

# Duplex Filter

RE 51410/08.08

1/10

## Types 16 FD 2500 to 7500

Nominal size **according to DIN 24550**: 2500 to 7500  
 Nominal pressure 16 bar  
 Connections up to DN 250  
 Operating temperature ... °C to ...



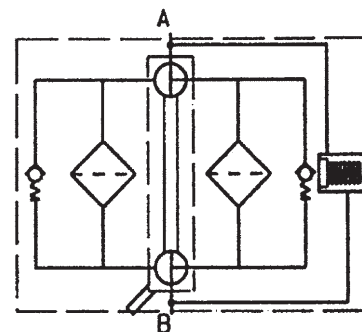
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## Application

- Filtration of hydraulic fluids and lubricants.
- Filtration of liquids and gases.
- Direct inline installation.
- Direct wear protection for downstream components and systems.
- Continuous operation through duplex filter type construction.

## Symbol



## Construction

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Welded steel construction with two filter housing connected with each other as one switching unit via four throttle valve. The connections are on top of each other. Filter cover with vent screw, filter fitted with drain plug.  
Material: as per spare parts list.

## 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 startup and overpressurization due to clogging.

### Vent valve

For removing the air from the filter during starting and for safe depressurization.

## Characteristic lines

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

The characteristic lines for the filters in this brochure are available in the filter calculation program by Bosch Rexroth Filtration Systems (BRFS) under:  
[http://www.eppensteiner.de/deutsch/download/Auslegungsprogramm2005/filterselect\\_frz.htm](http://www.eppensteiner.de/deutsch/download/Auslegungsprogramm2005/filterselect_frz.htm)

## 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 9001:2000.

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

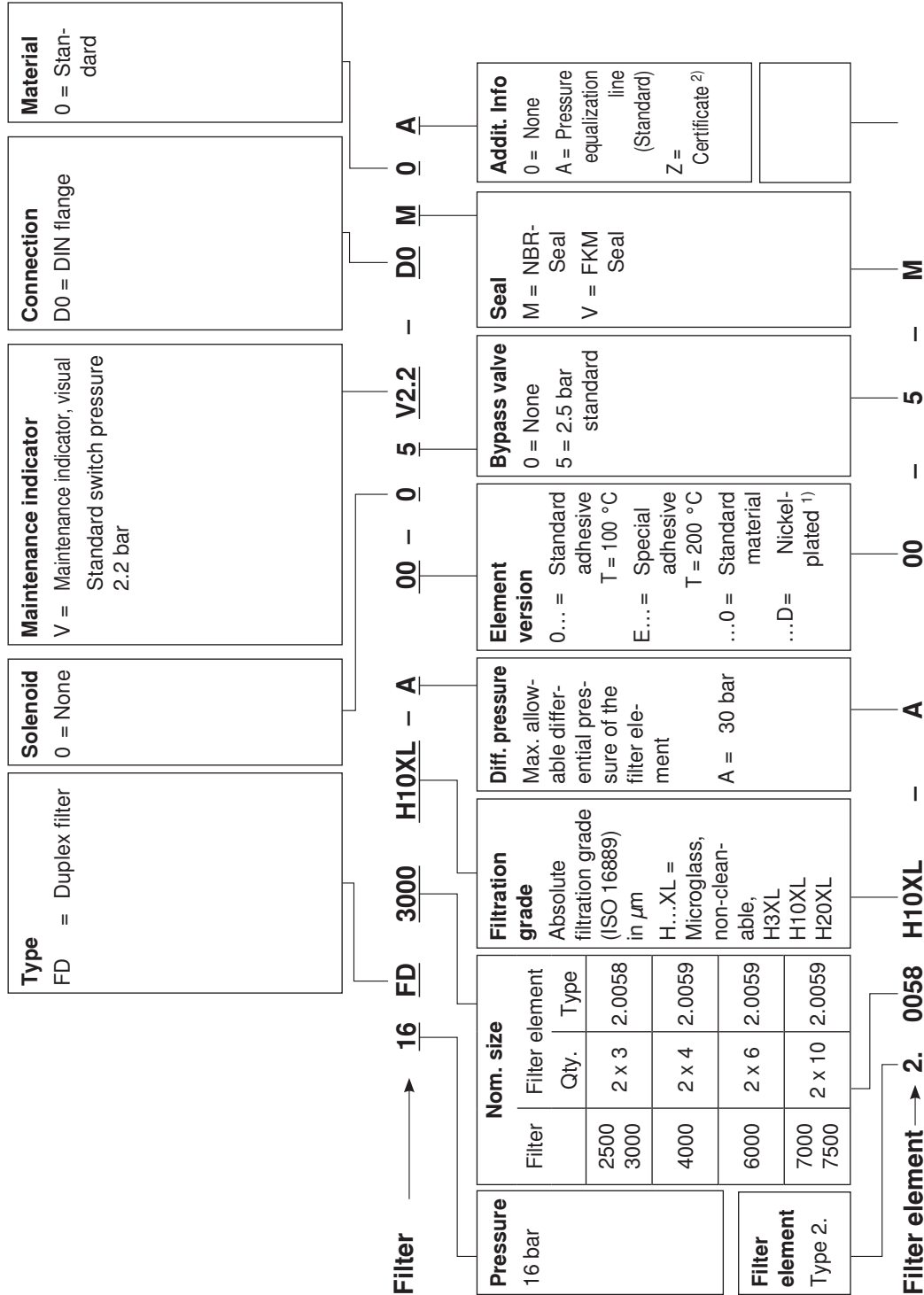
The stability calculation and testing of the filters take place according to updated rules, as well as in accordance with national and international standards.

The CE-identification mark according to the Pressure Equipment Directive 97/23/Ec depends upon the individual application and operating conditions.

We are able to perform the conformity evaluation in accordance with the Pressure Equipment Directive if requested.

## Order details

Determine the filter size:  
 With the computer program "BRFS-FILTERSELECT".  
 Special models are available on request.



<sup>1)</sup> Only in connection with FKM seal.

<sup>2)</sup> Z = Manufacturer's inspection certificate M according to DIN 55350 T18

**Order details:** electric switching element for contamination indicator

ABZ	F	V	-	-1X/-	DIN
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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

**Unit series**

1X = 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

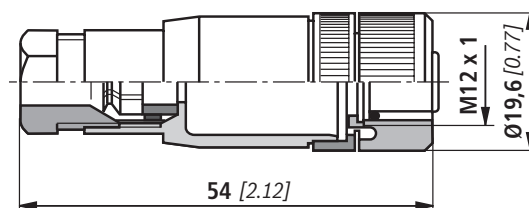
**Contamination indicator:** ABZ FV-E1SP-M12X1-1X/-DIN **Material no.:** R901025339

**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



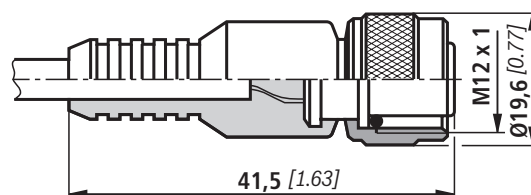
Plug-in connector for K24-3m 4-pin, M12 x 1 with potted-in PVC cable, 3 m long.

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

**Core marking:**

1	Brown
2	White
3	Blue
4	Black

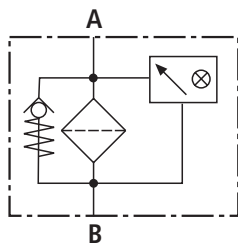
Material no. R900064381



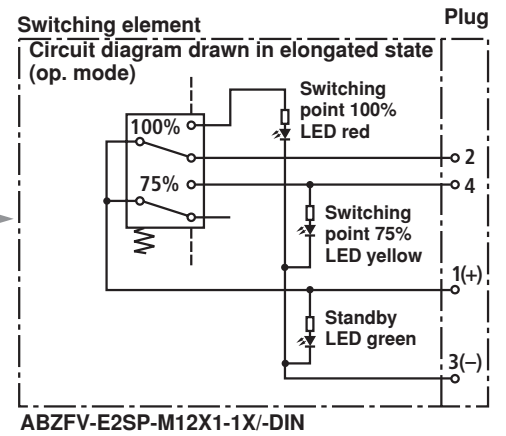
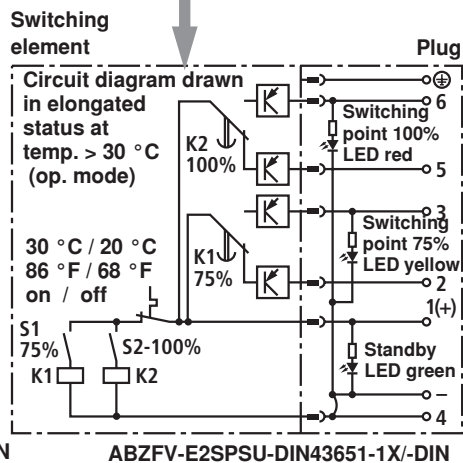
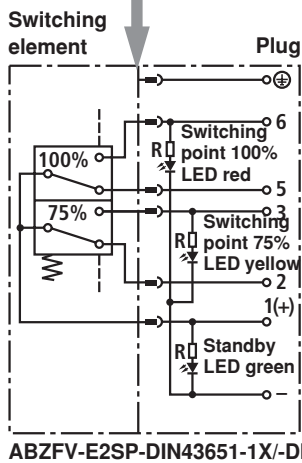
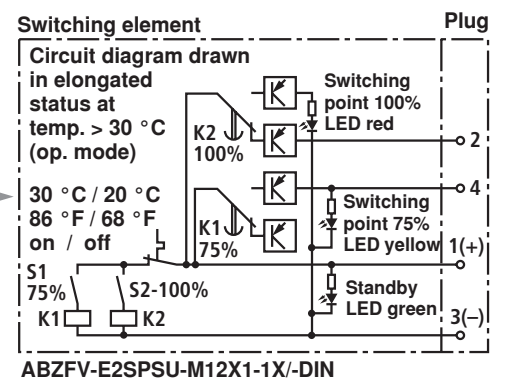
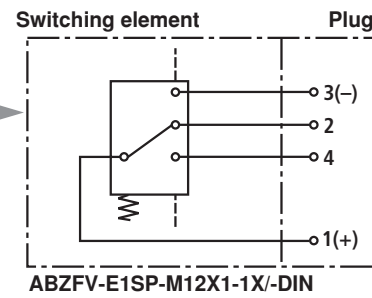
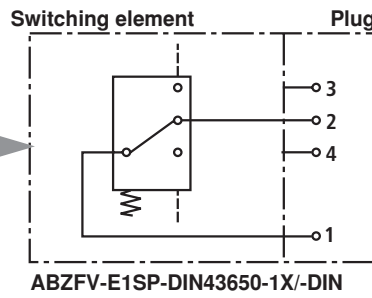
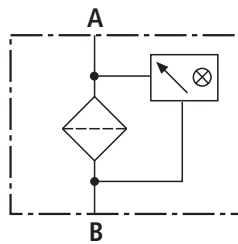
For more round plug-in connections, see datasheet RE 08006.

# Symbols

Pressure filter with bypass and mechanic display



Pressure filter without bypass, with mechanic display

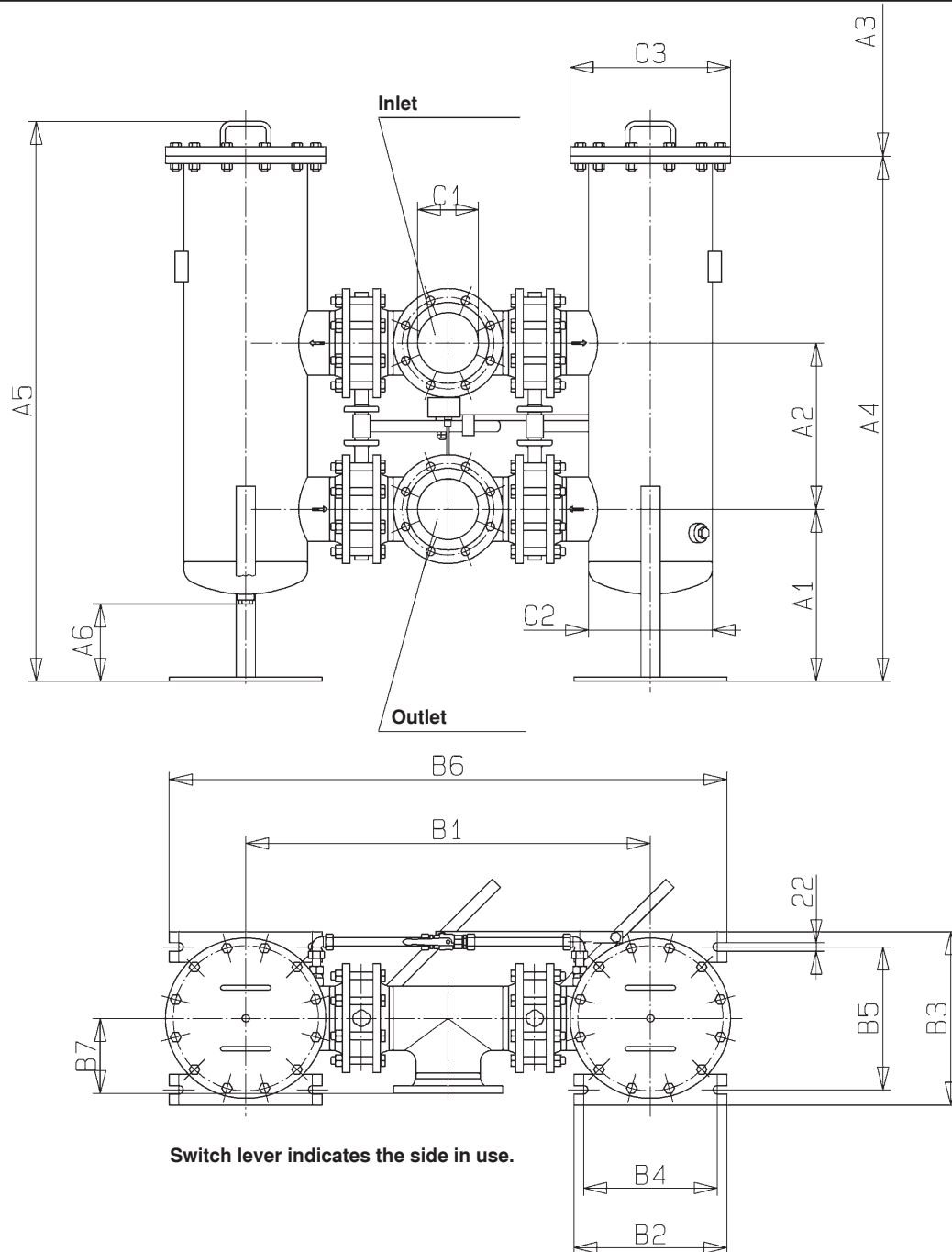


Electric switching element for contamination indicator

**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)

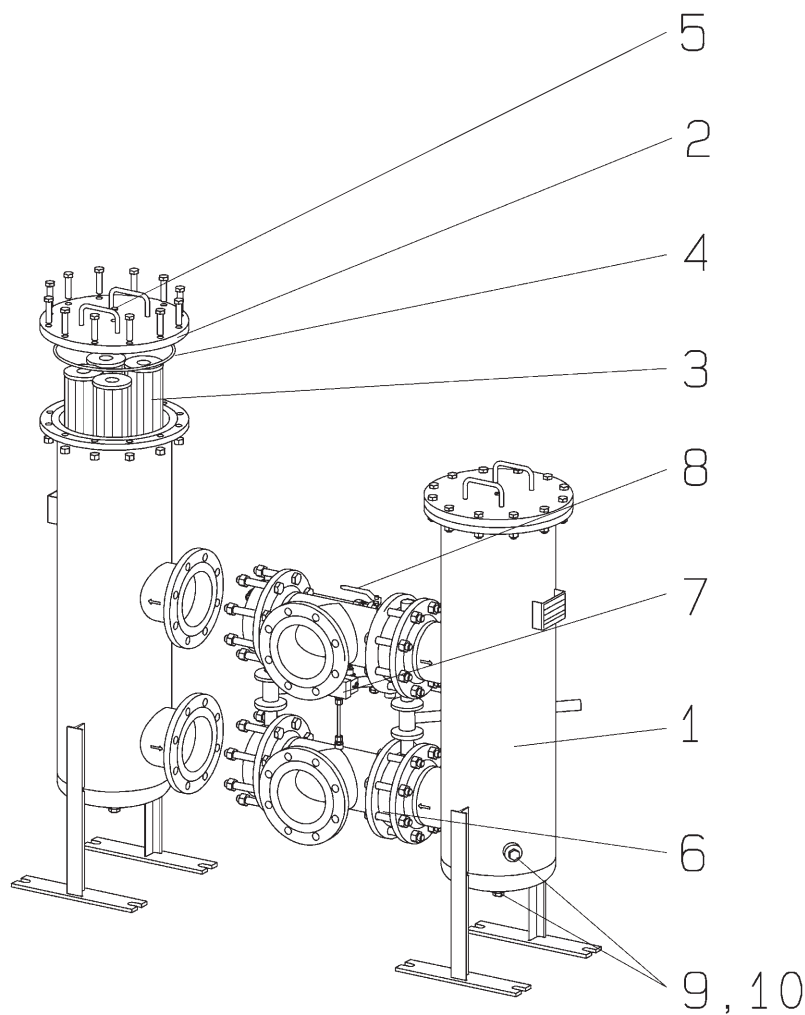


Type 16 FD...	Vol- ume in l	Weight in kg <sup>1)</sup>	A1	A2	A3 <sup>2)</sup>	A4	A5	A6	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3
<b>2500</b>	2 x 64	285	500	435	860	1295	1385	257	972	400	403	350	323	1372	180	DN 125	Ø 273	Ø 375
<b>3000</b>	2 x 70	325	500	435	860	1295	1385	257	1010	400	403	350	323	1410	199	DN 150	Ø 273	Ø 375
<b>4000</b>	2 x 99	420	450	435	990	1375	1465	197	1060	400	454	350	374	1460	199	DN 150	Ø 323.9	Ø 420
<b>6000</b>	2 x 178	505	500	480	990	1640	1730	212	1202	400	486	350	406	1602	241	DN 200	Ø 355.6	Ø 445
<b>7000</b>	2 x 395	995	500	585	990	1675	1841	150	1450	400	639	350	559	1850	287	DN 250	Ø 508	Ø 645
<b>7500</b>	2 x 412	1210	500	635	990	1705	1870	114	1642	400	639	350	559	2042	333	DN 300	Ø 508	Ø 645

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

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

## Spare parts



Part	Piece	Description	Material		Ordering information 16FD...					
			Steel	Stainless steel	2500	3000	4000	6000	7000	7500
1	2	Filter housing	Steel	1.4571	Please indicate ordering information "Filter"					
2	2	Filter cover	Steel	1.4571	Please indicate ordering information "Filter"					
3	1	Filter element kit	Various	Various	Please indicate ordering information "Filter Element"					
					2 x 3 Single elements 2.0058	2 x 4 Single element 2.0059	2 x 6 Single elements 2.0059	2 x 10 Single elements 2.0059		
3.1	1	Sealing kit	Perbunan/Viton		Please indicate ordering information "Seal Kit"					
4	1	Sealing ring	Perbunan/Viton		Please indicate ordering information "Seal Kit"					
5	2	Vent screw	1.4571/Viton		Part No. 13284					
6	2	Throttle valve	Various		Please indicate ordering information "Filter"					
7	1	Maintenance indicator	Various		Please indicate ordering information "Maintenance Indicator"					
8	1	Pressure equalization line	Various		Please indicate ordering information "Filter"					
9	4	Blanking plug	5.8	A4	Part No. 791/Part No. 3485 for "stainless steel" model					
10	4	Sealing ring	Iron	A4	Part No. 335/Part No. 3752 for "stainless steel" model					

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 low-pressure filters

switching point 2.2 bar [32 psi]

= NV2

Mechanic-visual contamination indicator for high-pressure filters

switching point 5 bar [72 psi]

= HV5

ABZ	F	V	-	-	1X	/	-	DIN
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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-NV2-1X/M-DIN	R901025312
ABZ FV-HV5-1X/M-DIN	R901025313

The order details for filter elements and seal kits can be found on page 3.

## 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.

Install the filter in the pipeline while considering the flow direction (direction arrows) and servicing height of the filter elements.

#### Warning!

Vessel is under pressure!

Assemble and disassemble filter only when system is switched off!

Leave pressure equalization valve closed while filter housing is out of service!

Do not operate switching device while filter housing is out of service!

Do not change maintenance indicator or pressure-equalization valve when filter is under pressure!

Functions and safety warranty only with BRFS-spare part!

Service filter only by trained personnel!

### Starting

Move switching lever to central position to fill both filter sides.

Switch on system pump. Pressure equalization is open. Vent filter by opening the vent screw, close when operating liquid emerges. Close pressure equalization. Move switching lever to filter in use. Switching lever must be moved into final position. Leave pressure equalization closed.

### Maintenance

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

### Filter Element Service

Open pressure equalization valve. Move switching lever to opposite direction until final position on clean filter side is reached. Close pressure equalization. Open the vent screw on the filter taken out of operation and reduce the pressure. Lift off filter cover. Open blanking plug and drain filter. Remove filter elements, turning slightly off from their spigots in the filter housing.

Check filter housing inside and clean if necessary.

Replace filter element H...XL.

Install cleaned or replaced filter elements by slightly turning them back on their spigots. Check o-ring on filter housing, replace in case of damage or wear. Screw on filter cover. Open pressure equalization valve. Ventilate filter by opening the vent screw, close when operating liquid emerges. Close pressure equalization.

Technical modifications reserved!

## Notes

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## Notes

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