TROX® TECHNIK
The art of handling air

SOUND ATTENUATOR SPLITTER, VARIANT RKA200

TESTED TO VDI 6022

TYPE RKA

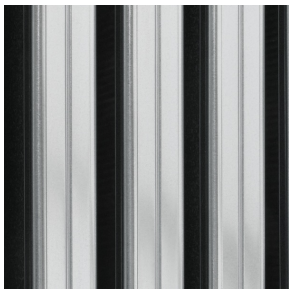
PARTS KIT FOR HIGH INSERTION LOSS IN THE LOW-FREQUENCY RANGE

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

- Installation in combination with other attenuator splitters
- 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

- Stainless steel and powder-coated constructions upon request



SPLITTER FRAMES WITH FOLDED EDGES

Splitter thickness 100 mm

Application

Application

- Sound attenuator splitters with resonating panels, Type RKA, used for the reduction of fan noise and air-regenerated noise in air conditioning systems
- Installation in combination with other Type MKA or XKA splitters
- Attenuation effect due to resonance
- Broadband attenuation particularly 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 – 1499 mm in increments of 1 mm)
- Length subdivided: 2501 – 3000 mm in increments of 1 mm
- Undivided construction: H + L 4000 mm max., 80 kg max.

Description

Variants

Maximum attenuation

- A: 250 – 125 Hz
- B: 125 – 250 Hz
- C: 125 – 63 Hz
- D: 63 – 125 Hz

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 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

Maintenance

- Maintenance-free as construction and materials are not subject to wear

TECHNICAL INFORMATION

Function, Technical data, QUICK SIZING, Specification text, Order code, Related products

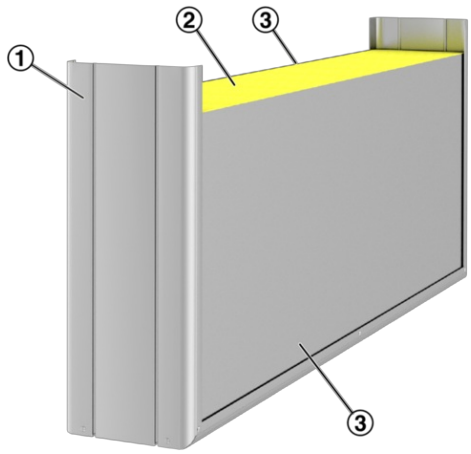
Functional description

Functional description

The attenuation effect of the RKA splitters is due to resonance.

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. The splitters have a mineral wool infill that prevents an amplification of the sound.

Schematic illustration of RKA200



① Splitter frame
② Absorption material
③ Resonating panels on both sides

Splitter thickness	200 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 × H) of 1 m².

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

RKA200-A, additional insertion loss

L	S	Centre frequency f_m [Hz]		
		63	125	250
L	S	$D_{e,add}$		
mm		Hz		
500	50	5	12	4
	100	2	6	2
1000	50	10	25	9
	100	5	13	5
1500	50	14	38	14
	100	7	19	6

RKA200-B, additional insertion loss

L	S	Centre frequency f_m [Hz]		
		63	125	250
L	S	$D_{e,add}$		
mm		Hz		
500	50	6	8	1
	100	3	4	1
1000	50	12	19	5
	100	6	9	3
1500	50	18	28	8
	100	9	14	4

RKA200-C, additional insertion loss

L	S	Centre frequency f_m [Hz]		
		63	125	250
L	S	$D_{e,add}$		
mm		Hz		
500	50	7	7	2
	100	3	3	1
1000	50	14	15	4
	100	7	7	2
1500	50	21	22	6
	100	10	11	3

RKA200-D, additional insertion loss

L	S	Centre frequency f_m [Hz]		
		63	125	250
L	S	$D_{e,add}$		
mm		Hz		
500	50	8	6	2
	100	4	3	1
1000	50	16	12	4
	100	8	6	2
1500	50	24	19	5
	100	12	9	3

MKA200/XKA200 + RKA200 differential pressure

L_{tot}	S	v_s [m/s]		
		4	10	20
L_{tot}	S	Δp_{st}		
mm		Pa		
1000	50	11	67	>80
	100	6	35	>80
1500	50	12	75	>80
	100	6	40	>80
2000	50	13	>80	>80
	100	7	44	>80
2500	50	15	>80	>80
	100	8	48	>80
3000	50	16	>80	>80
	100	8	53	>80

Sound attenuator splitters used for the reduction of fan noise and air-regenerated noise in air conditioning systems. Attenuation effect due to resonance. To be used in combination with sound absorbing splitters. 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 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

Technical data

- Splitter thickness: 200 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

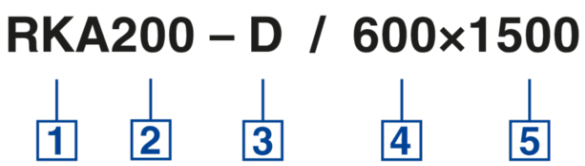
- B _____ [mm]
- H _____ [mm]
- L (in airflow direction) _____ [mm]
- V _____ [m^3/h]
- D_e at 250 Hz _____ [dB]
- Δp_{st} _____ [Pa]

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

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

Order example: RKA200–B/1500×1000

Resonator construction	125/250 Hz
Height	1500 mm
Length	1000 mm



1 Type

RKA Sound attenuator splitter

2 Splitter thickness [mm]

200

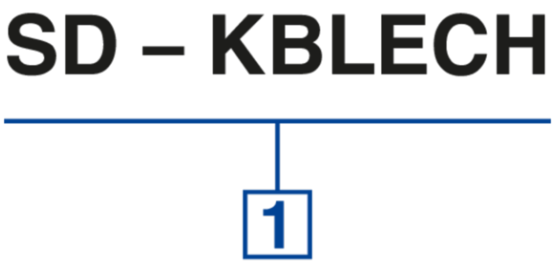
3 Resonator construction

Optimised for the following frequencies

A 250/125 Hz
B 125/250 Hz
C 125/63 Hz
D 63/125 Hz

4 Height H [mm]

5 Length L in airflow direction [mm]



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

Dimensions and weight

- 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 – 1499 mm in increments of 1 mm)
- Length subdivided: 2501 – 3000 mm in increments of 1 mm
- Undivided construction: H + L 4000 mm max., 80 kg max.

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.

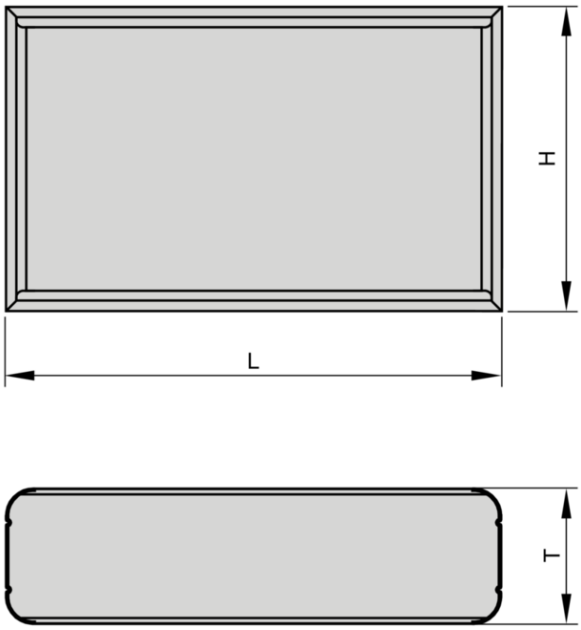
RKA200-A, RKA200-B, weights

H	RKA200-A					RKA200-B				
	L [mm]									
H	500	750	1000	1250	1500	500	750	1000	1250	1500
mm	kg									
300	4	6	7	9	10	5	7	9	12	14
600	7	9	12	14	16	9	13	16	20	23
900	9	13	16	19	23	13	18	23	28	33
1200	12	16	20	24	29	16	23	29	36	43
1500	14	20	25	30	35	20	28	36	44	52

RKA200-C, RKA200-D, weights

H	RKA200-C					RKA200-D				
	L [mm]									
H	500	750	1000	1250	1500	500	750	1000	1250	1500
mm	kg									
300	6	9	12	14	17	7	11	14	17	21
600	11	16	21	26	30	14	19	25	31	37
900	16	23	30	37	43	20	28	37	45	54
1200	21	30	39	48	56	26	37	48	59	-
1500	26	37	48	59	69	32	45	59	-	-

RKA

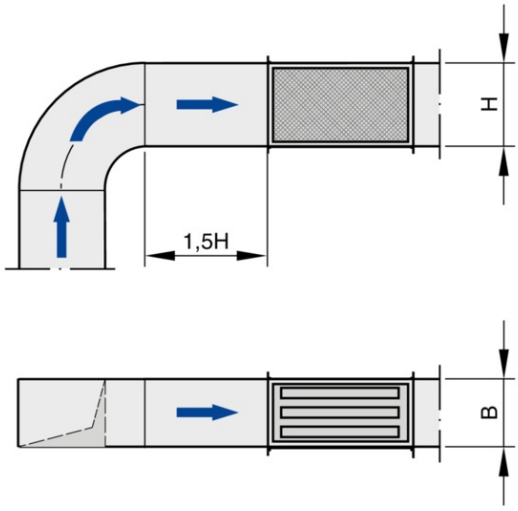


Installation details, Basic information and nomenclature

Installation and commissioning

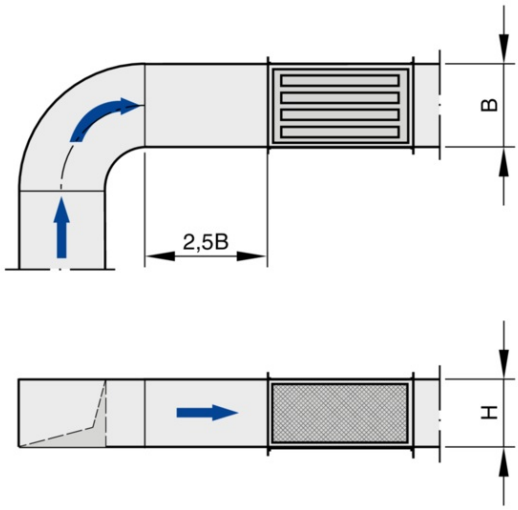
- Splitters are supplied as ready-to-install kits
- Follow the installation information and comply with the general codes of good practice in order to achieve the given performance data
- Up to height H = 1200 mm: any installation orientation, but we recommend upright installation of splitters
- From 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



B Width of the sound attenuator
H Height of the sound attenuator

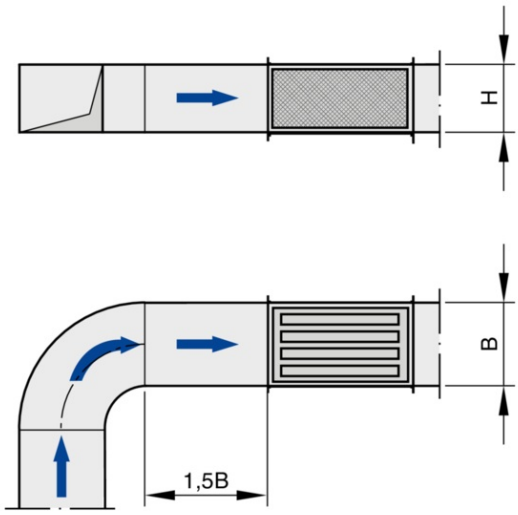
Upstream conditions after bends, junctions or a narrowing or widening of the duct, vertical upstream section, splitters horizontal



B Width of the sound attenuator
H Height of the sound attenuator

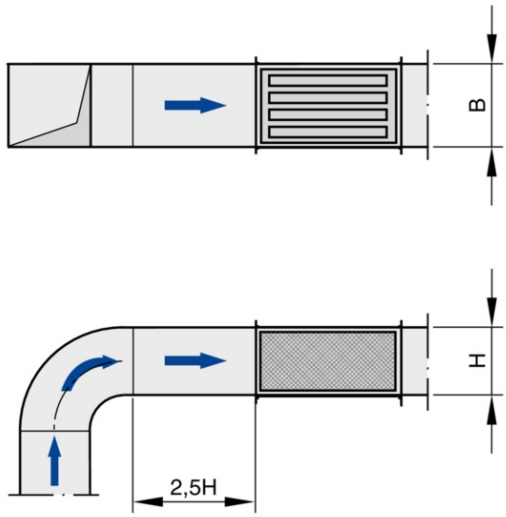
Horizontal installation only for splitters up to height 1200 mm

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



B Width of the sound attenuator
H Height of the sound attenuator

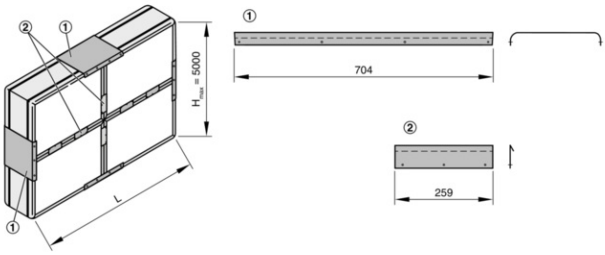
Upstream conditions after bends, junctions or a narrowing or widening of the duct, horizontal upstream section, splitters horizontal



B Width of the sound attenuator
H Height of the sound attenuator

Horizontal installation only for splitters up to height 1200 mm

Assembly of subdivided splitters



① U-sheet
② Clamp sheet
H or L ≤ 750 mm: without clamp sheet
H or L 751 – 1000 mm: 1 clamp sheet on each side
H or L > 1000 mm: 2 clamp sheets on each side recommended

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Principal dimensions

ØD [mm]

Outer diameter of the spigot

$ØD_3$ [mm]

Outer diameter of circular silencers

L [mm]

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

L_1 [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

V [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.

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TROX GmbH

Heinrich-Trox-Platz
D-47504 Neukirchen-Vluyn
Tel.: +49 (0)2845 202-0
Fax: +49 (0)2845 202-265

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