

Aerodynamically optimised  
splitter frame



Tested to VDI 6022

# Attenuators

## RK



### Splitter with high insertion loss in the low frequency range

Sound attenuator splitters with resonating panels, ready to be used in ventilation and air conditioning systems

- Attenuation effect due to resonance
- Energy efficient due to aerodynamically formed frame (bullnose radius 0.8")
- Acoustic data measured to EN ISO 7235
- Sound absorbing material is biosoluble and hence hygienically safe
- The sound absorbing material is non-combustible, to EN 13501, fire rating class A1
- For use in areas with potentially explosive atmospheres (according to EC Directive 2014/34/EU (ATEX)), zones 1, 2, and zones 21 and 22 (outside) according to EC Directive 1999/92/EC
- Operating temperature 212 °F max., up to 572 °F for a limited period of time

Optional equipment and accessories

- Stainless and PUR-coated constructions on request

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## General information

### Application

- Sound attenuator splitters with resonating panels are used for the reduction of fan and air-regenerated noise in ventilation and air conditioning systems
- Attenuation effect due to resonance
- Attenuation particularly in the low frequency range of critical fan noise
- Hygiene tested and compliant with VDI 6022
- For use in areas with potentially explosive atmospheres (ATEX), zones 1, 2, 21 and 22 (outside) according to EC Directive 1999/92/EC

### Special features

- Resonating panels ensure increased insertion loss in the frequency range of critical fan noise
- Energy-efficient due to aerodynamically formed splitter frame
  - Up to 30 % lower differential pressure
- Hygiene tested and compliant with VDI 6022

### Nominal sizes

- H: 6" – 71"
- L: 20", 30", 39", 49", 59"
- Intermediate heights (H) are possible: 6" – 71" in increments of 0.04"
- Intermediate lengths (L) are possible: 6" – 59" in increments of 0.04"
- H + L 24" min., 130" max., 176 lbs max.
- Height and length subdivided: Not available

### Variants

Principal attenuation range

- A: 250/125 Hz
- C: 125/63 Hz

### Construction

Materials and surfaces

- No entry: Galvanised steel 1.0917
- P1: Powder-coated RAL 7001, silver grey

### Parts and characteristics

- Aerodynamically formed frame
  - Reduced weight and increased rigidity due to special profile
  - Helps to optimise the airflow, hence reducing the air-regenerated noise
  - Reduces the pressure loss
  - Covers the edges of the sound absorbing material
- Resonating panels fitted to reduce air-regenerated noise by resonance

### Construction features

- Sound absorbing material and resonating panels fitted to reduce air-regenerated noise by resonance
- Aerodynamically formed splitter frame (bullnose radius 0.8") that helps to reduce turbulence on both the upstream and downstream sides; frame with grooves for increased rigidity
- Frame edges with bullnose to protect the infill
- Operating temperature up to 212 °F, up to 572 °F for 8 h max.

### Materials and surfaces

- Splitter frames, centre mullion and resonating panels made of galvanised sheet steel 1.0917
- Absorption material is mineral wool
  - To EN 13501, fire rating Class A1, non-combustible
  - RAL quality mark RAL-GZ 388
  - Biosoluble and hence non-hazardous to health according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU Directive 97/69/EC
  - Inert to fungal and bacterial growth according to EN 846

### Standards and guidelines

- Insertion loss and sound power level of air-regenerated noise tested to ISO 7235
- Meets the hygiene requirements of VDI 6022, VDI 3803 Part 1 and DIN 1946 Part 4
- EC Directive 2014/34/EC (ATEX): Equipment and protective systems intended for use in areas with potentially explosive atmospheres
- EC Directive 1999/92/EC (ATEX): Improvement of the safety and health protection of workers potentially at risk from explosive atmospheres.

### Maintenance

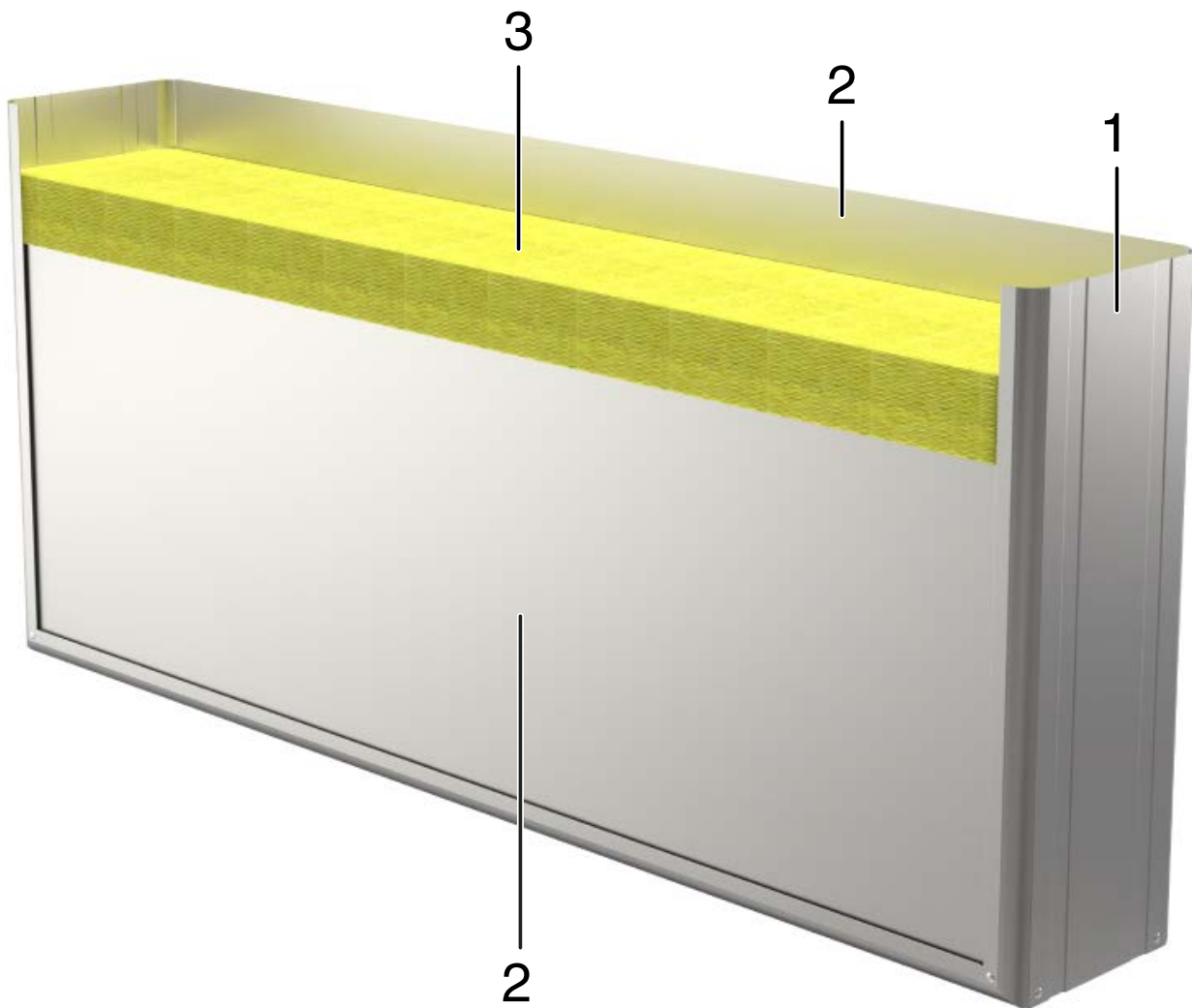
- Low maintenance as construction and materials are not subject to wear
- Regular cleaning intervals according to VDI6022

## Function

The attenuation effect of the RK 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 RK



- 1 Splitter frame
- 2 Resonating panels on both sides
- 3 Sound absorbing material

## Technical data

Splitter thickness	8"
Nominal sizes (H × L)	6" × 18" – 59" × 59", 18" × 6" – 71" × 59"
Height subdivide	Not available
Length subdivided	Not available
Intermediate sizes	In increments of 0.04"
Operating temperature	Up to 212 °F, up to 572 °F for 8h max.

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

## Quick sizing

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 program.

The differential pressures apply to sound attenuators with a height of 3'.

### RK8-A, insertion loss $D_e$ [dB] and differential pressure $\Delta p_i$ [in WC]

L	Airway width	Centre frequency $f_m$ [Hz]			$v_s$ [fpm]		
		2	5	10	0.2	0.4	0.6
20	2	6	17	12	4134	11417	22441
20	4	5	10	5	2165	6102	12008
39	2	8	24	14	4724	13189	25787
39	4	5	18	6	2559	6890	13583
59	2	11	32	17	5315	14764	28937
59	4	8	25	8	2756	7874	15354

### RK200-C, insertion loss $D_e$ [dB] and differential pressure $\Delta p_i$ [Pa]

L	Airway width	Centre frequency $f_m$ [Hz]			$v_s$ [fpm]		
		2	5	10	0.2	0.4	0.6
20	2	8	14	7	4134	11417	22441
20	4	3	6	3	2165	6102	12008
39	2	10	20	9	4724	13189	25787
39	4	7	10	4	2559	6890	13583
59	2	13	27	11	5315	14764	28937
59	4	10	13	5	2756	7874	15354

## Specification text

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

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. Installation kit consists of an aerodynamically profiled frame (bullnose radius of 0.8"), sound absorbing material and resonating panels. The splitter frame reduces pressure losses and air-regenerated noise. The special profile helps to reduce the weight and increase the rigidity of the splitters. Frame edges with bullnose to protect the sound absorbing infill. Insertion loss and sound power level of air-regenerated noise measured according to EN ISO 7235. Hygiene compliant with VDI 6022, VDI 3803 Part 1 and DIN 1946 Part 4. Suitable for areas with potentially explosive atmospheres (ATEX), zones 1, 2, 21 and 22 (outside) according to Directive 1999/92/EC.

### Special features

- Resonating panels ensure increased insertion loss in the frequency range of critical fan noise
- Energy-efficient due to aerodynamically formed splitter frame
  - Up to 30 % lower differential pressure
- Hygiene tested and compliant with VDI 6022

### Materials and surfaces

- Splitter frames, centre mullion and resonating panels made of galvanised sheet steel 1.0917
- Absorption material is mineral wool
  - To EN 13501, fire rating Class A1, non-combustible
  - RAL quality mark RAL-GZ 388

- Biosoluble and hence non-hazardous to health according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU Directive 97/69/EC
- Inert to fungal and bacterial growth according to EN 846

### Variants

Principal attenuation range

- A: 250/125 Hz
- C: 125/63 Hz

### Construction

Materials and surfaces

- No entry: Galvanised steel 1.0917
- P1: Powder-coated RAL 7001, silver grey

### Technical data

- Splitter thickness: 8"
- Nominal sizes: 6" × 18" – 59" × 59", 18" × 6" – 71" × 59"

- Intermediate sizes: in increments of 0.04"
- Operating temperature up to 212 °F, up to 572 °F for 8 h max.

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

### Sizing data

- B [in]
- H [in]
- L (in airflow direction) [in]
- $q_v$  (cfm)
- $D_e$  At 250 Hz [dB]
- $\Delta p_{st}$  [in WC]

**Order code**

RK - ... - A - / 8 x 24 x 59  
| | | | | | |  
1 2 3 4 5 6 7

**1 Type**

**RK** Sound attenuator splitter

**2 Variant**

No entry required: TROX standard variants

**3 Resonator construction**

Optimised for the following frequencies

**A** 250/125 Hz

**C** 125/63 Hz

**4 Material**

No entry required: Galvanised steel 1.0917

**P1** Powder-coated in RAL 7001, silver grey

**5 Splitter thickness [in]**

8

**6 Height H [in]**

6 – 71

**7 Length L in airflow direction [in]**

6 – 59

**Order example: RK-A/8×39×47**

Resonator construction

Height

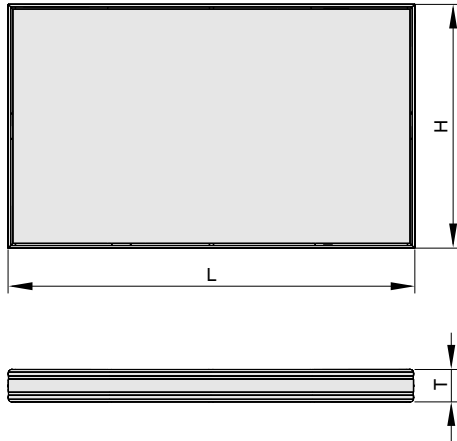
Length

250/125 Hz

39"

47"

## Dimensions



- H: 6" – 71"
- L: 20", 30", 39", 49", 59"
- T: 8"
- Intermediate heights (H) are possible: 6" – 71" in increments of 0.04"
- Intermediate lengths (L) are possible: 6" – 59" in increments of 0.04"
- H + L 130" max., 176 lbs max.

The total weight for intermediate sizes can be generated with our Easy Product Finder design program.

## Weights

### RK-A [lbs]

H	L				
	20	30	39	49	59
12	9	13	18	20	24
24	15	22	29	35	42
35	22	31	40	49	60
47	29	40	51	64	77
59	35	49	64	79	93
71	44	62	79	95	112

### RK-C [lbs]

H	L				
	20	30	39	49	59
12	15	22	26	33	40
24	26	37	49	62	73
35	37	55	71	88	106
47	51	71	93	117	139
59	62	88	117	143	170
71	77	108	141	174	X

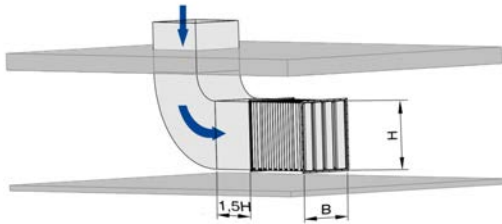
X = construction not available

## Installation details

### Installation and commissioning

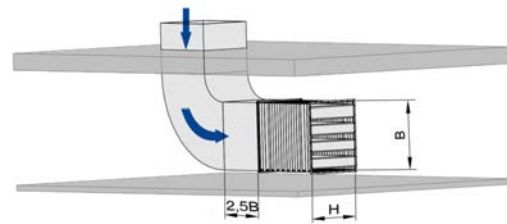
- Follow the installation manual and comply with the general codes of good practice in order to achieve the given performance data
- Up to height H = 47", length L = 59" and max. 88 lbs: any installation orientation, but we recommend upright installation of splitters  
From height H = 47": upright installation 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
- A turbulent airflow on sound attenuator splitters can cause damage to them
  - A straight upstream section must be provided in the airflow direction upstream of the sound attenuator
  - The minimum recommended upstream section is calculated depending on the change of direction, cross-section change and splitter arrangement
- Installation in ducts outside 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



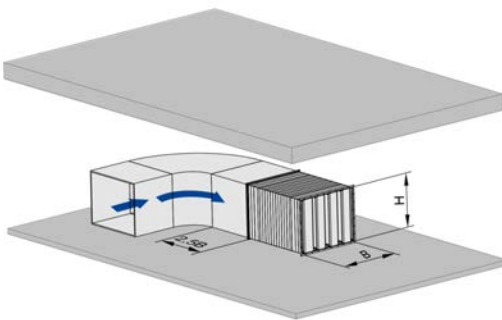
B Width of the sound attenuator  
H Height of the sound attenuator and the splitters

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



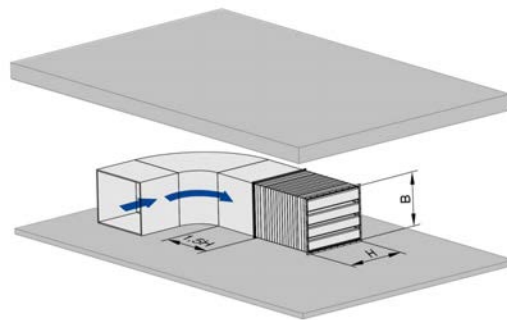
B Width of the sound attenuator  
H Height of the sound attenuator and the splitters  
Installation with the splitters lying flat only for splitters up to height 47"

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 and the splitters

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



B Width of the sound attenuator  
H Height of the sound attenuator and the splitters  
Installation with the splitters lying flat only for splitters up to height 47"

## Nomenclature

<b>L</b> [in] Length of sound attenuator including spigot (always in airflow direction)	<b>S</b> [in] Airway width
<b>L<sub>1</sub></b> [in] Length of part 1 of a splitter sound attenuator with the length subdivided	<b>m</b> [lbs] Weight
<b>L<sub>2</sub></b> [in] Length of part 2 of a splitter sound attenuator with the length subdivided	<b>f<sub>m</sub></b> [Hz] Octave band centre frequency
<b>B</b> [in] Sound attenuator width and duct width	<b>D<sub>o</sub></b> [dB] Insertion loss
<b>B<sub>1</sub></b> [in] Width of part 1 of a splitter sound attenuator with the width subdivided	<b>q<sub>v</sub></b> [cfm] Volume flow rate
<b>B<sub>2</sub></b> [in] Width of part 2 of a splitter sound attenuator with the width subdivided	<b>Δp<sub>t</sub></b> [in WC] Total differential pressure
<b>H</b> [in] Sound attenuator height and duct height (upright splitters)	<b>v<sub>s</sub></b> [fpm] Airflow velocity
<b>T</b> [in] Splitter thickness	<b>Lengths</b> All lengths are given in inches [in] unless stated otherwise.
	<b>Measured values</b> 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, based on practical conditions.