper, non-reusable (not cleanable)	P10 P25
	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H1XL H3XL H6XL H10XL H20XL
	Water absorbing	Non-reusable (not cleanable)	AS3 AS6 AS10 AS20

Pressure differential

04	Admissible pressure differential of the filter element of 1 bar [14.5 psi] – material standard	S00
	Admissible pressure differential of the filter element of 1 bar [14.5 psi] – stainless steel material	S0V ²⁾

Bypass valve

05	Without bypass valve	0
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Seal

06	NBR seal	M
	FKM seal	V

¹⁾ For admissible temperature ranges, see chapter, "Technical data"

²⁾ Only in conjunction with "H" special adhesive and FKM "V" seal

Order example:

7.006 H10XL-A00-0-M

Material no.: R928016626

Other filter ratings and seal materials upon request.

Ordering code Filter element

Filter element type 20.

For tank mounted return line filter 25TE

01	02	03	04	05	06
20.			- E00 -		

Filter element ¹⁾

01	Design	20.
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Size

02	In accordance with Bosch Rexroth standard	0101 0201 0351 1051
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Filter rating in μm

03	Nominal	Stainless steel wire mesh, recyclable (cleanable)	G10 G25 G40 G60 G100
		Filter paper, non-reusable (not cleanable)	P10 P25
	Absolute (ISO 16889; $\beta_{x(c)} \geq 200$)	Glass fiber material, non-reusable (not cleanable)	H3XL H6XL H10XL H20XL
		Water absorbing	Non-reusable (not cleanable)

Pressure differential

04	Max. admissible pressure differential of the filter element of 20 bar [290 psi]	E00
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Bypass valve

05	With bypass valve	6
	Without bypass valve	0

Seal

06	NBR seal	M
	FKM seal	V

¹⁾ For the admissible temperature ranges, see chapter, "Technical data".

Order example:

20.0101 H10XL-E00-6-M

Material no.: R928053667

Other filter ratings and seal materials upon request.

Preferred types

Filter elements, type 1.

Type	Material no. Filter element, Filter rating in μm		
	H3XL	H6XL	H10XL
1.0040 H..XL-A00-0-M	R928005835	R928005836	R928005837
1.0063 H..XL-A00-0-M	R928005853	R928005854	R928005855
1.0100 H..XL-A00-0-M	R928005871	R928005872	R928005873
1.0130 H..XL-A00-0-M	R928037178	R928045104	R928037180
1.0150 H..XL-A00-0-M	R928037181	R928037182	R928037183
1.0160 H..XL-A00-0-M	R928005889	R928005890	R928005891
1.0250 H..XL-A00-0-M	R928005925	R928005926	R928005927
1.0400 H..XL-A00-0-M	R928005961	R928005962	R928005963
1.0630 H..XL-A00-0-M	R928005997	R928005998	R928005999
1.1000 H..XL-A00-0-M	R928006033	R928006034	R928006035
1.2000 H..XL-A00-0-M	R928041312	R928048158	R928040797
1.2500 H..XL-A00-0-M	R928041314	R928046806	R928040800

Filter elements, type 2.

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

Filter elements, type 2.Z

Type	Material no. Filter element, Filter rating in μm		
	H3PZ	H6PZ	H10PZ
2.Z025 H...PZ-B00-0-M	R928051771	R928053299	R928051773
2.Z075 H...PZ-B00-0-M	R928051775	R928051776	R928051777
2.Z125 H...PZ-B00-0-M	R928051779	R928051780	R928051781

Filter elements, type 2.0058 and 2.0059

Type	Material no. Filter element, Filter rating in μm		
	H3XL	H6XL	H10XL
2.0058 H...XL-A00-6-M	R928007113	R928007114	R928007115
2.0059 H...XL-A00-6-M	R928007131	R928007132	R928007133

Preferred types

Filter elements, type 4.

Type	Material no. Filter element, Filter rating H10XL in μm
4.06 H..XL-A00-0-M	R928028880
4.10 H..XL-A00-0-M	R928046351
4.20 H..XL-A00-0-M	R928046366

Filter element type 6.

Type	Material no. Filter element, Filter rating in μm	
	H10XL	G10
6.56 ...-S00-0-0	R928053777	R928046438
6.90 ...-S00-0-0	R928046448	R928046444
6.140 ...-S00-0-0	R928019715	R928027883
6.225 ...-S00-0-0	R928040938	R928046428
6.360 ...-S00-0-0	R928052226	R928046432
6.460 ...-S00-0-0	R928046435	R928037008
6.560 ...-S00-0-0	R928054604	R928039963

Filter elements, type 7.

Type	Material no. Filter element, Filter rating in μm P10
7.002 ...-S00-0-M	R928039681
7.004 ...-S00-0-M	R928016621
7.006 ...-S00-0-M	R928016624
7.007 ...-S00-0-M	R928016627

Filter elements, type 20.

Type	Material no. Filter element, Filter rating in μm			
	H3XL	H6XL	H10XL	H20XL
20.0101 ...-E00-6-M	R928054019	R928054020	R928053667	R928054021
20.0201 ...-E00-6-M	R928054022	R928054023	R928053669	R928054024
20.0351 ...-E00-6-M	R928054025	R928054026	R928053671	R928054027
20.1051 ...-E00-6-M	R928054028	R928054029	R928053672	R928054030

Assignment of filter elements to filter series

Element type (type)	Series	Application	Data sheet no. ¹⁾
1.	40FLE(N)	Inline filter	51401
	100FLE(N)		51402
	40FLD(N)	Duplex filter	51408
	100FLD(N)		51409
	40FLDK(N)		51407
	63FLDK(N) -1X		51445
	10TE(N)	Tank mounted return line filter	51424
	10FRE(N)		51425
	10TD(N)-1X	Tank mounted return line filters, switchable	51454
	10 FRD(N)		-

Element type (Type)	Series	Application	Data sheet no. ¹⁾
2.	40LE(N)	Inline filter	51400
	100LE(N)		51400
	50LE(N)		51447
	110LE(N)		51448
	245LE(N)		51421
	350LE(N)		51422
	445LEN		51423
	16FE		51403
	40/160 LD(N)		Duplex filter
	250/450 LD(N)	51411	
	50LD(N)	51453	
	150LD(N)	51446	
	400LD(N)	51429	
	16FD	51410	
	250/450FE(N)	Block mounting filter	51405
	245PSF(N)		51418
	350PSF(N)		51419
	450PBF(N)		51417

Element type (type)	Series	Application	Data sheet no. ¹⁾
2.Z	320PZR	Sandwich plate filter	51427
	320PZR/PZL-2X	Sandwich plate filter, generation 2X	51468

Element type (type)	Series	Application	Data sheet no. ¹⁾
4.	20 L	Inline filter	-

Element type (type)	Series	Application	Data sheet no. ¹⁾
6.	SE	Housing suction filter	-

Element type (type)	Series	Application	Data sheet no. ¹⁾
7.	TLF	Tank breathing filter	51415

Element type (type)	Series	Application	Data sheet no. ¹⁾
20.	25TE	Tank mounted return line filter	51472

¹⁾ For further information, please refer to the respective data sheet

Function, section

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

1.; 2. and 20. filter elements

Filter elements consist of a combination of star-like, pleated filter media (3) which are laid around a perforated support tube (2). The 20. filter element also has a band to protect the filter element mat. The filter element is sealed in longitudinal direction with a two-component adhesive and the support tube and filter mat are connected to both end disks (1). One or two seal rings are provided to seal the filter element towards the filter housing.

Series 2.0058 and 2.0059 can be selected optionally with a bypass valve on the base of the filter element. The flow is generally from the outside to the inside.

All 1. and 2. filter elements of the Rexroth preferred program are made of zinc-free components to prevent 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 the elements.

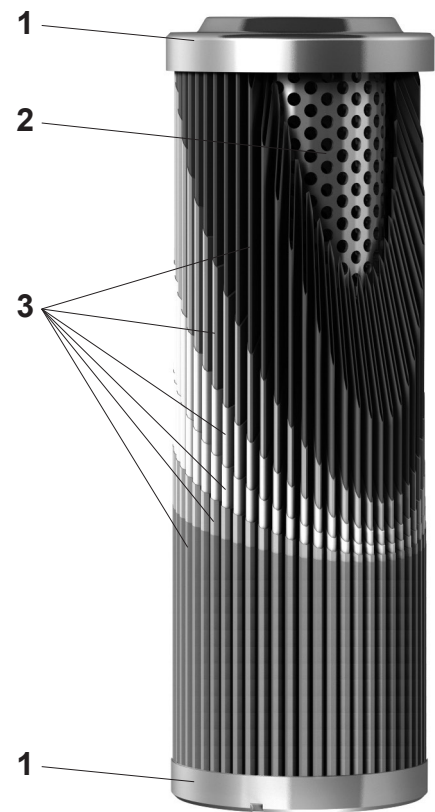
Therefore, Rexroth filter elements can be used universally for typical hydraulic fluids and lubricants.

4. and 7. filter elements

Filter elements consist of a combination of star-like, pleated filter media (3) which are laid around a perforated support tube (2). The filter element is vertically sealed with a two-component adhesive and the support tube and filter mat are connected to both end disks (1). One or two seal rings are provided to seal the filter element towards the filter housing.

The flow is generally from the outside to the inside.

When using HFA/HFC and synthetic oils, a filter element made of stainless steel must be used.



Type 2.0250

6. filter elements

Filter elements consist of a composite of star-like, pleated filter media which are placed in perforated and external support tubes. The filter element is sealed in longitudinal direction with a two-component adhesive and the support tube and filter mat are connected to both end disks. The sealing of the filter element is part of the filter housing.

The flow is generally from the inside outwards.

When using HFA/HFC and synthetic oils, a filter element made of stainless steel must be used.

Filter variables

(for series 1.; 2.; 4.; 6. and 20.)

Filter rating and attainable oil cleanliness

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

cleanliness classes which classify how the amount of particles of the existing contamination is distributed in the operating liquid.

Filtration performance

Filtration ratio $\beta_{x(c)}$ (β value)

The retention capacity of a hydraulic filter against contamination in a hydraulic system is characterized by the filtration ratio $\beta_{x(c)}$. This characteristic is the most important performance characteristic of a hydraulic filter. It is measured during the multipass test and is the average value between the defined initial and final pressure differential according to ISO 16889 using ISOMTD test dust. The filtration ratio $\beta_{x(c)}$ is defined as the quotient of the particle count of the respective particle size on both sides of the filter.

Dirt holding capacity

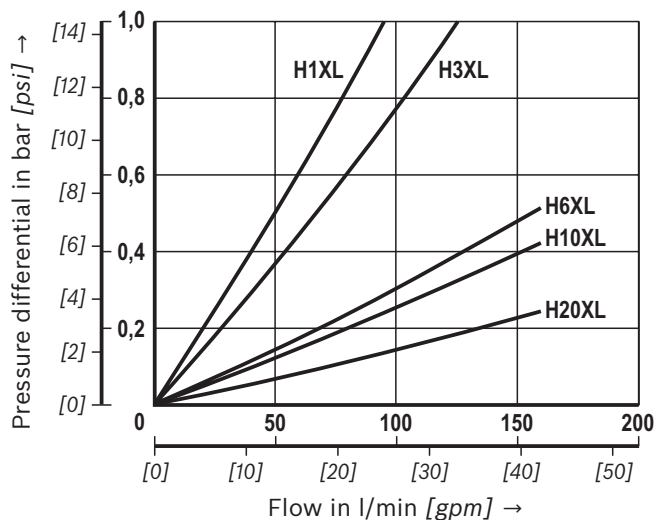
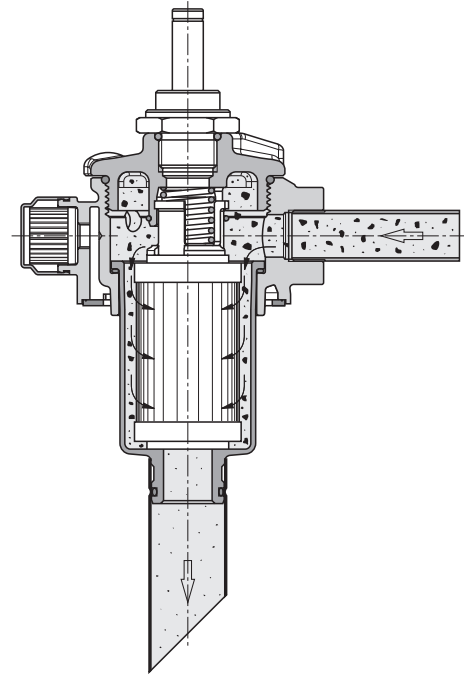
It is also measured using the multipass test and determines the amount of test dust ISOMTD which is fed to the filter medium until a specified pressure differential increase has been reached.

Pressure loss (also pressure differential or delta p)

The pressure loss of the filter element is the relevant characteristic value for the determination of the filter size. Here it concerns the filter manufacturer's recommendations or the filter user's specifications. This characteristic value depends on many factors. These are mainly: the rating of the filter medium, its geometry and arrangement in the filter element, the filter area, the operating viscosity of the fluid and the flow. The term "delta p" is also indicated by the symbol: " Δp ". When dimensioning the complete filter with a filter element, an initial pressure loss is determined which must not be exceeded by the new filter element based on the aforementioned conditions.

The dimensioning of a Rexroth filter element and the new complete filter by means of the initial Δp or Δp pressure loss can easily be carried out via our online design software "BOSCH REXROTH FILTERSELECT".

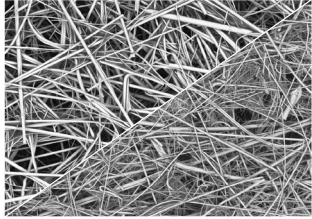
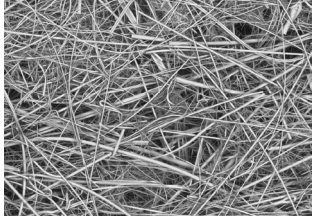
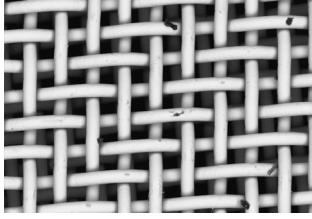
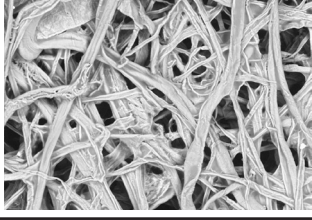
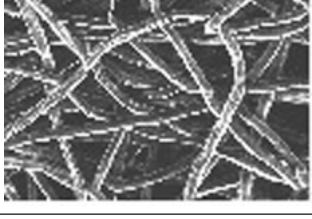
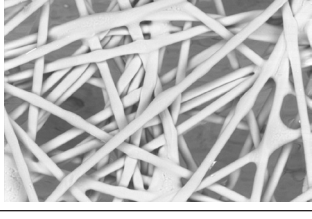
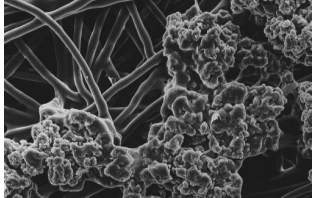
The following diagram shows the typical pressure loss behavior of filter elements with different filter media at different flow rates.



Filter variables

Overview

Different filter media in various ratings are used for the separation of particles, depending on the application and requirement.

Filter medium/set-up	Electron microscope image
<p>H...XL, glass fiber material Depth filter, combination of inorganic micro glass filter medium High dirt holding capacity due to multi-layer technique.</p>	
<p>H...PZ, glass fiber material Depth filter, combination of inorganic micro glass filter medium. Single-layer set-up variant by H...XL for use in sandwich plate filters.</p>	
<p>G..., stainless steel wire mesh material 1.4401 or 1.4571 Surface filter made of stainless steel wire mesh with supporting mesh.</p>	
<p>P..., filter paper Inexpensive depth filter made of filter paper with supporting mesh. Made of specially impregnated cellulose fibers to prevent humidity and swelling.</p>	
<p>M..., metal fiber fleece material 1.4404 Depth filter made of stainless steel fibers with supporting mesh.</p>	
<p>VS..., fleece material Surface filter made of extremely solid fiber composite materials in the form of polyethylene-covered polypropylene fibers.</p>	
<p>AS..., water absorbing Depth filter, fleece material with water-absorbing material, combined with micro glass filter media.</p>	

Technical data, preferred program

(please consult us for applications outside the specified values!)

General								
Weight (1. filter elements) ¹⁾	Size	1.0040	1.0063	1.0100	1.0130	1.0150	1.0160	
	kg	0.16	0.24	0.38	0.59	0.67	0.74	
	[lbs]	[0.35]	[0.53]	[0.83]	[1.30]	[1.47]	[1.63]	
	Size	1.0250	1.0400	1.0630	1.1000	1.2000	1.2500	
	kg	1.07	1.48	2.42	3.44	4.8	9.14	
	[lbs]	[2.36]	[3.26]	[5.33]	[7.58]	[10.58]	[20.15]	
Weight (2. filter elements) ¹⁾	Size	2.0040	2.0063	2.0100	2.0130	2.0150		
	kg	0.1	0.17	0.28	0.29	0.32		
	[lbs]	[0.22]	[0.38]	[0.61]	[0.66]	[0.7]		
	Size	2.0160	2.0250	2.0400	2.0630	2.1000		
	kg	0.5	0.75	1.14	1.5	2.58		
	[lbs]	[1.1]	[1.65]	[2.51]	[3.31]	[5.68]		
	Size	2.0058	2.0059	2.2025	2.2075	2.20125		
	kg	3.4	3.8	0.09	0.16	0.3		
	[lbs]	[7.7]	[8.5]	[0.2]	[0.35]	[0.66]		
	Weight (4. filter elements) ¹⁾	Size	4.06		4.10		4.20	
		kg	0.170		0.200		0.225	
		[lbs]	[0.37]		[0.44]		[0.51]	
Weight (6. filter elements) ¹⁾	Size	6.56	6.90	6.140	6.225	6.360	6.560	
	kg	0.14	0.40	0.50	0.70	0.75	1.2	
	[lbs]	[0.31]	[0.88]	[1.10]	[1.54]	[1.65]	[2.65]	
Weight (7. filter elements) ¹⁾	Size	7.002	7.004	7.006	7.007	7.008		
	kg	0.12	0.26	0.46	1.28	1.6		
	[lbs]	[0.26]	[0.57]	[1.01]	[2.82]	[3.53]		
Weight (20. filter elements) ¹⁾	Size	20.0101	20.0201	20.0351	20.1051			
	kg	0.12	0.36	0.80	1.74			
	[lbs]	[0.26]	[0.79]	[1.76]	[3.84]			
Filtration direction	▶ 1.; 2.; 4.; 7.; 20. filter elements	from the outside inwards						
	▶ 6. filter elements	from the inside outwards						
Ambient temperature range		°C [°F]	-10 ... +65 [+14 ... +149] (for a short time down to -30 [-22])					
Storage conditions	▶ NBR seal	°C [°F]	-40 ... +65 [-40 ... +149]; max. relative humidity of 65 %					
	▶ FKM seal	°C [°F]	-20 ... +65 [-4 ... +149]; max. relative humidity of 65 %					
Material 1. and 2. filter elements	▶ Differential pressure stability	bar [psi]	30 [435]		160 [2321]		330 [4786]	
	▶ Cover/base		Polyamide		Galvanized steel	Galvanized aluminum		
	▶ Support tube		Galvanized steel					
	▶ Seals		NBR or FKM					
Material 4. filter elements	▶ Differential pressure stability	bar [psi]	30 [435]					
	▶ Cover		Polyamide					
	▶ Base		Galvanized steel					
	▶ Support tube		Galvanized steel					
	▶ Seals		NBR or FKM					
Material 6. filter element	▶ Differential pressure stability	bar [psi]	1 [14.5]					
	▶ Cover/base		Galvanized steel					
	▶ Support tube		Galvanized steel					
Material 7. filter element	▶ Differential pressure stability	bar [psi]	1 [14.5]					
	▶ Cover/base		Galvanized steel					
	▶ Support tube		Galvanized steel					
	▶ Seals		NBR or FKM					
Material 20. filter element	▶ Differential pressure stability	bar [psi]	20 [290]					
	▶ Cover/base		Plastic					
	▶ Support tube		Galvanized steel					
	▶ Seals		NBR or FKM					
	▶ Protective cage		Plastic					

¹⁾ Net weights are based on glass fiber material

Technical data, preferred program

(please consult us for applications outside the specified values!)

Hydraulic		
Minimum conductivity of the medium	pS/m	300

Admissible operating temperature range depends on the combination of materials.

Material	Code letter	Operating temperature range °C [°F]
Seal		
NBR	M	-40 ... +100 [-40 ... +212]
FKM	V	-20 ... +210 [-4 ... +410]
Filter element adhesive		
Standard	O	-40 ... +100 [-40 ... +212]
Special	H	-55 ... +170 [-67 ... +338]
Filter element material (cover, base, support tube)		
Standard	O	-40 ... +100 [-40 ... +212]
Stainless steel	V	-55 ... +170 [-67 ... +338]
Filter element material (filter material)		
Aquasorb	AS...	0 ... +160 [32 ... +320]
Stainless steel wire mesh	G...	-55 ... +500 [-67 ... +932]
Glass fiber material	H...XL	Up to +160 [up to +320]
Metal fiber fleece	M...	-55 ... +250 [-67 ... +482]
Filter paper	P...	Up to +130 [up to +266]
Fleece material	VS...	Up to +80 [up to +176]

Compatibility with permitted hydraulic fluids

Hydraulic fluid	Classification	1. ; 2. and 20. filter elements	Design, type key		Suitable sealing materials	Standards	
			4. and 7. filter elements	6. filter elements			
Mineral oil	HLP	A00 or B00 or C00 or E00	A00 or S00	S00	NBR	DIN 51524	
Bio-degradable ▶ Insoluble in water	HETG		A0V or S0V (stainless steel)	A0V or S0V (stainless steel)	Not possible	NBR	VDMA 24568
	HEES					FKM	
▶ Soluble in water	HEPG		FKM			VDMA 24568	
Flame-resistant ▶ Water free	HFDU, HFDR		FKM			VDMA 24317	
	HFAS		NBR			DIN 24320	
	HFAE	NBR					
▶ Containing water	HFC	NBR	VDMA 24317				

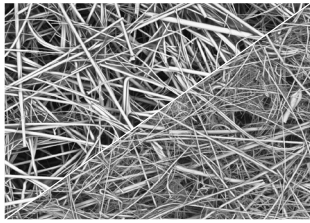
**Important information on hydraulic fluids:**

- ▶ For more information and data on the use of other hydraulic fluids, 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 (cellulose) must not be used, filter elements with glass fiber material must 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.

Filter media

Technical data	H...XL
<p>Glass fiber fleece, H...XL</p> <p>The filter medium achieves the best possible degree of cleanliness compared to other filter media. It is suitable for fluids such as hydraulic oils, lubricants and chemical and industrial fluids. Due to its defined retention capacity (ISO 16889), it offers highly effective protection for machines and system components which are sensitive to contamination.</p> <ul style="list-style-type: none"> ▶ H...XL depth filter made of inorganic glass fiber material ▶ Absolute filtration/defined retention capacity according to ISO 16889 ▶ High dirt holding capacity due to multi-layer design ▶ Non-reusable filter (not cleanable due to depth filtration effect) 	
<p>Filter rating and attainable oil cleanliness</p> <p>The following table provides recommendations for the selection of a filter medium depending on the application and specifies the average oil cleanliness class attainable according to ISO 4406 or SAE-AS 4059.</p>	

Glass fiber material

Oil cleanliness class ISO 4406	to be achieved with filter			Hydraulic system	
	$\beta_{x(c)} = 200$	Materials	Possible arrangement		
10/6/4 - 14/8/6	1 μm	Glass fiber material H...XL	Return flow or pressure filter	-----	Special applications
13/10/8 - 17/13/10	3 μm			-----	Servo valves
15/12/10 - 19/14/11	6 μm			-----	High-response valves
17/14/10 - 21/16/13	10 μm			---	Proportional valves
19/16/12 - 22/17/14	20 μm			-	General pumps and valves

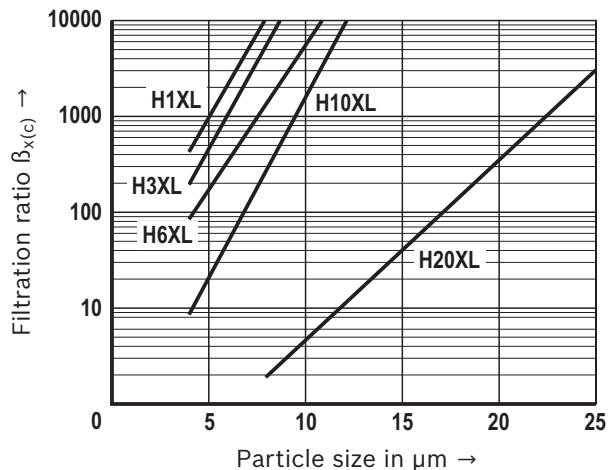
Achievable filtration ratio $\beta_{x(c)}$ (β value)

Typical β values up to 2.2 bar [31.9 psi] Δp pressure increase at the filter element ¹⁾

Filter medium	Particle size "x" for various β 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 $\mu\text{m}(c)$

¹⁾ Filtration ratio $\beta_{x(c)}$ for other filter media upon request

Filtration ratio $\beta_{x(c)}$ as a function of the particle size $\mu\text{m}(c)$





Filter media

Technical data

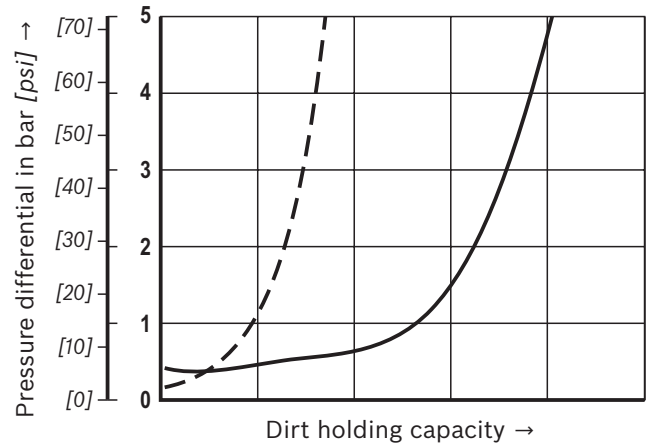
H...XL

Dirt holding capacity

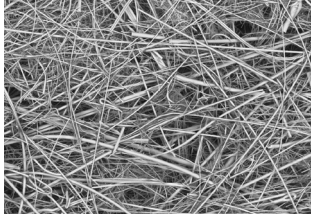
Compared to conventional filter media with single layer technology, the filter material H...XL features a high dirt holding capacity because it is made of two separate filter layers connected in series.

Conventional filter element 
 (single-layer glass fiber material)
Rexroth H...XL filter element 
 (multi-layer glass fiber material)

Superior dirt holding capacity of H...XL filter elements



Filter media

Technical data	H...PZ
<p>Glass fiber material, H...PZ The filter medium achieves the best possible degree of cleanliness compared to other filter media. It is suitable for hydraulic oil. Due to its defined retention capacity (ISO 16889), it offers highly effective protection for machines and system components which are sensitive to contamination.</p> <ul style="list-style-type: none"> ▶ Depth filter made of inorganic glass fiber material ▶ Absolute filtration/defined retention capacity according to ISO 16889 ▶ Non-reusable filter (not cleanable due to depth filtration effect) 	
<p>Filter rating and attainable oil cleanliness The following table provides recommendations for the selection of a filter medium depending on the application and specifies the average oil cleanliness class attainable according to ISO 4406 or SAE-AS 4059.</p>	

Glass fiber material

Oil cleanliness class ISO 4406	to be achieved with filter				Hydraulic system
	$\beta_{x(c)} = 200$	Material	Possible arrangement		
13/10/8 - 17/13/10	3 μm	Glass fiber material H...PZ	Sandwich plate filter 320PZ...	-----	Vertical stacking (sandwich plate assembly)
15/12/10 - 19/14/11	6 μm				
17/14/10 - 21/16/13	10 μm				
19/16/12 - 22/17/14	20 μm				

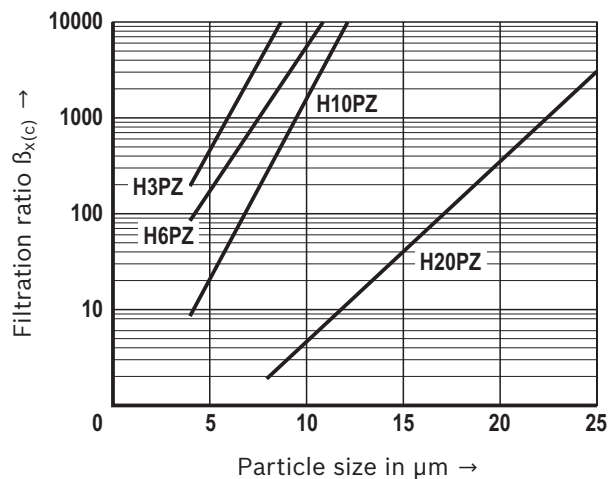
Achievable filtration ratio $\beta_{x(c)}$ (β value)

Typical β values up to 2.2 bar [31.9 psi] Δp pressure increase at the filter element ¹⁾

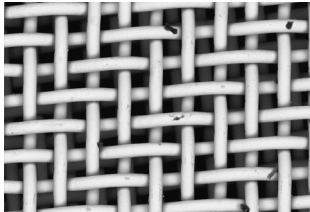
Filter medium	Particle size "x" for various β values, measurement according to ISO 16889		
	$\beta_{x(c)} \geq 75$	$\beta_{x(c)} \geq 200$	$\beta_{x(c)} \geq 1000$
H3PZ	4.0 $\mu\text{m}(c)$	< 4.5 $\mu\text{m}(c)$	5.0 $\mu\text{m}(c)$
H6PZ	4.8 $\mu\text{m}(c)$	5.5 $\mu\text{m}(c)$	7.5 $\mu\text{m}(c)$
H10PZ	6.5 $\mu\text{m}(c)$	7.5 $\mu\text{m}(c)$	9.5 $\mu\text{m}(c)$
H20PZ	18.5 $\mu\text{m}(c)$	20.0 $\mu\text{m}(c)$	22.0 $\mu\text{m}(c)$

¹⁾ Filtration ratio $\beta_{x(c)}$ for other filter media upon request

Filtration ratio $\beta_{x(c)}$ as a function of the particle size $\mu\text{m}(c)$



Filter media

Technical data	G...
<p>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.</p> <p>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 meshes. Therefore, we recommend cleaning them in an ultrasonic bath.</p> <p>Wire mesh G60 ... G800 Due to their coarser mesh sizes, these filter media are more easier to clean.</p> <ul style="list-style-type: none"> ▶ Surface filter made of stainless steel wire mesh ▶ Recyclable, cleanable ▶ Pleated design: single, two or three-layer design 	

Filter medium	Design	Mesh size
G10	Special Dutch weave	10 µm nom.
G25	Woven roving	25 µm nom.
G40		40 µm nom.
G60 ... G800	Plain woven cloth	60 ... 800 µm nom.

Stainless steel wire mesh

Oil cleanliness class ISO 4406	To be achieved with filter			Fluid system
	Nominal	Material	Possible arrangement	
20/18/13 - 21/20/15	10 µm	Stainless steel wire mesh, G...	Return flow, pressure or suction filter	----- For existing systems (hydraulic) and as a protection filter (G10, G25)
Not applicable for wire mesh > 10 µm	25 ... 800 µm			All fluids e.g.: ▶ Lubricants: ▶ Petrochemicals ▶ Water filters ▶ Cooling systems/thermal oils

Filter media

Technical data

G...

Cleaning of filter elements

Cleaning or replacing

Before cleaning a G...- element, the filter element has to be dismantled first and then checked whether it makes sense to clean the element. For example, effective and complete cleaning is not possible in many cases if the cloth contains many fibrous substances and consists of a material finer than G40. Filter mesh which has visible damage due to frequent cleaning must be replaced. In general, the following applies: the finer the cloth, the thinner the wire. Therefore, especially fine mesh must be cleaned gently to protect the material. Cracks in the seams of the wire mesh are to be avoided. 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 cleaned more than ten times. Re-usability, however, very much depends on the type of contamination as well as on the pressurization (final Δp before dismantling the filter element). For maximum re-usability, we therefore recommend replacing in particular the fine mesh at a final Δp 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

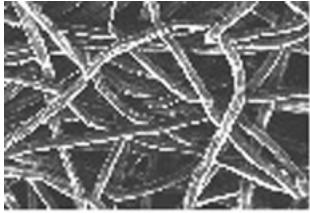
Manual and simple cleaning method for G... elements

Procedure	Wire mesh G10, G25, G40	Wire mesh G60 ... G800
Chemical pre-cleaning	Let the filter element drain for approx. 1 hour after disassembly. Wash it out in solvent afterwards.	
Mechanical pre-cleaning	Remove rough dirt with a brush or scrubber. Do not use any hard or pointed objects which could damage the filter medium.	
Mechanical/chemical main cleaning	Put a 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 corrosion protection agent)
Inspection	Visually inspect whether the material is intact. Replace the filter element if you identify any obvious damage.	
Preservation	After drying, you must spray the cleaned element with preservative agent and store it sealed against dust in a plastic foil.	

Automated cleaning for G... elements

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

Filter media

Technical data	M...
<p>Metal fiber fleece, M... Metal fiber fleece is used to achieve a high degree of cleanliness for special fluids or high operating temperatures. It provides effective protection for machine parts sensitive to contamination due to absolute filtration. Since this material is made of stable and tightly bound interwoven stainless steel fibers, it counts as a depth filter media and is classified as not cleanable.</p> <ul style="list-style-type: none"> ▶ Absolute filtration, measurement according to ISO 16889 ▶ Depth filter made of stainless steel fibers ▶ Non-reusable filter ▶ Pleated design: two or three-layer design ▶ Supporting mesh: epoxy or stainless steel wire mesh 	

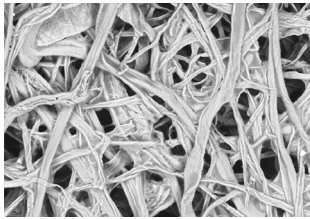
Filter medium	Particle size for filtration ratio > 75 ¹⁾
M5	5 µm
M10	10 µm

¹⁾ in accordance with ISO 16889

Metal fiber fleece

Oil cleanliness class ISO 4406	To be achieved with filter			Hydraulic system
	$\beta_{x(c)} = 75$	Material	Possible arrangement	
16/13/10 - 20/15/11	5 µm	Metal fiber fleece M...	Return flow or pressure filter	----- Filter material for special applications
18/14/10 - 21/17/13	10 µm			

Filter media

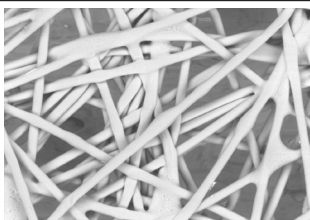
Technical data	P...
<p>Filter paper, P... Filter paper is used for the filtration of lubricating oil and for pre-filtration. It has the following features:</p> <ul style="list-style-type: none"> ▶ Depth filter made of cellulose fibers ▶ Specially impregnated against swelling caused by humidity ▶ Pleated design: single, two or three-layer design ▶ Non-reusable filter (not cleanable due to the depth filtration effect) 	

Filter medium	Nominal filter rating	Filtration ratio β values ¹⁾	Retention rate at 10 μm ¹⁾
P10	10 μm	$\beta_{10(c)} > 2.0$	50 %
P25	25 μm	$\beta_{10(c)} > 1.25$	20 %

¹⁾ in accordance with ISO 16889

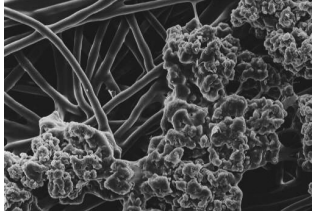
Filter paper

Oil cleanliness class ISO 4406	To be achieved with filter			Hydraulic system
	$\beta_{x(c)} = 200$	Material	Possible arrangement	
20/19/14 - 22/20/15	10 μm	Paper P...	Return flow or pressure filter	----- For existing systems
21/20/15 - 22/21/16	25 μm			

Technical data	VS...
<p>Fleece material, VS... The fleece material VS... serves for filtration of coolants, water and water-based media. It is also possible to use this filter medium for the filtration of emulsions or generally for pre-filtration.</p> <ul style="list-style-type: none"> ▶ Depth filter material made of polyolefin fibers ▶ Free of binding agents ▶ Heat-set ▶ Extremely resistant ▶ Pleated design: one or two layer design ▶ Supporting mesh: epoxy-coated or stainless steel wire mesh ▶ Non-reusable filter (not cleanable due to the depth filtration effect) 	

Filter medium	Nominal filter rating
VS 25	25 μm
VS 40	40 μm
VS 60	60 μm

Filter media

Technical data	AS...
<p>Water absorbing, AS... AS ... Aquasorb filter elements adsorb humidity from ventilation filters as well as free water from hydraulic fluids and lubricating oils. Water can accelerate oil aging through oxidation even at low concentration above the saturation point of the oil. This results in increased corrosion and increased wear. In certain oil additives it can also cause a change or a failure in the form of solid, mucus-like substances which then prematurely clog the pores of the filter. Highly effective separation of contamination is additionally provided by its combination with glass fiber filter media.</p> <ul style="list-style-type: none"> ▶ Absolute filtration ISO 16889 ▶ Surface filter made of water-absorbing filter fleece ▶ Combined with non-woven glass fiber media ▶ Non-reusable filter (not cleanable due to the depth filtration effect) ▶ Pleated design: multi-layer design 	

Filter medium	Particle size $\beta_{x(c)} = 200$ ¹⁾	Particle size $\beta_{x(c)} = 1000$ ¹⁾
AS3	4.5 $\mu\text{m(c)}$	5.0 $\mu\text{m(c)}$
AS6	5.5 $\mu\text{m(c)}$	7.5 $\mu\text{m(c)}$
AS10	7.5 $\mu\text{m(c)}$	9.5 $\mu\text{m(c)}$
AS20	20 $\mu\text{m(c)}$	22 $\mu\text{m(c)}$

¹⁾ in accordance with ISO 16889

Aquasorb

Oil cleanliness class ISO 4406	To be achieved with filter			Hydraulic system	
	$\beta_{x(c)} = 200$	Material	Possible arrangement		
13/10/8 - 17/13/10	3 μm	Aquasorb AS...	Return flow, bypass or breathing filter	-----	Servo valves
15/12/10 - 19/14/11	6 μm			-----	High-response valves
17/14/10 - 21/16/13	10 μm			---	Proportional valves
19/16/12 - 22/17/14	20 μm			-	General pumps and valves

Functional principle

Rexroth Aquasorb filter elements are pleated just like Rexroth industrial filter elements, however they contain a layer of fleece material on a water-binding fabric in the form of a fine granulate. The corresponding non-woven glass fiber media is combined behind this fleece material, depending on the filter rating.

Effectiveness

The effectiveness of the Rexroth Aquasorb elements has been proven by internal testing and by a scientific examination at an independent institute. The water content (free water) can be reduced to the saturation point of the oil. The effectiveness and water absorption depend on the load on filter area, the viscosity of the oil and the oil temperature. The values of water absorption and the change at higher viscosities are specified below.

Design and area of application

Rexroth Aquasorb filter elements must be dimensioned so that an initial pressure drop of 0.2 bar [2.9 psi] is not exceeded. They should be preferably used as a bypass filter in the low pressure range < 5 bar [72.5 psi]. The replacement of the filter element must be carried out at a pressure differential of at least 2.2 bar [31.9 psi].

Rexroth Aquasorb can be used only in HLP and HEES.

Filter media

Technical data	AS...
-----------------------	--------------

Type	Rated flow in l/min [US gpm]	Calculated water absorption			
		at 15 cst in ml	at 30 cst in ml	at 46 cst in ml	at 120 cst in ml
1.0040	5 [1.33]	60	40	35	20
1.0063	8 [2.21]	100	70	55	35
1.0100	14 [3.57]	160	110	90	60
1.0130	19 [5.01]	225	155	130	85
1.0150	30 [8.03]	360	250	210	135
1.0160	20 [5.25]	265	185	155	100
1.0250	32 [8.57]	435	305	255	165
1.0400	40 [10.57]	785	550	455	300
1.0630	66 [17.32]	1290	900	750	490
1.1000	97 [25.67]	1435	1005	830	545
1.2000	189 [49.85]	2785	1950	1615	1055
1.2500	197 [51.94]	3650	2555	2115	1385

Type	Rated flow in l/min [US gpm]	Calculated water absorption			
		at 15 cst in ml	at 30 cst in ml	at 46 cst in ml	at 120 cst in ml
2.0040	3 [0.74]	35	25	20	15
2.0063	5 [1.25]	55	40	30	20
2.0100	8 [2.01]	90	65	50	35
2.0130	9 [2.48]	110	75	65	40
2.0150	12 [3.24]	145	105	85	55
2.0160	17 [4.50]	200	140	115	75
2.0250	28 [7.27]	325	225	190	125
2.0400	45 [11.90]	525	370	305	200
2.0630	46 [12.17]	715	500	415	270
2.1000	73 [19.40]	835	585	485	315
2.0058	105 [27.7]	1545	1080	895	585
2.0059	121 [32.05]	1790	1250	1035	680

Installation, commissioning, maintenance

When does the filter element have to be replaced or cleaned?

As soon as the dynamic pressure or the pressure differential set on the maintenance indicator is reached, the red pushbutton of the optical-mechanical maintenance indicator pops out. In addition an electrical signal is issued if an electronic switching element is present. In this case, the filter element must be replaced or cleaned.

If the filter does not have a maintenance indicator, we recommend replacing or cleaning filter elements after a maximum of 6 months.

Filter element exchange

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

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

WARNING!

- | | |
|---|--|
| <ul style="list-style-type: none"> ▶ Filters are containers under pressure. Before opening the filter housing, check whether the system pressure at the filter has been decreased to the ambient | <p style="margin: 0;">pressure. Only then may the filter housing be opened for maintenance purposes.</p> |
|---|--|

Note:

- ▶ From a cold start, the preset optical maintenance indicator signal may be exceeded due to the high viscosity.
After reaching the operating temperature, the mechanical optical display can be acknowledged manually. The electrical signal will go out after the operating temperature has been reached.
If the maintenance indicator signal is ignored, the disproportionately increasing

pressure differential may damage the filter element (causing it to collapse).

- ▶ Warranty will become void if the delivered item is modified by the ordering party or third parties or improperly mounted, installed, serviced, repaired or used or exposed to environmental conditions that do not comply with the installation conditions.

Directives and standardization

Rexroth 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 the hydraulic fluid	ISO 2943:1998-11
Collapse pressure test	ISO 2941:2009-04

The development, manufacture and installation 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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It must be remembered that our products are subject to a natural process of wear and aging.

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