

Line filter

RE 51400/01.09
Replaces: 08.08

1/14

Types 40/100 LEN 0040 to 0400; 40/100 LE 0003, 0015, 0018

Nominal sizes according to **DIN 24550**: 0040 to 0400
 Nominal sizes according to BRFS: 0003, 0015, 0018
 Nominal pressures 40, 100 bar
 Connections up to G 1 1/2
 Operating temperature -10 °C to +100 °C



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Application

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

Features

- Filters for inline installation
- Extremely large filter area
- Flow-optimised design due to 3D computer-supported design
- Low pressure drop
- Special highly efficient filter media
- Versatile application possibilities

Design

Filter head with inlet, outlet and filter element spigot. Filter bowl is unscrewed downwards.

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 system "FILTER" in view of prolonged life and 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 "Filter Elements" brochure.

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 electronic switching element is attached to the mechanical optical clogging indicator and held by means of a locking ring.

Bypass valve

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

Characteristic curves

Our software "BRFilterSelect" 1) makes it possible to optimise filter selection, see download area
<http://www.eppensteiner.de>.

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

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 pressure filters for hydraulic applications according to RE 51400 are pressure holding equipment according to article 1, section 2.1.4 of the pressure equipment directive 97/23/EG (DGRL). However, on the basis of the exception in article 1, section 3.6 of the DGRL hydraulic filters are exempt from the DGRL, if they are not classified higher than category I (guideline 1/19). They do not receive a CE mark.

Ordering code

Of the filter

Pressure

40 bar = 40
100 bar = 100

Design

Line filter with filter element according to DIN 24550 = LEN
Line filter with filter element according to BRFS standard = LE

Nom. size

LEN... = 0040 0063 0100
0160 0250 0400
LE... = 0003³⁾ 0015 0018

Filtration rating 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
330 bar = B²⁾

Element model

Standard adhesive T = 100 °C = 0...
Standard material = ...0
Chemically nickel-plated = ...D⁴⁾

Solenoid

without = 0

Complementary details

0 = Without
Z⁵⁾ = Certificate

Material

0 = Standard
D = Chemically nickelplated

Seal

M = NBR seal
V = FKM seal

Connection

R0 = Pipe thread

Clogging indicator

V2,2¹⁾ = Clogging indicator, optical
specify hydraulic pressure 2.2 bar

V5,0²⁾ = Clogging indicator, optical
specify hydraulic pressure 5.0 bar

Bypass valve

0 = Without
7¹⁾ = 3.5 bar
9²⁾ = 7 bar

Ordering example:

100 LEN 0063 H10XL-A00-09V5,0-R0M00

Of the filter element

Filter element

Design = 2.

Nom. size

LEN... = 0040 0063 0100 0160 0250 0400
LE... = 0004 0015 0018

Filtration rating μm

Nominal

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
330 bar = B²⁾

Seal

M = NBR seal
V = FKM seal

Bypass valve

0 = With filter element always 0

Element model

0... = Standard adhesive T = 100 °C

...0 = Standard material

...D⁴⁾ = Chemically nickel-plated

Ordering example:

2. 0063 H10XL-A00-0-M

¹⁾ Only at pressure = 40 bar

²⁾ Only at pressure = 100 bar

³⁾ Filter element 2.0004

⁴⁾ Only in connection with FKM seal

⁵⁾ Manufacturer's inspection certificate M according to DIN 55350 T18

Preferred types

Line filter with bypass, filtration rating 10 µm and nominal pressure 40 bar

Type	Flow [Li/min] → at 30mm/s and $\Delta p = 0.8$ bar	Material number
40 LE 0003 H10XL-A00-07V2,2-R0M00	33	R928000016
40 LEN 0040 H10XL-A00-07V2,2-R0M00	43	R928000010
40 LEN 0063 H10XL-A00-07V2,2-R0M00	64	R928000011
40 LEN 0100 H10XL-A00-07V2,2-R0M00	84	R928000012
40 LE 0015 H10XL-A00-07V2,2-R0M00	133	R928000017
40 LE 0018 H10XL-A00-07V2,2-R0M00	153	R928000018
40 LEN 0160 H10XL-A00-07V2,2-R0M00	218	R928000013
40 LEN 0250 H10XL-A00-07V2,2-R0M00	285	R928000014
40 LEN 0400 H10XL-A00-07V2,2-R0M00	346	R928000015

Line filter with bypass, filtration rating 3 µm and nominal pressure 40 bar

Type	Flow [Li/min] → at 30mm/s and $\Delta p = 0.8$ bar	Material number
40 LE 0003 H3XL-A00-07V2,2-R0M00	14	R928000007
40 LEN 0040 H3XL-A00-07V2,2-R0M00	17	R928000001
40 LEN 0063 H3XL-A00-07V2,2-R0M00	28	R928000002
40 LEN 0100 H3XL-A00-07V2,2-R0M00	42	R928000003
40 LE 0015 H3XL-A00-07V2,2-R0M00	61	R928000008
40 LE 0018 H3XL-A00-07V2,2-R0M00	77	R928000009
40 LEN 0160 H3XL-A00-07V2,2-R0M00	98	R928000004
40 LEN 0250 H3XL-A00-07V2,2-R0M00	146	R928000005
40 LEN 0400 H3XL-A00-07V2,2-R0M00	210	R928000006

Line filter with bypass, filtration rating 10 µm and nominal pressure 100 bar

Type	Flow [Li/min] → at 30mm/s and $\Delta p = 0.8$ bar	Material number
100 LE 0003 H10XL-A00-09V5,0-R0M00	33	R928000124
100 LEN 0040 H10XL-A00-09V5,0-R0M00	43	R928000118
100 LEN 0063 H10XL-A00-09V5,0-R0M00	64	R928000119
100 LEN 0100 H10XL-A00-09V5,0-R0M00	84	R928000120
100 LE 0015 H10XL-A00-09V5,0-R0M00	133	R928000125
100 LE 0018 H10XL-A00-09V5,0-R0M00	153	R928000126
100 LEN 0160 H10XL-A00-09V5,0-R0M00	218	R928000121
100 LEN 0250 H10XL-A00-09V5,0-R0M00	285	R928000122
100 LEN 0400 H10XL-A00-09V5,0-R0M00	346	R928000123

Line filter with bypass, filtration rating 3 µm and nominal pressure 100 bar

Type	Flow [Li/min] → at 30mm/s and $\Delta p = 0.8$ bar	Material number
100 LE 0003 H3XL-A00-09V5,0-R0M00	14	R928000115
100 LEN 0040 H3XL-A00-09V5,0-R0M00	17	R928000109
100 LEN 0063 H3XL-A00-09V5,0-R0M00	28	R928000110
100 LEN 0100 H3XL-A00-09V5,0-R0M00	42	R928000111
100 LE 0015 H3XL-A00-09V5,0-R0M00	61	R928000116
100 LE 0018 H3XL-A00-09V5,0-R0M00	77	R928000117
100 LEN 0160 H3XL-A00-09V5,0-R0M00	98	R928000112
100 LEN 0250 H3XL-A00-09V5,0-R0M00	146	R928000113
100 LEN 0400 H3XL-A00-09V5,0-R0M00	210	R928000114

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 up to 30 °C round plug-in connection M12x1, 3 LED						= E2SPSU-M12X1

-DIN = Mark for 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.
ABZ FV-E1SP-M12X1-1X/-DIN	R901025339
ABZ FV-E2SP-M12X1-1X/-DIN	R901025340
ABZ FV-E2SPSU-M12X1-1X/-DIN	R901025341

Ordering example: Pressure filter with mechanical optical clogging indicator for $p_{nom.} = 100 \text{ bar [1450 psi]}$ with bypass valve, nominal size 0063, with filter element $10 \mu\text{m}$ and electronic switching element M12x1 with 1 switching point for pressure fluid mineral oil HLP according to DIN 51524.

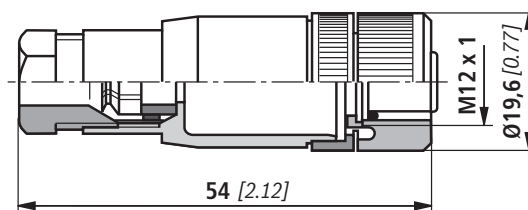
Filter: 100 LEN 0063 H10XL-A00-09V5,0-R0M00 **Material number: R928000119**
Clogging indicator: ABZ FV-E1SP-M12X1-1X/-DIN **Material number: R901025339**

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

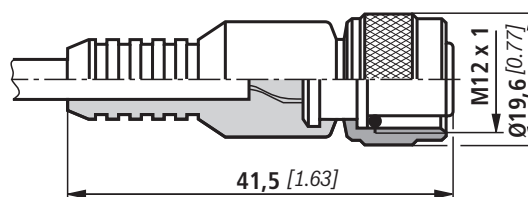


Plug-in connector for K24-3m 4-pin, M12 x 1 with moulded in PVC cable, 3 m long.

Line cross-section: 4 x 0.34 mm²

- Core marking:**
- 1 Brown
 - 2 White
 - 3 Blue
 - 4 Black

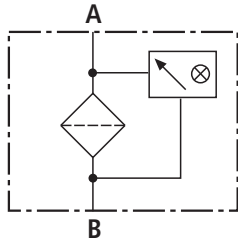
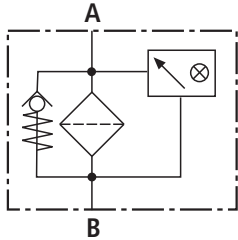
Material no. R900064381



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

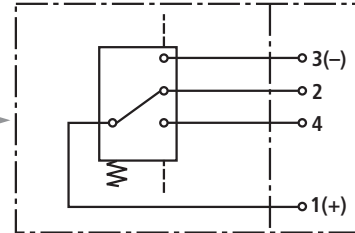
Symbols

Pressure filter



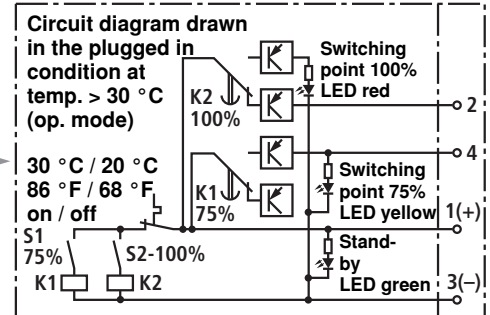
Electronic switching element
for clogging indicator

Switching element Plug



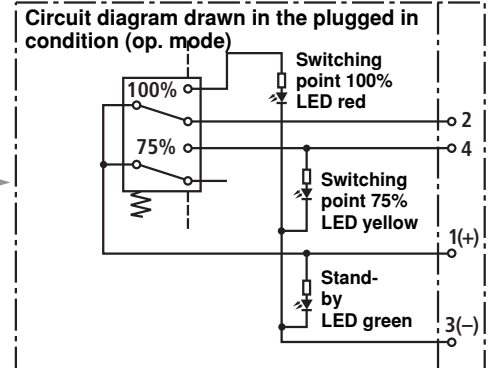
ABZFV-E1SP-M12X1-1X/-DIN

Switching element Plug



ABZFV-E2SPSU-M12X1-1X/-DIN

Switching element Plug



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. switching capacity with ohmic loads 1
Voltage range	E1SP-M12x1 V DC/AC	Max. switching capacity with ohmic loads 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]

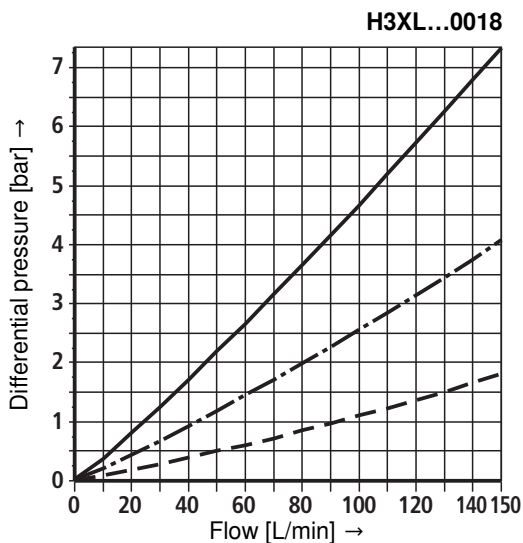
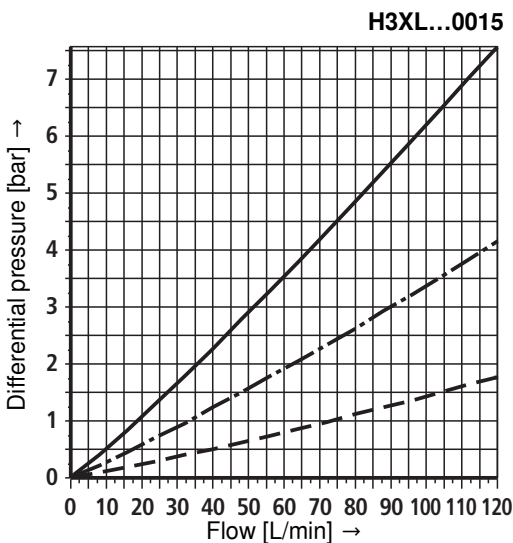
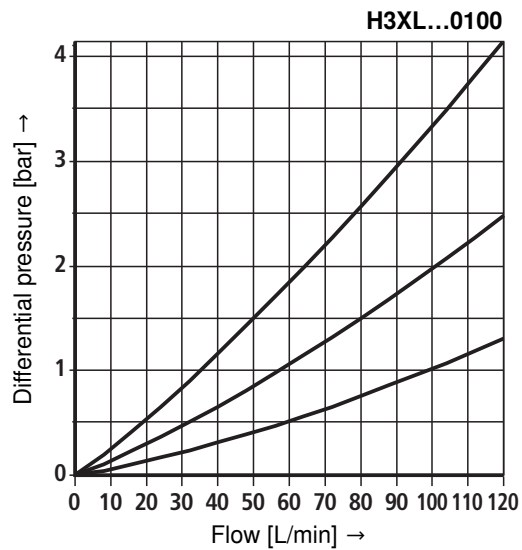
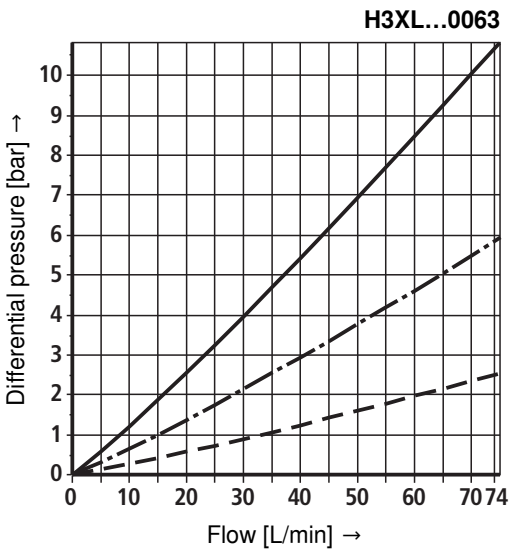
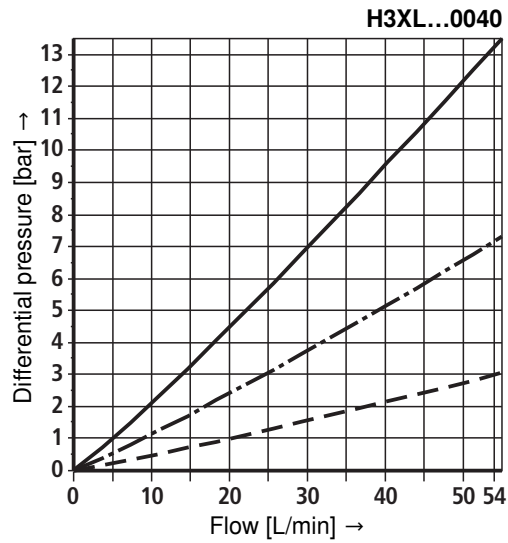
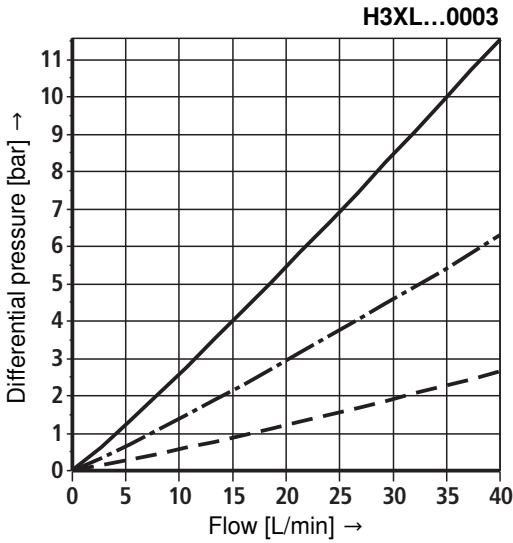
Characteristic curves

H3XL...

Specific weight: <math>< 0.9 \text{ kg/dm}^3</math>
 Δp -Q characteristic curves for complete filters recommended
 initial Δp for design = 0.8 bar

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

Oil viscosity:
 — 120 mm²/s
 - · - 46 mm²/s
 - - - 30 mm²/s



Characteristic curves

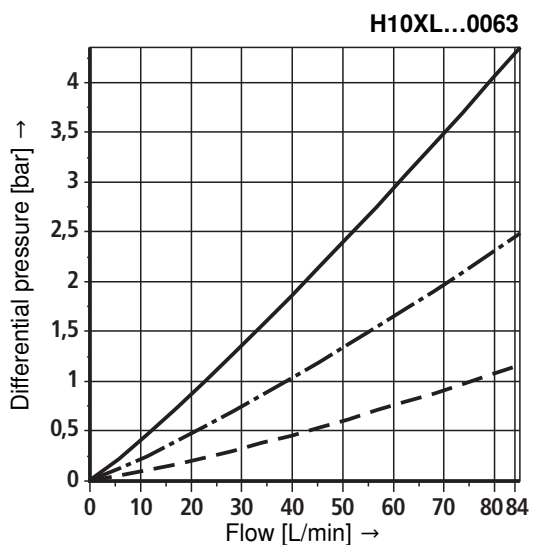
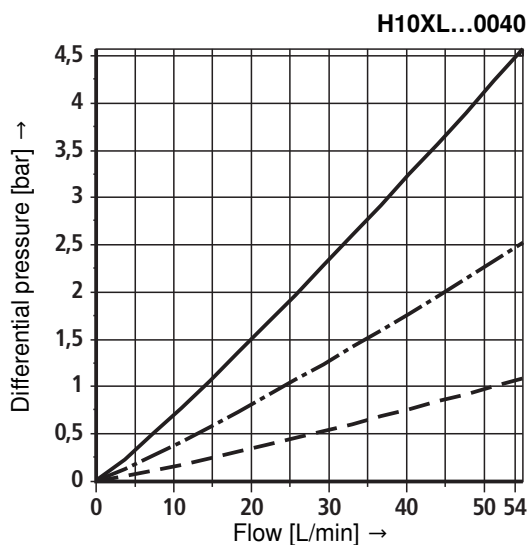
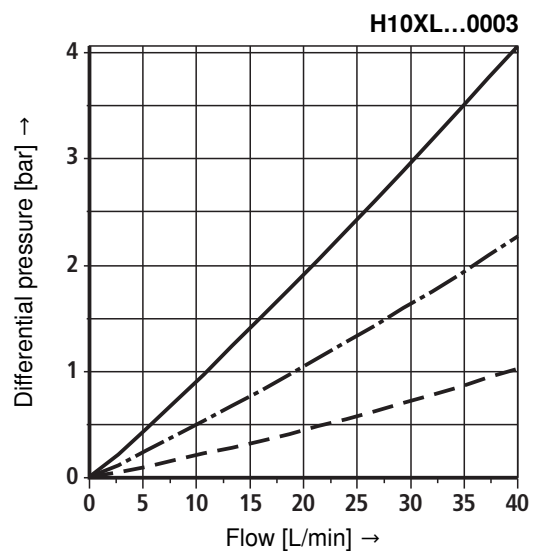
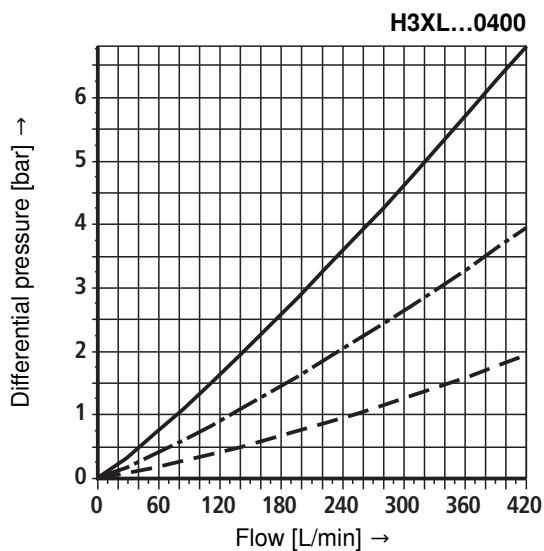
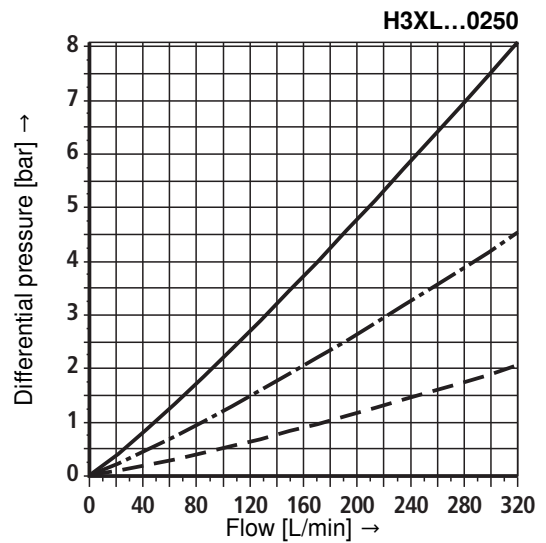
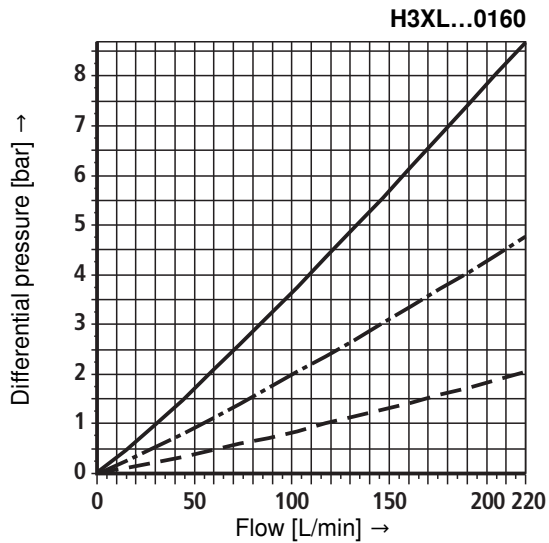
Specific weight: <math>< 0.9 \text{ kg/dm}^3</math>

Δp -Q characteristic curves for complete filters recommended initial Δp for design = 0.8 bar

H3XL... und H10XL...

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

Oil viscosity:
 — 120 mm²/s
 - - 46 mm²/s
 - - - 30 mm²/s



Characteristic curves

H10XL...

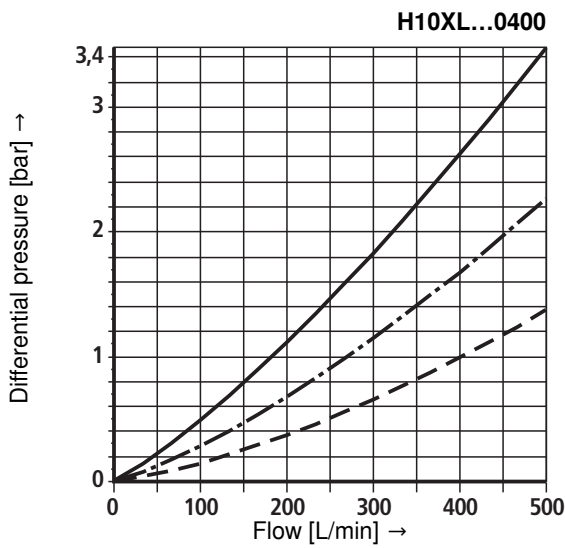
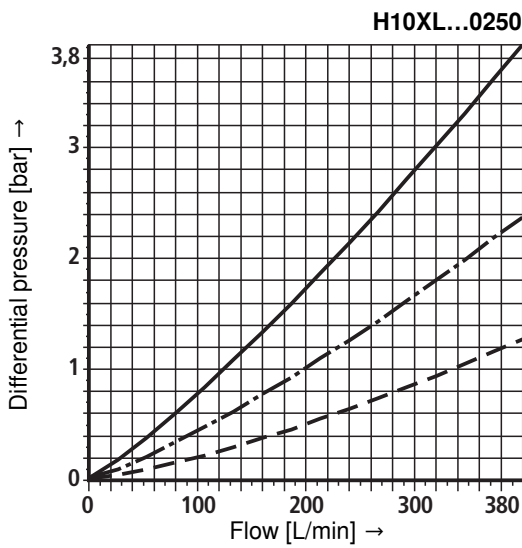
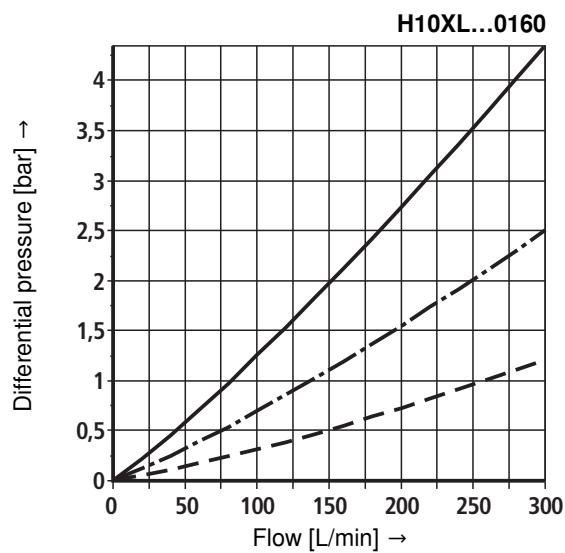
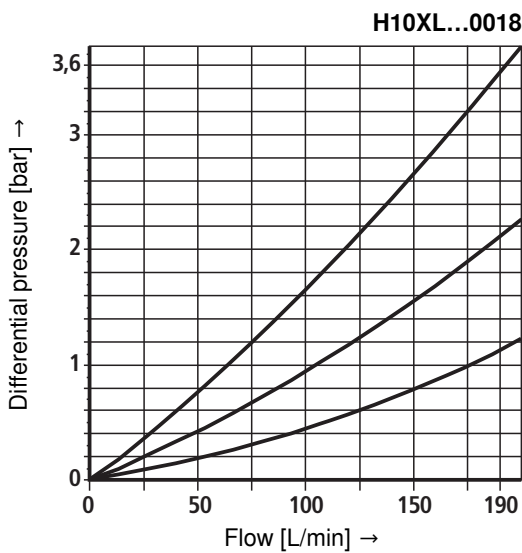
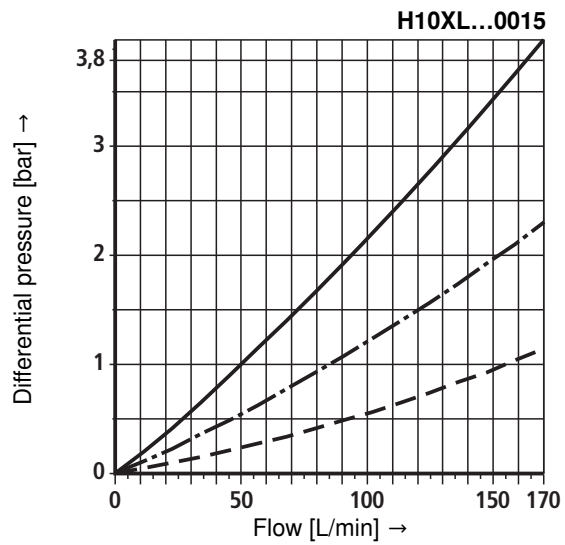
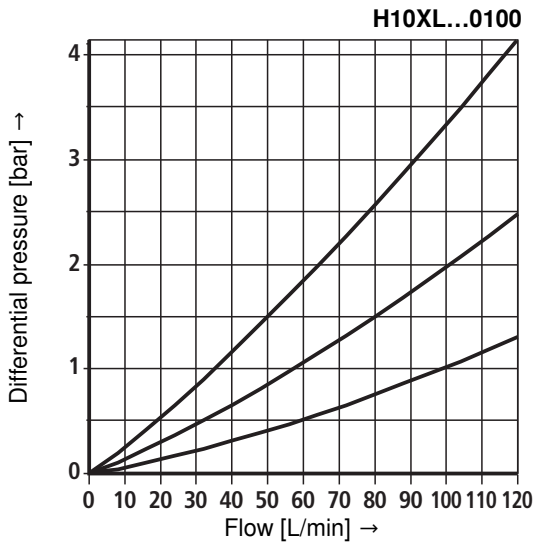
Specific weight: $< 0.9 \text{ kg/dm}^3$

Δp -Q characteristic curves for complete filters recommended initial Δp for design = 0.8 bar

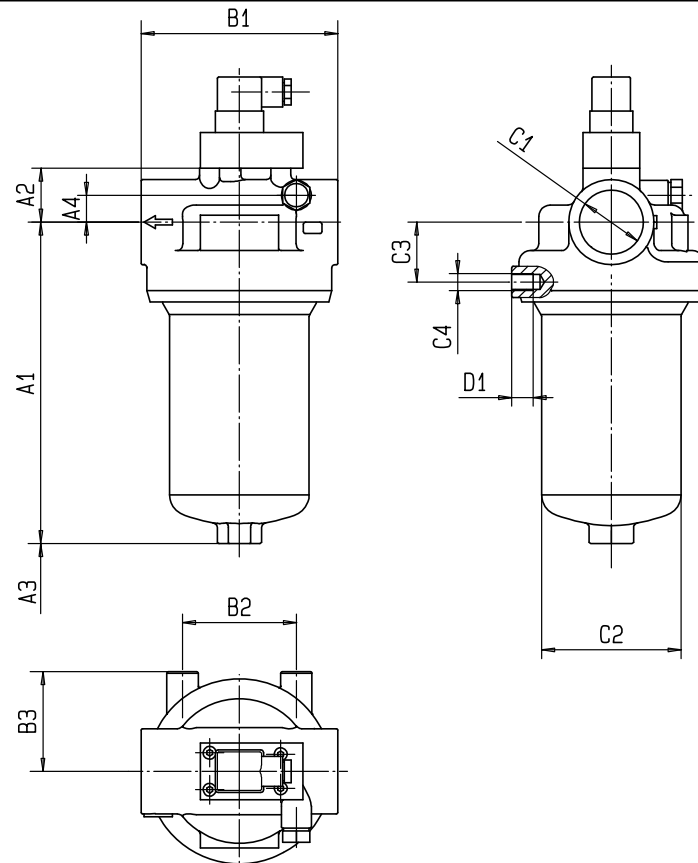
An optimum filter selection is made possible by using our "BRFilterSelect" computer programme.

Oil viscosity:

- 120 mm²/s
- · - 46 mm²/s
- - - 30 mm²/s



Unit dimensions (in mm)



Filter housing for filter elements in accordance with DIN 24550

Type 40/100 LEN...	Volume in L	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	B1	B2	B3	C1 Connection	C2	C3	C4	D1
0040	0.2	1.47	150	30	100	14	84	45	45	G 1	Ø 55	21	M8	10
0063	0.4	1.69	210											
0100	0.5	2.03	300											
0160	1.2	4.86	235	38	120	19	138	80	70	G1 1/2	Ø 98	42	M12	14
0250	1.8	6.25	325											
0400	2.7	8.16	475											

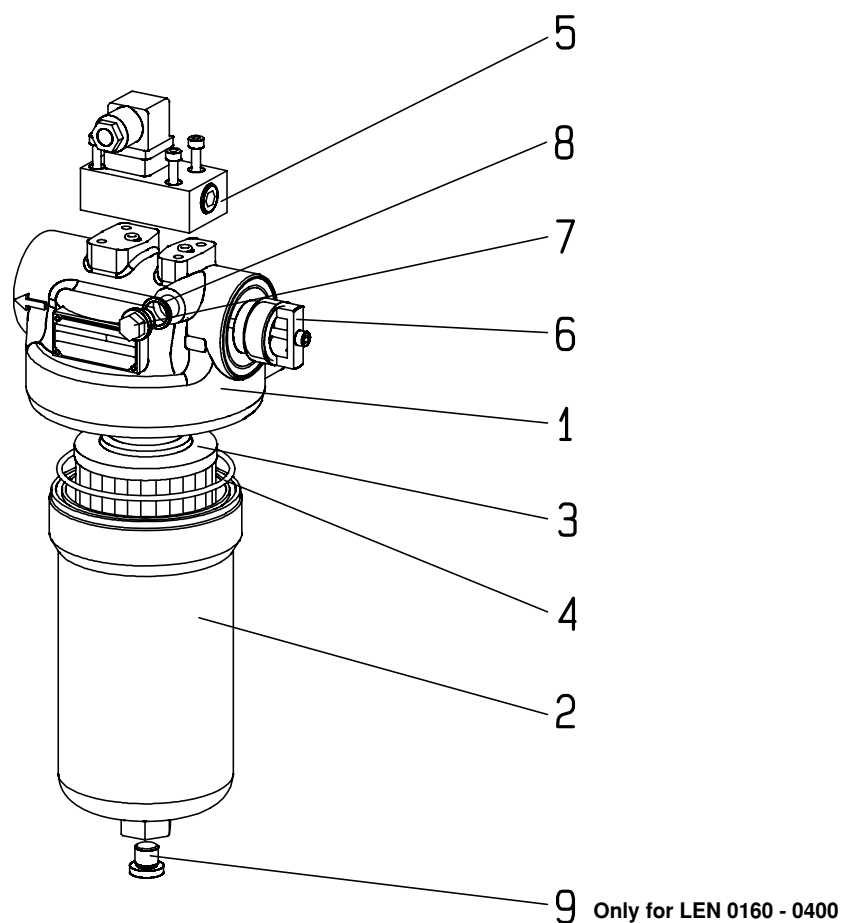
Filter housing for filter elements according to BRFS standard

Type 40/100 LE...	Volume in L	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	B1	B2	B3	C1	C2	C3	C4	D1
0003	0.2	1.47	150	30	80	14	84	45	45	G 1/2	Ø 55	21	M8	10
0015	0.8	3.87	257	35	120	15	114	60	60	G1 1/4	Ø 76	28		
0018	1.0	4.20	308											

¹⁾ Weight including standard filter element and clogging indicator.

²⁾ Withdrawal dimension for filter element replacement.

Spare parts list



Part	Piece	Description	Material	Size									
				LEN LE	0003	0040	0063	0100	0015	0018	0160	0250	0400
1	1	Filter head	Al	Please indicate ordering information "Filter"									
2	1	Filter bowl	Carbon steel	Please indicate ordering information "Filter"									
3	1	Filter element	Various	Please indicate ordering information "Filter Element"									
4	1	Seal ring	NBR / FKM	Please indicate ordering information "Filter"									
5	1	Clogging indicator	Various	See ordering information "Clogging indicator"									
6	1	Bypass valve ¹⁾	Al / plastic	Part No. 5359			Part No. 5118		Part No. 5360				
7	1	Bleed screw	5.8	Part No. 4158									
8	1	Seal ring	Soft steel	Please indicate ordering information "Filter"									
9	1	Blanking plug	Steel	-					Part No. 778				

All part numbers BRFs-specific.

¹⁾ Please specify opening pressure.

Spare parts (insert for DIN filters)

Mechanical optical Clogging indicator

Rexroth power unit accessories

Filter

Clogging indicator

Mechanical optical clogging indicator for low-pressure filters
switching point 2.2 bar [32 psi] = NV2

ABZ | F | V - NV2 - 1X / - DIN

DIN =

Identification for DIN
and SAE models

M =

V =

Sealing material

See table below

See table below

Unit series

Unit series 10 to 19

(10 to 19; unchanged

installation and connection dimensions)

1X =

Mechanical optical Clogging indicator	Material no.
ABZ FV-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 detail	
Mineral oils			Sealing material	Element model and material
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.

Screw the filter housing (position 1) to the fastening device considering the flow direction (direction arrows) and withdrawal height of the filter element (position 3).

Remove the plugs from the filter inlet and outlets. Fit the filter into the pipe work, ensuring that it is fitted free of tension.

Warning!

Assemble and disassemble the filter only when system is depressurised!

Vessel is under pressure!

When disassembling the filter, please note that the filter inlet and the filter outlet need to be emptied separately!

Remove the filter bowl only if it is not pressurised!

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 plug / bleed valve (position 7), close when operating fluid vents.

Maintenance

If the red indicator pin shows out of the clogging indicator and/or if the switching process in the electric display is triggered, the filter element is clogged and needs to be replaced or cleaned respectively.

Filter element replacement

Switch of the operating pump.

Open the plug / bleed valve (position 7) and relieve pressure.

Unscrew the filter bowl (position 2) and remove the filter element (position 3) from the centering spigot on the filter head (position 1) by turning it lightly.

Check the filter head for cleanliness and clean if necessary.

Replace filter elements H...-XL und P.... Clean the filter element with material G

The efficiency of the cleaning process depends on the type of contamination and the value of the pressure differential before the filter element was exchanged. If the pressure differential after replacing the filter element is more than 50% of the value before replacing the filter element then the G.... element also needs to be replaced.

Install the cleaned or new filter element with light turning movements back on to the centering spigot.

Check the seal ring Pos. 4 in the filter bowl for damage or wear and replace if necessary.

Screw on the filter bowl and tighten via the hexagon using a suitable tool

Bleed filter by opening the plug / bleed valve (position 7), close when operating fluid vents.

Technical modifications reserved!