



CIRCULAR SILENCER TYPE CAK

## CAK

## FOR THE REDUCTION OF NOISE IN PLASTIC CIRCULAR **DUCTS FOR CONTAMINATED AIR**

Plastic circular silencers for the reduction of noise in the circular ducts of extract air systems for aggressive media

- Absorption material is non-combustible mineral wool with RAL quality mark, biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EC
- Mineral wool faced with non-woven glass fibre as protection against erosion due to airflow velocities up to 20 m/s
- Casing and perforated inner duct are flame-resistant polypropylene (PPs) to DIN 4102, building class B1
- Variant with spigot suitable for circular ducts according to DIN 8077 or DIN 8078
- Insertion loss measured according to ISO 7235 Casing air leakage to EN 15727, class D

Optional equipment and accessories

• With flanges on both ends

# General information

• Plastic circular silencers Type CAK for the reduction of noise in the circular ducts of air conditioning systems

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- Suitable for contaminated air
- For the reduction of air-regenerated noise of air terminal units TVRK and TVLK
- For the reduction of fan noise

### **Special features**

**Application** 

- Insertion loss measured according to ISO 7235
- Absorption material is non-combustible

### **Nominal sizes**

• 125, 160, 200, 250, 315, 400 mm

### **Variants**

- CAK: Circular silencer
- VF2: Circular silencer with flanges on both ends

### **Parts and characteristics**

- Casing
- Perforated inner tube
- Absorption material

#### **Accessories**

• Matching flanges for both ends, including seals

#### **Construction features**

- Circular casing
- Spigot suitable for circular ducts according to DIN 8077 or DIN 8078
- Maximum operating pressure 1000 Pa
- Max. operating temperature 100 °C

### **Materials and surfaces**

- Casing and perforated inner duct are flame-resistant polypropylene (PPs) to DIN 4102, building class B1
- Lining is mineral wool

### Mineral wool

- To EN 13501, fire rating class A2, 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 as protection against erosion through airflow velocities up to 20 m/s
- Inert to fungal and bacterial growth

### Standards and guidelines

- Insertion loss measured according to ISO 7235
- Casing air leakage to EN 15727, class D

### Maintenance

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

## **TECHNICAL INFORMATION**

Technical data, Quick sizing, Specification text, Order code

Nominal sizes	125 - 400 mm
Operating pressure	1000 Pa
Operating temperature	100 °C max.

The stated differential pressures for circular silencers correspond to the values for smooth pipes. Deviations, if any, are of no practical relevance. For ductwork calculation, if the length of a circular silencer is included in the total length of the ductwork, no extra length must be added.

## CAK, insertion loss

Manada da	Nominal	Centre frequency f <sub>m</sub> [Hz]							
Nominal size	length	63						4000	8000
Nominal size	Nominal length	D <sub>e</sub> Hz							
	mm								
125	500	1	6	7	14	25	23	14	12
	1000	2	9	13	22	34	35	24	16
125	1500	3	12	19	31	42	43	33	20
160	500	0	3	5	11	22	21	12	10
	1000	1	4	9	18	30	31	19	13
160	1500	2	7	13	25	38	41	27	17
200	500	0	2	4	10	21	17	10	8
	1000	1	4	9	15	29	25	16	11
200	1500	1	6	12	21	36	33	20	14
250	500	0	2	4	9	19	13	9	8
	1000	0	4	8	14	26	22	15	11
250	1500	1	6	11	20	35	30	20	15
315	500	0	2	3	8	18	12	7	6
	1000	0	4	6	14	26	17	11	8
315	1500	1	6	9	19	34	23	15	10
400	500	0	2	3	6	14	8	6	4
	1000	0	3	6	11	25	13	10	7
400	1500	1	4	8	16	29	15	11	8

CAK, differential pressure

Nominal size         Neminal size   Imm)   500   1000   1500				Neni	nlänge	[mm]	
Nominal size   1/s   m³/h   Pa	Nominal size	V				1500	
1/s   m²/h   Pa     125   342   4   6   10     125   145   522   6   14   20     145   522   6   14   20     155   558   2   6   8     160   195   702   4   8   10     235   846   6   10   14     200   245   882   2   4   6     200   370   1332   4   8   10     250   385   1386   <2   4   8     250   385   1386   <2   4   6     250   385   1746   2   4   6     315   310   1116   <2   <2   <2     315   310   1116   <2   <2   <2     315   310   1116   <2   <2   <2     315   330   2   4   6     315   3330   2   4   6     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3582   <2   <2   2     3400   3482   <2   2   4     3482   <2   2   4     3483   3482   <2   2   4     348482   <2   2   4     348482   <2   2   4     348484   <2   2   2   4     3485   3582   <2   <2   2     3485   3582   <2   <2   2     3486   3482   <2   2   4     3486   3482   <2   2   4     3486   3482   <2   2   4     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482   <2   2   2     3486   3482	Nominal size	١	/				
125   95   342   4   6   10     125   145   522   6   14   20     160   155   558   2   6   8     160   195   702   4   8   10     235   846   6   10   14     200   245   882   2   4   6     200   370   1332   4   8   10     250   385   1386   <2   4   4     250   385   1386   <2   4   6     310   1116   4   6   8     370   1332   4   8   10     250   385   1386   <2   4   4     250   385   1386   <2   4   6     310   1116   <2   <2   <2     310   1116   <2   <2   <2     4   4     315   310   1116   <2   <2   <2     4   4     315   3330   2   4   6     400   3582   <2   <2   <2     400   3582   <2   <2   <2     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4     400   4482   <2   2   4	Nominal Size	l/s m³/h					
120   432   6   10   14     145   522   6   14   20     155   558   2   6   8     160   155   558   2   6   8     160   235   846   6   10   14     235   846   6   10   14     245   882   2   4   6     370   1332   4   8   10     250   385   1386   <2   4   4     250   385   1386   <2   4   6     310   1116   <2   <2   <2     385   1386   <2   4   6     310   1116   <2   <2   <2     40   315   330   2   4   6     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <2     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <2   <2   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4   <4     400   482   <4     400   482   <4   <4     400   482   <4     400   482   <4	125	50	180	2	2	4	
125       145       522       6       14       20         160       288       2       2       2       2         155       558       2       6       8         160       195       702       4       8       10         235       846       6       10       14         200       245       882       2       4       6         370       1332       4       8       10         250       385       1386       <2       <2       <2         385       1386       <2       4       4         485       1746       2       4       6         88       2088       4       6       8         315       310       1116       <2       <2       <2         615       2214       <2       <2       <2         400       3315       3330       <2       <4       <6         30       1800       <2       <2       <2       <2         400       3315       3330       <2       <4       <6         400       3482       <2       <2       <2		95	342	4	6	10	
160   288   2   2   2   2   155   558   2   6   8   8   10   14   10   14   10   14   10   14   10   14   10   14   10   14   10   14   10   14   10   14   10   10	125	120	432	6	10	14	
160       155       558       2       6       8         160       195       702       4       8       10         235       846       6       10       14         200       125       450       2       2       2         245       882       2       4       6       8         370       1332       4       8       10         250       385       1386       <2       4       4         385       1386       <2       4       4         485       1746       2       4       6         580       2088       4       6       8         315       310       1116       <2       <2       <2         615       2214       <2       2       4         400       3330       <2       4       6         400       1800       <2       <2       <2         20       2       <2       <2       <2         20       2       <2       <2       <2         20       3       <2       <2       <2         20       3       <2		145	522	6	14	20	
160	160	80	288	2	2	2	
160       235       846       6       10       14         200       125       450       2       2       2         245       882       2       4       6       8         370       1312       4       8       10         250       195       702       <2       <2       <2         385       1386       <2       4       4         485       1746       2       4       6         580       2088       4       6       8         315       310       1116       <2       <2       <2         615       2214       <2       2       4         400       3315       3330       <2       4       6         400       1800       <2       <2       <2         400       1800       <2       <2       <2         400       1245       4482       <2       <2       4		155	558	2	6	8	
125   450   2   2   2   2   2   2   2   3   882   2   4   6   8   370   1332   4   8   10   370   1332   4   8   10   385   1386   <2   <4   4   4   4   4   4   4   4   4	160	195	702	4	8	10	
200   245   882   2   4   6   6   8   370   1332   4   8   10   10   10   10   10   10   10		235	846	6	10	14	
310 1116 4 6 8 370 1332 4 8 10 250 195 702 <2 <2 <2 385 1386 <2 4 4 250 485 1746 2 4 6 580 2088 4 6 8 310 1116 <2 <2 <2 615 2214 <2 2 4 315 770 2772 <2 4 4 925 3330 2 4 6 400 1800 <2 <2 <2 24 400 1245 4482 <2 2 4	200	125	450	2	2	2	
200   370   1332   4   8   10   10   250   385   1386   <2   4   4   4   4   6   580   2088   4   6   8   8   500   1116   <2   <2   <2   <2   <4   4   6   6   8   6   6   6   6   6   6   6		245	882	2	4	6	
195 702 <2 <2 <2 385 1386 <2 4 4 4	200	310	1116	4	6	8	
250 385 1386 <2 4 4  250 485 1746 2 4 6  580 2088 4 6 8  315 615 2214 <2 2 4  770 2772 <2 4 4  925 3330 2 4 6  200 1800 <2 <2 <2  995 3582 <2 <2 <2  400 1245 4482 <2 2 4		370	1332	4	8	10	
485 1746 2 4 6 580 2088 4 6 8 310 1116 <2 <2 <2 615 2214 <2 2 4  770 2772 <2 4 4  925 3330 2 4 6  500 1800 <2 <2 <2 995 3582 <2 <2 4 400 1245 4482 <2 2 4	250	195	702	<2	<2	<2	
250   580   2088   4   6   8   8   8   8   8   8   8   8   8		385	1386	<2	4	4	
315 310 1116 <2 <2 <2 <2 615 2214 <2 2 4 315 770 2772 <2 4 4 925 3330 2 4 6 400 500 1800 <2 <2 <2 995 3582 <2 <2 2 400 400 42 <2 2 4 400 482 <2 2 4 4	250	485	1746	2	4	6	
315 615 2214 <2 2 4  315 770 2772 <2 4 4  925 3330 2 4 6  400 1800 <2 <2 <2  995 3582 <2 <2 2  400 1245 4482 <2 2 4		580	2088	4	6	8	
770 2772 <2 4 4  925 3330 2 4 6  500 1800 <2 <2 <2  995 3582 <2 <2 2  1245 4482 <2 2 4	315	310	1116	<2	<2	<2	
315 925 3330 2 4 6 300 1800 <2 <2 <2 <2 995 3582 <2 <2 2 400 1245 4482 <2 2 4		615	2214	<2	2	4	
500 1800 <2 <2 <2 <2 995 3582 <2 <2 2 1245 4482 <2 2 4	315		2772			4	
400 995 3582 <2 <2 2 4 400 400 400 400 400 400 400 400 40		925	3330	2	4	6	
1245 4482 <2 2 4	400	500	1800	<2	<2	<2	
400		995	3582	<2	<2	2	
<b>1495 5382</b> <2 4 4	400	1245	4482	<2	2	4	
		1495	5382	<2	4	4	

Plastic circular silencers for use in extract air systems subject to aggressive media; they reduce the air-regenerated noise in plastic ducts (absorption principle).

Insertion loss measured according to ISO 7235.

Absorption material is mineral wool with RAL quality mark RAL-GZ 388.

Spigot, suitable for ducts according to DIN 8077.

Casing air leakage to EN 15727, class D.

### **Special features**

- Insertion loss measured according to ISO 7235
- Absorption material is non-combustible

#### **Materials and surfaces**

- Casing and perforated inner duct are flame-resistant polypropylene (PPs) to DIN 4102, building class B1
- · Lining is mineral wool

### Mineral wool

- To EN 13501, fire rating class A2, 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 as protection against erosion through airflow velocities up to 20 m/s
- Inert to fungal and bacterial growth

## **Technical data**

Nominal sizes: 125 to 400 mm
Operating pressure: 1000 Pa max.
Operating temperature: 100 °C max.

### Sizing data



### Order example: CAK/200×1000

Nominal size	200 mm		
Length	1000 mm		
Type of connection	Spigot		

# CAK / 160×1000 / GZ / VF2









1 Type

Circular silencer

2 Nominal size [mm]

CAK

3 Length [mm]

500 1000 1500

4 Matching flange

No entry: none

GZ on both ends (only VF2)

**5** Type of connection

No entry: spigot **VF2** Flanges on both ends

## Variants, Dimensions and weight

### CAK

### Variant

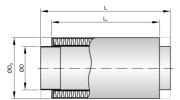
- Circular silencer for the reduction of noise
- Spigot

## CAK/.../VF2

### Variant

- Circular silencer for the reduction of noise
- With flanges to make detachable connections to the ductwork

## CAK





Installation details, Basic information and nomenclature

## Installation and commissioning

- Any installation orientation
  Installation in ducts outside of closed rooms requires sufficient protection against the effects of weather

### **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<sub>m</sub> [Hz]

Octave band centre frequency

## L<sub>WA</sub> [dB(A)]

A-weighted sound power level of air-regenerated noise

### D<sub>e</sub> [dB]

Insertion loss

### V [m<sup>3</sup>/h] and [l/s]

Volume flow rate

### Δp<sub>st</sub> [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.