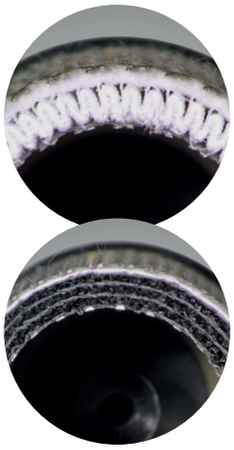
Filtrations-Separations-Technik

APPLICATION

Type ERBE filter elements of filtration grades ZN, XN and A provide the opportunity to use our high performance, energy efficient and safe to operate filtration technology also in Beko filter housings. We recommend the filtration grade assignment found in the table below.



FEATURES

Filter elements of filtration grades ZN, and XN (coalescing filter) consist of a pleated depth filter media and a separate drainage media. Thanks to the pleating technology the effective filter surface area is increased many times, resulting in much higher dirt holding capacity and a longer service life. At the same time, flow resistance and therefore differential pressure are considerably reduced. To ensure the highest operational safety, the pleated depth filter cylinder has at least two or even more layers. In addition, it is provided with a pleated supporting fabric on the inside and outside. Filter elements of filtration grade A (adsorption filter) comprise of activated carbon granulate, embedded between two coarse filter layers. In addition, a separate general purpose filter layer (Z) is located towards the outer side, in order to reliably prevent even the finest activated car-bon dust from leaving the filter element. Using loose activated carbon granulate results in an average amount of activated carbon (1.2 kg of activated carbon for each m² of filter surface area). This considerably increases the separation capability and the service life. The 3-layer design contributes to an adequate thickness of the activated carbon bed and thus to a long contact time between compressed air and activated carbon. This results in extremely low residual oil contents. The general purpose filter layer downstream of the activated carbon usually eliminates the need for additional downstream filtration. All media are securely located between the two stainless steel cylinders. Thus, breaking off completely or in parts is impossible. All the features mentioned above contribute to a filter element which has a high performance (high separation efficiency) combined with economic efficiency (low differential pressure, long service life) and maximum operating safety (integrated design).

ASSIGNMENT

Filtration grade	FST	Beko
General purpopse	ZN	G, F, FX
Fine	XN	S, N, SX
activated carbon	A	A

ERBE filter elements

Product data sheet

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BASIC DATA

Model	Nominal volume flow (VN)*1	Max. operating pressure	Min./Max. operating pressure
ERBE 04	35 m³/h (0,87)	---	+2°C - +65°C
ERBE 05	65 m³/h (1,05)		
ERBE 06	100 m³/h (0,98)		
ERBE 07	150 m³/h (0,98)		
ERBE 10	200 m³/h (0,89)		
ERBE 12	250 m³/h (0,95)		
ERBE 15	320 m³/h (0,89)		
ERBE 18	420 m³/h (0,90)		
ERBE 20	600 m³/h (1,05)		
ERBE 22	780 m³/h (1,02)		
ERBE 23	1020 m³/h (1,01)		
ERBE 25	1300 m³/h (1,11)		
ERBE 27	1620 m³/h (1,07)		
ERBE 30	1940 m³/h (1,02)		
ERBE 32	2400 m³/h (1,01)		

*1 – refers to 1 bar(a) and 20°C at 7 bar operating pressure
The factor in brackets specifies the relation of the flow of the filter element for each cm² of surface area compared to EFST30 reference element

VOLUME FLOW CONVERSION FACTORS

<<F1>> – Pressure (in bar) | conversion factor																
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0,125	0,25	0,38	0,50	0,63	0,75	0,88	1,00	1,13	1,25	1,38	1,50	1,63	1,75	1,88	2,00	2,13
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	>400
3,1	5,1	6,5	7,6	8,5	9,3	9,9	10,5	11,0	11,5	11,9	12,3	12,7	13,0	13,0	13,0	13,0

<<F2>> – Temperature in °C | conversion factor													
2	5	10	15	20	25	30	35	40	45	50	55	60	65
1,07	1,05	1,04	1,02	1,00	0,98	0,97	0,95	0,94	0,92	0,91	0,89	0,88	0,87

CALCULATION OF THE CONVERTED VOLUME FLOW

Converted volume flow VK	Nominal required volume flow VN_{min}
$VK = VN \times F1 \times F2$	$VN_{min} = VK / F1 / F2$

VK : Converted volume flow calculated for the operating conditions

VN_{min} : Nominal required volume flow calculated for the operating conditions, based on the volume flow at operating conditions

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DIMENSIONS

Model	Height (total height)	Ø	Ø Inlet (inside)
ERBE 04	72 mm (106 mm)	48 mm	12 mm
ERBE 05	102 mm (136 mm)	48 mm	12 mm
ERBE 06	157 mm (191 mm)	48 mm	12 mm
ERBE 07	163 mm (196 mm)	70 mm	20 mm
ERBE 10	230 mm (263 mm)	70 mm	20 mm
ERBE 12	265 mm (298 mm)	70 mm	20 mm
ERBE 15	202 mm (244 mm)	105 mm	40 mm
ERBE 18	255 mm (297 mm)	105 mm	40 mm
ERBE 20	305 mm (347 mm)	105 mm	40 mm
ERBE 22	402 mm (443 mm)	105 mm	40 mm
ERBE 23	520 mm (561 mm)	105 mm	40 mm
ERBE 25	392 mm (466 mm)	179 mm	64 mm
ERBE 27	496 mm (570 mm)	179 mm	64 mm
ERBE 30	616 mm (690 mm)	179 mm	64 mm
ERBE 32	763 mm (837 mm)	179 mm	64 mm

PURITY CLASSES ACCORDING TO ISO 8573.1

Contamination	ZN	XN	A
Solid particles*2	Class 2	Class 1	(Class 2)
Water content*2	---	---	---
Total oil content*2	Class 2*3	Class 1*3	Class 1*4

*2 – typical result, under the assumption of suitable inlet concentrations as well as operating and marginal conditions
*3 – the oil vapour content is not taken into account, it may reduce the purity class
*4 – the liquid residual oil content is not taken into account and may reduce the purity class (should be separated in advance by means of fine filtration)

PRODUCT SPECIFIC DATA

Specification	ZN	XN	A
Differential pressure, dry	30 mbar	40 mbar	60 mbar
Differential pressure, wet	125 mbar	140 mbar	---
Separation efficiency (nominal)	99,9999 % (1µ)	99,9999 % (0,01µ)	--- ---
Separation efficiency(ISO 12500-3)	99,98 % (0,3µ)*5	99,995 % (0,3µ)*5	--- ---
Residual oil content (nominal)	≤ 0,5 mg/m³	≤ 0,01 mg/m³	≤ 0,003 mg/m³*6
Residual oil content (ISO 12500-1)	---	0,02 mg/m³	---
Capacity (ISO 12500-2)	---	---	19,3 minutes

*5 – measured referring to ISO 12500-3 at 7 bar amd nominal volume flow, model EFST30, MPPS – Most Penetrating Particle Size
*6 – at an inlet concentration of ≤ 0,01 mg/m³, liquid residual oil contens is not taken into account (should be separated in advance by means of fine filtration)

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MATERIALS

Part	Material
Coarse filter medium	Cellulosic fibres, impregnated (acrylic basis)
Depth filter medium	Glass fibres
Drainage medium	PES (Polyester)
Supporting fabric of depth filter medium	PA
Activated carbon filter medium	Activated carbon granulate, PES (Polyester) fibre layer
General purpose filter medium	Glass fibres
Bonded joint	PU (Polyurethan)
Cylinders	Stainless steel 1.4301
End caps	PA, 30% GF
Sealing materials	NBR

MAINTENANCE RULES

Pressure range	ZN, XN	A
0-4 bar	Replacement for filter element once a year, the latest on a differential pressure of 50 mbar	Replacement of filter elements every 3 months, depending on the operating temperature, and therefore on the specified oil vapour amount, earlier if required
5-16 bar	Replacement for filter element once a year, the latest on a differential pressure of 350 mbar	
17-50 bar	Replacement for filter element once a year, the latest on a differential pressure of 500 mbar	
> 50 bar	Replacement for filter element once a year, the latest on a differential pressure of 750 mbar	