



- Nominal sizes **according to DIN 24550**: 0160 to 1000
- Nominal sizes according to BRFS: 0045, 0055, 0120, 0200, 0270
- Nominal pressures 100 bar
- Connections up to DN 100
- Operating temperature -10 °C to +100 °C

Duplex filter

Types 100 FLDN 0160 to 1000; 100 FLD 0045, 0055, 0120, 0200, 0270

Application

- Filtration of pressure fluids and lubricants.
- Filtration of fluids and gases.
- Direct installation into pipelines.
- Direct wear protection of downstream components and systems.
- Continuous operating mode due to duplex filter design.

Features

- Filters for inline installation, for continuous operation
- FLDN series with filter elements in accordance with DIN 24550
- Versatile applications
- Compact modular design
- Low pressure drop
- Special highly efficient filter media

Design

Two filter housings in steel welded design, connected by means of switch housing. Vertically aligned connections for inlet and outlet at the front of the switch housing. 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".

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 pressurization due to clogging.

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 are pressure holding equipment according to article 1, section 2.1.4 of the pressure equipment directive 97/23/EC (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 details

of the filter

100									
— 0 — V5,0—D0 — 0 —									
Pressure									
100 bar = 100									
Design									
Duplex filter with filter element according to DIN 24550 = FLDN									
Duplex filter with filter element according to BRFS standard = FLD									
Nom. size									
FLDN... = 0160 0250 0400 0630 1000									
FLD... = 0045 0055 0120 0200 0270									
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									
60 bar not for 100 FLD 0200 and 100 FLD 0270 = C									
Element model									
Standard adhesive T = 100 °C = 0...									
Standard material = ...0									
chemically nickel-plated = ...D ¹⁾									
Solenoid									
without = 0									
Complementary details									
A = Pressure compensation line									
Z ²⁾ = Certificate									
Material									
0 = Standard									
Seal									
M = NBR seal									
V = FKM seal									
Connection									
D0 = DIN flange									
Clogging indicator									
V5,0 = clogging indicator, optical state switching pressure 5.0 bar									
Bypass valve									
Opening pressure: without									
7 = 3.5 bar									

Ordering example:

100 FLD 0045 H10XL-A00-07V5,0-D0M0A

of the filter element

1. — — 0 —									
Filter element									
Design = 1.									
Nom. size									
FLDN... = 0160 0250 0400 0630 1000									
FLD... = 0045 0055 0120 0200 0270									
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									
60 bar not for 100 FLD 0200 and 100 FLD 0270 = C									
Seal									
M = NBR seal									
V = FKM seal									
Bypass valve									
Opening pressure: With filter element always 0									
0 =									
Element model									
0... = Standard adhesive T = 100 °C									
...0 = Standard material									
...D ¹⁾ = chemically nickel-plated									

Ordering example:

1.0045 H10XL-A00-0-M

¹⁾ Only in connection with FKM seals

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

Preferred types

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

Type	Flow in L/min at $v = 30 \text{ mm}^2/\text{s}$ and $\Delta p = 0.8 \text{ bar}$
100 FLDN 0160 H10XL-A00-09V5,0-D0M0A	290
100 FLDN 0250 H10XL-A00-09V5,0-D0M0A	380
100 FLD 0045 H10XL-A00-09V5,0-D0M0A	460
100 FLD 0055 H10XL-A00-09V5,0-D0M0A	510
100 FLDN 0400 H10XL-A00-09V5,0-D0M0A	690
100 FLDN 0630 H10XL-A00-09V5,0-D0M0A	830
100 FLD 0120 H10XL-A00-09V5,0-D0M0A	950
100 FLDN 1000 H10XL-A00-09V5,0-D0M0A	850
100 FLD 0201 H10XL-A00-09V5,0-D0M0A	1500
100 FLD 0271 H10XL-A00-09V5,0-D0M0A	1570

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

Type	Flow in L/min at $v = 30 \text{ mm}^2/\text{s}$ and $\Delta p = 0.8 \text{ bar}$
100 FLDN 0160 H3XL-A00-09V5,0-D0M0A	130
100 FLDN 0250 H3XL-A00-09V5,0-D0M0A	198
100 FLD 0045 H3XL-A00-09V5,0-D0M0A	285
100 FLD 0055 H3XL-A00-09V5,0-D0M0A	352
100 FLDN 0400 H3XL-A00-09V5,0-D0M0A	355
100 FLDN 0630 H3XL-A00-09V5,0-D0M0A	515
100 FLD 0120 H3XL-A00-09V5,0-D0M0A	735
100 FLDN 1000 H3XL-A00-09V5,0-D0M0A	550
100 FLD 0201 H3XL-A00-09V5,0-D0M0A	1040
100 FLD 0271 H3XL-A00-09V5,0-D0M0A	1190

Duplex filter without bypass, filtration rating 10 µm and nominal pressure 100 bar

Type	Flow in L/min at $v = 30 \text{ mm}^2/\text{s}$ and $\Delta p = 0.8 \text{ bar}$
100 FLDN 0160 H10XL-C00-00V5,0-D0M0A	290
100 FLDN 0250 H10XL-C00-00V5,0-D0M0A	380
100 FLD 0045 H10XL-C00-00V5,0-D0M0A	460
100 FLD 0055 H10XL-C00-00V5,0-D0M0A	510
100 FLDN 0400 H10XL-C00-00V5,0-D0M0A	690
100 FLDN 0630 H10XL-C00-00V5,0-D0M0A	830
100 FLD 0120 H10XL-C00-00V5,0-D0M0A	950

Duplex filter without bypass, filtration rating 3 µm and nominal pressure 100 bar

Type	Flow in L/min at $v = 30 \text{ mm}^2/\text{s}$ and $\Delta p = 0.8 \text{ bar}$
100 FLDN 0160 H3XL-C00-00V5,0-D0M0A	130
100 FLDN 0250 H3XL-C00-00V5,0-D0M0A	198
100 FLD 0045 H3XL-C00-00V5,0-D0M0A	285
100 FLD 0055 H3XL-C00-00V5,0-D0M0A	352
100 FLDN 0400 H3XL-C00-00V5,0-D0M0A	355
100 FLDN 0630 H3XL-C00-00V5,0-D0M0A	515
100 FLD 0120 H3XL-C00-00V5,0-D0M0A	735

Ordering details: electronic switching element for clogging indicator

ABZ F V — —1X/—DIN				—DIN =	Identification for DIN and SAE models
power unit accessories					
Filter					
Clogging indicator					
electronic switching element with 1 switching point (changeover) round plug-in connection M12x1				= E1SP-M12X1	Unit series unit series 10 to 19 (10 to 19; unchanged installation and connection dimensions)
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	

Electronic switching element

ABZ FV-E1SP-M12X1-1X/-DIN

ABZ FV-E2SP-M12X1-1X/-DIN

ABZ FV-E2SPSU-M12X1-1X/-DIN

Ordering example: Pressure filter with mechanical optical clogging indicator for $p_{nom.} = 100 \text{ bar}$ [1450 psi] with bypass valve, nominal size 0045, with filter element 10 µm and electronic switching element M12x1 with 1 switching point for pressure liquid mineral oil HLP according to DIN 51524.

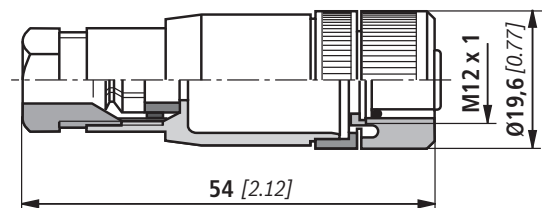
Filter: 100 FLD 0045 H10XL-A00-07V5,0-D0M0A

Clogging indicator: ABZ FV-E1SP-M12X1-1X/-DIN

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.**

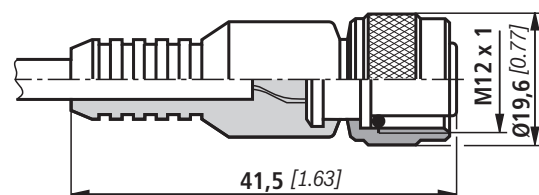


**Plug-in connector for K24-3m 4-pin, M12 x 1
with molded in PVC cable, 3 m long.**

Line cross-section: 4 x 0.34 mm²

Core marking:

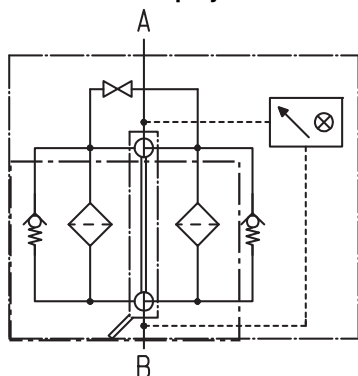
1	brown
2	white
3	blue
4	black



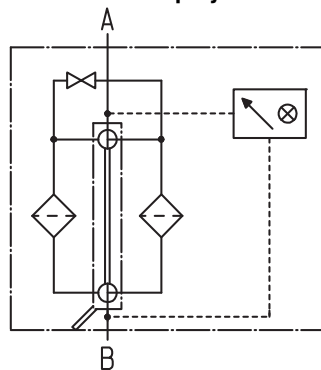
For additional round plug-in connections, see data sheet.

Symbols

Pressure filter
with bypass and
mechanical display

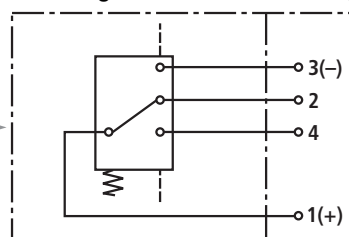


Pressure filter
without bypass and
mechanical display



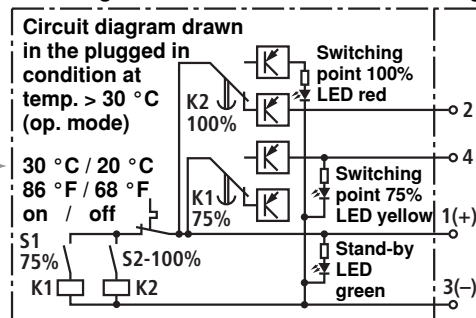
Electronic
switching element
for clogging
indicator

Switching element Plug



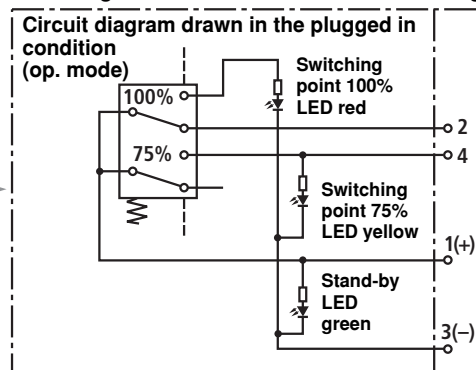
ABZFV-E1SP-M12X1-1X/-DIN

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. 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

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

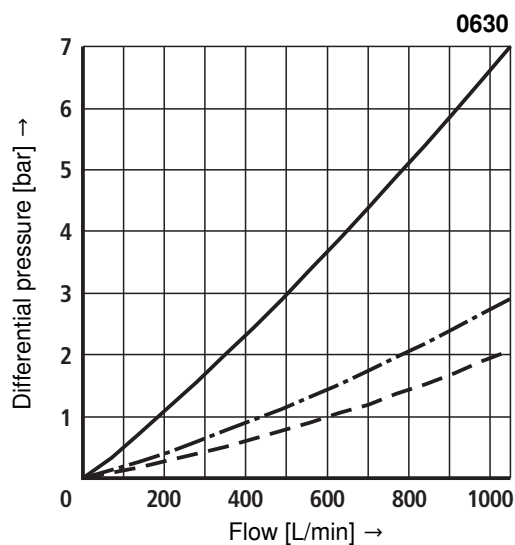
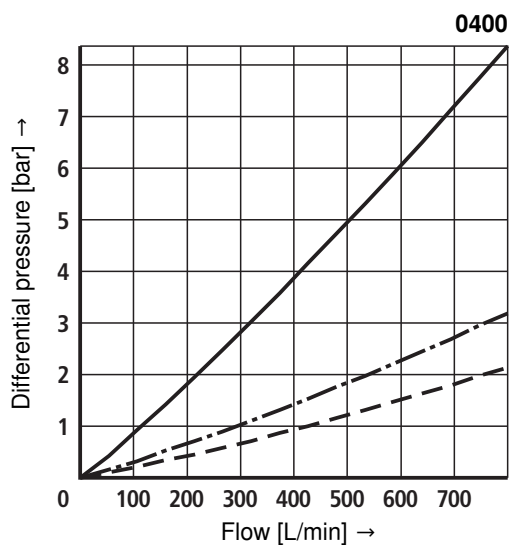
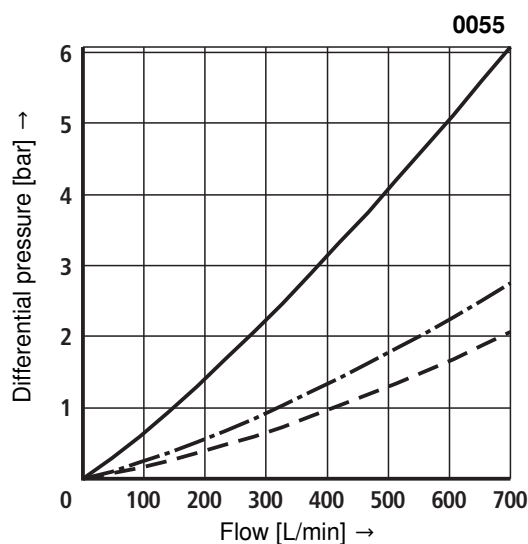
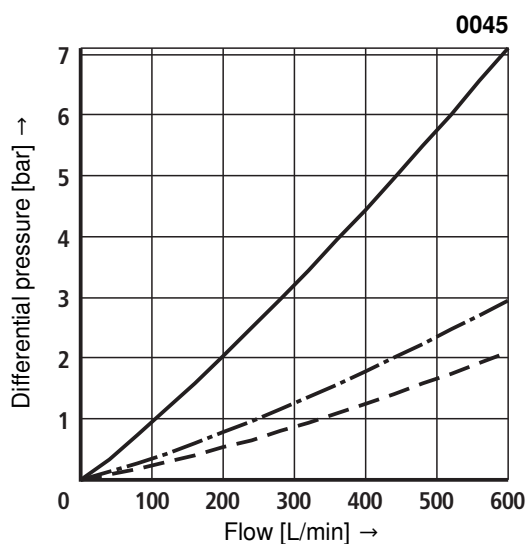
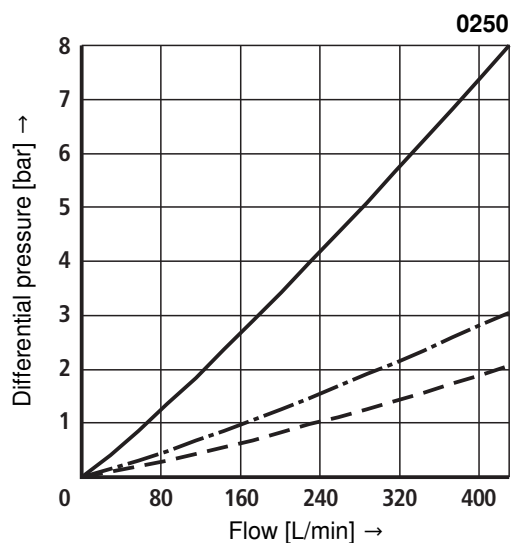
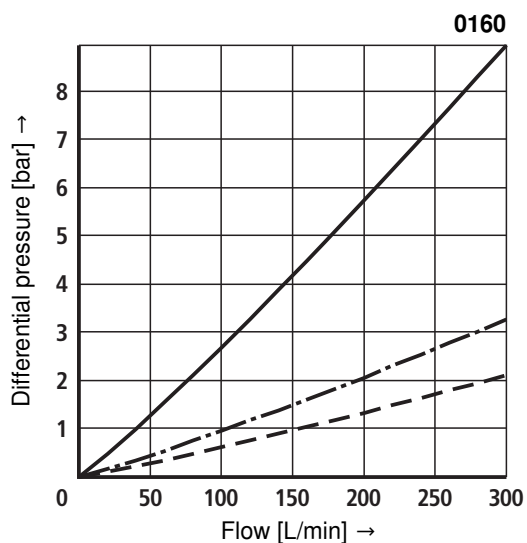
Δp -Q characteristic curves for complete filters recommended

initial Δp for design = 0.8 bar

H3XL...

Oil viscosity:

— 120 mm²/s
 - - 46 mm²/s
 --- 30 mm²/s

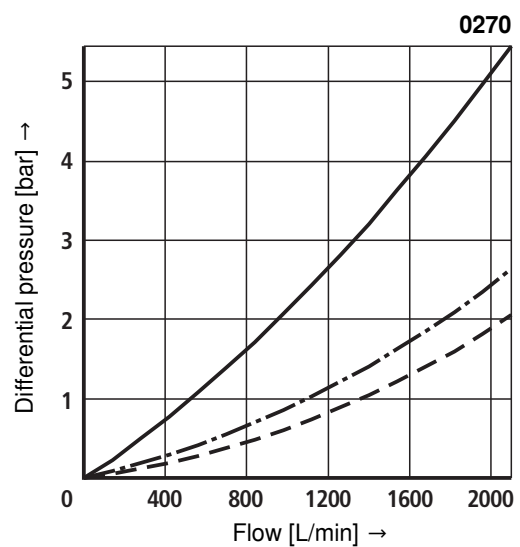
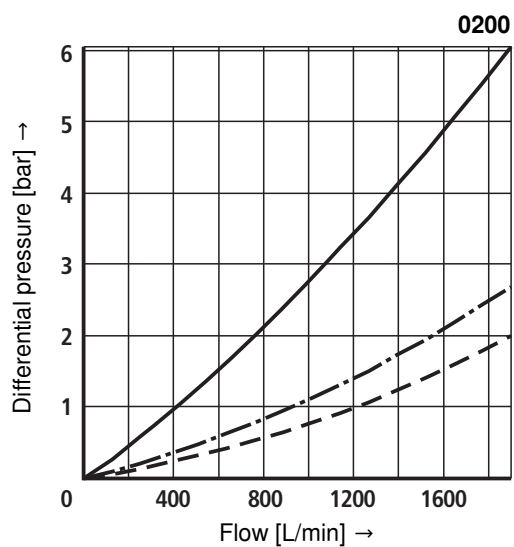
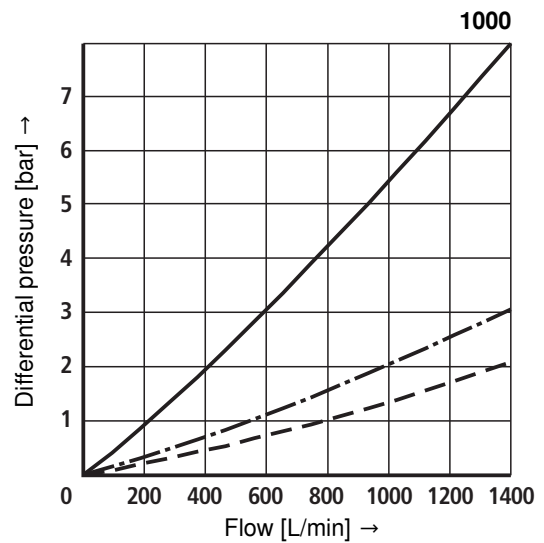
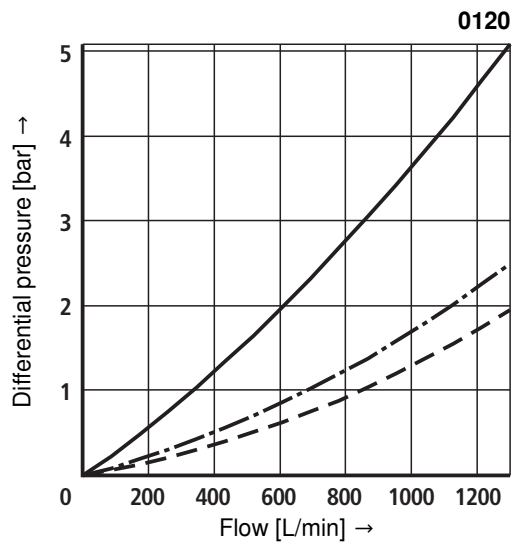


Characteristic curves

H3XL...

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

Oil viscosity:

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


Characteristic curves

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

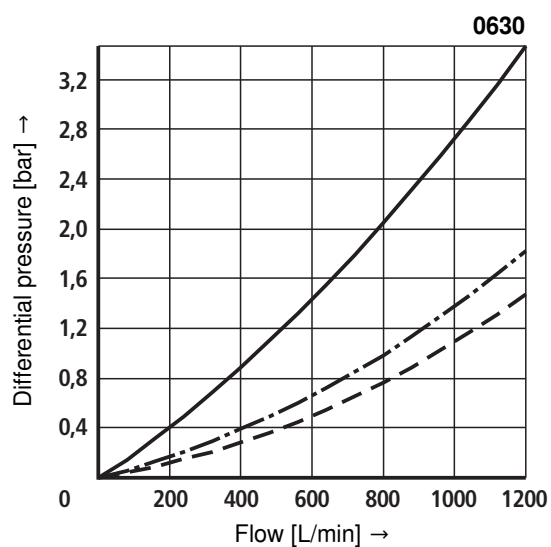
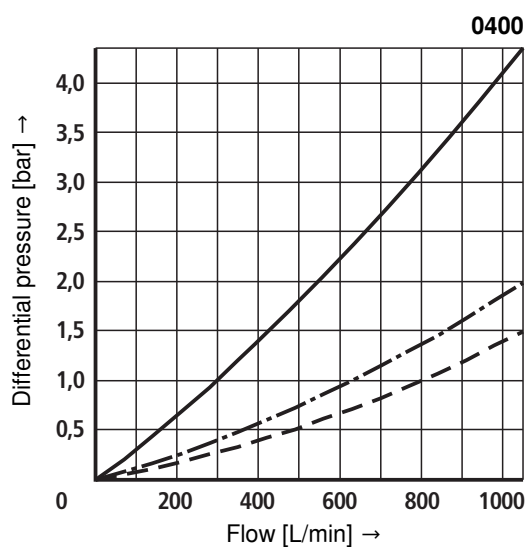
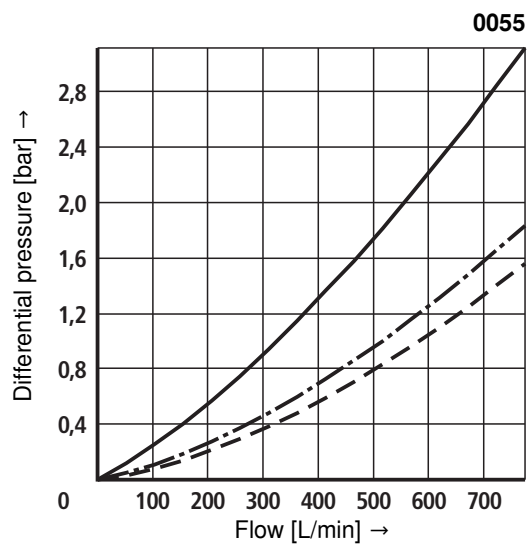
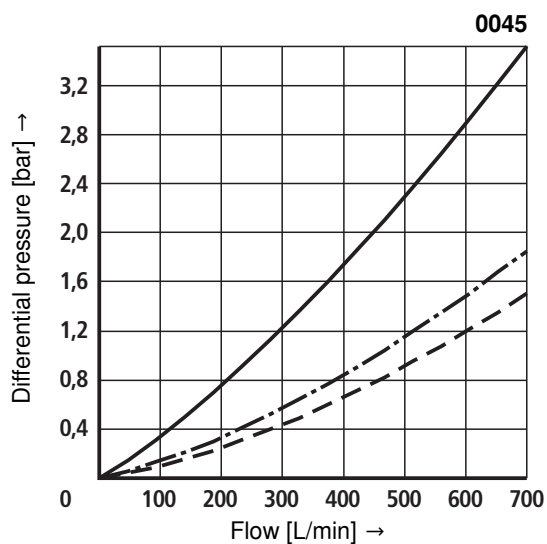
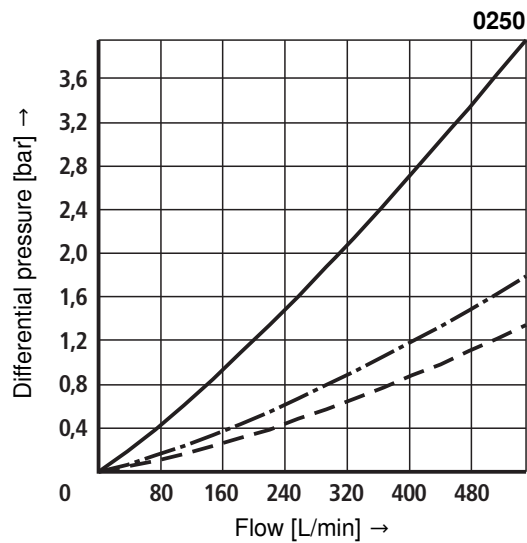
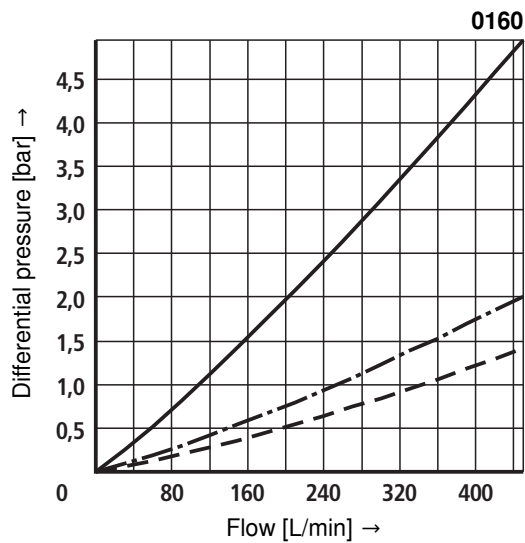
Δp -Q characteristic curves for complete filters recommended

initial Δp for design = 0.8 bar

H10XL...

Oil viscosity:

— 120 mm^2/s
 - - - 46 mm^2/s
 --- 30 mm^2/s



Characteristic curves

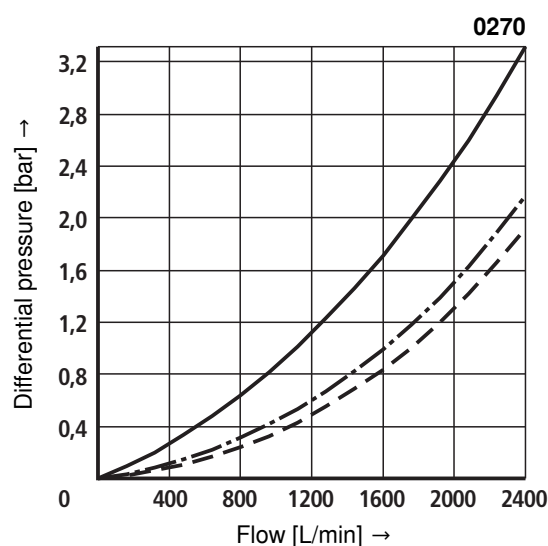
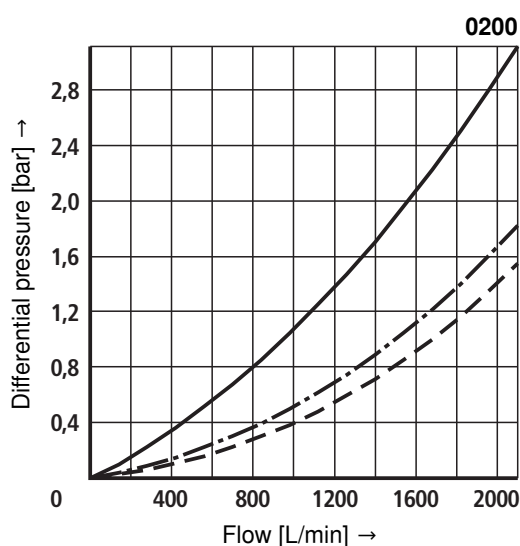
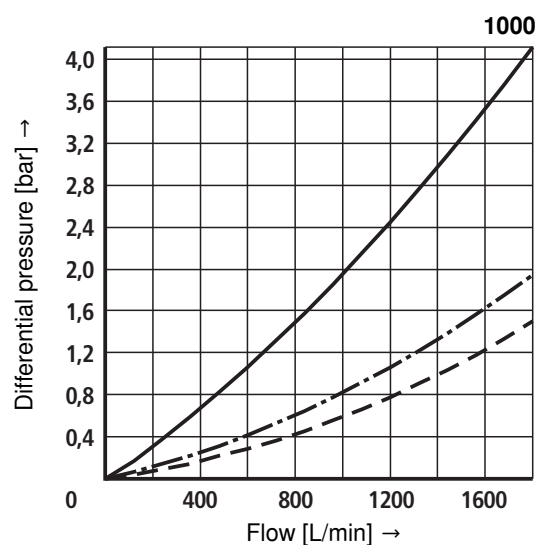
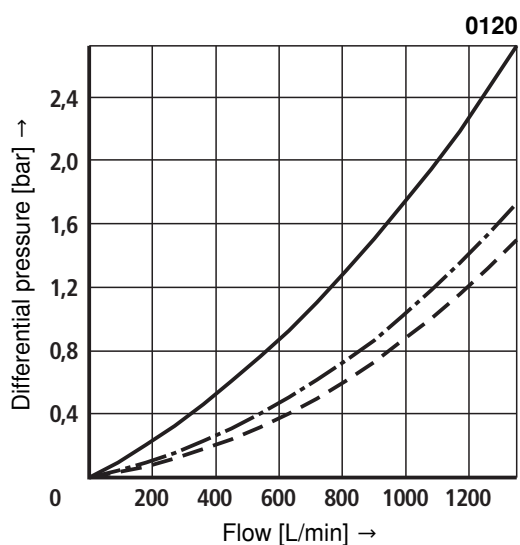
Specific weight: $< 0.9 \text{ kg/dm}^3$

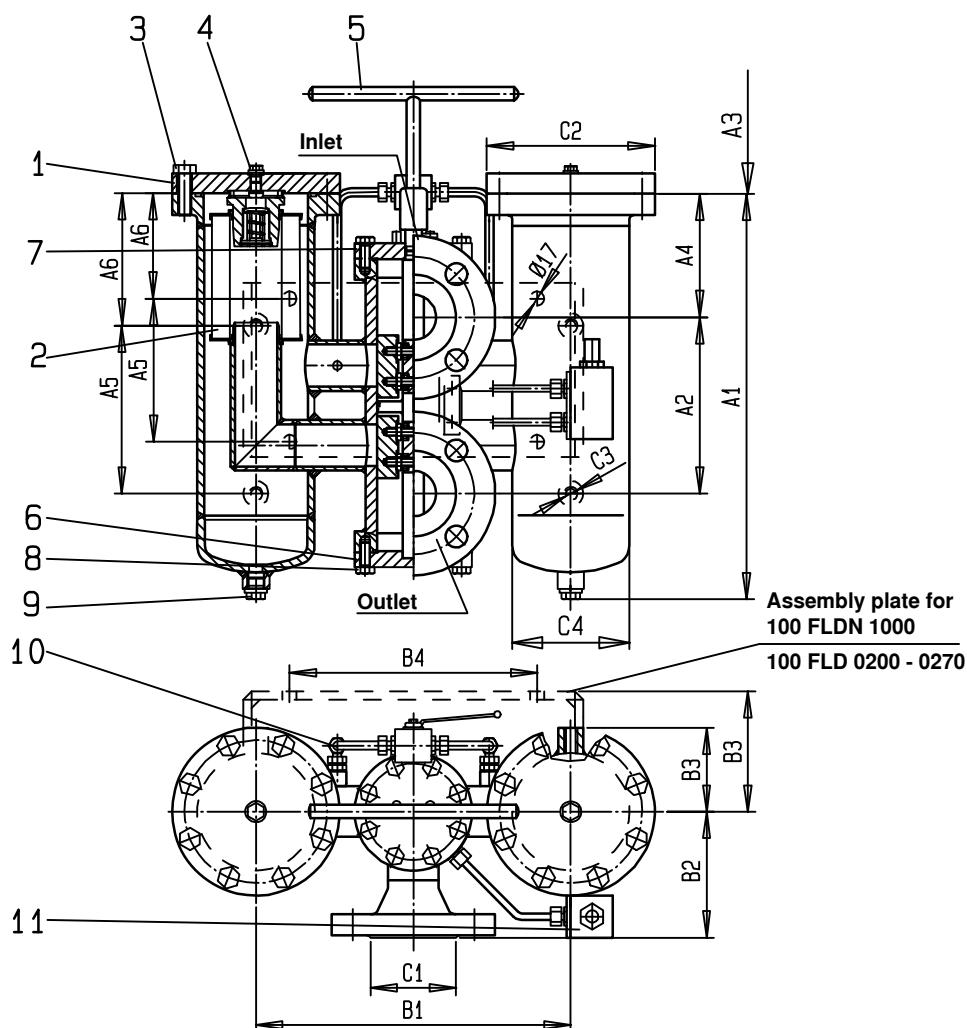
Δp -Q characteristic curves for complete filters recommended
 initial Δp for design = 0.8 bar

H10XL...

Oil viscosity:

- 120 mm^2/s
- · - 46 mm^2/s
- - - 30 mm^2/s



Unit dimensions, spare parts (dimensions in mm)

Filter housing for filter elements in accordance with DIN 24550

Type 100 FLDN...	Content in L	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	A6	B1	B2	B3	B4	C1 Connection DIN 2637	C2	C3	C4
0160	2 x 5	127.5	490	210	180	148	-	210	375	150	100	-	DN 50	Ø 200	M16	Ø 139.7
0250	2 x 6	130	580		270	238		230	485	180	115		DN 80	Ø 240	M20	Ø 168.3
0400	2 x 10	181.5	627	235	420	256	-	230	485	180	115	-	DN 80	Ø 240	M20	Ø 168.3
0630	2 x 13	187	777			406		230	485	180	115		DN 80	Ø 240	M20	Ø 168.3
1000	2 x 19	226	888	270	420	463	250	-	480	225	-	188	DN 100	Ø 260	-	Ø 193.7

Filter housing for filter elements according to BRFS standard

Type 100 FLD...	Con- tent in L	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A5	A6	B1	B2	B3	B4	C1 Connection DIN 2637	C2	C3	C4
0045	2 x 8	134.5	730	210	420	388	-	210	375	150	100	-	DN 50	Ø 200	M16	Ø 139.7
0055	2 x 10	139	898		590	556		210	375	150	100		DN 50	Ø 200	M16	Ø 139.7
0120	2 x 20	199	1134	235	780	763	-	230	485	180	115	-	DN 80	Ø 240	M20	Ø 168.3
0200	2 x 28	322	1246	270	780	821		230	485	180	115		DN 80	Ø 240	M20	Ø 168.3
0270	2 x 33	384	1480		1010	1055	250	-	480	225	-	188	DN 100	Ø 260	-	Ø 193.7

¹⁾ Weight including standard filter element and clogging indicator.

²⁾ Withdrawal dimension for filter element replacement.

Spare parts list

		Size	FLDN		0160	0250			0400	0630		1000		
			FLD				0045	0055			0120		0200	0270
Part	Piece	Description	Material	Ordering information										
1	2	Filter cover	various	Please indicate ordering information Filter										
2	2	Filter element	various	See ordering information Filter Element										
3	16	Hexagonal head screw	8.8	602					–					
	24			–					605					
4	2	Bleed screw	5.8	4158										
5	1	Plug key	Steel	Please indicate ordering information Filter										
6	1	Switch housing bottom	Steel	4019					4055			4075		
7	1	Switch housing cover	Steel	4018					4056			4058		
8	32	Socket head cap screw	8.8	–					654			–		
	24			–						662				
	16	Hexagonal head screw		594					–					
9	2	Plug	5.8	789								790		
10	1	Pressure compensa- tion line	Steel	Please indicate ordering information Filter										
11	1	Clogging indicator	various	See ordering information Clogging indicator										
	1	Sealing kit	various	Please indicate ordering information Filter										

All part numbers BRFS specific.

Spare parts (insert for DIN and SAE filters)

Mechanical optical clogging indicator

power unit accessories

Filter

Clogging indicator

Mechanical optical clogging indicator for high-pressure filters

Switching point 5 bar [72 psi]

ABZ	F	V	HV5	1X	/	DIN
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= HV5

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

ABZ FV-HV5-1X/M-DIN

The ordering details for filter elements can be found in the order details 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		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 (direction arrows) and the withdrawal height of the filter elements.

Warning!

Vessel is under pressure!

Assemble and disassemble the filter only when system is depressurized!

Keep the pressure compensation closed if the filter is open!

Do not operate the change over valve when the filter is opened!

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

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

Service filter only by trained personnel!

Commissioning

Move the switch lever into the central position in order to fill both filter sides. Switch on system pump. Bleed filter by opening the bleed screw, close when operating fluid vents. Switch filter into its operating position. In this connection, the switch lever must be in the stop position.

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 element is clogged and needs to be replaced or cleaned respectively.

Filter element replacement

Open the pressure compensation line, switch the switch lever over into the opposite direction to the stop to the clean filter side. Close the pressure compensation line again. Open the bleed screw and reduce the pressure. Close the bleed screw again. Screw off the filter head. Open the plug and drain the filter; then close the plug again. Remove the filter element from the lower centering spigot in the filter housing by turning it lightly. Check the filter housing for cleanliness and clean if necessary.

Replace filter elements H...-XL, P. The filter element with mater G... is cleanable. 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 less than 50% of the value of a new filter element, the cleaning is not reasonable any more. Install the cleaned or new filter element into the filter housing. Check the seal ring and replace it in case of damage. Without any tools, install filter head by rotating it clockwise by hand up to the last thread. Rotate back 1/4 rotation. Bleed filter by opening the bleed screw, close again when operating fluid vents.

Technical modifications reserved!