

# Attenuators

## CF



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

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

- The sound absorbing 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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## General information

### Application

- Flexible circular silencer for the reduction of noise in the circular ducts of ventilation and air conditioning systems
- For the reduction of air-regenerated noise of air terminal units LVC, TVR, TVE and of mechanical self-powered control units 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

### Special characteristics

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

### Nominal sizes

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

### 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

### 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
- Max. operating pressure 1000 Pa
- Max. operating temperature 100 °C

### Material and surfaces

- Casing and perforated inner duct made of aluminium
  - Lining is mineral wool
  - End pieces made of aluminium
- Mineral wool
- To EN 13501, fire rating Class A1, non-combustible
  - RAL quality mark RAL-GZ 388
  - Non-hazardous thanks to high biosolubility according to the German Ordinance on Hazardous Substances and Note Q of the European Regulation (EC) No. 1272/2008
  - 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

- Low-maintenance as construction and materials are not subject to wear

### Technical data

Nominal sizes	80 – 400 mm
Operating pressure	1000 Pa max.
Operating temperature	100 °C max.

### Quick sizing

The stated differential pressures for circular silencers correspond to the values for plain, unprofiled ducts. 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 $D_e$ [dB]

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

CF050 (insulation thickness 50 mm), insertion loss  $D_e$  [dB]

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

CF, differential pressure  $\Delta p$ , [Pa]

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

## 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.

### Specification text

Circular silencers for ventilation and 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 lip seal for circular ducts according to EN 1506 or EN 13180. Casing leakage to EN 15727, class D.

### Special features

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

### Material and surfaces

- Casing and perforated inner duct made of aluminium
- Lining is mineral wool
- End pieces made of aluminium

### Mineral wool

- To EN 13501, fire rating Class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Non-hazardous thanks to high biosolubility according to the German Ordinance on Hazardous Substances and Note Q of the European Regulation (EC) No. 1272/2008
- 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

- $\varnothing D$  [mm]
- H [mm]
- Insulation thickness [mm]
- $q_v$  (m<sup>3</sup>/h)
- $D_e$  At 250 Hz [dB]
- $\Delta p_t$  [Pa]



## Order code

CF – 025 / 160 × 1000 / VD2

1	2	3	4	5

**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

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

Insulation thickness

50 mm

Nominal size

160 mm

Length

1000 mm

Type of connection

Spigot with lip seal on both ends

## Variants

### 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
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### CF/ .../BK2

#### Variant

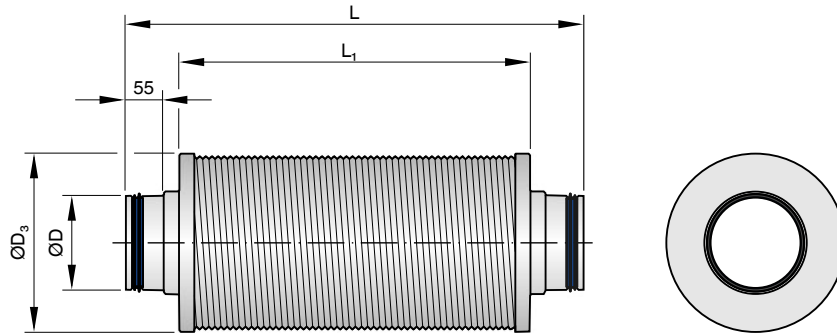
- Circular silencer for the reduction of noise
  - With raised edges to make detachable connections to the ducting
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## Dimensions and weight

The tables show the available nominal sizes

CF



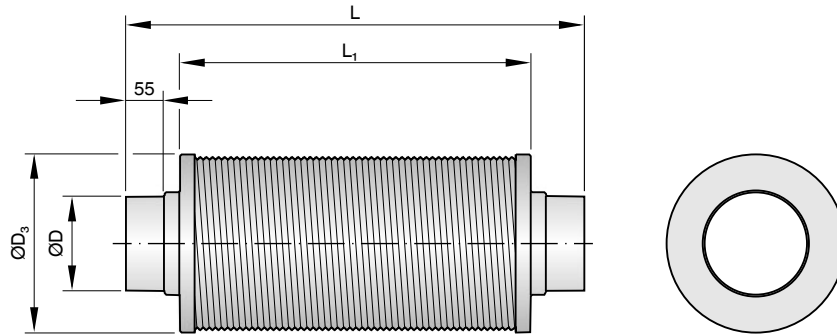
### CF, dimensions

NS	ØD <sub>3</sub> (CF-025)	ØD <sub>3</sub> (CF-050)	ØD
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

FL <sub>N</sub>	FL	L <sub>1</sub>
500	650	500
1000	1150	1000
1500	1650	1500
2000	2150	2000

CF/.../AS2



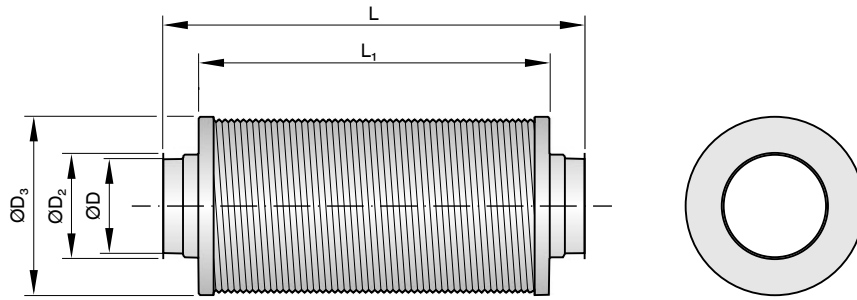
CF/.../AS2, dimensions

NS	ØD <sub>3</sub> (CF-025)	ØD <sub>3</sub> (CF-050)	ØD
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

FL <sub>N</sub>	FL	L <sub>1</sub>
500	650	500
1000	1150	1000
1500	1650	1500
2000	2150	2000

CF/.../BK2



**CF/.../BK2, dimensions**

NS	ØD <sub>3</sub> (CF-025)	ØD <sub>3</sub> (CF-050)	ØD	ØD <sub>2</sub>
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**

FL <sub>N</sub>	FL	L <sub>1</sub>
500	638	500
1000	1138	1000
1500	1638	1500
2000	2138	2000

**CF, weights**

NS	CF-025				CF-050			
	500	1000	1500	2000	500	1000	1500	2000
80	1	1	2	2	1	2	2	3
100	1	1	2	2	1	2	3	3
125	1	2	2	3	1	2	3	4
160	1	2	3	3	1	2	3	4
200	1	2	3	4	2	3	4	5
250	2	3	4	5	2	4	5	6
315	2	3	5	6	2	4	6	7
400	3	4	6	7	3	5	7	9



## Product details

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

## Explanation

<b>ØD</b> [mm] Outer diameter of the spigot	Weight
<b>ØD<sub>3</sub></b> [mm] Inside diameter of the socket-type spigot	<b>f<sub>m</sub></b> [Hz] Octave band centre frequency
<b>ØD<sub>3</sub></b> [mm] Outer diameter of circular silencers	<b>L<sub>WA</sub></b> [dB(A)] A-weighted sound power level of air-regenerated noise
<b>L<sub>N</sub></b> [mm] Nominal length	<b>D<sub>e</sub></b> [dB] Insertion loss
<b>L</b> [mm] Length of sound attenuator including spigot (always in airflow direction)	<b>q<sub>v</sub></b> [m <sup>3</sup> /h]; [l/s] Volume flow rate
<b>L<sub>t</sub></b> Length of acoustic cladding and acoustically effective length	<b>Δp<sub>t</sub></b> [Pa] Total differential pressure
<b>T</b> [mm] Splitter thickness	<b>Lengths</b> All lengths are given in millimetres [mm] unless stated otherwise.
<b>n</b> [ ] Number of flange screw holes	All sound power levels are based on 1 pW.
<b>m</b> [kg]	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 given as 50 dB, based on practical conditions.