

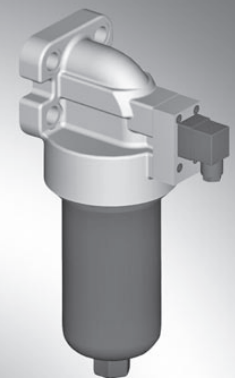
# High-pressure inline filter, flangeable

RE 51405/08.08

1/12

**Types 250/450 FEN 0040 to 1000; 250/450 FE 0003, 0015, 0018**

Nominal size **according to DIN 24550**: 0040 to 1000  
 Nominal size according to BRFS: 0003, 0015, 0018  
 Nominal pressure 250; 450 bar  
 Connection up to SAE 2 1/2"  
 Operating temperature -10 °C to +100 °C



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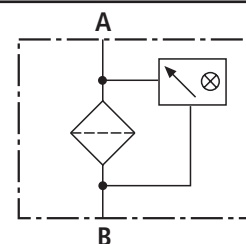
## Application

- Filtration of hydraulic fluids and lubricants.
- Filtration of liquids and gases.
- Installation at hydraulic blocks.
- Direct wear protection for downstream components and systems.

## Features

- Optimized flow characteristics by 3D - computer aided design
- Low pressure drop.
- Special high efficient filter media

## Symbol



## Construction

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Filter head with inlet, outlet and filter element spigots.

Filter bowl is unscrewed downwards.

Material: as per spare part list in this brochure.

## Filter element

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Pleated design with optimized pleat density and with various filter media.

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

Oil cleanliness, the initial pressure drop and the dirt holding capacity are the most important criteria for selection.

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

## Accessories

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### Maintenance indicator

For monitoring the filter element's contamination status, visual and visual/electrical indicators, available with one or two switching points.

### Bypass valve

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

## Quality and standardization

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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 DIN EN ISO 9001.

The stability calculation and testing of the filters take place according to existing pressure vessel regulations, as well as in accordance with national and international norms.

Certification of the filters by accredited institutions (for example TÜV, GL, LRS LRIS, ABS, BV, DNV, DRIRE, UDT, etc.) is available on request.

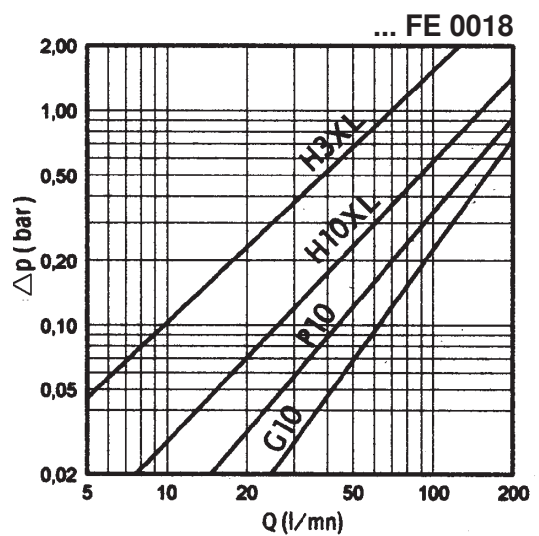
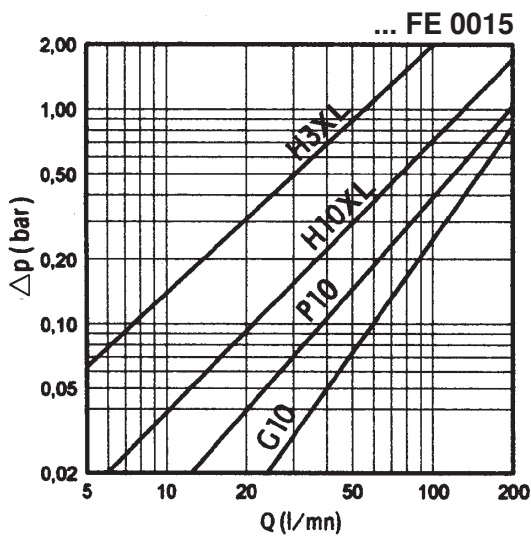
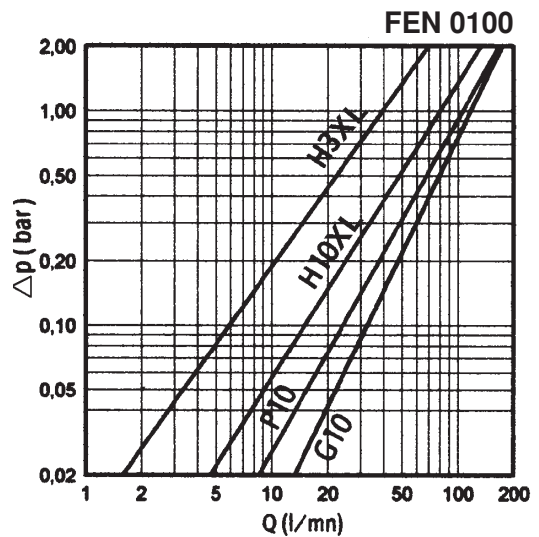
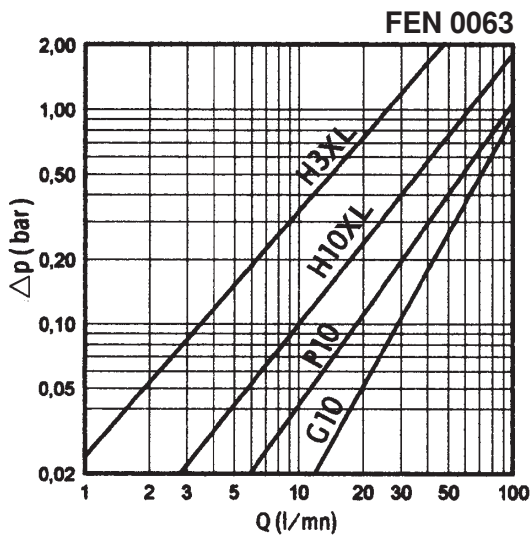
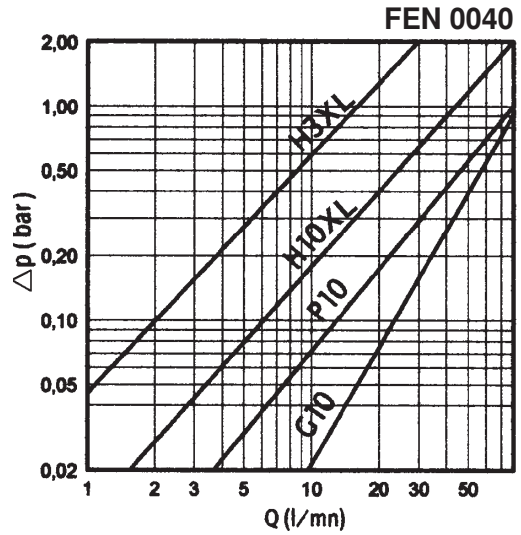
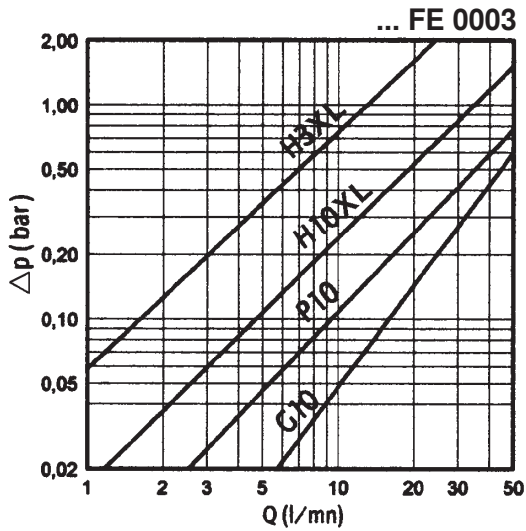
### Characteristic lines

Oil viscosity: 30 mm<sup>2</sup>/s

Specific weight: < 0.9 kg/dm<sup>3</sup>

$\Delta p$ -Q characteristic lines for complete filters  
recommended initial  $\Delta p$  for design = 1.5 bar

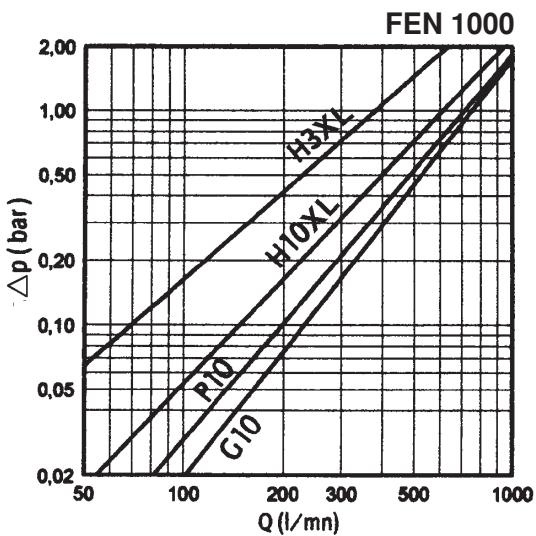
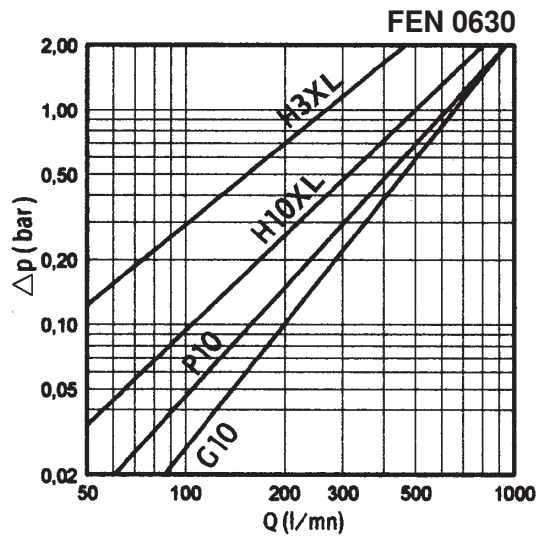
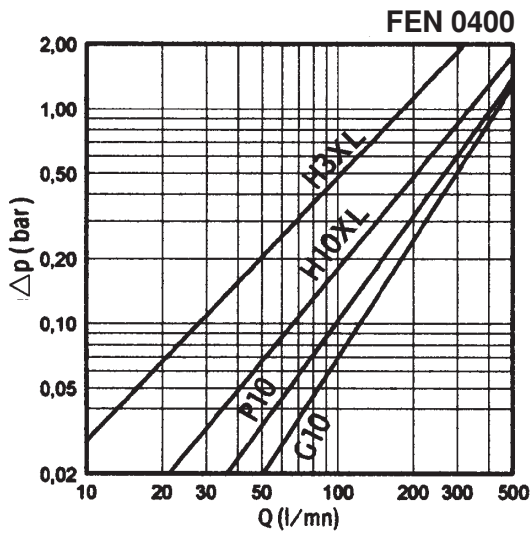
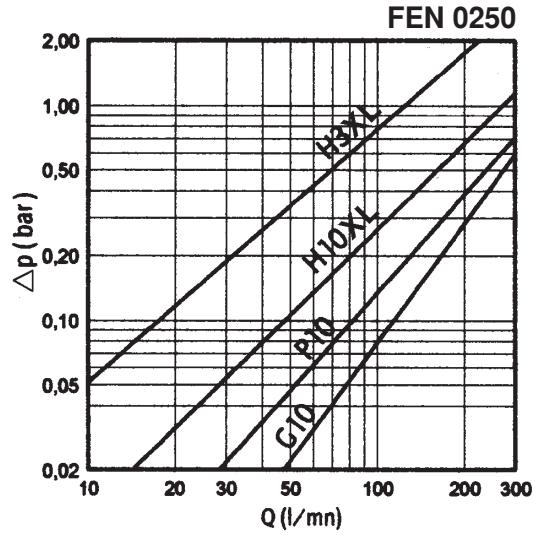
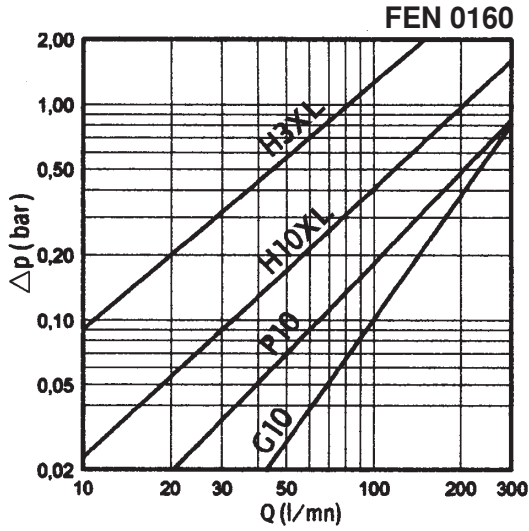
A proper filter selection is enabled by our "BRFS- FILTERSE-LECT" software.



### Characteristic lines

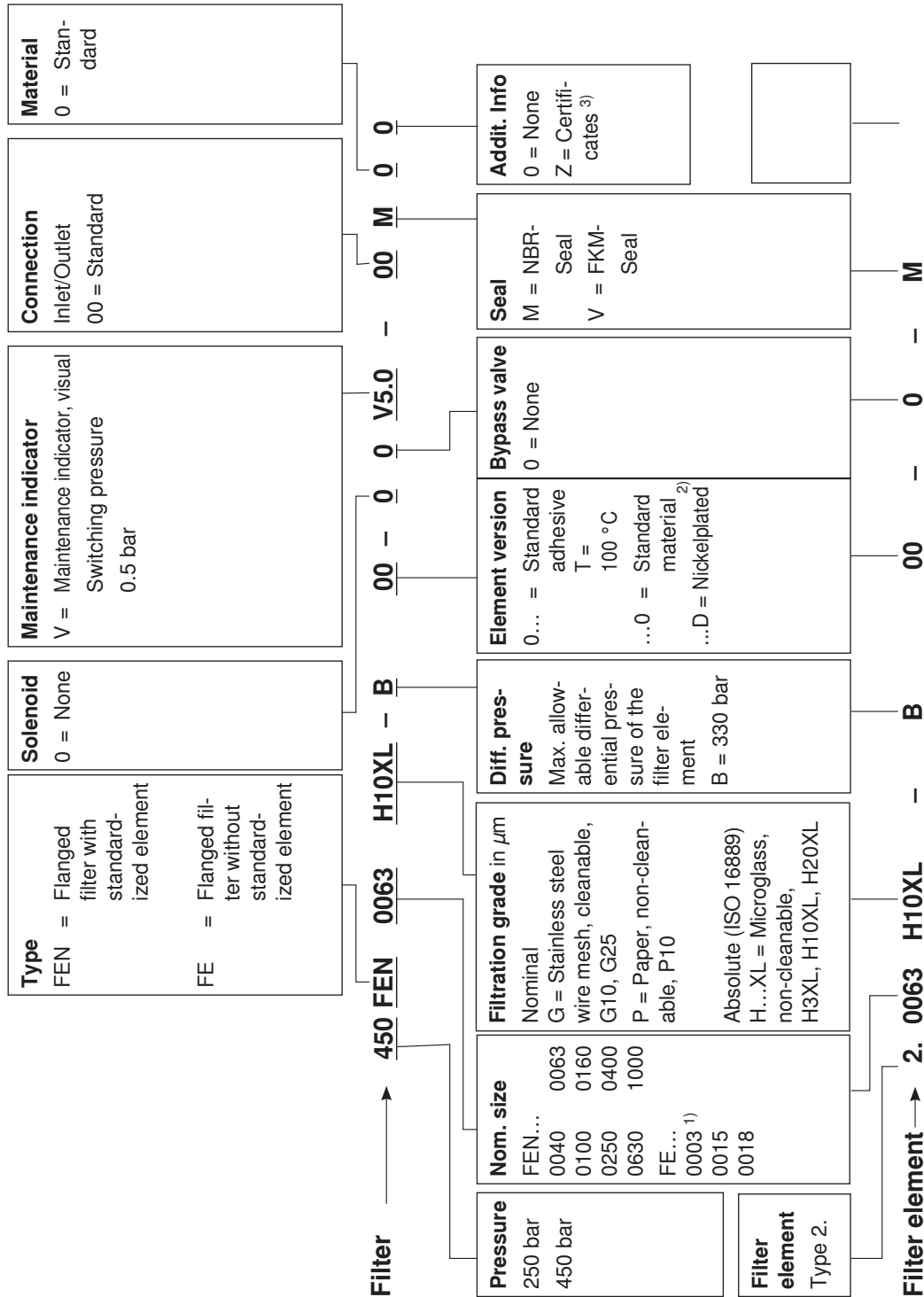
Oil viscosity: 30 mm<sup>2</sup>/s  
 Specific weight: < 0.9 kg/dm<sup>3</sup>  
 Δp-Q characteristic lines for complete filters  
 recommended initial Δp for design = 1.5 bar

A proper filter selection is enabled by our "BRFS- FILTERSE-LECT" software.



## Order details

Determine the filter size:  
with the computer program "BRFS-FILTERSELECT"  
or via the characteristic lines in this brochure.



1) Filter element 2.0004

2) Only in connection with FKM seal.

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

## Order details: electric switching element for contamination indicator

**ABZ F V - -1X/-DIN**

Rexroth Anlagenbau Accessories

Filter

Contamination indicator

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

Electric switching element with 2 switching points (opener/closer), 75%, 100%, round plug-in connection M12x1, 3 LED = **E2SP-M12X1**

Electric switching element with 2 switching points (opener/closer), 75%, 100%, signal suppression until 30 °C, round plug-in connection M12x1, 3 LED = **E2SPSU-M12X1**

Electric switching element with 1 switching point (opener) Plug-in connection according to DIN EN 175301-803 <sup>1)</sup> = **E1SP-DIN43650**

Electric switching element with 2 switching points (changeover), 75%, 100%, plug-in connection according to DIN EN 175201-804 <sup>2)</sup>, 3 LED = **E2SP-DIN43651**

Electric switching element with 2 switching points (changeover), 75%, 100%, signal suppression until 30 °C, plug-in connection according to DIN EN 175201-804 <sup>2)</sup>, 3 LED = **E2SPSU-DIN43651**

**-DIN =** Mark for DIN- and SAE model

**1X =**

**Unit series**  
Unit series 10 to 19  
(10 to 19; identical installation and connection dimensions)

Electric 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
ABZ FV-E1SP-DIN43650-1X/-DIN	R901025349
ABZ FV-E2SP-DIN43651-1X/-DIN	R901025331
ABZ FV-E2SPSU-DIN43651-1X/-DIN	R901025337

<sup>1)</sup> DIN 43650 has been replaced by DIN EN 175301-803!

<sup>2)</sup> DIN 43651 parts 1 through 3 were replaced by DIN EN 175201-804!

**Order example:** Pressure filter with mechanic-visual contamination indicator for  $p_{\text{Nominal}} = 63 \text{ bar}$  [910 psi] with bypass valve, nominal size 63, with filter element 10  $\mu\text{m}$  and electric switching element M12x1 with 1 switching point Mineral oil HLP according to DIN 51524 for hydraulic fluid.

**Filter:** ABZFD-S0063-10N-063-1X/M-DIN **Material no.:** R901025424

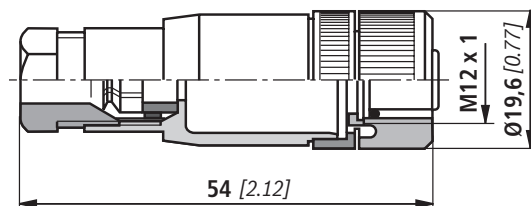
**Contamination indicator:** ABZ FV-E1SP-M12X1-1X/-DIN **Material no.:** R901025339

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

For electric switching element with round plug-in connection M12 x 1

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

Material no. R900031155



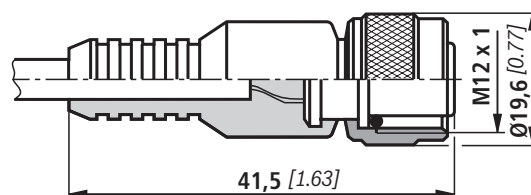
Plug-in connector for K24-3m 4-pin, M12 x 1 with potted-in PVC cable, 3 m long.

Line diameter: 4 x 0.34 mm<sup>2</sup>

Core marking:

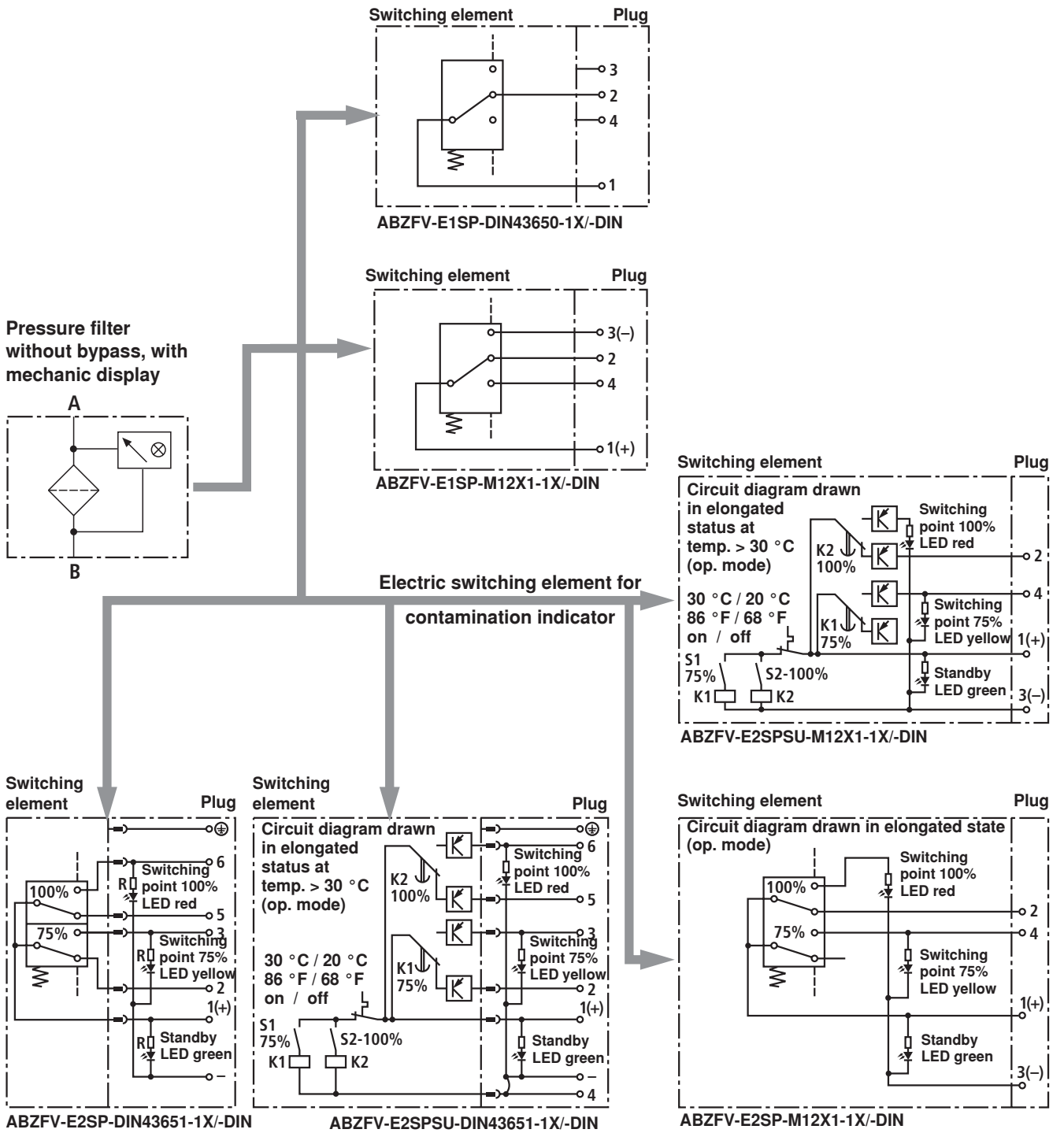
1	Brown
2	White
3	Blue
4	Black

Material no. R900064381



For more round plug-in connections, see datasheet RE 08006.

# Symbols

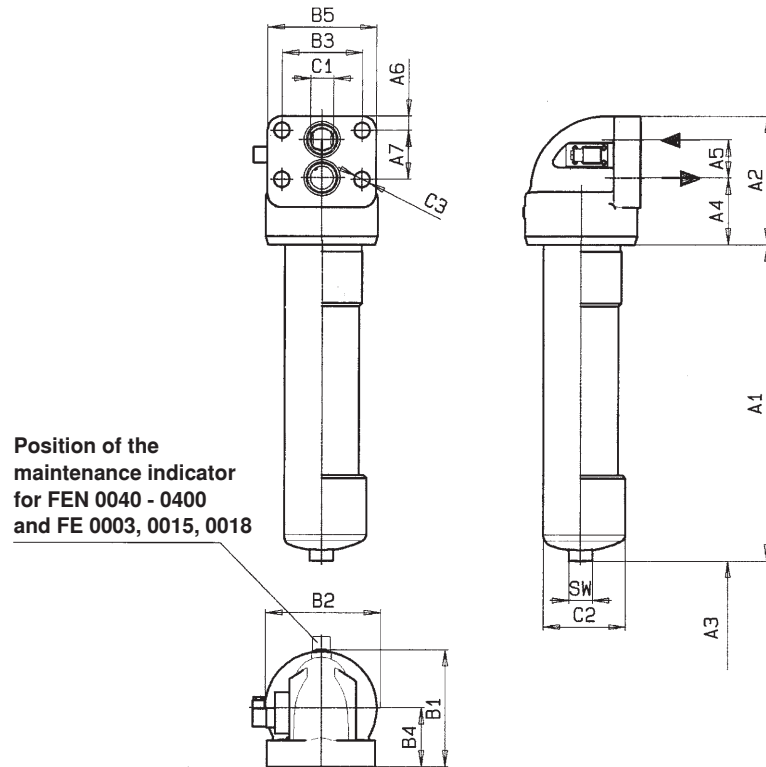


## Specifications (Please inquire in case the intended use of unit is outside the given values!)

### electric (electric switching element)

Electrical Connection		Round plug-in connection M12 x 1, 4-pin Plug-in connection according to DIN EN 175201-804, 6-pin + PE Plug-in connection according to DIN EN 175301-803, 3-pin + PE	
Contact load, direct voltage	A	Max. 1	
Voltage range	E1SP-M12x1 V DC/AC	Max. 150	
	E1SP-DIN43650 V DC/AC	200 / 250	
	E2SP V DC	10 to 30	
Max. switching power with resistive load		20 VA; 20 W; (70 VA; 70 W with E1SP-DIN43650)	
Switching type	E1SP-M12x1	Changeover	
	E1SP-DIN43650	Opener	
	E2SP-M12x1	Closer at 75% of the opening pressure, Opener at 100 % of the opening pressure	
	E2SP-DIN43651	Changeover at 75 and 100% of the opening pressure	
	E2SPSU-M12x1	Closer at 75% of the opening pressure, Opener at 100 % of the opening pressure Signal switching through at 30 °C [86 °F], Return switching at 20 °C [68 °F]	
	E2SPSU-DIN43651	Changeover at 75 and 100% of the opening pressure Signal switching through at 30 °C [86 °F], Return switching at 20 °C [68 °F]	
Display via LED's in the electric switching element E2SP...		Stand-by (LED green); 75% switching point (LED yellow) 100% switching point (LED red)	
Protection type according to EN 60529		IP 65	
For direct voltage above 24 V a spark extinguishing is to be planned to protect the switching contacts.			
Mass	Electric switching element: – with round plug-in connection M12 x 1	kg [lbs]	0.1 [0.22]
	– with plug-in connection according to DIN 43651	kg [lbs]	0.17 [0.37]

## Unit dimensions (in mm)



### Filter housing for filter elements in accordance with DIN 24550

Type	Content in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	SW
250/450 FEN 0040	0.2	4.6	98															
250/450 FEN 0063	0.3	5.9	161	112	110	56	28	12	45	95	88	57	48	80	Ø 14	Ø 67	Ø 14	24
250/450 FEN 0100	0.5	6.1	251															
250/450 FEN 0160	1.3	16.5	167															
250/450 FEN 0250	1.9	19.2	257	160		79,5	52	22,5	60	156	150	95	80	140	Ø 32	Ø 114	Ø 23	32
250/450 FEN 0400	3.0	24.1	407		150													
450 FEN 0630	4.5	47.5	421															
450 FEN 1000	6.2	67.5	641	225		117	67	25	86	199	195	140	99	190	Ø 50	Ø 140 Ø 156	Ø 27	41

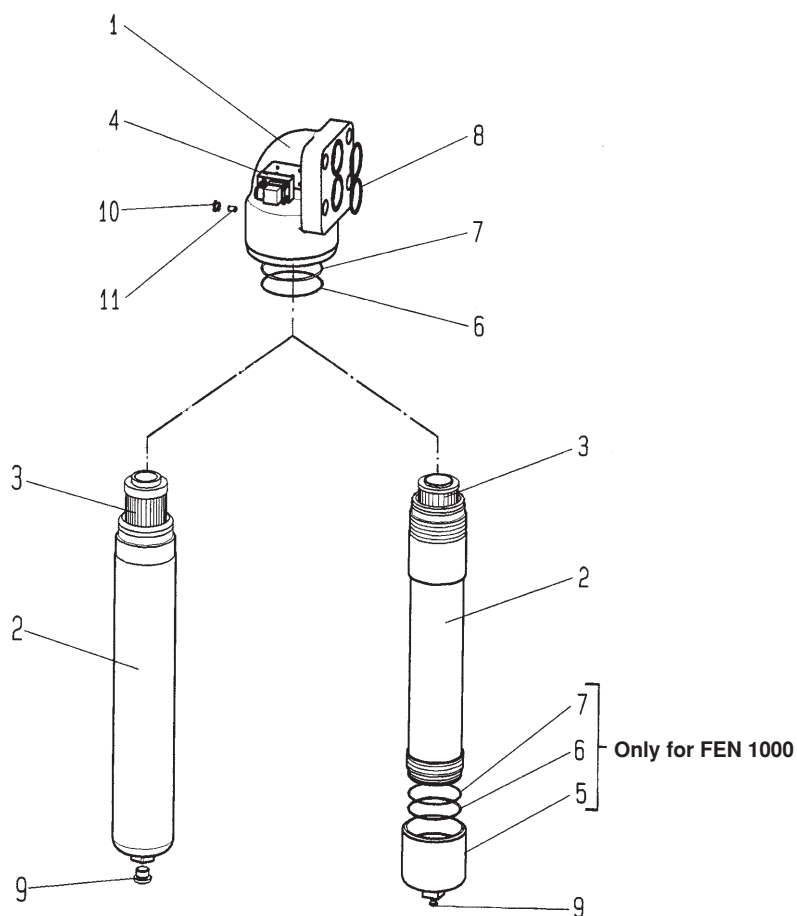
### Filter housing for filter elements according to BRFS standard

Typ 250/450 FE...	Content in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2		C3	SW
																250	450		
0003	0.2	4.6	98	112	100	56	28	12	45	95	88	57	48	80	Ø 14	Ø 64	Ø 67	Ø 14	24
0015	0.9	11.0	188																
0018	1.1	12.7	239	150	130	80	35	20	55	130	125	72	65	110	Ø 18	Ø 92	Ø 18	32	

<sup>1)</sup> Weight including standard filter element and maintenance indicator.

<sup>2)</sup> Servicing height for filter element replacement.

### Spare parts



		Size FEN								0160	0250	0400	0630	1000	
		Size FE								0003	0040	0063	0100	0015	0018
Part	Piece	Description	Material												
1	1	Filter head	GGG50	Please indicate ordering information "Filter"											
2	1	Filter bowl	Carbon steel/ 24CrMo5	Please indicate ordering information "Filter"											
3	1	Filter element	various	Please indicate ordering information "Filter Element"											
3.1	1	Sealing ring	Perbunan/ Viton	Please indicate ordering information "Seal Kit"											
4	1	Maintenance indicator	various	See ordering information											
5	1	Bottom	42CrMo4	-										Part No. 4374	
6	2	Supporting ring	Teflon	Please indicate ordering information "Seal Kit"											
7	2	Sealing ring	Perbunan/ Viton	Please indicate ordering information "Seal Kit"											
8	2	Sealing ring	Perbunan/ Viton	Please indicate ordering information "Seal Kit"											
9	1	Blanking plug	Steel	Part No. 778											
10	1	Blanking plug	Steel	-										Part No. 771	
11	1	Stud bolt with head cap screw	5.8	-										Part No. 4371	

All part no.s BRFS-specific.

## Spare parts (insert for DIN and SAE filters)

### Mechanic-visual contamination indicator

Rexroth Anlagenbau Accessories

Filter

Contamination indicator

Mechanic-visual contamination indicator for high-pressure filters switching point 5 bar [72 psi]

**ABZ F V HV5-1X/ -DIN**

= NV5

DIN =

Mark for DIN and SAE model

M =

V =

### Sealing material

See table below

See table below

### Unit series

Unit series 10 to 19  
(10 to 19; identical installation and connection dimensions)

1X =

mechanic-visual contamination indicator	Material no.
ABZ FV-HV5-1X/M-DIN	R901025313

The order details for filter elements can be found on page 5.

## Sealing material and surface coating for hydraulic liquids

			Order detail	
Mineral oils			Sealing material	Element model
Mineral oil	HLP	according to DIN 51524	M	...0
Flame-resistant hydraulic fluids				
Emulsions	HFA-E	according to DIN 24320	M	...0
Synthetic aqueous solutions	HFA-S	according to DIN 24320	M	...D
Aqueous 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
Poly glycoles	HEPG	according to VDMA 24568	V	...D

## Installation, starting and maintenance

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### Installation

Verify operating pressure with name plate information.

Screw the filter head Pos. 1 to the mounting device while considering the flow direction (arrows) and the servicing height of the filter element Pos. 3.

Remove dust protection plugs from filter inlet and outlet, screw filter in pipeline without tension stress.

### Starting

Switch on system pump.

### Maintenance

The filter element is clogged and must be changed or cleaned if, in operating temperature, the visual indicator's Pos. 4 red pin reaches its final position and/or the electrical switch is activated.

### Filter Element Service

Unscrew filter bowl Pos. 2 / bottom Pos. 5 (only FEN 1000) of the filter bowl Pos. 2 and remove filter element Pos. 3, turning slightly off its spigot in the filter head Pos. 1.

Check the filter head for cleanliness and clean if necessary.

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

The efficiency of the cleaning process depends on the characteristics of contamination and the differential pressure prior to replacing the filter element. If the differential pressure after the filter element's replacement is more than 50 % of the pre-service value, the G... element also needs to be replaced.

Install cleaned or replaced filter element by slightly turning it back on its spigot.

Check sealing ring Pos.7 in the filter housing and replace when damaged or worn.

Screw filter bowl Pos. 2 on and tighten with the hexagon bolt using a suitable tool.

Operate as described above.

Technical modifications reserved!