

# DUCT MOUNTABLE HEPA & HIGH EFFICIENCY FILTERS

## LNB-NB-KVB



**LNB - NB - KVB multi-diehdral absolute filters** are mini-pleated in V-arranged packs to create a series of adjacent bags that form elements with a very large filtration surface. These filters have an air flow rate 100% times higher than models of the same size with a normal surface because they allow a face air speed of 2.5 - 3 m/s. hence, these filters halve the sizes, costs, weights and spaces occupied by the ducts. Furthermore, compared to filters with normal air flow rates, they assure a longer operating life and a higher fan motor energy saving levels. LNB - NB - KVB filters are made of two materials different from the one used for the frame: MDF wood (LNB) and galvanized steel (NB-KVB).

Both have a special single piece gasket. They come in two different depths: 149 and 292 mm which allow face air speeds of 0.75 and 1.5 m/s respectively. All the filters are tested individually and labeled to assure the compliance with the measured features.

### Applications

LNB - NB - KVB filters can be used in various applications:

- final stage of air treatment units for rooms with cleanliness class M4 and M5 (FS 290E)
- protection stage for very high efficiency filters (ULPA)
- in Canister systems to assure the required emission levels of exhausted air
- in line in Modulo systems to improve the efficiency of filtration systems
- in DIF.K/DIF.S terminal hoods in controlled contamination rooms.

### Installation

No matter what is the installation position, LNB - NB - KVB filters always allow for the use of the entire filtration surface. We suggest installing the proper high-efficiency pre-filters to increase their operating life. On request we also supply frames and housings to improve and simplify the installation of the filters. Models LNB can be burned completely.

## DELTA series absolute filters for duct flows

# LNB-NB-KVB

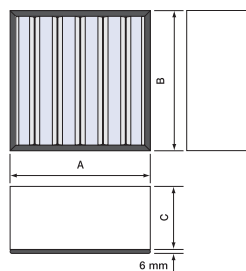
Product:	LNB	NB	KVB
MPPS efficiency*:	99,95 %	99,95 %	99,95 %
CEN EN 1822 classification:	H 13	H 13	H 13
Suggested final pressure drop:	600 Pa	600 Pa	600 Pa
Maximum pressure drop:	1000 Pa	1000 Pa	1000 Pa
Maximum operating temperature:	60 °C	60 °C	60 °C
Maximum relative humidity:	90 %	100 %	100 %

\* Average efficiency. Punctua efficiency has an admitted penetration rate 5 times higher.

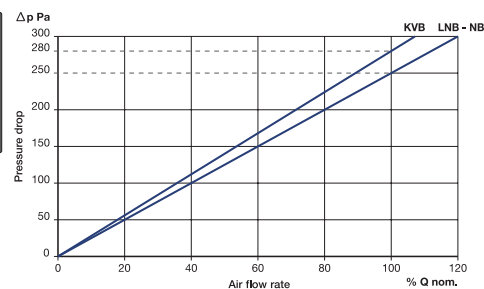
Type	Dimensions (mm)			Nominal air rate flow				Filtration media m <sup>2</sup>		Initial pressure drop Pa		
	A	B	C	LNB m <sup>3</sup> /h	NB m <sup>3</sup> /h	LNB m <sup>3</sup> /s x 10 <sup>-3*</sup>	NB m <sup>3</sup> /s x 10 <sup>-3*</sup>	LNB	NB			
LNB - NB												
31	305	x	305	x	292	750	850	208	236	7	8,3	250
52	305	x	610	x	292	1500	1800	416	500	16,5	16,5	250
5	610	x	610	x	292	3400	4000	945	1111	32,5	37	250
6	762	x	610	x	292	4250	5000	1180	1389	44	47	250
KVB												
52	305	x	610	x	292	1700		472		14		280
5	610	x	610	x	292	3400		945		28		280

\*1 m<sup>3</sup>/s x 10<sup>-3</sup> = 1 l/s

### Size



### Typical curves



# DUCT MOUNTABLE HEPA & HIGH EFFICIENCY FILTERS

## TB-TC

**DELTA series high temperature absolute filters**

# TB - TC



Product	<b>TB</b>	<b>TC</b>
MPPS efficiency*	<b>99,5 %</b>	<b>95 %</b>
CEN EN 1822 classification	<b>H 12</b>	<b>H 11</b>
Suggested final pressure drop	<b>600 Pa</b>	<b>600 Pa</b>
Maximum pressure drop	<b>1000 Pa</b>	<b>1000 Pa</b>
Operating temperature / Maximum resistance	<b>245 °C</b>	<b>25 / 500 °C</b>
Maximum relative humidity	<b>100 %</b>	<b>100 %</b>
Pleats filtration pack	<b>Deep</b>	<b>Deep</b>

### Absolute TB Delta filters and TC

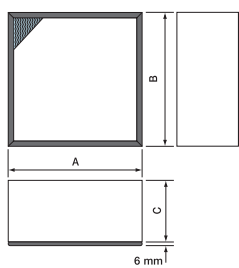
**semi-absolute filters** are deep-pleated and are mainly used for high temperature operating and even in fire risk applications (TC). The frame is in stainless steel and the spacers are made of aluminum; the TB models for high temperature operation use silicon sealants, whereas the TC models use fiber glass sealants. These filters operate in high and very high temperature conditions; they have high mechanical resistance, robust construction, high dust holding capacity and a long operating life.

The frame is made of AISI 304 stainless steel for high temperature TB models and in AISI 430 for TC models for fire risk applications. Both have a special single piece gasket. All the filters are tested individually and labeled to assure the compliance with the measured features.

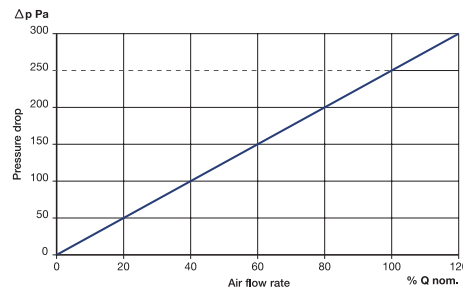
Type	Dimensions (mm)			Nominal air rate flow				Filtration media m <sup>2</sup>		Initial pressure drop Pa
	A	B	C	TB m <sup>3</sup> /h	TC m <sup>3</sup> /h	TB m <sup>3</sup> /s x 10 <sup>-3</sup> *	TC m <sup>3</sup> /s x 10 <sup>-3</sup> *	TB	TC	
TB - TC										
3	305	x 305	x 149	250	-	69	-	3	-	250
42	305	x 610	x 149	500	500	139	139	5	4,5	250
4	610	x 610	x 149	1000	1000	278	278	11	9	250
31	305	x 305	x 292	500	-	139	-	6	-	250
52	305	x 610	x 292	1000	1000	278	278	11	10	250
5	610	x 610	x 292	2000	2000	555	555	23	19	250
6	620	x 762	x 292	2500	2500	694	694	28	24	250
7	610	x 762	x 292	750	-	208	-	13	-	250

\*1 m<sup>3</sup>/s x 10<sup>-3</sup> = 1 l/s

### Size



### Typical curves



### Applications

TB and TC filters allow for various special applications:

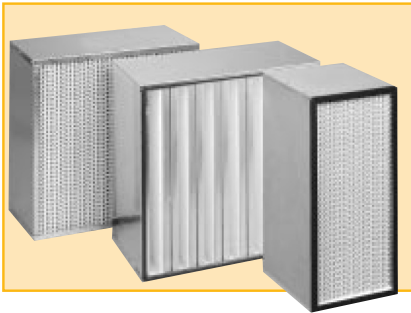
- in systems and sterilization furnaces for pharmaceutical companies (TB)
- in fire risk applications (TC)
- in Canister systems to assure the required emission levels of exhausted air
- in rooms with fire emergency requirements

### Installation

No matter what is the installation position, TB - TC filters always allow for the use of the entire filtration surface. We suggest installing the proper high-efficiency pre-filters to increase their operating life. On request we also supply frames and housings to improve and simplify the installation of the filters.

# DUCT MOUNTABLE HEPA & HIGH EFFICIENCY FILTERS

## LR-KR-NR



### BETA series semi-absolute filters for duct flows

# LR-KR-NR

**LR - KR - NR Delta semi-absolute filters** offer very high filtration efficiency and low pressure drops, hence they allow for limited energy consumption levels in the systems. The LR and KR filter medium is made of deep pleated glass micro-fiber paper fitted with corrugated aluminum spacers; it is fixed to the frame through an elastomeric sealant. LR filters have an MDF wood frame, whereas KR filters have a galvanized steel frame. NR filters differ from the previous because they are multi-diehedral; the glass fiber medium is mini-pleated with continuous thermal plastic spacers and the frame is made of galvanized steel. All the models have high dust holding capacity and offer considerable mechanical resistance.

#### Applications

LR - KR - NR filters are used in all civil, industrial and processing facilities which require high air cleanliness levels, but not so high as to need absolute filters. Luxury residential rooms, food, chemical, pharmaceutical, photographic, mass consumption electronic, precise mechanical applications, etc., are just a few examples of the typical use of these filters. Furthermore, they are also used in libraries, museums, art galleries, gold-working laboratories and in several other prestigious and precise industrial and craftsmanship industries.

#### Installation

LR - KR - NR filters need to fitted with pre-filters to maintain high operating life levels. They can be installed for both downward horizontal and vertical air flows. These filters are installed in CT 50 counter-frames, Modulo or in safety housings Canister type, the latter for air that transports toxic substances or pathogens.

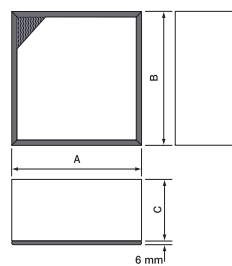
Product:	LR	KR	NR
MPPS efficiency*:	≥ 85	≥ 85	≥ 85
CEN EN 1822 classification:	H 10	H 10	H 10
Eff. DOP test UNI 7833:	> 95 %	> 95 %	> 95 %
Suggested final pressure drop:	600 Pa	600 Pa	600 Pa
Maximum pressure drop:	1000 Pa	1000 Pa	1000 Pa
Maximum operating temperature:	90 °C	100 °C	60 °C
Maximum relative humidity:	90 %	100 %	100 %

\* Average efficiency.

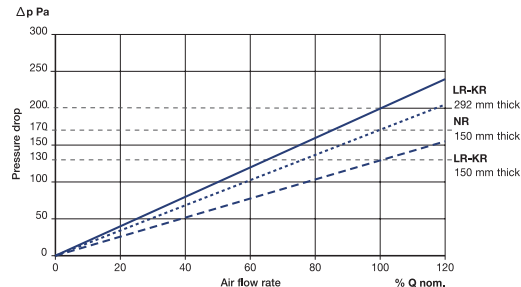
Type	Dimensions (mm)			Nominal air rate flow		Filtration media m <sup>2</sup>	Initial pressure drop Pa
	A	B	C	m <sup>3</sup> /h	m <sup>3</sup> /s x 10 <sup>-3</sup> *		
LR - KR							
3	305	x 305	x 149	400	111	2	130
42	305	x 610	x 149	800	222	4	130
4	610	x 610	x 149	1700	472	8	130
31	305	x 305	x 292	800	222	4	200
52	305	x 610	x 292	1700	472	8	200
54	595	x 595	x 292	3200	889	16	200
5	610	x 610	x 292	3400	944	17	200
6	610	x 762	x 292	4000	1111	21	200
NR							
52	305	x 610	x 292	2000	556	18	170
5	610	x 610	x 292	4000	1111	38	170
6	610	x 762	x 292	5000	1389	47	170

\*1 m<sup>3</sup>/s x 10<sup>-3</sup> = 1 l/s

#### Size



#### Typical curves

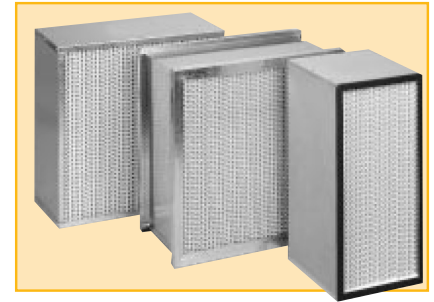


# DUCT MOUNTABLE HEPA & HIGH EFFICIENCY FILTERS

## LF-KF

### SIGMA series high efficiency filters

# LF-KF

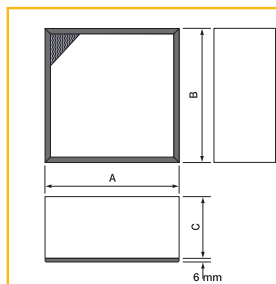


Product:	LF	KF
UNI EN 779 class:	F 7	F 7
EUROVENT class:	EU 7	EU 7
Em ASHRAE 52.1.1992:	80/85 %	80/85 %
Suggested final pressure drop:	450 Pa	450 Pa
Maximum operating temperature:	90 °C	100 °C
Maximum relative humidity:	90 %	100 %

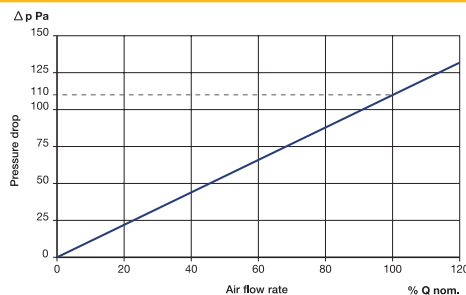
Type	Dimensions (mm)			Nominal air rate flow		Filtration media m <sup>2</sup>	Initial pressure drop Pa
	A	B	C	m <sup>3</sup> /h	m <sup>3</sup> /s x 10 <sup>-3</sup> *		
LF - KF 3	305	x 305	x 149	500	139	2	110
42	305	x 610	x 149	1000	278	3	110
4	610	x 610	x 149	2000	555	6	110
31	305	x 305	x 292	850	236	3	110
52	305	x 610	x 292	1700	472	7	110
5	610	x 610	x 292	3400	944	14	110
6	610	x 762	x 292	4300	1194	17	110
55 F	289	x 595	x 292	1600	444	6	110
54 F	595	x 595	x 292	3200	889	13	110

\*1 m<sup>3</sup>/s x 10<sup>-3</sup> = 1 l/s

#### Size



#### Typical curves



**High efficiency SIGMA series LF - KF filters** have high filtration efficiency rates. This means these filters are able to meet the strictest air cleanliness requirements and can be used in heavy duty conditioning and ventilation systems. The filter media is made of deep pleated glass micro-fiber paper fitted with corrugated aluminum spacers. The frame is constructed of two different materials according to the models: MDF wood for LF filters and galvanized steel sheet for KF filters. The filter medium is fixed to the frame with a polyurethane sealant, the frame is fitted with a single piece gasket. LF - KF high efficiency filters have a low pressure drop level, a high dust holding capacity and offer considerable mechanical resistance. They come in various sizes to suit a wide range of air flow rates.

#### Applications

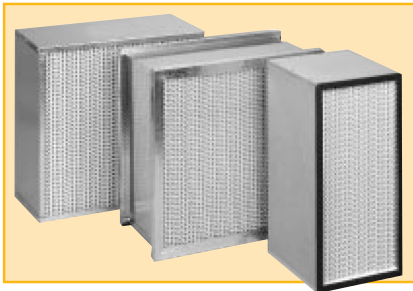
High efficiency SIGMA series LF - KF are used in conditioning and ventilation units which require high air cleanliness levels. They can be installed in air treatment plants, ventilation units, independent roof top conditioning systems, with proper pre-filters to prevent the rapid clogging of the media. They can also be used in processing plants and industries to assure product quality: food, photography, precision mechanical, mass distribution electronic industries, etc.

#### Installation

LF - KF filters are installed in duct housings Multimod model, Modulo or in safety housings Canister type; for normal operating conditions use CT 50 counter-frames. The filters can be installed in vertical positions, for horizontal air flows, with vertical pleats, or in horizontal position for vertical air flows from top to bottom. The flanged version (...F) can be installed in CT 20 – CT 10 counter-frames.

# DUCT MOUNTABLE HEPA & HIGH EFFICIENCY FILTERS

## LG-KG



## SIGMA series high efficiency filters

# LG-KG

**High efficiency SIGMA series LG - KG filters** have high filtration efficiency rates. This means these filters are able to meet the strictest air cleanliness requirements and can be used in heavy duty conditioning and ventilation systems. The filter media is made of deep pleated glass micro-fiber paper fitted with corrugated aluminum spacers. The frame is constructed of two different materials according to the models: MDF wood for LG filters and galvanized steel sheet for KG filters. The filter medium is fixed to the frame with a polyurethane sealant (LG) and with glass fiber interposition (KG), the frame is fitted with a single piece gasket. LG - KG high efficiency filters have a low pressure drop level, a high dust holding capacity and offer considerable mechanical resistance. They come in various sizes to suit a wide range of air flow rates.

### Applications

High efficiency SIGMA series LG - KG are used in conditioning and ventilation units which require high air cleanliness levels. They can be installed in air treatment plants, ventilation units, independent roof top conditioning systems, with proper pre-filters to prevent the rapid clogging of the media. They can also be used in processing plants and industries to assure product quality: food, photography, precision mechanical, mass distribution electronic industries, etc.

### Installation

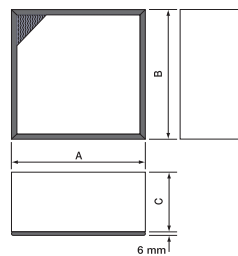
LG - KG filters are installed in duct housings Multimod model, Modulo or in safety housings Canister type; for normal operating conditions use CT 50 counter-frames. The filters can be installed in vertical positions, for horizontal air flows, with vertical pleats, or in horizontal position for vertical air flows from top to bottom. The flanged version (...F) can be installed in CT 20 – CT 10 counter-frames.

Product:	LG	KG
UNI EN 779 class:	<b>F 6</b>	<b>F 6</b>
EUROVENT class:	<b>EU 6</b>	<b>EU 6</b>
Em ASHRAE 52.1.1992:	<b>60/65 %</b>	<b>60/65 %</b>
Suggested final pressure drop:	<b>450 Pa</b>	<b>450 Pa</b>
Maximum operating temperature:	<b>90 °C</b>	<b>100 °C</b>
Maximum relative humidity:	<b>90 %</b>	<b>100 %</b>

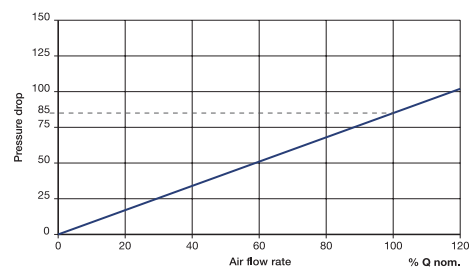
Type	Dimensions (mm)			Nominal air rate flow		Filtration media m <sup>2</sup>	Initial pressure drop Pa
	A	B	C	m <sup>3</sup> /h	m <sup>3</sup> /s x 10 <sup>3*</sup>		
LG - KG 3	305	x 305	x 149	500	139	2	85
42	305	x 610	x 149	1000	278	3	85
4	610	x 610	x 149	2000	555	6	85
31	305	x 305	x 292	850	236	3	85
52	305	x 610	x 292	1700	472	7	85
5	610	x 610	x 292	3400	944	14	85
6	610	x 762	x 292	4300	1194	17	85
55 F	289	x 595	x 292	1600	444	6	85
54 F	595	x 595	x 292	3200	889	13	85

\*1 m<sup>3</sup>/s x 10<sup>3</sup> = 1 l/s

### Size



### Typical curves

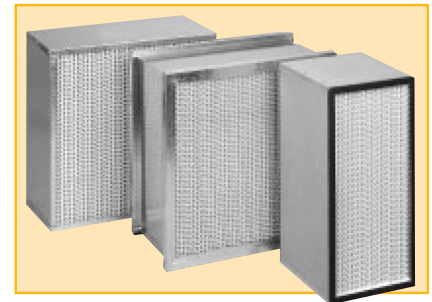


# DUCT MOUNTABLE HEPA & HIGH EFFICIENCY FILTERS

## LH-KH

### SIGMA series high efficiency filters

# LH-KH

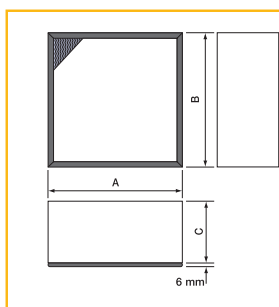


Product:	<b>LH</b>	<b>KH</b>
UNI EN 779 class:	<b>F 8</b>	<b>F 8</b>
EUROVENT class:	<b>EU 8</b>	<b>EU 8</b>
Em ASHRAE 52.1.1992:	<b>90/95 %</b>	<b>90/95 %</b>
Suggested final pressure drop:	<b>450 Pa</b>	<b>450 Pa</b>
Maximum operating temperature:	<b>90 °C</b>	<b>100 °C</b>
Maximum relative humidity:	<b>90 %</b>	<b>100 %</b>

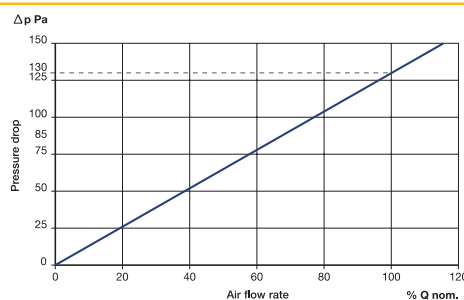
Type	Dimensions (mm)			Nominal air rate flow		Filtration media	Initial pressure drop
	A	B	C	m <sup>3</sup> /h	m <sup>3</sup> /s x 10 <sup>-3*</sup>		
LH - KH							
3	305	x 305	x 149	500	139	2	130
42	305	x 610	x 149	1000	278	3	130
4	610	x 610	x 149	2000	555	6	130
31	305	x 305	x 292	850	236	3	130
52	305	x 610	x 292	1700	472	7	130
5	610	x 610	x 292	3400	944	14	130
6	610	x 762	x 292	4300	1194	17	130
55 F	289	x 595	x 292	1600	444	6	130
54 F	595	x 595	x 292	3200	889	13	130

\*1 m<sup>3</sup>/s x 10<sup>-3</sup> = 1 l/s

#### ■ Size



#### ■ Typical curves



#### High efficiency SIGMA series LH - KH

**filters** have high filtration efficiency rates. This means these filters are able to meet the strictest air cleanliness requirements and can be used in heavy duty conditioning and ventilation systems. The filter media is made of deep pleated glass micro-fiber paper fitted with corrugated aluminum spacers. The frame is constructed of two different materials according to the models: MDF wood for LH filters and galvanized steel sheet for KH filters.

The filter medium is fixed to the frame with a polyurethane sealant, the frame is fitted with a single piece gasket. LF - KF high efficiency filters have a moderate pressure drop level, a high dust holding capacity and offer considerable mechanical resistance. They come in various sizes to suit a wide range of air flow rates.

#### ■ Applications

High efficiency SIGMA series LH - KH are used in conditioning and ventilation units which require high air cleanliness levels. They can be installed in air treatment plants, ventilation units, with proper pre-filters to prevent the rapid clogging of the media. They can also be used in processing plants and industries to assure product quality: food, photography, precision mechanical, mass distribution electronic industries, etc.

#### ■ Installation

LF - KF filters are installed in duct housings Multimod model, Modulo or in safety housings Canister type; for normal operating conditions use CT 50 counter-frames. The filters can be installed in vertical positions, for horizontal air flows, with vertical pleats, or in horizontal position for vertical air flows from top to bottom. The flanged version (...F) can be installed in CT 20 – CT 10 counter-frames.