Rexroth
Bosch Group

Return line filter to DIN 24550 for direct tank mounting

RE 50088/05.04 1/14

Type ABZFR…-DIN


HAD 7108

Nominal sizes 40 to 630
Component series 1X
Nominal pressure 10 bar

Overview of contents

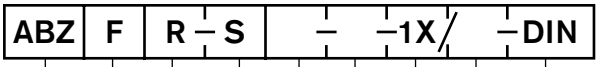
Features

Return line filters are designed for mounting onto fluid reservoirs. They are used to separate solid matter from the pressure fluid that is flowing back into the tank.

They have the following features:

- Filter elements based on an inorganic fibre
- Absorbtion of finest particles over a wide differential pressure range
- High contamination retention capacity due to large specific filter surface area
- Good chemical resistance of the filter elements due to the use of epoxy resins for impregnation and bonding
- High burst pressure resistance of the filter elements (e.g. during cold start)
- 10 µm filter rating
- 3 µm filter rating
- Fitted as standard with a mechnical-visual clogging indicator with memory function

Ordering details: Return line filter with mechnical-visual clogging indicator



Rexroth power unit accessories

Filter

Return line filter

Return line filter, single **= S**

Nominal size

NS 40	**= 0040**
NS 63	**= 0063**
NS 100	**= 0100**
NS 160	**= 0160**
NS 250	**= 0250**
NS 400	**= 0400**
NS 630	**= 0630**

Filter rating

10 =	10 µm [1]
03 =	3 µm [1]

Component series

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

Seal material

M =	See table (page 6)
V =	See table (page 6)

DIN =	DIN 24550

[1] The retention capacity is measured in accordance with ISO 16889
10 µm element ≙ $\beta_{10\,(c)} > 200$
3 µm element ≙ $\beta_{5\,(c)} > 200$

Preferred types (readily available)

Return line filter, 10 µm filter rating

Type	Flow in L/min at 33 mm²/s and $\Delta p = 0.5$ bar	Material No.
ABZFR-S0040-10-1X/M-DIN	48	R901052388
ABZFR-S0063-10-1X/M-DIN	78	R901025411
ABZFR-S0100-10-1X/M-DIN	92	R901025412
ABZFR-S0160-10-1X/M-DIN	160	R901025413
ABZFR-S0250-10-1X/M-DIN	250	R901025414
ABZFR-S0400-10-1X/M-DIN	320	R901025415
ABZFR-S0630-10-1X/M-DIN	460	R901025416

Return line filter, 3 µm filter rating

Type	Flow in L/min at 33 mm²/s and $\Delta p = 0.5$ bar	Material No.
ABZFR-S0040-03-1X/M-DIN	26	R901052387
ABZFR-S0063-03-1X/M-DIN	38	R901025403
ABZFR-S0100-03-1X/M-DIN	59	R901025404
ABZFR-S0160-03-1X/M-DIN	94	R901025405
ABZFR-S0250-03-1X/M-DIN	150	R901025407
ABZFR-S0400-03-1X/M-DIN	215	R901025408
ABZFR-S0630-03-1X/M-DIN	345	R901025410

Ordering details: electrical switching element for the clogging indicator

ABZ | F | V – | – | 1X / –DIN

Rexroth power unit accessories

Filter

Clogging indicator

Electrical switching element with 1 switching point
round plug connection M12x1 **= E1SP-M12X1**

Electrical switching element with 2 switching points, 75%, 100%
round plug connection M12x1, 3 LED **= E2SP-M12X1**

Electrical switching element with 2 switching points, 75%, 100%
signal suppression up to 30 °C
round plug connection M12x1, 3 LED **= E2SPSU-M12X1**

Electrical switching element with 2 switching points, 75%, 100%
plug connection to DIN EN 175201-804 [1],
3 LED **= E2SP-DIN43651**

Electrical switching element with 2 switching points, 75%, 100%
signal suppression up to 30 °C
plug connection to DIN EN 175201-804 [1],
3 LED **= E2SPSU-DIN43651**

–DIN = Identification mark for DIN filters

Component series

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

Electrical switching element	Material No.
ABZFV-E1SP-M12X1-1X/-DIN	R901025339
ABZFV-E2SP-M12X1-1X/-DIN	R901025340
ABZFV-E2SPSU-M12X1-1X/-DIN	R901025341
ABZFV-E2SP-DIN43651-1X/-DIN	R901025331
ABZFV-E2SPSU-DIN43651-1X/-DIN	R901025337

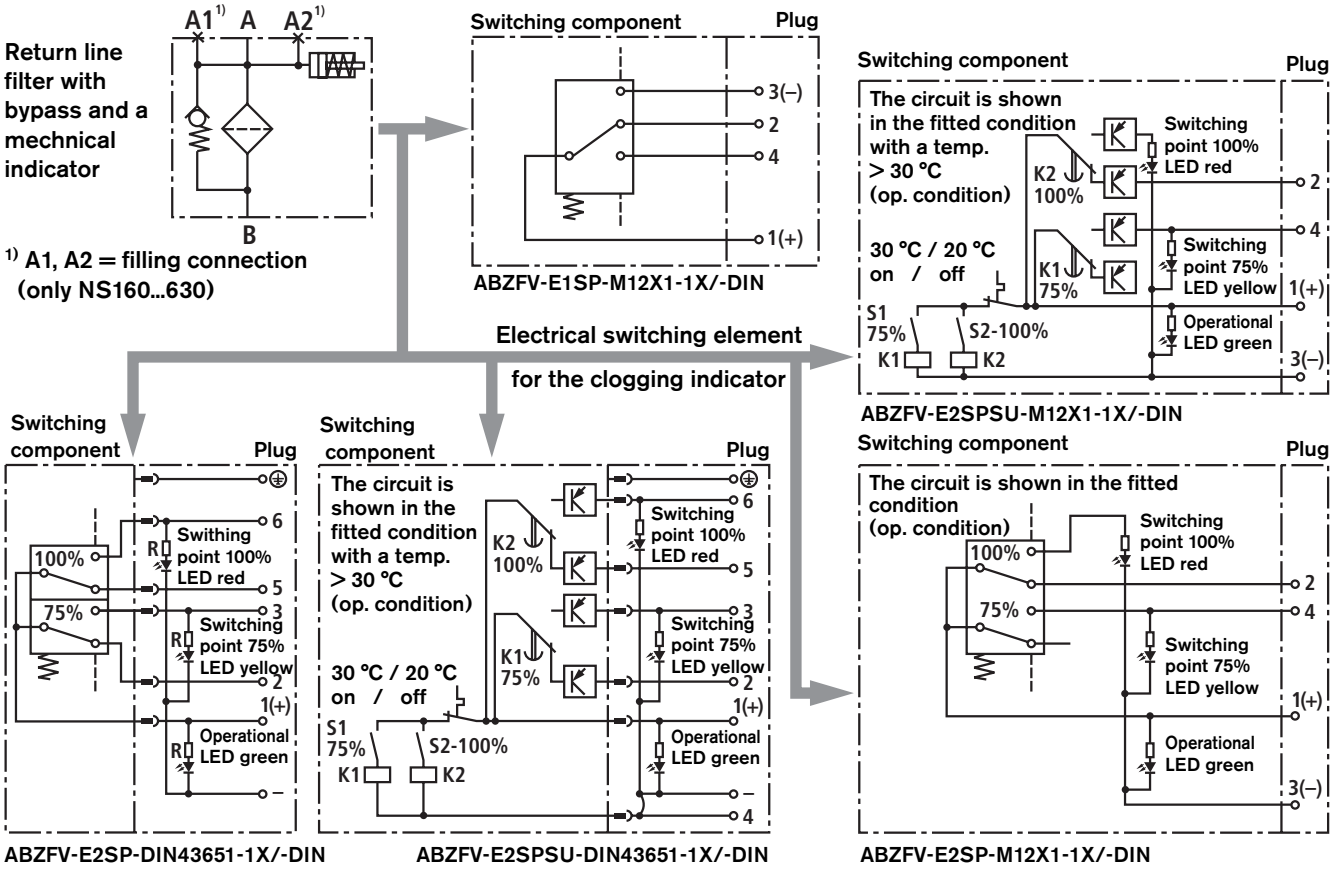
[1] DIN 43651 parts 1 to 3 have been replaced by DIN EN 175201-804!

Ordering example: Return line filter with mechnical-visual clogging indicator, nominal size 63 with a 10 µm filter element with mechnical-visual clogging indicator for HLP mineral oil pressure fluids to DIN 51524, and electrical switching element M12x1 with 1 switching point.

1: ABZFR-S0063-10-1X/M-DIN **Material No.: R901025411**

2: ABZFV-E1SP-M12X1-1X/-DIN **Material No.: R901025339**

Symbols



Function, section

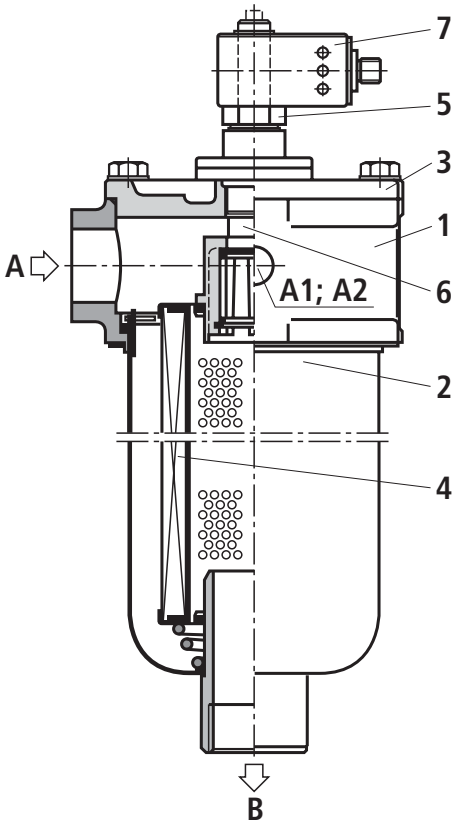
These return line filters are designed to be directly mounted onto the fluid reservoir.

They basically consist of the filter head (1), filter bowel (2), cover (3), filter element (4) as well as a mechnical-visual clogging indicator (5). Bypass valves (6) are integrated into the filter cover.

The pressure fluid is passed via port A to the filter element (4) and is cleaned in relation to the filtration rating. The contamination particles filtered out settle in the filter element (4). The filtered pressure fluid is directed via port B back into the reservoir.

The basic version of these return line filters includes a mechanical-visual clogging indicator (5).
Electrical switching elements for the clogging indicator (7) must be ordered separately.

The additional connections, A1 and A2, on the NS 160 to 630 (plugged as standard) are suitable to be used as a reservoir filling point or as an additional connection for retro-fitting additional return lines.



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

General

Installation			Vertical					
Flow direction			Inlet on the side, outlet vertically downwards					
Nominal size		NS	**40; 63**	**100**	**160**	**250**	**400**	**630**
Weight		kg	0.8	0.9	3.2	3.4	6.4	6.9
Material	Filter head		Aluminium					
	Filter bowel		Plastic		Steel			
	Filter cover		Plastic		Aluminium			
	Visual clogging indicator		Aluminium					
	Electrical switching element		PA6 plastic					

Hydraulic

Max. operating pressure	bar	10
Opening pressure of the bypass valve	bar	3.5 ± 0.35
Response pressure of the clogging indicator	bar	2.2 ± 0.25
Pressure fluid temperature range	°C	–30 to +100

Electrical (electrical switching element)

Electrical connection			Round plug connection M12 x 1, 4-pin Plug connection to DIN EN 175201-804, 6-pin + PE
Contact load		A	Max. 1
Voltage range	E1SP	V DC/AC	Max. 150
	E2SP	V DC	10 - 30
Max. switching power with resistive loads			20 VA; 20 W
Switching type	E1SP		AC
	E2SP		Normally closed at 75 % of the response pressure,
	E2SPSU		normally open at 100 % of the response pressure
Signal suppression (optional)			Signal switching at 30 °C, re-set at 20 °C
Display via LED's in the electrical switching element E2SP...			Operational (LED green) 75% switching point (LED yellow) 100% switching point (LED red)
Protection to DIN 40050			IP 65
			For DC voltages above 24 V a spark suppressor is to be provided to protect the switching contacts.
Weight	Electrical switching element with round plug connection M12 x 1	kg	0.1
	Electrical switching element with plug connection to DIN EN 175201-804	kg	0.17

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

Filter element

Filter element		Discardable element on the basis of an organic fibre						
Particle separation		$\beta_{10} \geq 200$ to $\Delta p = 5$ bar						
		$\beta_3 \geq 200$ to $\Delta p = 5$ bar						
Permissible pressure differential	bar	10						
Nominal size	NS	**40**	**63**	**100**	**160**	**250**	**400**	**630**
Weight	kg	0.18	0.28	0.34	0.71	0.99	1.61	1.95

Pressure fluid seal material

Mineral oil			Ordering details
Mineral oil	HLP	to DIN 51524	M

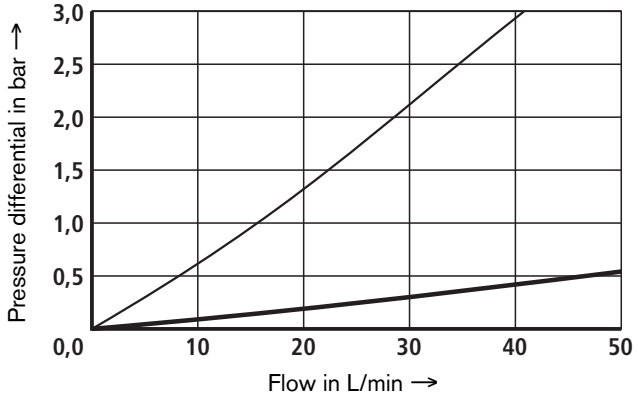
Fire-resistant pressure fluids			Ordering details
Emulsions	HFA-E	to DIN 24320	M
Synthetic, water solutions	HFA-S		[1]
Viscosity adjusted HFA fluids	HFA-V		V
Water solutions	HFC	to VDMA 24317	M
Phosphate esters	HFD-R	to VDMA 24317	V
Organic esters	HFD-U	to VDMA 24317	V

Fast bio-degradable pressure fluids			Ordering details
Triglycerides (rape seed oil)	HETG	to VDMA 24568	M
Synthetic ester	HEES	to VDMA 24568	V
Polyglycoles	HEPG	to VDMA 24568	V

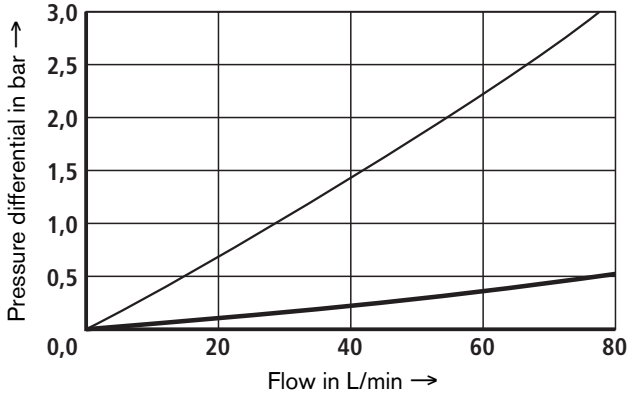
[1] On request, stating details of the pressure fluid

Characteristic curves for a 10 µm filter rating (measured with mineral oil HLP46 to DIN 51524)

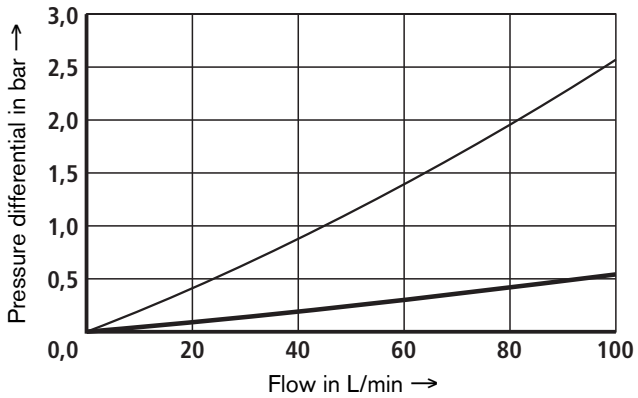
ABZFR-S0040-10-1X/M-DIN



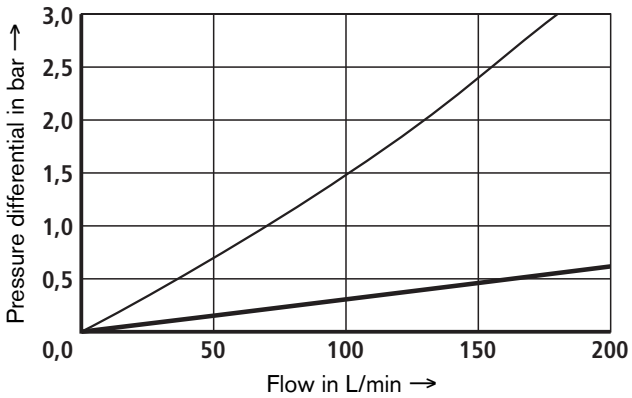
ABZFR-S0063-10-1X/M-DIN



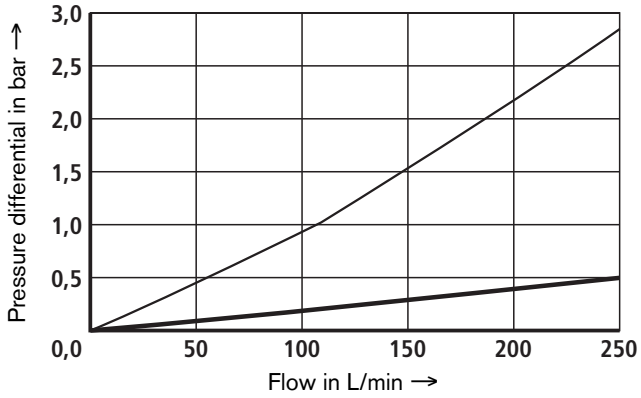
ABZFR-S0100-10-1X/M-DIN



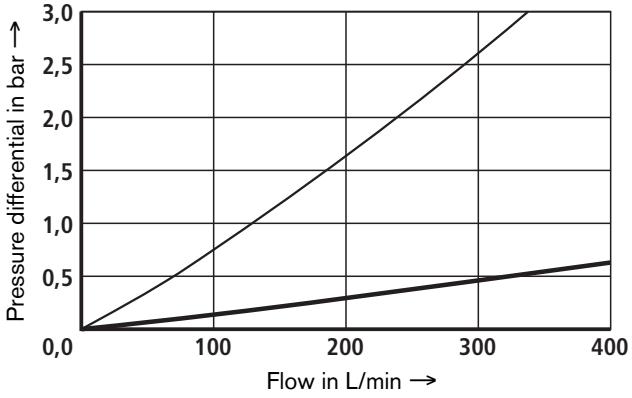
ABZFR-S0160-10-1X/M-DIN



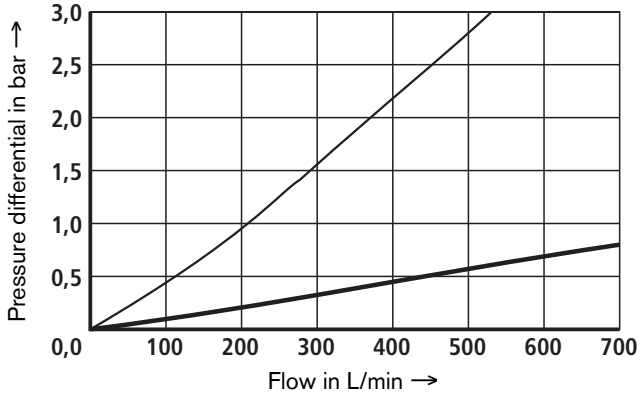
ABZFR-S0250-10-1X/M-DIN



ABZFR-S0400-10-1X/M-DIN



ABZFR-S0630-10-1X/M-DIN

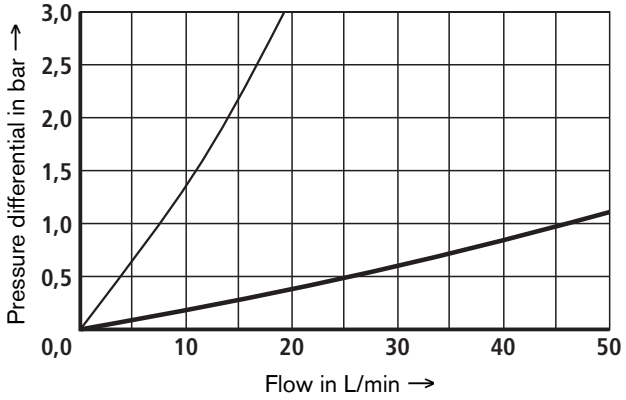


190 mm²/s

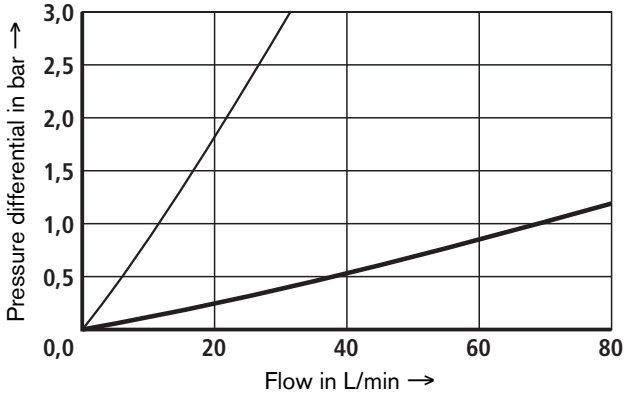
33 mm²/s

Characteristic curves for a 3 µm filter rating (measured with mineral oil HLP46 to DIN 51524)

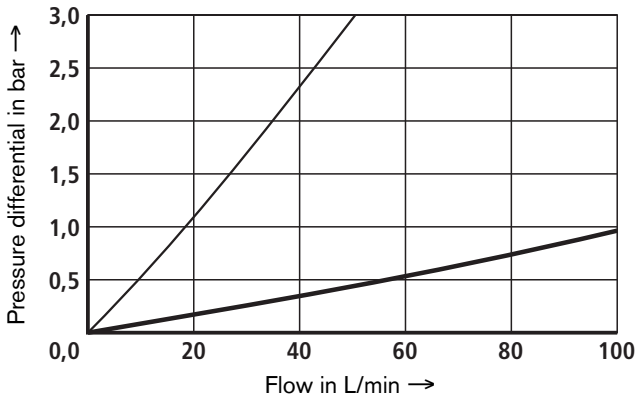
ABZFR-S0040-03-1X/M-DIN



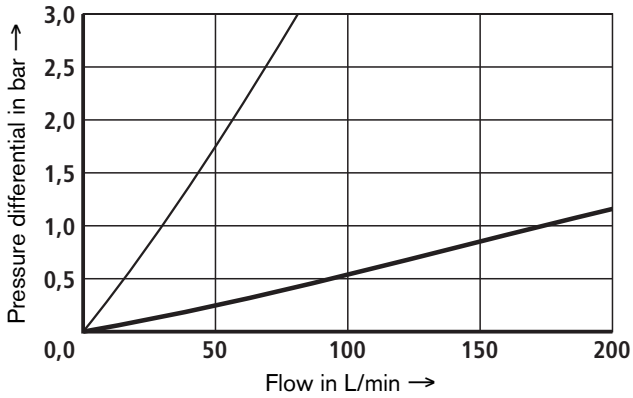
ABZFR-S0063-03-1X/M-DIN



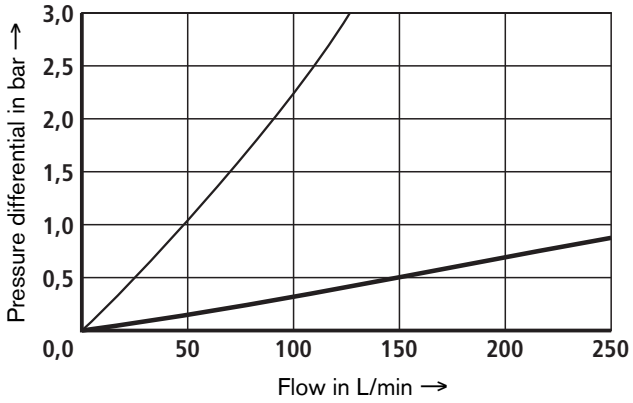
ABZFR-S0100-03-1X/M-DIN



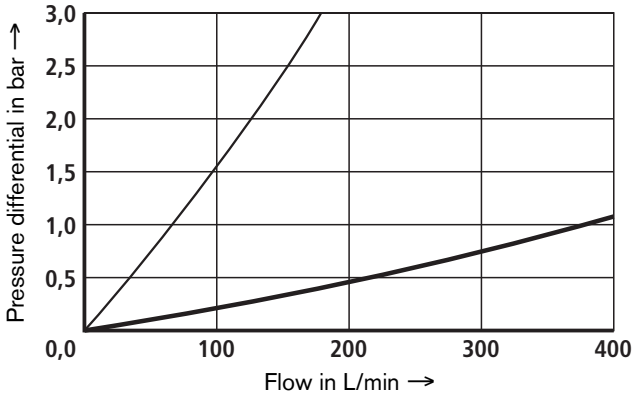
ABZFR-S0160-03-1X/M-DIN



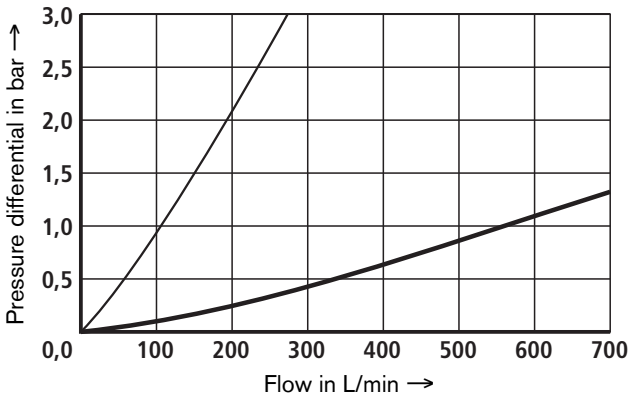
ABZFR-S0250-03-1X/M-DIN

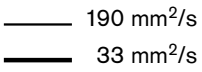


ABZFR-S0400-03-1X/M-DIN

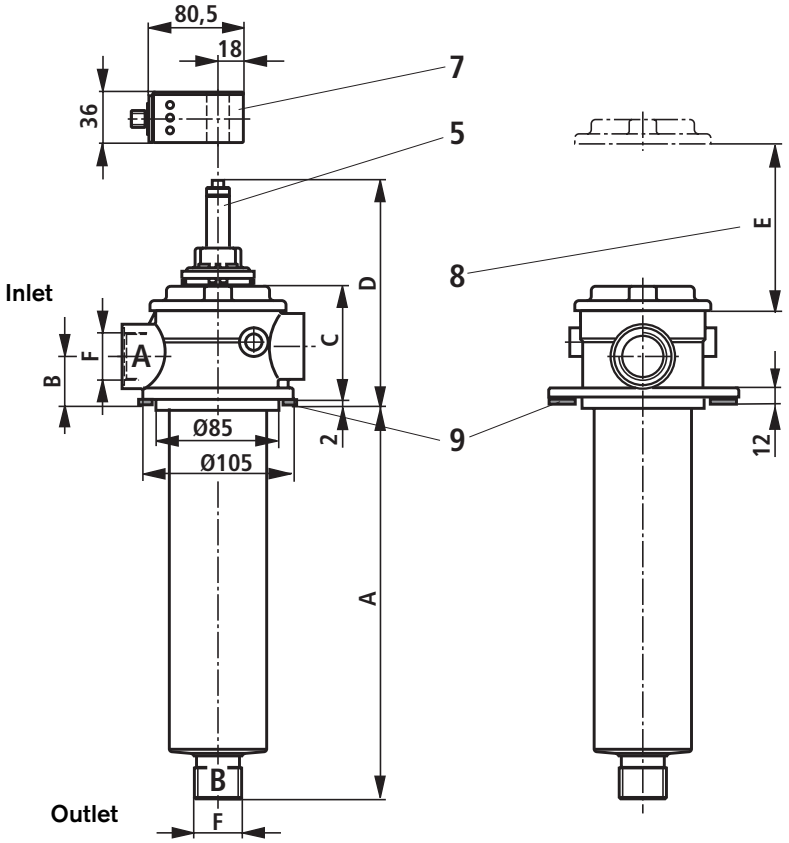


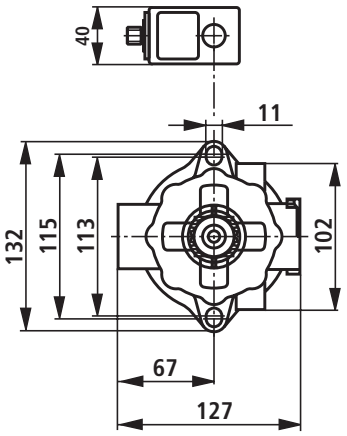
ABZFR-S0630-03-1X/M-DIN



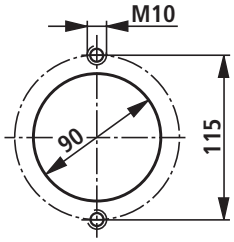


Unit dimensions (in mm)





Reservoir opening details



5 Mechanical-visual clogging indicator

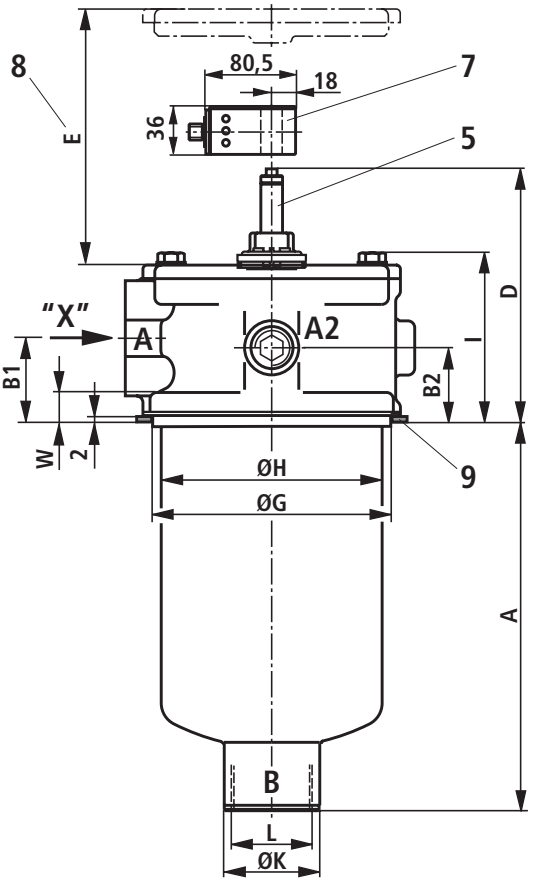
7 Switching element with a safety ring for the electrical clogging indicator M12x1 or plug connection to DIN EN 175201-804

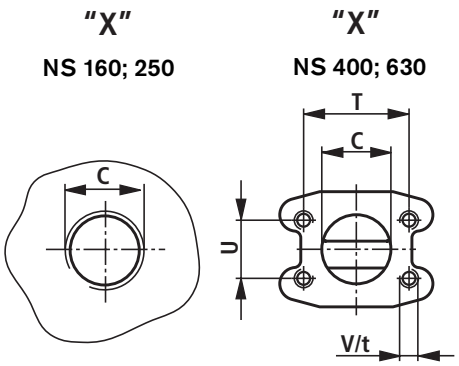
8 Minimum space required to change the element

9 Flat seal

Type	A	B	C	D	E	F
ABZFR-S0040-..-1X/..-DIN	129	30	79	152	100	G 1
ABZFR-S0063-..-1X/..-DIN	189	30	79	152	130	G 1
ABZFR-S0100-..-1X/..-DIN	279	30	79	152	200	G 1

Unit dimensions(in mm)





5 Mechanical-visual clogging indicator

7 Switching element with a safety ring for the electrical clogging indicator M12x1 or plug connection to DIN EN 175201-804

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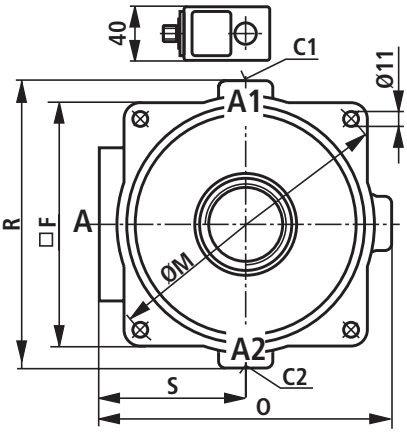
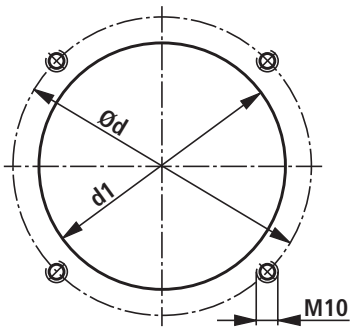


Reservoir opening details



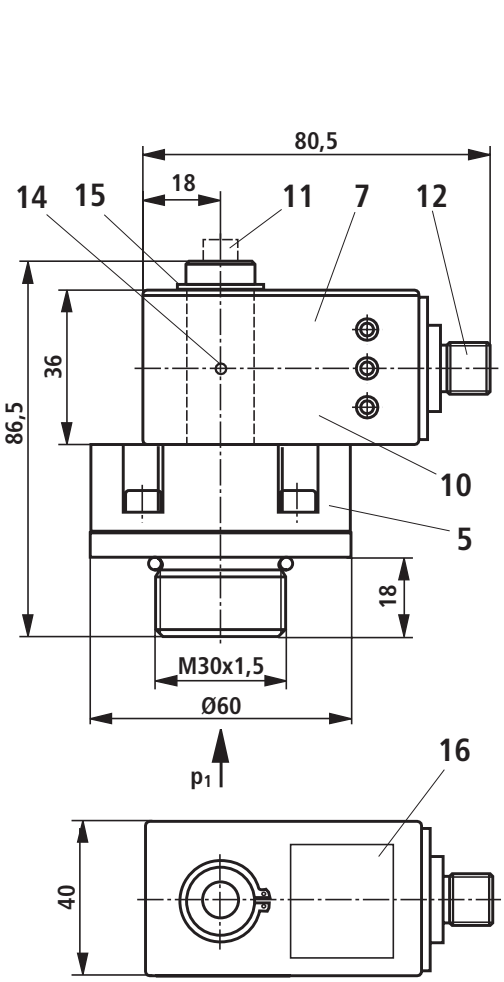
Type	A	B1	B2	C	C1	C2	D	E	□ F	Ø G	Ø H	I	Ø K
ABZFR-S0160-..-1X/..-DIN	202	42	42	G 1 1/4	G 3/4	G 3/4	160	180	151	135	130	96	52
ABZFR-S0250-..-1X/..-DIN	295	42	42	G 1 1/2	G 3/4	G 3/4	160	270	151	135	130	96	52
ABZFR-S0400-..-1X/..-DIN	307	57	50	SAE 2 [1)]	G 1	G 1	184	270	180	175,5	163	120	70
ABZFR-S0630-..-1X/..-DIN	457	57	50	SAE 2 1/2 [1)]	G 1	G 1	184	420	180	175,5	163	120	70

Type	Ø M	O	R	S	T	U	V/t	W	Ø d	d1
ABZFR-S0160-..-1X/..-DIN	185	–	181	93.5	–	–	–	12	185 ± 0.2	140 + 1
ABZFR-S0250-..-1X/..-DIN	185	–	181	93.5	–	–	–	12	185 ± 0.2	140 + 1
ABZFR-S0400-..-1X/..-DIN	220	214	212	109.5	77.8	42.9	M12; 20	15	220 ± 0.2	180 + 1
ABZFR-S0630-..-1X/..-DIN	220	214	212	109.5	89	50.8	M12; 20	15	220 ± 0.2	180 + 1

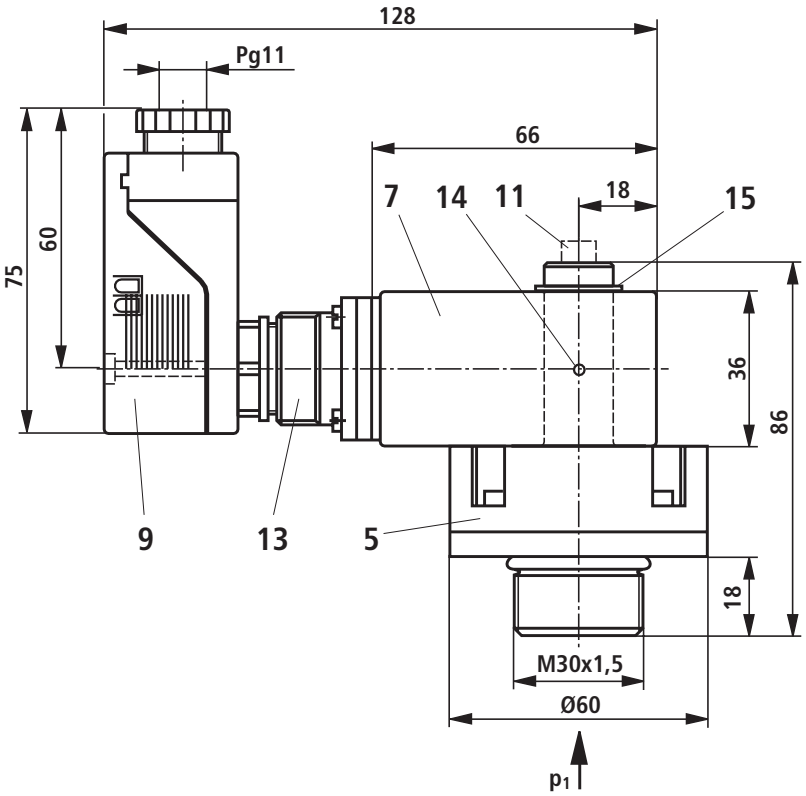
[1)] Standard pressure series to ISO 6162

Clogging indicator (in mm)

Electrical clogging indicator
M12x1



Electrical clogging indicator
DIN EN 175201-804



5 Mechanical-visual clogging indicator
max. tightening torque $M_{A\ max} = 50$ Nm

7 Switching element with a safety ring for the electrical clogging indicator (rotable through 360°);
Plug connection M12x1 or to DIN EN 175201-804

9 Transparent plug-in connector with 3 light diodes: 24 V =
Green: Operational
Yellow: Switching point 75%
Red: Switching point 100%

10 Housing with 3 light diodes: 24 V =
Green: Operational
Yellow: Switching point 75%
Red: Switching point 100%

11 Visual indicator bi-stable

12 Round plug connection M12x1, 4-pin

13 Plug connection to DIN EN 175201-804

14 Air bleed hole (do not plug)

15 Safety ring

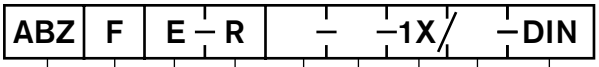
16 Name plate

Note: **The view shows the mechanical-visual clogging indicator (5) and the electrical switching element (7).**

Cable sets for connecting the „round plug connector M12x1“ (Pos.12)
E.g. ABZFV-E1SP-M12X1 are available from our Rexroth standard sheet AB 24-02!

Spare parts

Filter element



Rexroth power unit accessories

Filter

Filter element

Filter element for the return line filter **= R**

Nominal size

NS 40	**= 0040**
NS 63	**= 0063**
NS 100	**= 0100**
NS 160	**= 0160**
NS 250	**= 0250**
NS 400	**= 0400**
NS 630	**= 0630**

DIN = DIN 24550

Seal material

M = See table (page 6)
V = See table (page 6)

Component series

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

Filter rating

10 = 10 µm [1)]
03 = 3 µm [1)]

[1)] The retension capacity is measured in accordance with ISO 16889
10 µm element ≙ $\beta_{10\,(c)} > 200$
3 µm element ≙ $\beta_{5\,(c)} > 200$

Filter element, 10 µm	Material No.
ABZFE-R0040-10-1X/M-DIN	R901052390
ABZFE-R0063-10-1X/M-DIN	R901025291
ABZFE-R0100-10-1X/M-DIN	R901025293
ABZFE-R0160-10-1X/M-DIN	R901025295
ABZFE-R0250-10-1X/M-DIN	R901025297
ABZFE-R0400-10-1X/M-DIN	R901025298
ABZFE-R0630-10-1X/M-DIN	R901025300

Filter element, 3 µm	Material No.
ABZFE-R0040-03-1X/M-DIN	R901052389
ABZFE-R0063-03-1X/M-DIN	R901025274
ABZFE-R0100-03-1X/M-DIN	R901025278
ABZFE-R0160-03-1X/M-DIN	R901025279
ABZFE-R0250-03-1X/M-DIN	R901025283
ABZFE-R0400-03-1X/M-DIN	R901025286
ABZFE-R0630-03-1X/M-DIN	R901025288

Mechanical-visual clogging indicator

Rexroth power unit accessories

Filter

Clogging indicator

Mechanical-visual clogging indicator for the return line filter switching point 2.2 bar **= RV2**

DIN = Identification mark for DIN filters

Seal material

M = See table (page 6)
V = See table (page 6)

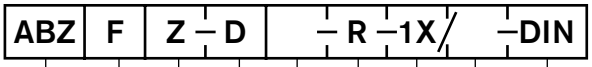
Component series

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

Mechanical-visual clogging indicator	Material No.
ABZFV-RV2-1X/M-DIN	R901025310

Spare parts

Seal kit



Rexroth power unit accessories

Filter

Accessories/others

Seal kit **= D**

Nominal size

NS 40, 63, 100 **= 0040-0063-0100**
NS 160, 250 **= 0160-0250**
NS 400, 630 **= 0400-0630**

DIN = Identification mark for DIN filters

Seal material

M = See table (page 6)
V = See table (page 6)

Component series

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

R = Return line filter

Dichtsatz [1]	Material Nr.
ABZFZ-D0040-0063-0100-R-1X/M-DIN	R901025391
ABZFZ-D0160-0250-R-1X/M-DIN	R901025392
ABZFZ-D0400-0630-R-1X/M-DIN	R901025393

[1] The seal kit comprises of O-rings for the filter bowel, cover, clogging indicator and a tank seal.

Installation, operational and maintenance guidelines

Filter installation

When fitting the filter the following must be taken into account,

a) that the required filter element Pos. 4 and the filter bowel Pos. 2 withdrawal length is available,

b) that the installation opening for mounting the filter onto the reservoir cover is not too large so that the unit can be correctly sealed,

c) that the filter is mounted stress-free.

The filter has a two piece housing. It is fitted with the filter bowel pointing downwards into the reservoir. It is recommended that the return pipe, fitted to the filter bowel, is supported when the length exceeds 500 mm so that movement caused by fluid flows within the reservoir are prevented. It has to be taken into account that the filter bowel complete with the return pipe have to be withdrawn together for maintenance work.

Connecting the electrical clogging indicator

The filter is fitted, as standard, with a visual clogging indicator. The electrical clogging indicator is connected via the electrical switching element which has 1 or 2 switching points. It is pushed onto the visual clogging indicator and locked into place with a retaining ring.

When does the filter element have to be replaced?

When starting up in a cold condition the clogging indicator's red button could pop-up and an electrical signal is enabled via the electrical indicator. Only press the red button back in when the system operating temperature has been reached. If it immediately pops back out or if the electrical signal, at operating temperature, is not withdrawn then the filter element has to be replaced at the end of the current shift.

Changing the element

- Switch the system off, depressurise the filter on the pressure side.
- Unscrew the cover and remove, anti-clockwise rotation, (for NS 40, 63 and 100) or remove the filter cover screws (for NS 160 to 630).
- Pull out the filter bowel complete with filter element.
- Remove the filter element by lightly rocking the element from side to side.
- Clean the filter bowel with a suitable medium.
- Check the O-ring on the filter cover and filter bowel for damage. If necessary replace them.
- Check the type code on the replacement element to ensure that it matches the type code stated on the filter's name plate.
- Remove the filter element from the plastic sleeve and re-assemble the filter in the reverse order from that described above.

Notes

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