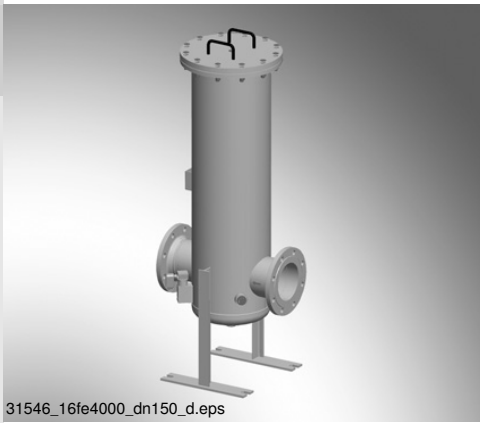
Rexroth
Bosch Group

Inline filter

RE 51403/09.10 1/16
Replaces: 02.09

Types 16 FE 2500 to 7500



Nominal size: 2500 to 7500
Nominal pressures 16 bar
Connections up to DN 300
Operating temperature -10 °C to +90 °C

Table of contents

Application

- Filtration of pressure fluids and lubricants.
- Filtration of fluids and gases.
- Direct installation into pipelines.
- Direct wear protection of downstream components and systems.

Features

- Filters for inline installation
- Particularly suited for off-line filtration
- Extremely large filter area
- Flow-optimized design due to 3D computer-supported design
- Low pressure drop.
- Special highly efficient filter media

Design

Steel welded construction of filter housing with connection for inlet and outlet positioned on the opposite side. Filter cover with bleed and filter housing with drain screws. Filter mounting by means of two welded on feet.
Materials as per spare parts list.

Further design variants available on request.

Filter element

Pleated design with optimized pleat density and various filter media.

The filter element is the most important component of the "FILTER" system in view of the prolonged life and the wear protection of the systems.

The most important criteria for selection are the required degree of cleanliness of the operating medium, the initial pressure differential and the contamination retention capacity.

For further detailed information please refer to our brochure "Filter Elements".

Bypass valve

To protect the filter element during startup and over pressurization due to clogging.

Accessories

Clogging indicator

Basically, the filter is equipped with mechanical optical clogging indicator. The electronic clogging indicator is connected via the electronic switching element with 1 or 2 switching points, which has to be ordered separately. The electrical switching element is attached to the mechanical optical clogging indicator and held by means of a locking ring.

Bleed valve

For bleeding the filter in the commissioning and for the safe reduction of the operating pressure.

Cover lifting tool

For the simple lifting and pivoting of the filter cover in case of filter element replacement and maintenance.

Characteristic curves

An optimum filter selection is made possible by our "BRFilterSelect" software, see download area http://www.eppensteiner.de.

Additional characteristic curves for the filters in this catalogue can be found in the BRFS filter calculation program.

Quality and standardization

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

The strength calculation and filter tests are completed according to current rules as well as according to national and international standards.

The CE marking according to DGRL will be performed optionally, depending on the individual case and the operating conditions.

We will willingly perform the conformity evaluation according to DGRL for you.

Acceptance of the filters by classification companies will be possible upon request.

Ordering details

of the filter

16	FE		–A	–0		V2,2–D0		0	

Pressure
16 bar **= 16**

Design
Inline filter **= FE**

Nom. size
FE… **= 2500 3000 4000 6000 7000 7500**

Filtration rating in µm
nominal
Stainless steel wire mesh, cleanable:
G10, G25 **=G…**
Paper, non-cleanable P10 **= P…**
absolute (ISO 16889)
Micro glass, non-cleanable
H3XL, H10XL, H20XL **= H…XL**

Pressure differential
Max. admissible pressure differential of the filter element
30 bar **= A**

Element model
Standard adhesive T = 100 °C **= 0…**
Standard material **= …0**
chemically nickel-plated **= …D** [1]

Solenoid
without **= 0**

Complementary details
0 = without
M = with cover lifting tool
Z [2] **=** Certificate

Material
0 = Standard

Seal
M = NBR seal
V = FKM seal

Connection
D0 = DIN flange

Clogging indicator
V2,2 = clogging indicator, optical
State switching pressure 2.2 bar

Bypass valve
0 = without
6 = 3 bar

Ordering example:
16 FE 3000 H10XL-A00-00V2,2-D0M00

of the filter element

2.		–A	–	–

Filter element
Design **= 2.**

Nom. size

Filter	Filter element	
	Number	Type
2500, 3000	3	**= 0058**
4000	4	**= 0059**
6000	6	**= 0059**
7000, 7500	10	**= 0059**

Filtration rating in µm
nominal
Stainless steel wire mesh, cleanable: G10, G25 **=G…**
Paper, non-cleanable: P10 **= P…**
absolute (ISO 16889)
Micro glass, non-cleanable: H3XL, H10XL, H20XL **= H…XL**

Pressure differential
Max. admissible pressure differential of the filter element
30 bar **= A**

Seal
M = NBR seal
V = FKM seal

Bypass valve
0 = without
6 = 3 bar

Element model
0… = Standard adhesive T = 100 °C
…0 = Standard material
…D [1] **=** chemically nickel-plated

Ordering example:
2.0058 H10XL-A00-0-M

[1] Only in connection with FKM seal.

[2] Z = manufacturer's inspection certificate M according to DIN 55350 T18

Preferred types

Inline filter with bypass, filtration rating 20 µm and nominal pressure 16 bar

Type	Flow in L/min at ν = 30 mm²/s and Δp = 0.5 bar	Material number
16 FE 2500 H20XL-A 00-06V2,2-D0M00	2780	**R928001255**
16 FE 3000 H20XL-A 00-06V2,2-D0M00	3650	**R928001256**
16 FE 4000 H20XL-A 00-06V2,2-D0M00	4060	**R928001257**
16 FE 6000 H20XL-A 00-06V2,2-D0M00	6750	**R928001258**
16 FE 7000 H20XL-A 00-06V2,2-D0M00	9100	**R928001259**
16 FE 7500 H20XL-A 00-06V2,2-D0M00	13300	**R928001260**

Inline filter with bypass, filtration rating 10 µm and nominal pressure 16 bar

Type	Flow in L/min at ν = 30 mm²/s and Δp = 0.5 bar	Material number
16 FE 2500 H10XL-A 00-06V2,2-D0M00	2400	**R928001249**
16 FE 3000 H10XL-A 00-06V2,2-D0M00	2950	**R928001250**
16 FE 4000 H10XL-A 00-06V2,2-D0M00	3540	**R928001251**
16 FE 6000 H10XL-A 00-06V2,2-D0M00	5750	**R928001252**
16 FE 7000 H10XL-A 00-06V2,2-D0M00	8100	**R928001253**
16 FE 7500 H10XL-A 00-06V2,2-D0M00	11800	**R928001254**

Inline filter with bypass, filtration rating 3 µm and nominal pressure 16 bar

Type	Flow in L/min at ν = 30 mm²/s and Δp = 0.5 bar	Material number
16 FE 2500 H3XL-A 00-06V2,2-D0M00	1390	**R928001243**
16 FE 3000 H3XL-A 00-06V2,2-D0M00	1480	**R928001244**
16 FE 4000 H3XL-A 00-06V2,2-D0M00	2100	**R928001245**
16 FE 6000 H3XL-A 00-06V2,2-D0M00	3250	**R928001246**
16 FE 7000 H3XL-A 00-06V2,2-D0M00	5050	**R928001247**
16 FE 7500 H3XL-A 00-06V2,2-D0M00	5550	**R928001248**

Preferred types

Inline filter without bypass, filtration rating 20 µm and nominal pressure 16 bar

Type	Flow in L/min at ν = 30 mm²/s and Δp = 0.5 bar	Material number
16 FE 2500 H20XL-A 00-00V2,2-D0M00	2780	**R928001237**
16 FE 3000 H20XL-A 00-00V2,2-D0M00	3650	**R928001238**
16 FE 4000 H20XL-A 00-00V2,2-D0M00	4060	**R928001239**
16 FE 6000 H20XL-A 00-00V2,2-D0M00	6750	**R928001240**
16 FE 7000 H20XL-A 00-00V2,2-D0M00	9100	**R928001241**
16 FE 7500 H20XL-A 00-00V2,2-D0M00	13300	**R928001242**

Inline filter without bypass, filtration rating 10 µm and nominal pressure 16 bar

Type	Flow in L/min at ν = 30 mm²/s and Δp = 0.5 bar	Material number
16 FE 2500 H10XL-A 00-00V2,2-D0M00	2400	**R928001231**
16 FE 3000 H10XL-A 00-00V2,2-D0M00	2950	**R928001232**
16 FE 4000 H10XL-A 00-00V2,2-D0M00	3540	**R928001233**
16 FE 6000 H10XL-A 00-00V2,2-D0M00	5750	**R928001234**
16 FE 7000 H10XL-A 00-00V2,2-D0M00	8100	**R928001235**
16 FE 7500 H10XL-A 00-00V2,2-D0M00	11800	**R928001236**

Inline filter without bypass, filtration rating 3 µm and nominal pressure 16 bar

Type	Flow in L/min at ν = 30 mm²/s and Δp = 0.5 bar	Material number
16 FE 2500 H3XL-A 00-00V2,2-D0M00	1390	**R928001225**
16 FE 3000 H3XL-A 00-00V2,2-D0M00	1480	**R928001226**
16 FE 4000 H3XL-A 00-00V2,2-D0M00	2100	**R928001227**
16 FE 6000 H3XL-A 00-00V2,2-D0M00	3250	**R928001228**
16 FE 7000 H3XL-A 00-00V2,2-D0M00	5050	**R928001229**
16 FE 7500 H3XL-A 00-00V2,2-D0M00	5550	**R928001230**

Ordering details: electronic switching element for clogging indicator

ABZ | F | V – | –1X / –DIN

Rexroth power unit accessories

Filter

Clogging indicator

electronic switching element with 1 switching point (changeover) round plug-in connection M12x1 **= E1SP-M12X1**

electronic switching element with 2 switching points (normally open/normally closed), 75%, 100%, round plug-in connection M12x1, 3 LED **= E2SP-M12X1**

electronic switching element with 2 switching points (normally open/ normally closed), 75%, 100%, signal suppression until 30 °C Round plug-in connection M12x1, 3 LED **= E2SPSU-M12X1**

–DIN = Identification for DIN and SAE models

Unit series

1X = unit series 10 to 19 (10 to 19; unchanged installation and connection dimensions)

Electronic switching element	Material no.
ABZFV-E1SP-M12X1-1X/-DIN	R901025339
ABZFV-E2SP-M12X1-1X/-DIN	R901025340
ABZFV-E2SPSU-M12X1-1X/-DIN	R901025341

Ordering example: Pressure filter with mechanical optical clogging indicator for $p_{nom.}$ = 16 bar *[232 psi]* with bypass valve, nominal size 3000, with filter element 10 µm and electronic switching element M12x1 with 1 switching point for pressure liquid mineral oil HLP according to DIN 51524.

Filter: **16 FE 3000 H10XL-A00-00V2,2-D0M00** **Material number: R928001232**

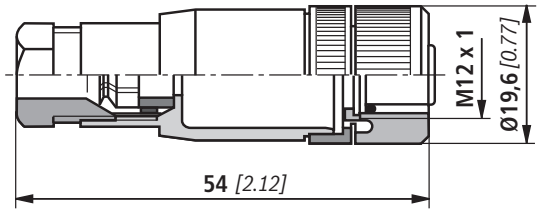
Clogging indicator: **ABZFV-E1SP-M12X1-1X/-DIN** **Material number: R901025339**

Plug-in connectors according to IEC 60947-5-2 (dimensions in mm *[inch]*)

for electronic switching element with round plug-in connection M12 x 1

Plug-in connector for K24 4-pin, M12 x 1 with screwed connection, cable fitting Pg9.

Material no. R900031155



Plug-in connector for K24-3m 4-pin, M12 x 1 with molded in PVC cable, 3 m long.

Line cross-section: 4 x 0.34 mm²

Core marking:

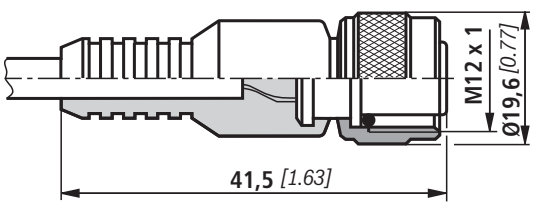
1 brown

2 white

3 blue

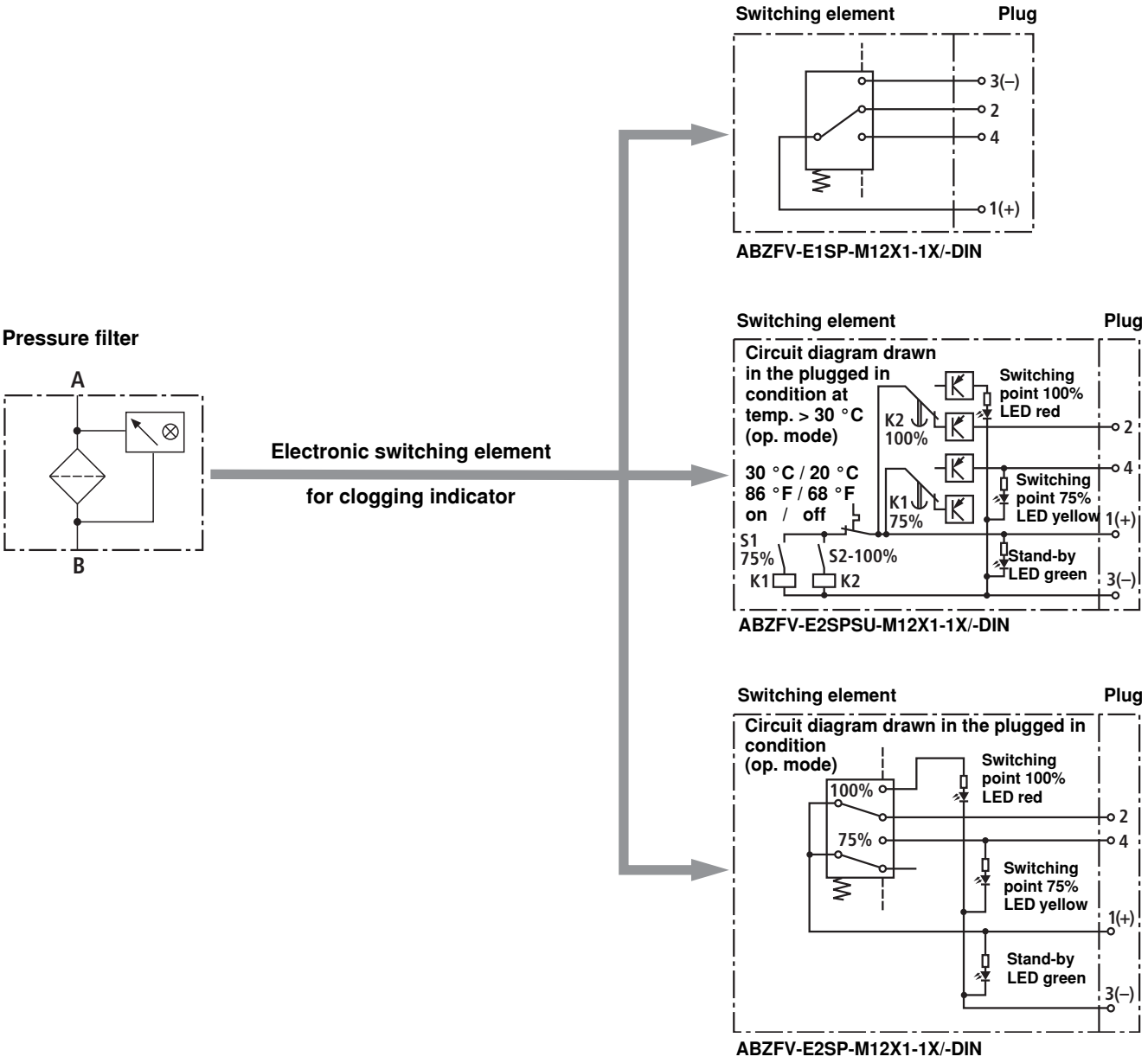
4 black

Material no. R900064381



For additional round plug-in connections, see data sheet 08006.

Symbols


Pressure filter
A
B
Electronic switching element
for clogging indicator
Switching element
Plug
3(–)
2
4
1(+)
ABZFV-E1SP-M12X1-1X/-DIN
Switching element
Plug
Circuit diagram drawn in the plugged in condition at temp. > 30 °C (op. mode)
30 °C / 20 °C
86 °F / 68 °F
on / off
K2 100%
K1 75%
Switching point 100% LED red
Switching point 75% LED yellow
Stand-by LED green
S1 75%
S2-100%
K1
K2
2
4
1(+)
3(–)
ABZFV-E2SPSU-M12X1-1X/-DIN
Switching element
Plug
Circuit diagram drawn in the plugged in condition (op. mode)
100%
75%
Switching point 100% LED red
Switching point 75% LED yellow
Stand-by LED green
2
4
1(+)
3(–)
ABZFV-E2SP-M12X1-1X/-DIN

Technical data (for applications outside these parameters, please consult us!)

Electronic (electric switching element)

Electrical connection		Round plug-in connection M12 x 1, 4-pin
Contact load, direct voltage	A	Max. 1
Voltage range	E1SP-M12x1 V DC/AC	Max. 150
	E2SP V DC	10 to 30
Max. switching capacity with ohmic loads		20 VA; 20 W; (70 VA)
Switching type	E1SP-M12x1	Changeover
	E2SP-M12x1	Normally open at 75% of the response pressure, Normally closed at 100% of the response pressure
	E2SPSU-M12x1	Normally open at 75% of the response pressure, Normally closed at 100% of the response pressure Signal switching through at 30 °C *[86 °F]*, Return switching at 20 °C *[68 °F]*
Display via LEDs in the electronic switching element E2SP...		Stand-by (LED green); 75% switching point (LED yellow) 100% switching point (LED red)
Type of protection according to EN 60529		IP 65
For direct voltage above 24 V a spark suppression is to be provided to protect the switching contacts.		
Weight electronic switching element: – with round plug-in connection M12 x 1	kg *[lbs]*	0.1 *[0.22]*

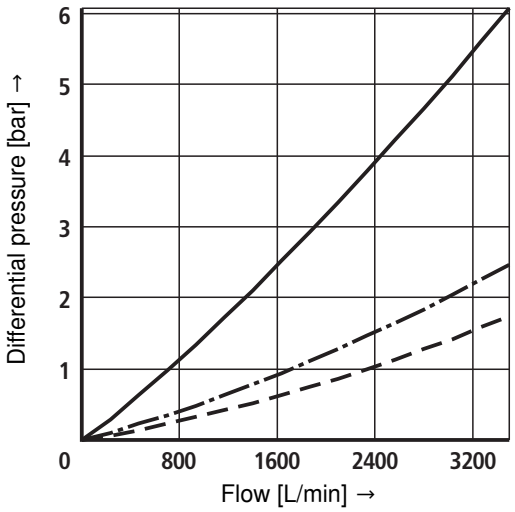
Characteristic curves H3XL...

Specific weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filters recommended
initial Δ*p* for design = 0.8 bar

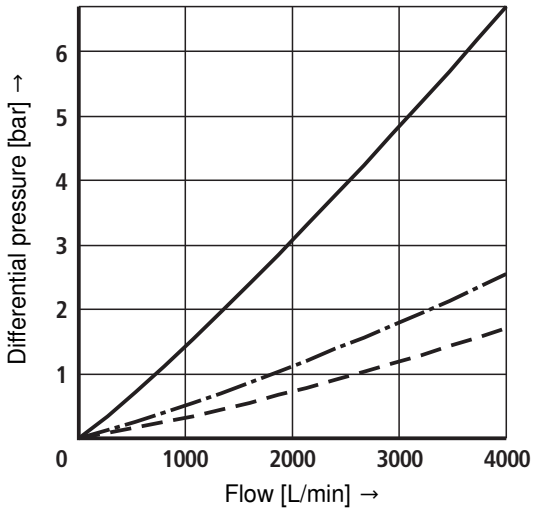
An optimum filter selection is made possible by our computer program "BRFilterSelect".

Oil viscosity: 120 mm²/s, 46 mm²/s, 30 mm²/s

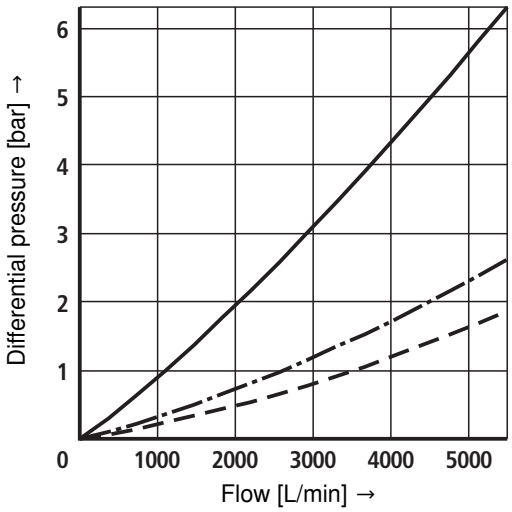
2500



3000



4000



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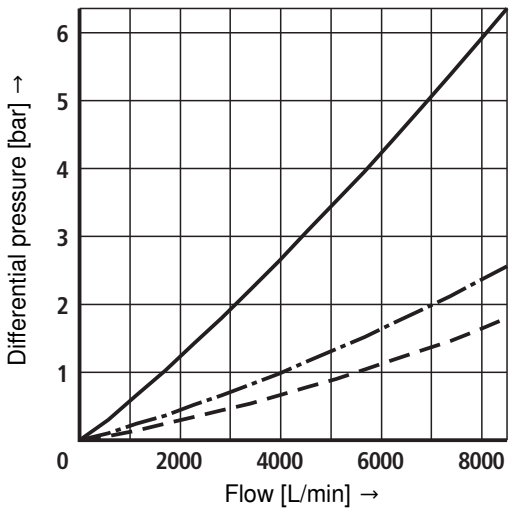

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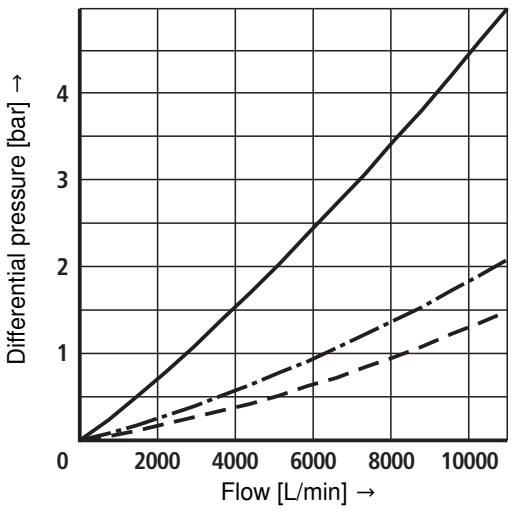

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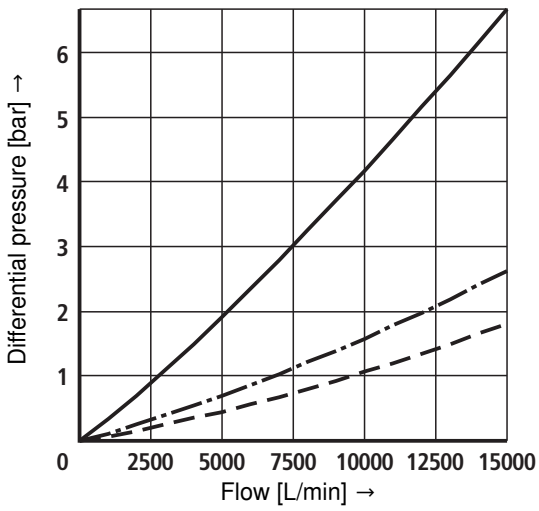


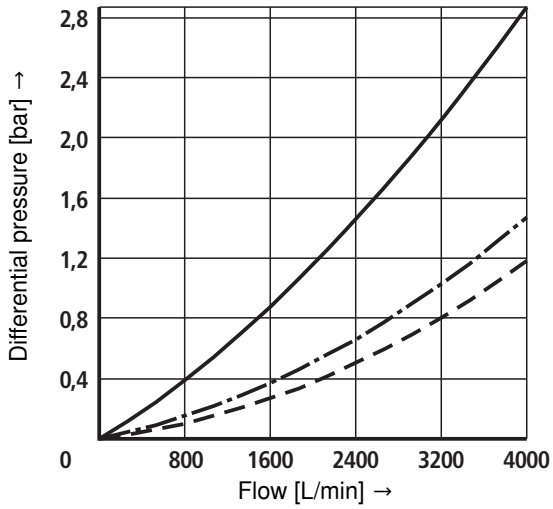
Characteristic curves **H10XL…**

Specific weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filters recommended initial Δ*p* for design = 0.8 bar

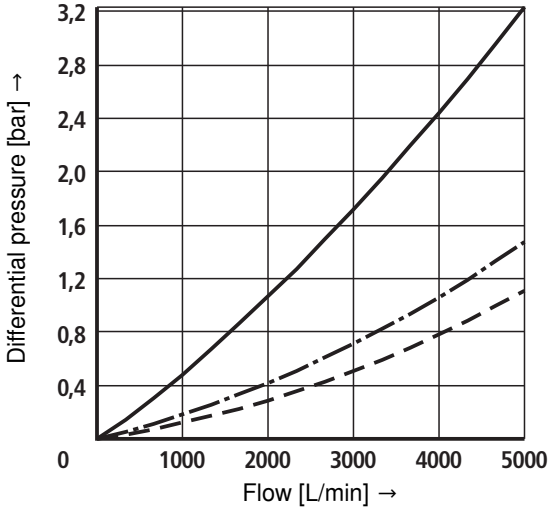
An optimum filter selection is made possible by our computer program "BRFilterSelect".

Oil viscosity: 120 mm²/s, 46 mm²/s, 30 mm²/s

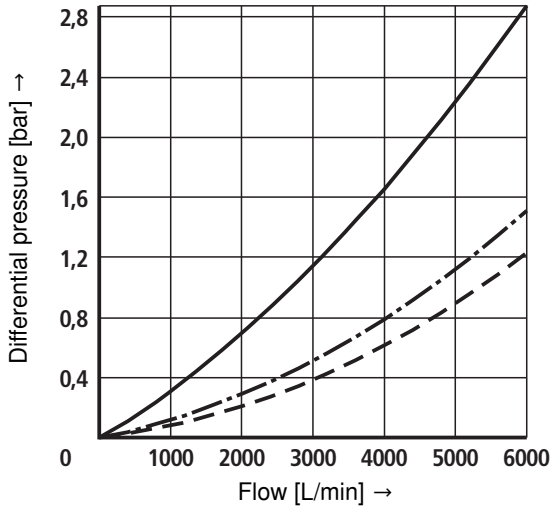
2500



3000



4000



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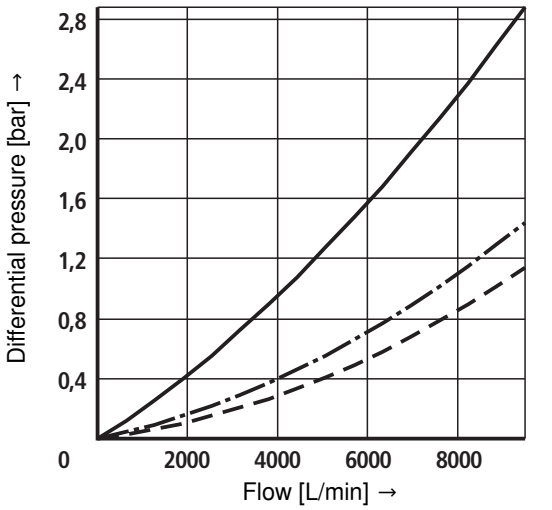

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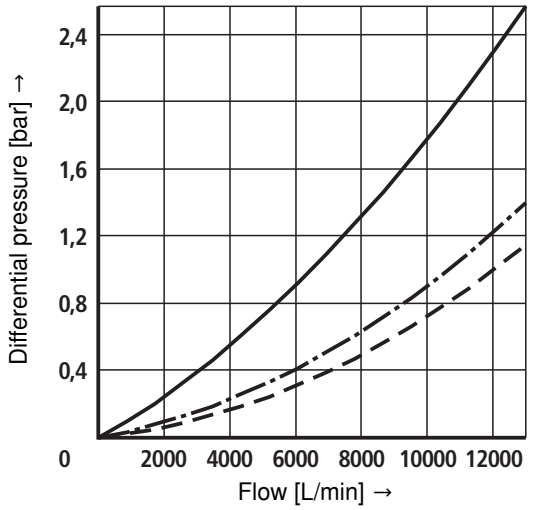

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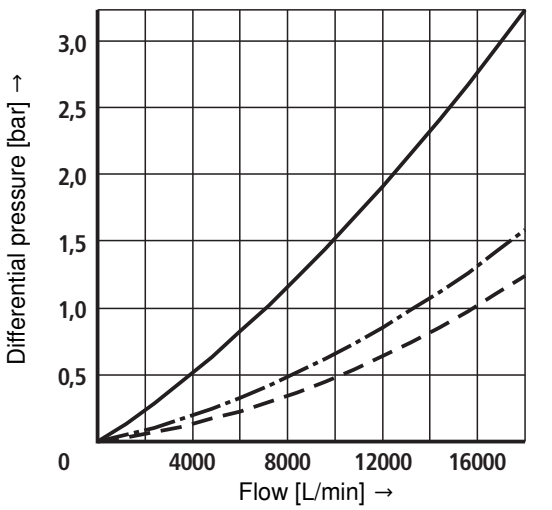


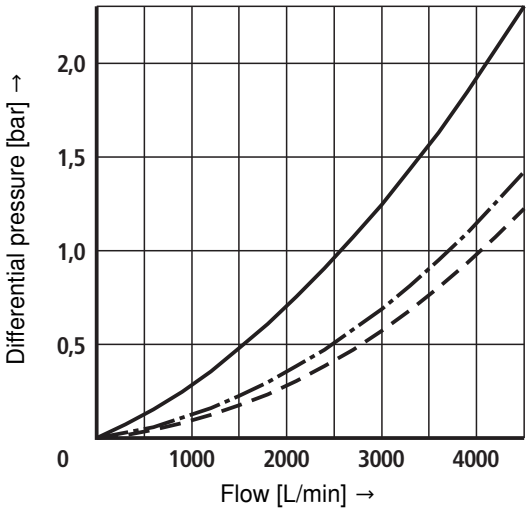
Characteristic curves H20XL…

Specific weight: < 0.9 kg/dm³
Δ*p*-Q characteristic curves for complete filters recommended initial Δ*p* for design = 0.8 bar

An optimum filter selection is made possible by our computer program "BRFilterSelect".

Oil viscosity: 120 mm²/s, 46 mm²/s, 30 mm²/s

2500



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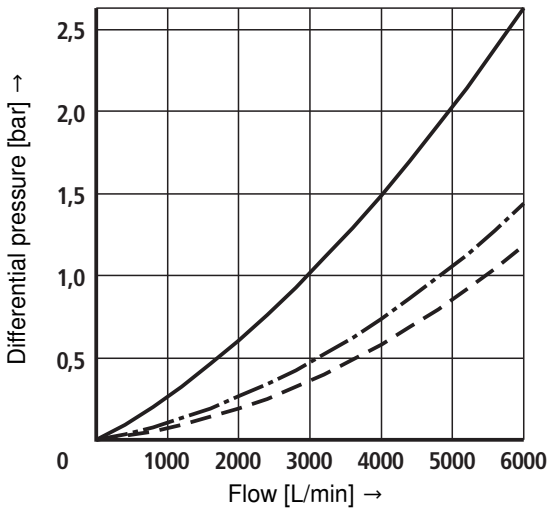

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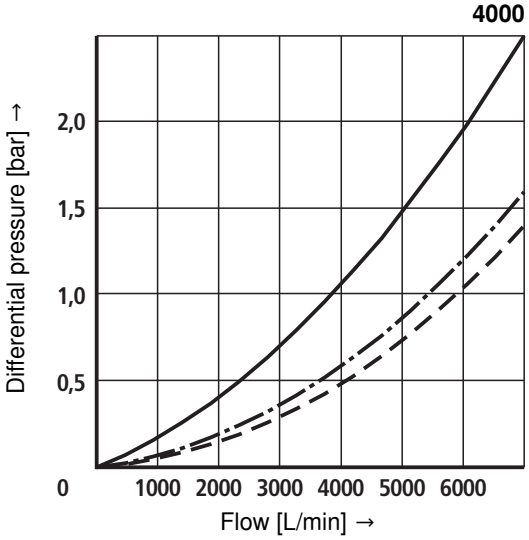

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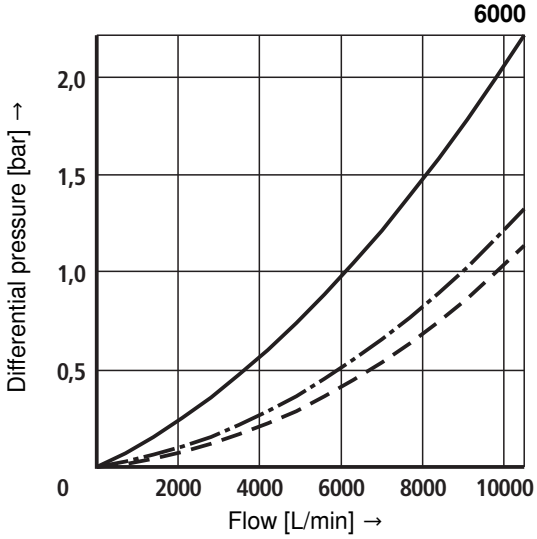
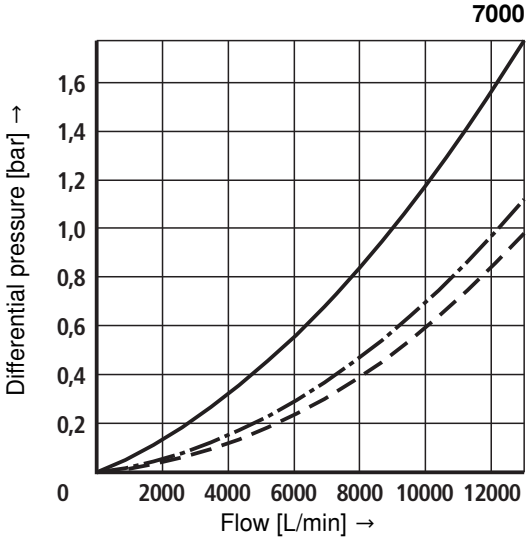
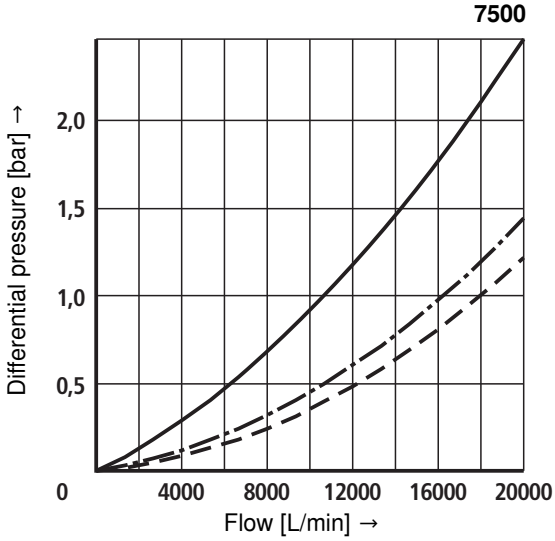


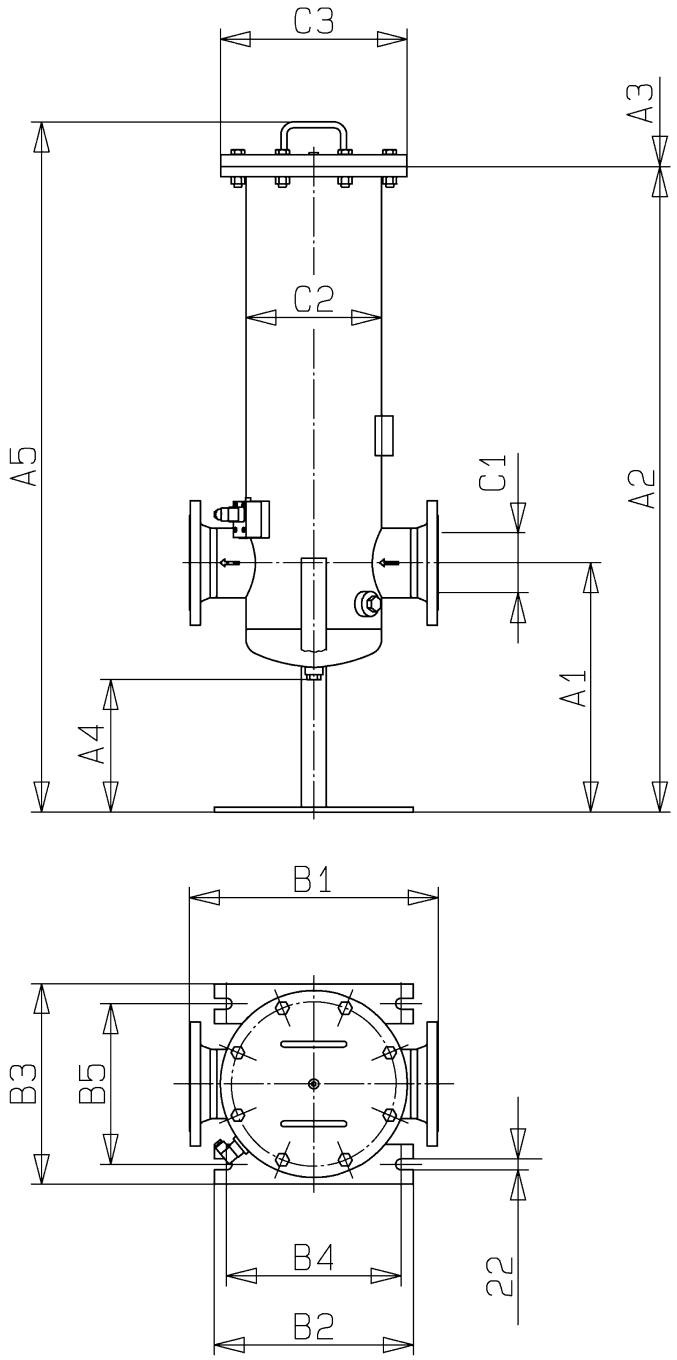
7000



7500



Unit dimensions (dimensions in mm)

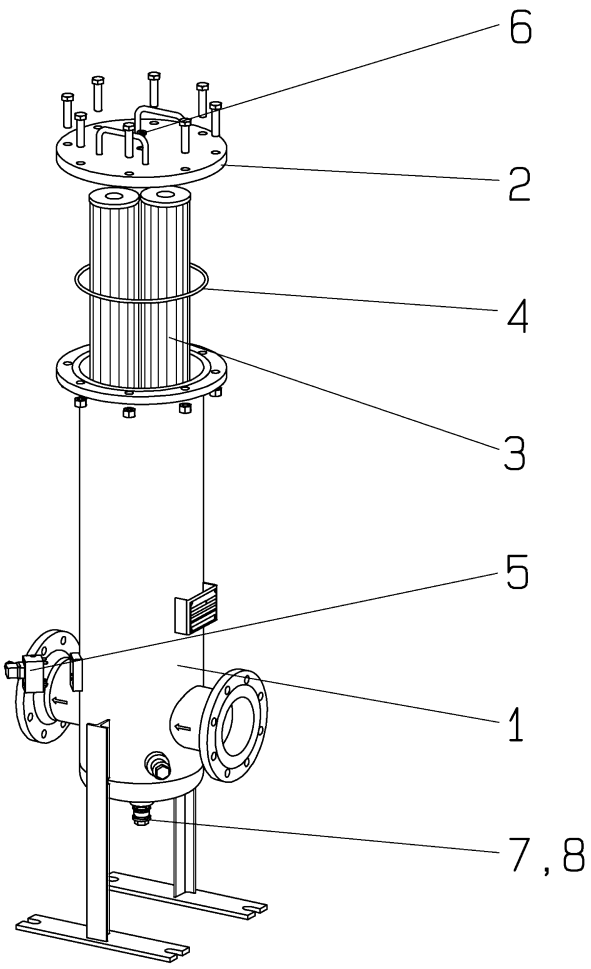


Type 16 FE…	Content in L	Weight in kg [1]	A1	A2	A3 [2]	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3
2500	51	104	500	1295	860	257	1385	500	400	403	350	323	DN 125	Ø 273	Ø 375
3000	53	108	500	1295	860	257	1385	500	400	403	350	323	DN 150	Ø 273	Ø 375
4000	94	140	450	1375	990	214	1465	550	400	454	350	374	DN 150	Ø 323.9	Ø 420
6000	149	168	500	1640	990	212	1730	600	400	486	350	406	DN 200	Ø 355.6	Ø 445
7000	335	333	500	1675	990	150	1841	740	400	639	350	559	DN 250	Ø 508	Ø 645
7500	344	355	500	1705	990	114	1870	750	400	639	350	559	DN 300	Ø 508	Ø 645

[1] Weight including standard filter element and clogging indicator.

[2] Withdrawal dimension for filter element replacement.

Spare parts



Part	Piece	Description	Material	Ordering information 16 FE…					
			Steel	2500	3000	4000	6000	7000	7500
1	1	Filter housing	Steel	Please indicate ordering information “Filter”					
2	1	Filter cover	Steel	Please indicate ordering information “Filter”					
3	1	Filter element kit	various	Please indicate ordering information “Filter Element”					
				3 Single elements 2.0058		4 Single elements 2.0059	6 Single elements 2.0059	10 Single elements 2.0059	
3.1	1	Seal ring kit	NBR / FKM	Please indicate ordering information “Filter”					
4	1	Seal ring	NBR / FKM	Please indicate ordering information “Filter”					
5	1	Clogging indicator	various	Please indicate ordering information “Clogging indicator”					
6	1	Bleed	1.4571 / FKM	Part No. 13284					
7	2	Plug	5.8	Part No. 791					
8	2	Seal ring	Soft steel	Part No. 335					

All part numbers BRFS specific.

Spare parts (insert for DIN and SAE filters)

Mechanical optical clogging indicator

ABZ F V – NV2 – 1X / – DIN

Rexroth power unit accessories

Filter

Clogging indicator

mechanical optical clogging indicator
for low-pressure filters
Switching point 2.2 bar *[32 psi]* **= NV2**

DIN = Identification for DIN and SAE models

Sealing material

M = see table below

V = see table below

Unit series

1X = unit series 10 to 19 (10 to 19; unchanged installation and connection dimensions)

Mechanical optical clogging indicator	**Material no.**
ABZFV-NV2-1X/M-DIN	R901025312

The ordering details for filter elements can be found on page 3.

Sealing kits must be ordered by stating the complete part key.

Sealing material and surface coating for pressure fluids

		Ordering details	
Mineral oils		Sealing material	Element model
Mineral oil	HLP according to DIN 51524	M	...0
Fire-resistant hydraulic fluids			
Emulsions	HFA-E according to DIN 24320	M	...0
Synthetic water solutions	HFA-S according to DIN 24320	M	...D
Water solutions	HFC according to VDMA 24317	M	...D
Phosphate esters	HFD-R according to VDMA 24317	V	...D
Organic esters	HFD-U according to VDMA 24317	V	...D
Hydraulic fluids that are fast biodegradable			
Triglycerides (rape seed oil)	HETG according to VDMA 24568	M	...D
Synthetic esters	HEES according to VDMA 24568	V	...D
Polyglycoles	HEPG according to VDMA 24568	V	...D

Installation, commissioning and maintenance

Installation

Verify operating pressure with name plate information.

Install the filter into the pipe work; when doing so, consider the flow direction and the withdrawal height of the filter elements.

⚠ Warning!

Vessel is under pressure!

Assemble and disassemble the filter only when system is depressurized!

Do not replace the clogging indicator while the filter is under pressure!

Functional and safety warranty only applicable when using genuine Rexroth spare parts!

Service filter only by trained personnel!

Commissioning

Switch on system pump.

Bleed filter by opening the bleed screw, close when operating fluid vents.

Maintenance

If at operating temperature, the red indicator pin shows out of the clogging indicator so far that it contacts the plastic-cap and/or if the switching process in the electric display is triggered, the filter elements are clogged and need to be replaced or cleaned respectively.

Filter element replacement

Close the shut-off device.

Open the bleed screw and reduce the pressure. Lift off the filter cover. Open the plug at the filter housing and drain the filter. Remove the filter elements from the lower centering spigots in the filter housing by turning them lightly.

Check the filter housing for cleanliness and clean if necessary.

Replace the filter elements.

Re-install the cleaned or new filter elements (fabric material) into the filter housing. Check the seal and replace it in case of damage or wear. Re-attach the filter cover.

Close the plug at the filter housing. Fill the filter slowly. When operating fluid vents, close the bleed screw.

Filter is ready for use.

Notes

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