

Splitters

Type MKA



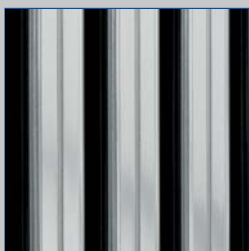
For increased insertion loss and broadband attenuation even in the low frequency range

Energy-saving splitters with resonating panels, ready to be used in air conditioning systems

- Attenuation effect due to resonance and absorption
- Energy efficient due to aerodynamically profiled frame (radius > 15 mm)
- Acoustic data measured to ISO 7235
- Absorption material is biosoluble and hence hygienically safe
- Absorption material faced with glass fibre fabric as a protection against erosion due to airflow velocities up to 20 m/s
- Absorption material non-combustible, to EN 13501, fire rating class A1
- Intermediate sizes in increments of 1 mm
- Operating temperature up to 100 °C

Optional equipment and accessories

- Additional perforated sheet metal to protect the absorption material
- Stainless steel, aluminium and PUR-coated constructions upon request



Splitter frames with folded edges



Tested to VDI 6022

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Application

Application

- Sound attenuator splitters with resonating panels, Type MKA, used for the reduction of fan noise and air-regenerated noise in air conditioning systems
- Attenuation effect due to absorption and resonance
- Broadband attenuation even in the low frequency range of critical fan noise
- Hygiene tested and certified to VDI 6022
- For use in potentially explosive atmospheres (ATEX), zones 1, 2, 21 and 22 (outside)

Special characteristics

- Resonating panels ensure increased insertion loss in the frequency range of critical fan noise
- Up to 30 % lower differential pressure
- Energy efficient and/or space saving due to aerodynamically profiled frame
- Hygiene tested and certified

- Multi-section construction available for large dimensions

Nominal sizes

- H: 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800 mm (intermediate sizes 150 – 2500 mm in increments of 1 mm)
- Height subdivided: 2501 – 5000 mm, in increments of 1 mm
- L: 500, 750, 1000, 1250, 1500 mm (intermediate sizes 501 – 2500 mm in increments of 1 mm)
- Length subdivided: 2501 – 3000 mm in increments of 1 mm
- Undivided construction: H + L 4000 mm max., H and L 1500 mm max. (if one dimension is 1500 mm, the other one must not exceed 1500 mm)

Description

Variants

- MKA100: splitter thickness 100 mm
- MKA200: splitter thickness 200 mm
- MKA230: splitter thickness 230 mm

Construction

Surface of splitter area not covered by a resonating panel

- F: Glass fibre fabric
- L: Glass fibre fabric and additional perforated sheet metal to protect the absorption material

Parts and characteristics

- Aerodynamically profiled frame
- Absorption material and resonating panels fitted to reduce air-regenerated noise by absorption and resonance

Useful additions

- U-sheets/clamp sheets to join subdivided attenuator splitters

Construction features

- Aerodynamically profiled splitter frame (radius > 15 mm) that enables a reduction of turbulence both upstream and downstream; frame with grooves for increased rigidity
- Frame edges are folded to protect the infill
- Operating temperature up to 100 °C

(construction with perforated sheet metal up to 300 °C for 8h max.)

Materials and surfaces

- Splitter frames, centre mullion and resonating panels made of galvanised sheet steel
- Absorption material is mineral wool

Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EC
- Faced with glass fibre fabric as a protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

Standards and guidelines

- Insertion loss and sound power level of air-regenerated noise tested to ISO 7235
- Meets the hygiene requirements of VDI 6022, DIN 1946, parts 1 and 2 as well as of VDI 3803
- Directive 94/9/EC: Equipment and protective systems intended for use in potentially

explosive atmospheres

materials are not subject to wear

Maintenance

- Maintenance-free as construction and

Functional description

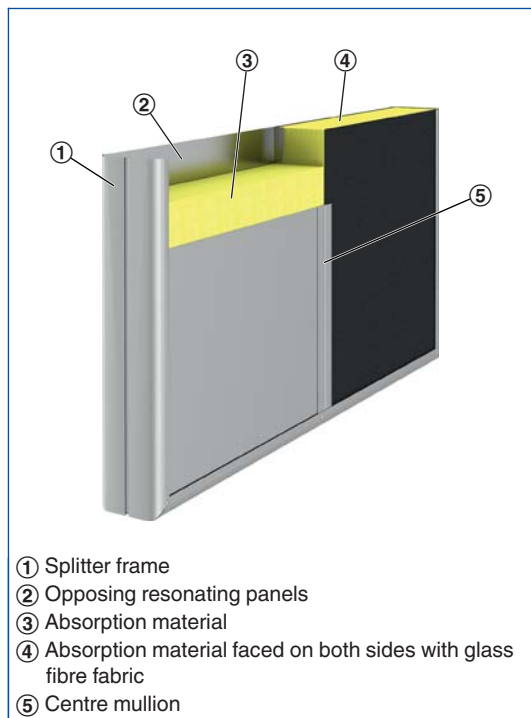
The attenuation effect of the MKA splitters is due to absorption and resonance.

The splitters have a mineral wool infill as absorption material. Part of the splitter surface that runs parallel to the airflow is covered with resonating panels. These panels start oscillating

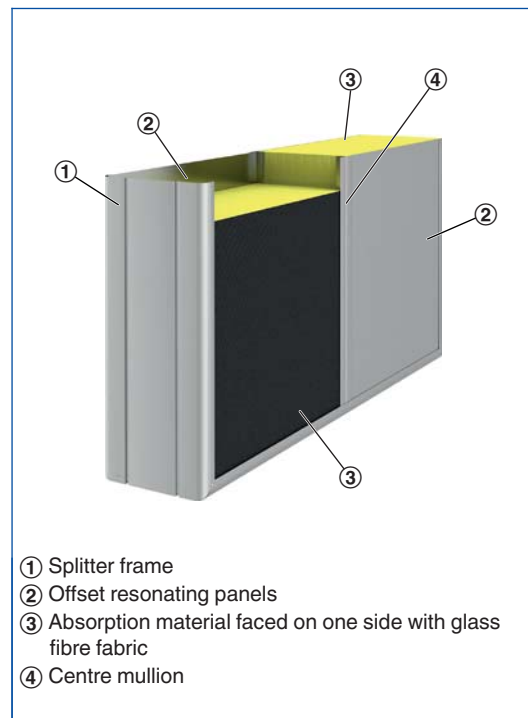
due to the sound (resonance) and hence absorb sound energy. Resonance works best in the frequency range of critical fan noise.

There is a higher attenuation across a wider frequency range when compared to mere absorption splitters.

Schematic illustration of MKA100



Schematic illustration of MKA200, 230



Splitter thickness	100, 200, 230 mm
Nominal sizes	150 × 500 mm – 1499 × 2500, 2500 × 1499 or 1500 × 1500 mm
Height subdivided	2501 – 5000 mm
Length subdivided	1501 – 3000 mm
Intermediate sizes	In increments of 1 mm
Operating temperature	Up to 100 °C

The length (L) of sound attenuator splitters refers to the airflow direction

Quick sizing tables provide a good overview of the insertion loss and of differential pressures for different airway widths and airflow velocities. Intermediate values can be calculated with our Easy Product Finder design programme.

The sound power levels L_{WA} apply to sound attenuators with a cross-sectional area ($B \times H$) of 1 m^2 .

The differential pressures apply to sound attenuators with a height of 1 m.

MSA, MKA, XSA, XKA, RKA, air-regenerated noise

v_s	m/s	4	6	8	10	12	14	16	18	20
L_{WA}	dB(A)	21	31	38	43	48	51	55	58	60

MKA100, MSA100, insertion loss and differential pressure

L	S	Centre frequency f_m [Hz]								v_s [m/s]		
		63	125	250	500	1000	2000	4000	8000	4	10	20
mm	mm	D_e								Δp_{st}		
		Hz								Pa		
500	40	4	10	11	13	21	27	24	18	5	32	>80
	60	5	13	20	23	31	38	32	26	7	44	>80
1000	40	5	11	17	19	28	32	27	21	5	33	>80
	60	6	16	30	32	42	48	40	34	9	55	>80
1500	40	6	14	25	28	38	41	33	27	6	38	>80
	60	4	10	14	19	29	28	19	14	5	29	>80
	100	8	19	39	42	50	50	49	42	11	66	>80
2000	40	7	16	32	36	47	50	40	34	7	44	>80
	60	5	12	19	25	37	35	23	16	5	32	>80
	100	3	9	10	17	25	15	9	8	4	25	>80
	200	9	22	48	50	50	50	50	50	12	77	>80
2500	40	8	19	40	45	50	50	47	40	8	50	>80
	60	6	14	24	30	45	41	27	19	6	34	>80
	100	3	12	12	21	33	19	12	11	4	26	>80
	200	10	25	50	50	50	50	50	50	14	>80	>80
3000	40	9	22	48	50	50	50	50	46	9	56	>80
	60	7	16	28	36	50	47	31	22	6	37	>80
	100	2	14	15	26	41	24	16	14	4	27	>80
	200	10	25	50	50	50	50	50	50	14	>80	>80

MKA200, MSA200, insertion loss and differential pressure

L	S	Centre frequency f_m [Hz]								v_s [m/s]		
		63	125	250	500	1000	2000	4000	8000	4	10	20
mm	mm	D_e								Δp_{st}		
		Hz								Pa		
500	50	5	7	19	21	26	22	17	14	9	58	>80
	100	2	4	12	12	15	11	9	8	5	31	>80
1000	50	6	16	33	39	41	39	26	20	11	67	>80
	100	4	10	22	23	26	19	13	11	6	35	>80
1500	50	9	22	44	50	50	50	34	25	12	75	>80
	100	5	15	32	33	37	25	16	14	6	40	>80
2000	50	12	29	50	50	50	50	43	29	13	>80	>80
	100	6	19	42	44	47	31	19	17	7	44	>80
2500	50	14	38	50	50	50	50	49	35	15	>80	>80
	100	8	25	50	50	50	38	23	18	8	48	>80
3000	50	17	48	50	50	50	50	50	40	16	>80	>80
	100	10	30	50	50	50	44	26	19	8	53	>80
400	200	6	19	35	35	27	17	15	11	5	30	>80
	400	3	13	19	15	14	10	7	6	3	19	77

MKA230, MSA230, insertion loss and differential pressure

L	S	Centre frequency f_m [Hz]								v_s [m/s]		
		63	125	250	500	1000	2000	4000	8000	4	10	20
mm	mm	D_e								Δp_{st}		
		Hz								Pa		
500	60	3	7	16	19	21	17	14	14	9	57	>80
	115	2	5	11	12	13	10	9	10	5	31	>80
1000	60	7	13	27	30	35	25	18	18	10	66	>80
	115	4	10	20	20	22	15	12	13	6	35	>80
1500	60	11	19	38	41	49	33	21	21	12	74	>80
	115	7	14	28	28	30	20	15	15	6	40	>80
2000	60	15	24	50	50	50	42	25	25	13	>80	>80
	115	9	19	37	36	39	26	18	18	7	44	>80
2500	60	19	30	50	50	50	50	29	28	15	>80	>80
	115	12	24	46	44	47	31	21	20	8	48	>80
3000	60	24	36	50	50	50	50	32	32	16	>80	>80
	115	14	28	50	50	50	36	24	23	8	52	>80
460	230	4	19	35	29	18	13	15	13	5	29	>80
	460	0	11	16	6	0	0	7	3	3	19	74

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Sound attenuator splitters used for the reduction of fan noise and air-regenerated noise in air conditioning systems. Attenuation effect due to absorption and resonance. Energy-saving as well as hygiene tested and certified.

Installation kit consists of an aerodynamically profiled frame (radius > 15 mm), absorption material and resonating panels.

Frame edges are folded to protect the sound absorbing infill.

Insertion loss and sound power level of the air-regenerated noise tested to ISO 7235.

Meets the hygiene requirements of VDI 6022, DIN 1946, parts 2 and 4, as well as of VDI 3803.

Special characteristics

- Resonating panels ensure increased insertion loss in the frequency range of critical fan noise
- Up to 30 % lower differential pressure
- Energy efficient and/or space saving due to aerodynamically profiled frame
- Hygiene tested and certified
- Multi-section construction available for large dimensions

Materials and surfaces

- Splitter frames, centre mullion and resonating panels made of galvanised sheet steel
- Absorption material is mineral wool

Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EC

- Faced with glass fibre fabric as a protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

Construction

Surface of splitter area not covered by a resonating panel

- F: Glass fibre fabric
- L: Glass fibre fabric and additional perforated sheet metal to protect the absorption material

Technical data

- Splitter thickness: 100, 200, 230 mm
- Nominal sizes: 150 × 500 mm – 1499 × 2500, 2500 × 1499 or 1500 × 1500 mm
- Height subdivided: up to 5000 mm
- Length subdivided: up to 3000 mm
- Intermediate sizes: in increments of 1 mm
- Operating temperature: up to 100 °C

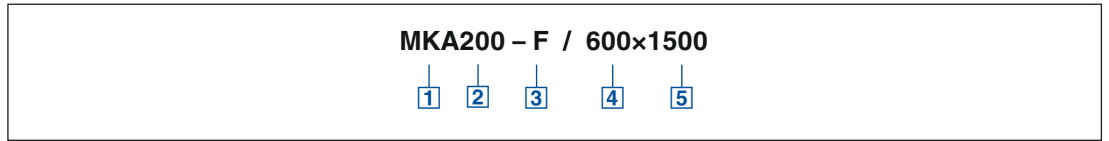
The length (L) of splitter attenuators refers to the airflow direction.

Sizing data

- B _____ [mm]
- H _____ [mm]
- L (in airflow direction) _____ [mm]
- \dot{V} _____ [m³/h]
- D_e at 250 Hz _____ [dB]
- Δp_{st} _____ [Pa]

The length (L) of sound attenuator splitters and splitter attenuators refers to the airflow direction. Remember this with regard to vertical ducting.

MKA



1 Type

MKA Sound attenuator splitter with resonating panels

4 Height H [mm]

5 Length L in airflow direction [mm]

2 Splitter thickness [mm]

- 100
- 200
- 230

3 Splitter surface

- F** Glass fibre fabric
- L** Glass fibre fabric and perforated sheet metal

Order example: MKA100-L/1500x1500

Splitter thickness	100 mm
Splitter surface	Glass fibre fabric and perforated sheet metal
Height	1500 mm
Length	1500 mm

Fitting accessories to join subdivided attenuator splitters



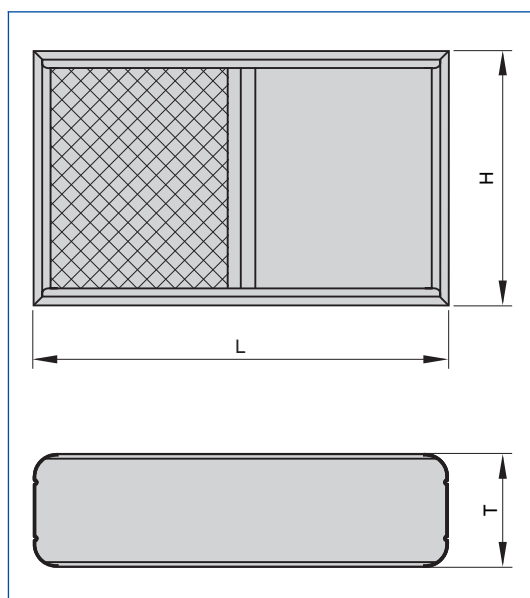
1 Part

- SD-KBLECH** Clamp sheet for MKA, XKA, RKA200
- SD-KAP100** U-sheet for MKA100, XKA100
- SD-KAP200** U-sheet for MKA200, XKA200, RKA200
- SD-KAP230** U-sheet for MKA230, XKA230
- SD-KAP300** U-sheet for XKA300

- H: 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800 mm (intermediate sizes 150 – 2500 mm in increments of 1 mm)
- Height subdivided: 2501 – 5000 mm, in increments of 1 mm
- L: 500, 750, 1000, 1250, 1500 mm (intermediate sizes 501 – 2500 mm in increments of 1 mm)
- Length subdivided: 2501 – 3000 mm in increments of 1 mm
- Undivided construction: H + L 4000 mm max., H and L 1500 mm max. (if one dimension is 1500 mm, the other one must not exceed 1500 mm)

The total weight of a splitter sound attenuator is the combined weight of the casing (with standard flange or angle section frame) and all splitters. The total weight for intermediate sizes can be generated with our Easy Product Finder design programme.

MKA



MKA100, weights

H	Glass fibre fabric (-F)					Glass fibre fabric and perforated sheet metal (-L)				
	L [mm]									
	500	750	1000	1250	1500	500	750	1000	1250	1500
mm	kg									
300	2	3	4	5	6	3	4	5	6	8
600	4	5	7	8	10	5	7	9	11	13
900	5	7	9	11	13	7	10	13	16	18
1200	7	10	12	15	17	9	13	16	20	24
1500	8	12	15	18	21	11	16	20	25	29
1800	10	14	19	23	27	14	19	25	31	36

MKA200, weights

H	Glass fibre fabric (-F)					Glass fibre fabric and perforated sheet metal (-L)				
	L [mm]									
	500	750	1000	1250	1500	500	750	1000	1250	1500
mm	kg									
300	4	5	6	7.5	9	4	6	7	9	11
600	6	8	10	12	15	7	10	12	15	18
900	8	11	14	17	20	10	14	17	21	25
1200	10	14	18	22	26	13	18	22	27	32
1500	13	17	22	27	31	15	21	27	33	40
1800	16	22	28	34	40	19	27	34	42	50

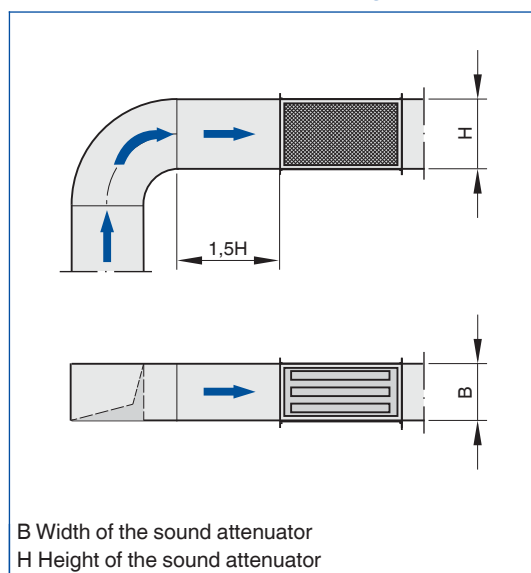
MKA230, weights

H	Glass fibre fabric (-F)					Glass fibre fabric and perforated sheet metal (-L)				
	L [mm]									
	500	750	1000	1250	1500	500	750	1000	1250	1500
mm	kg									
300	4	5	7	8	10	5	6	8	10	12
600	6	9	11	14	16	8	11	13	16	19
900	9	12	16	19	22	11	15	19	23	27
1200	11	16	20	24	28	14	19	24	30	35
1500	14	19	24	29	34	17	23	30	36	43
1800	18	24	31	37	44	21	29	37	45	54

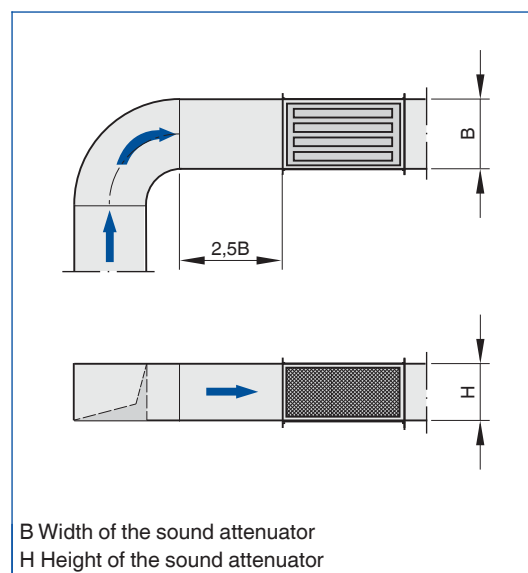
Installation and commissioning

- Splitters are supplied as ready-to-install kits
- Follow the installation information and comply with the general codes of good practice in order to achieve the given performance data
- Up to height $H = 1200$ mm: any installation orientation, but we recommend upright installation of splitters
- From height $H = 1201$ mm: upright installation only
- The length (L) of sound attenuator splitters and splitter sound attenuators refers to the airflow direction; be sure to note how width, height and length are defined, particularly in case of a vertical airflow
- Installation in ducts outside of closed rooms requires sufficient protection against the effects of weather

Upstream conditions after bends, junctions or a narrowing or widening of the duct, vertical upstream section, splitters upright

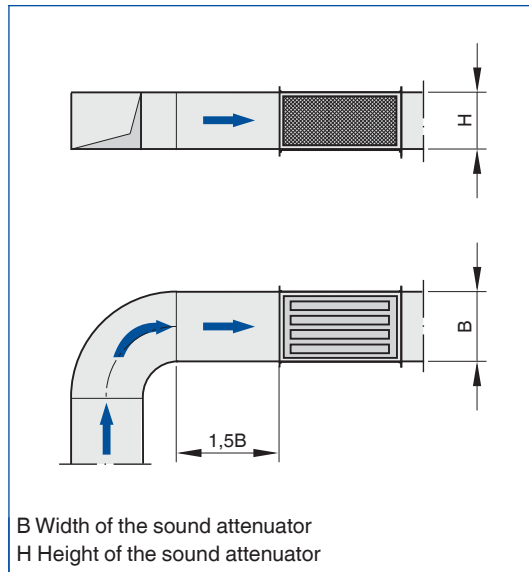


Upstream conditions after bends, junctions or a narrowing or widening of the duct, vertical upstream section, splitters horizontal

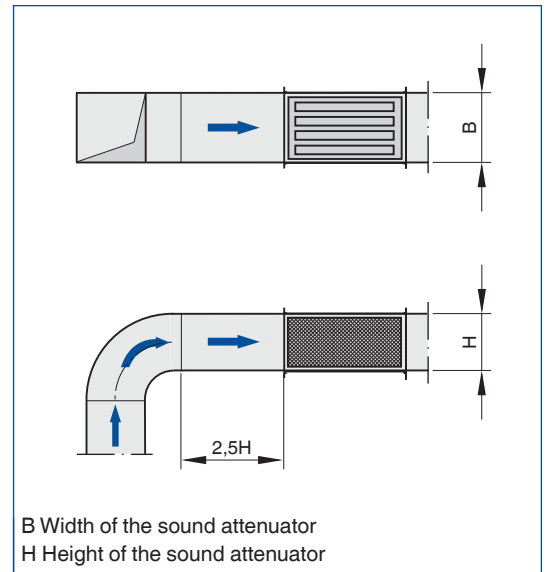


Horizontal installation only for splitters up to height 1200 mm

Upstream conditions after bends, junctions or a narrowing or widening of the duct, horizontal upstream section, splitters upright

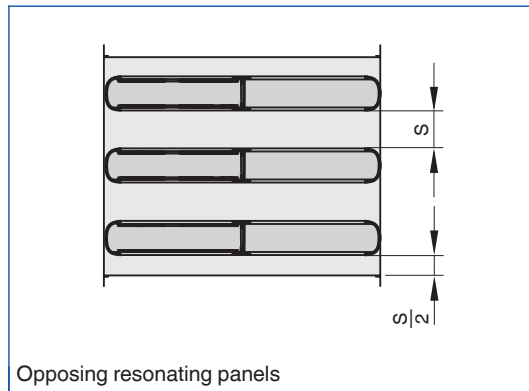


Upstream conditions after bends, junctions or a narrowing or widening of the duct, horizontal upstream section, splitters horizontal

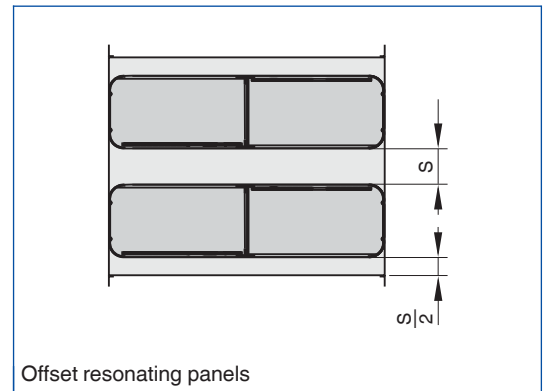


Horizontal installation only for splitters up to height 1200 mm

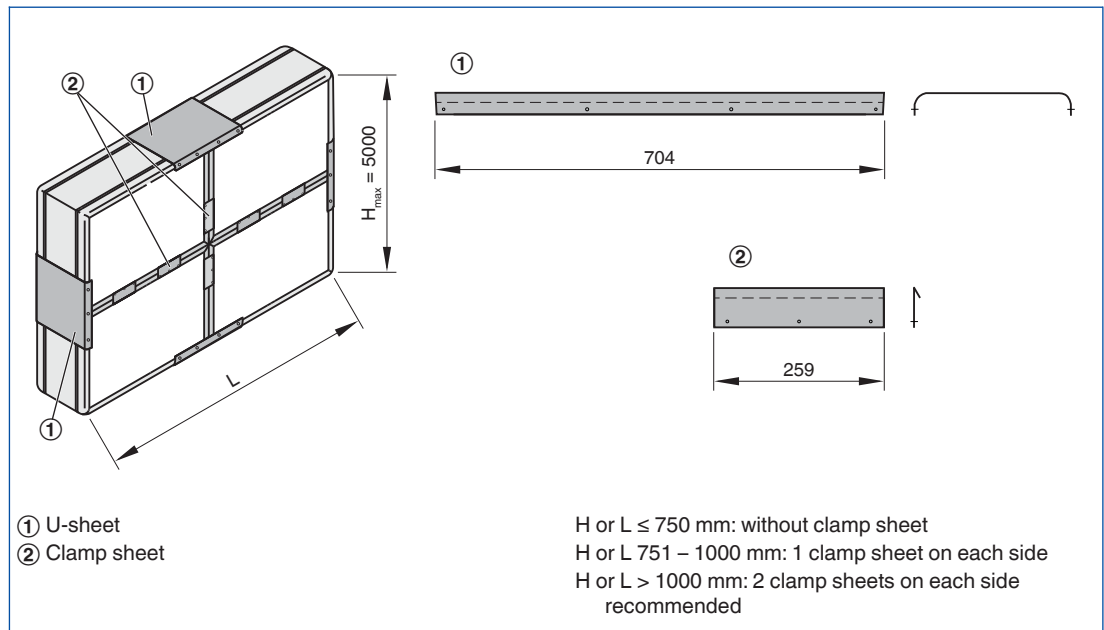
Correct installation of MKA100 splitters



Correct installation of MKA200 and MKA230 splitters



Assembly of subdivided splitters



Principal dimensions

ØD [mm]

Outer diameter of the spigot

ØD₃ [mm]

Outer diameter of circular silencers

L [mm]

Length of attenuator/silencer including spigot (in airflow direction)

L₁ [mm]

Length of acoustic cladding and acoustically effective length

B [mm]

Attenuator width and duct width (upright splitters)

H [mm]

Attenuator height and duct height (upright splitters)

T [mm]

Splitter thickness

S [mm]

Airway width

n []

Number of flange screw holes

m [kg]

Weight

Nomenclature

f_m [Hz]

Octave band centre frequency

L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

D_e [dB]

Insertion loss

Ṃ [m³/h] and [l/s]

Volume flow rate

Δp_{st} [Pa]

Static differential pressure

All sound power levels are based on 1 pW.

All values were measured in a TROX lab and to EN ISO 7235. Intermediate values may be achieved by interpolation.

Lab measurements exceeding 50 dB are indicated as 50 dB, in line with common practice.