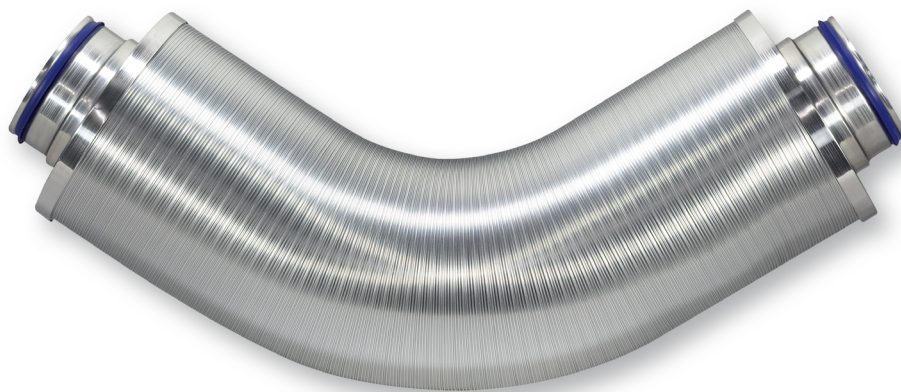


# Circular silencers

## Type CF



### For the reduction of noise in circular ducts, flexible aluminium construction

Circular silencers, in flexible aluminium construction, for the reduction of noise in the circular ducts of air conditioning systems

- 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
- Casing and perforated inner duct made of aluminium
- Variant with spigot has a groove for a lip seal, suitable for circular connecting ducts to EN 1506 or EN 13180
- Insertion loss measured according to ISO 7235
- Casing air leakage to EN 15727, class D

Optional equipment and accessories

- Socket-type spigots on both ends
- Raised edges at both ends
- With lip seals on both ends

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## Application

### Application

- Flexible circular silencers Type CF for the reduction of noise in the circular ducts of air conditioning systems
- For the reduction of air-regenerated noise of air terminal units LVC and TVR, and of mechanical self-powered controllers RN and VFC
- For the reduction of fan noise
- Can be used as cross talk silencer to reduce the transfer of noise through ducts between neighbouring rooms
- Insertion loss measured according to ISO 7235
- Very flexible and consequently suitable for installation in complicated duct systems and restricted spaces
- Absorption material is non-combustible
- Insulation thickness 25 mm or 50 mm
- Smallest bend radius  $3 \times$  outer diameter  $D_3$

### Nominal sizes

- 80, 100, 125, 160, 200, 250, 315, 400 mm

### Special characteristics

## Description

### Variants

- 025: Circular silencer with 25 mm insulation
- 050: Circular silencer with 50 mm insulation
- AS2: Circular silencer with socket-type spigots on both ends
- BK2: Circular silencer with raised edges at both ends
- Casing and perforated inner duct made of aluminium
- Lining is mineral wool
- End pieces made ABS plastic, flammability to UL 94, V-0 (nominal sizes 80 – 125)
- End pieces made of aluminium (nominal sizes 160 – 400)

### Parts and characteristics

- Casing
- Perforated inner tube
- Absorption material

### Accessories

- VD2: With lip seals on both ends
- AS2: Socket-type spigots on both ends
- BK2: Raised edges at both ends

### Construction features

- Circular casing
- Flexible construction
- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal
- Maximum operating pressure 1000 Pa
- Max. operating temperature 100 °C

### Materials and surfaces

### 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
- 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

Nominal sizes	80 – 400 mm
Operating pressure	1000 Pa max.
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.

**CF025 (insulation thickness 25 mm), insertion loss**

Nominal size	Nominal length	Centre frequency $f_m$ [Hz]							
		63	125	250	500	1000	2000	4000	8000
	mm	$D_e$ Hz							
80	500	1	2	4	9	20	16	15	10
	1000	3	5	10	21	44	46	37	23
	1500	3	5	13	28	47	48	44	31
	2000	3	6	15	35	50	50	50	39
100	500	1	1	4	8	17	14	12	9
	1000	2	3	8	17	44	34	28	21
	1500	2	4	12	24	47	41	34	26
	2000	2	5	15	30	50	49	41	31
125	500	1	1	3	8	15	11	9	7
	1000	2	3	7	17	43	30	24	17
	1500	2	3	10	22	45	34	28	20
	2000	2	4	12	28	48	37	32	23
160	500	1	1	2	5	14	10	8	6
	1000	1	1	4	12	40	27	20	16
	1500	2	2	6	16	42	30	25	19
	2000	2	3	8	20	47	34	28	21
200	500	1	1	2	5	14	9	6	5
	1000	1	1	3	11	35	22	16	13
	1500	2	2	5	15	41	27	19	15
	2000	1	3	7	19	47	32	20	16
250	500	0	1	2	5	13	8	5	4
	1000	1	1	3	11	30	19	12	10
	1500	1	2	5	15	38	25	14	11
	2000	1	3	6	17	43	30	15	13
315	500	0	1	1	4	9	7	4	3
	1000	0	1	3	9	21	10	12	8
	1500	1	2	4	12	27	19	13	10
	2000	1	2	6	14	32	27	13	11
400	500	0	0	1	3	6	5	3	3
	1000	0	1	3	8	16	8	8	7
	1500	1	1	4	10	23	17	11	8
	2000	1	2	4	10	23	22	11	9

CF050 (insulation thickness 50 mm), insertion loss

Nominal size	Nominal length	Centre frequency $f_m$ [Hz]							
		63	125	250	500	1000	2000	4000	8000
	mm	$D_e$ Hz							
80	500	4	5	11	20	30	27	16	12
	1000	8	14	23	47	50	50	44	27
	1500	11	14	33	48	50	50	47	37
	2000	15	15	42	50	50	50	50	47
100	500	3	4	9	17	24	21	12	10
	1000	7	10	21	38	50	50	29	22
	1500	10	11	27	44	50	50	37	30
	2000	12	12	34	50	50	50	46	37
125	500	2	3	7	14	20	16	11	9
	1000	5	7	16	32	50	42	25	22
	1500	7	9	21	41	50	46	33	27
	2000	9	11	27	50	50	50	40	31
160	500	2	2	6	12	17	14	8	6
	1000	4	5	12	26	47	34	20	16
	1500	5	7	17	37	48	42	24	19
	2000	6	9	22	48	50	50	29	21
200	500	1	2	5	12	16	11	6	5
	1000	3	5	11	25	45	26	16	13
	1500	4	6	14	37	48	34	18	15
	2000	5	8	18	47	50	42	22	18
250	500	1	2	4	12	15	8	5	4
	1000	2	4	9	25	40	19	12	10
	1500	3	5	11	35	45	25	14	11
	2000	4	6	15	45	50	30	16	13
315	500	1	1	3	9	12	6	4	3
	1000	1	4	8	22	28	13	12	8
	1500	2	4	10	26	35	19	12	10
	2000	3	4	12	33	41	27	14	11
400	500	1	1	3	7	9	6	4	3
	1000	1	4	8	18	23	11	10	7
	1500	2	4	9	20	26	17	11	8
	2000	3	3	9	22	29	22	11	9

CF, differential pressure

Nominal size	$\dot{V}$	$\dot{V}$	Nennlänge [mm]			
			500	1000	1500	2000
	l/s	m <sup>3</sup> /h	$\Delta p_{st}$			
			Pa			
80	20	72	2	4	6	6
	40	144	6	12	16	25
	50	180	8	16	25	35
	55	198	12	25	35	45
100	30	108	2	2	4	5
	60	216	4	8	12	16
	75	270	6	12	18	25
	90	324	8	18	25	35
125	50	180	2	2	4	4
	95	342	4	6	10	12
	120	432	6	10	14	18
	145	522	6	14	20	25
160	80	288	2	2	2	4
	155	558	2	6	8	10
	195	702	4	8	10	14
	235	846	6	10	14	18
200	125	450	2	2	2	2
	245	882	2	4	6	8
	310	1116	4	6	8	10
	370	1332	4	8	10	14
250	195	702	<2	<2	<2	2
	385	1386	<2	4	4	6
	485	1746	2	4	6	8
	580	2088	4	6	8	10
315	310	1116	<2	<2	<2	<2
	615	2214	<2	2	4	4
	770	2772	<2	4	4	6
	925	3330	2	4	6	8
400	500	1800	<2	<2	<2	<2
	995	3582	<2	<2	2	4
	1245	4482	<2	2	4	4
	1495	5382	<2	4	4	6

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

Circular silencers for air conditioning systems, flexible construction, available in 8 nominal sizes. Insertion loss measured according to ISO 7235. Casing with acoustic and thermal insulation. Spigot with groove for lip seal, suitable for circular connecting ducts to EN 1506 or EN 13180. Casing air leakage to EN 15727, class D.

**Special characteristics**

- Insertion loss measured according to ISO 7235
- Very flexible and consequently suitable for installation in complicated duct systems and restricted spaces
- Absorption material is non-combustible
- Insulation thickness 25 mm or 50 mm
- Smallest bend radius 3 × outer diameter  $D_3$

**Materials and surfaces**

- Casing and perforated inner duct made of aluminium
- Lining is mineral wool
- End pieces made ABS plastic, flammability to UL 94, V-0 (nominal sizes 80 – 125)
- End pieces made of aluminium (nominal sizes 160 – 400)

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
- Inert to fungal and bacterial growth

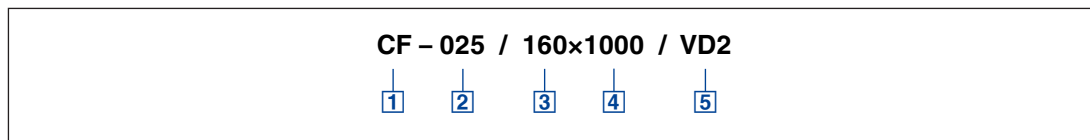
**Technical data**

- Nominal sizes: 80 to 400 mm
- Operating pressure: 1000 Pa max.
- Operating temperature: 100 °C max.

**Sizing data**

- D \_\_\_\_\_ [mm]
- H \_\_\_\_\_ [mm]
- Insulation thickness \_\_\_\_\_ [mm]
- $\dot{V}$  \_\_\_\_\_ [ $m^3/h$ ]
- $D_e$  at 250 Hz \_\_\_\_\_ [dB]
- $\Delta p_{st}$  \_\_\_\_\_ [Pa]

CF



**1** Type

**CF** Flexible circular silencer

**2** Insulation thickness [mm]

**025** 25

**050** 50

**3** Nominal size [mm]

**80**

**100**

**125**

**160**

**200**

**250**

**315**

**400**

**Order example: CF-050/160×1000/VD2**

<b>Insulation thickness</b>	50 mm
<b>Nominal size</b>	160 mm
<b>Length</b>	1000 mm
<b>Type of connection</b>	Spigot with lip seal on both ends

**4** Nominal length [mm]

**500**

**1000**

**1500**

**2000**

**5** Type of connection

No entry: spigot

**VD2** Spigot with lip seal on both ends

**AS2** Socket-type spigots on both ends

**BK2** Raised edges at both ends



**CF**

**Variant**

- Circular silencer for the reduction of noise
  - Spigot
- 

**CF/.../AS2**

**Variant**

- Circular silencer for the reduction of noise

- Socket-type spigots to make connections to the ducting
- 

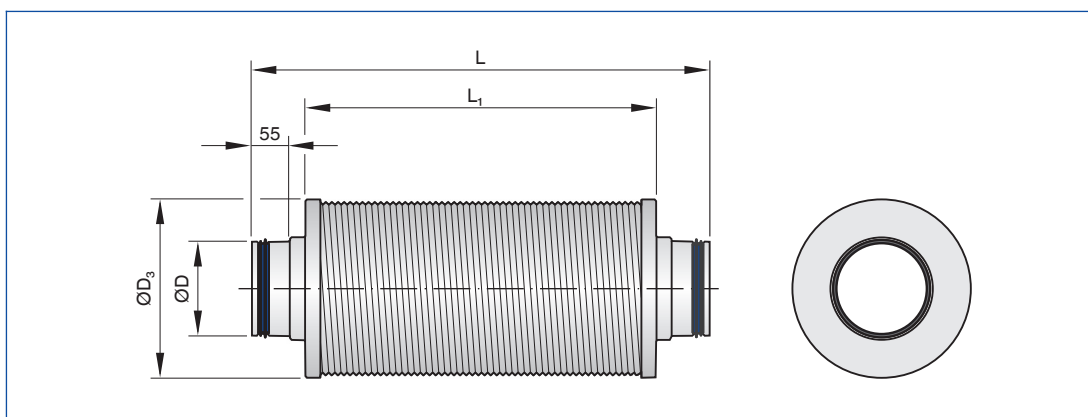
**CF/.../BK2**

**Variant**

- Circular silencer for the reduction of noise

- With raised edges to make detachable connections to the ducting

CF



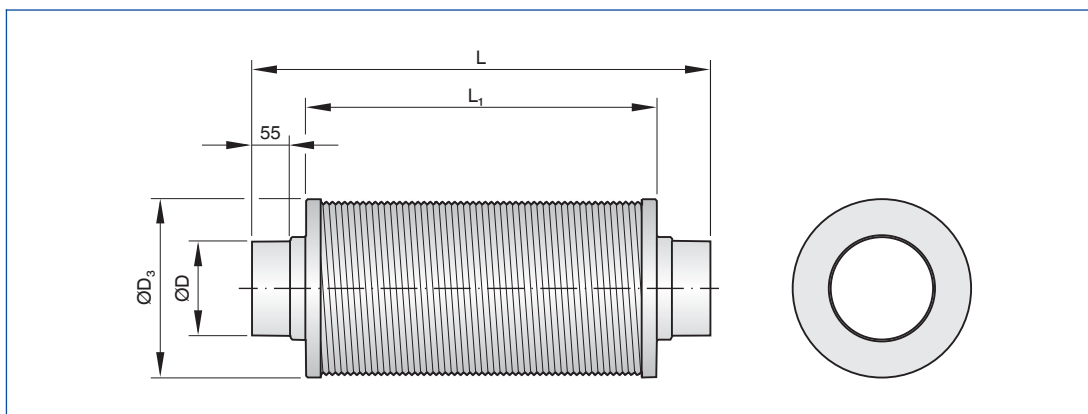
CF, dimensions

Nominal size	CF-025	CF-050	ØD mm
	ØD <sub>3</sub> mm		
80	135	192	79
100	160	212	99
125	191	236	124
160	221	271	159
200	261	311	199
250	311	366	249
315	376	426	314
400	461	511	399

CF, lengths

Nominal length	L mm	L <sub>1</sub> mm
	500	650
1000	1150	1000
1500	1650	1500
2000	2150	2000

CF/.../AS2



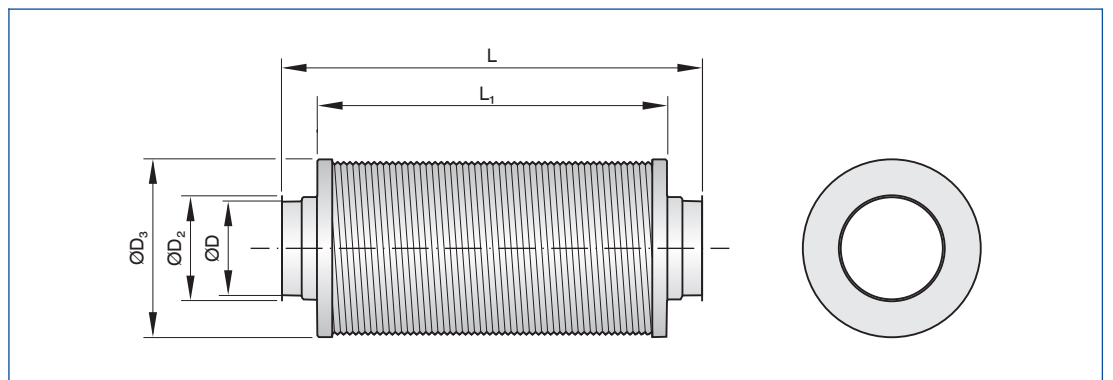
CF.../AS2, dimensions

Nominal size	CF-025	CF-050	ØD mm
	ØD <sub>3</sub>		
	mm	mm	
80	135	192	80
100	160	212	100
125	191	236	125
160	221	271	160
200	261	311	200
250	311	366	250
315	376	426	315
400	461	511	400

CF.../AS2, lengths

Nominal length	L	L <sub>1</sub>
	mm	mm
500	650	500
1000	1150	1000
1500	1650	1500
2000	2150	2000

CF.../BK2



CF.../BK2, dimensions

Nominal size	CF-025	CF-050	ØD mm	ØD <sub>2</sub> mm
	ØD <sub>3</sub>			
	mm	mm		
80	135	192	79	93
100	160	212	99	113
125	191	236	124	138
160	221	271	159	173
200	261	311	199	213
250	311	366	249	263
315	376	426	314	328
400	461	511	399	413

CF.../BK2, lengths

Nominal length	L	L <sub>1</sub>
	mm	mm
500	638	500
1000	1138	1000
1500	1638	1500
2000	2138	2000

CF

Nominal size	CF-025				CF-050			
	500	1000	1500	2000	500	1000	1500	2000
	m							
	kg	kg	kg	kg	kg	kg	kg	kg
80	0.6	1.0	1.5	1.9	0.9	1.5	2.2	2.8
100	0.8	1.3	1.7	2.2	1.1	1.8	2.5	3.2
125	0.9	1.5	2.1	2.7	1.2	2.0	2.9	3.7
160	1.1	1.8	2.5	3.2	1.4	2.4	3.3	4.3
200	1.3	2.2	3.0	3.9	1.7	2.9	4.0	5.1
250	1.6	2.7	3.7	4.7	2.1	3.5	4.8	6.2
315	1.9	3.2	4.5	5.7	2.4	4.0	5.6	7.2
400	2.5	4.1	5.6	7.2	3.1	5.1	7.1	9.1

**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

**ØD<sub>3</sub> [mm]**

Outer diameter of circular silencers

**L [mm]**

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

**L<sub>1</sub> [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

**Ṃ [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.