

# Circular Silencer

Rigid and flexible construction  
Type CA · CB · CF · CS



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**Type CA**



**Type CB**



TROX circular silencers type CA · CB · CF · CS are intended for use in room air conditioning systems.

In air distribution systems they can be used to attenuate fan noise and to reduce the air-regenerated noise of air terminal units.

To avoid sound transmission through ventilation ducting between adjacent rooms they can be integrated into the duct system as so called cross talk silencers.

Further, current information on application, selection as well as silencers available can be found in the "Technical Documents" download area of our website.

Also available on the internet is the on-line design programme "silencers" for the design and selection of our units.

## Special constructions

Due to the technical co-ordination necessary, special constructions are only available on request.

## Circular silencer Type CA

The outer casing and perforated inner duct of circular silencers type CA are galvanised sheet steel. The non-combustible acoustic material is available in insulation thicknesses of 50 mm or 100 mm.

Inlet and outlet connection options available:

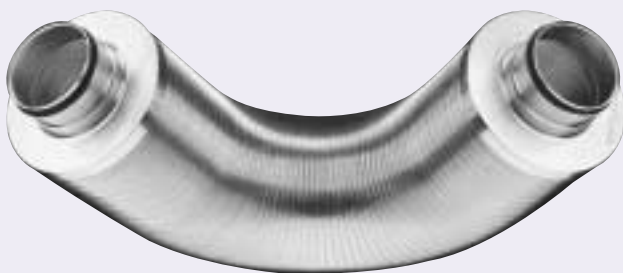
- Spigots with groove for lip seal
- Spigots with lip seal
- Flanges according to DIN EN 12220

## Circular silencer Type CB

Type CB attenuators are the same as the type CA models, but have an additional sound-absorbing pod for higher insertion loss.

The sound-absorbing pod fitted in the centre has a galvanised, perforated sheet covering and a coned end to reduce pressure drop.

**Type CF**



**Type CS**



## **Circular silencer Type CS**

The outer casing and perforated inner duct of circular silencers Type CS are aluminium.

The non-combustible acoustic material is available in insulation thicknesses of 25 mm or 50 mm.

Inlet and outlet connection options available:

- Spigots with groove for lip seal
- Spigots with lip seal
- Socket type spigots
- Spigots with raised edges for quick locking system

## **Circular silencer Type CF**

The circular silencer Type CF is the flexible construction of Type CS.

The circular silencer with a high degree of flexibility means that they can be fitted in complicated duct systems and in restricted spaces.

# Construction · Dimensions · CA · CB

## Construction

The table below shows weights and the sizes of silencers available.

## Constructional features

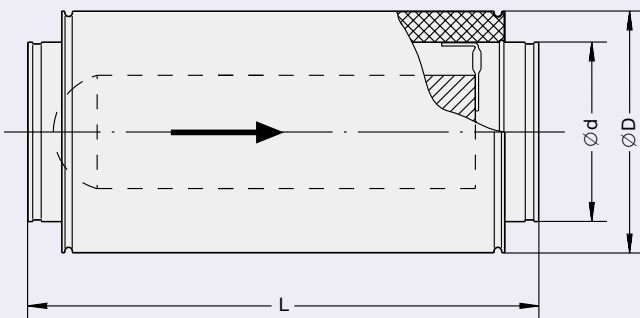
- Circular silencer in rigid construction
- Insertion loss tested according to DIN EN ISO 7235
- Casing air leakage complies with DIN EN 1751, class A
- Construction with spigot connections suitable for circular connecting ducts to DIN EN 1506 or DIN EN 13180 with groove for lip seal (if lip seals are required, these will be factory fitted)
- Flange construction with flange drilling to DIN 12220

## Materials

- Casing, perforated inner duct and pod (CB only) galvanised sheet steel.
- Lining is mineral wool conforming to DIN 4102, fire rating class A2, with RAL quality mark RAL-GZ 388, bio-degradable as defined by TRGS 905 and EU directive 97/69/EG
- Mineral wool faced with fibreglass as protection against erosion suitable for air velocities up to 20 m/s

### Type CA · CB (Type CB shown)

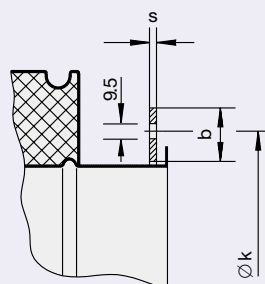
Construction with plug type spigots (standard)



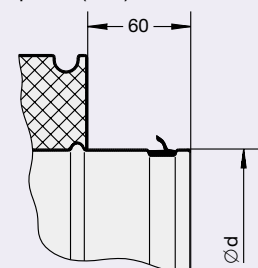
Insulation thickness 50 mm:  $\varnothing D = \varnothing d + 100$  mm  
 Insulation thickness 100 mm:  $\varnothing D = \varnothing d + 200$  mm

1) Reduced length for flange construction 10 mm (VF1) or 20 mm (VF2)

Flange construction (VF) <sup>1)</sup>



Construction with lip seal (VD2)



Casing air leakage complies with DIN EN 1751, class A

### Dimensions in mm

Nominal size	Plain flange to DIN EN 12220			
	Ø d in mm	Ø k in mm	b x s in mm	No. of holes
100	99	132	25 x 3	4
125	124	157	25 x 3	4
160	159	192	25 x 4	6
200	199	233	25 x 4	6
250	249	283	25 x 4	6
315	314	352	30 x 4	8
400	399	438	30 x 4	8
450	448	488	30 x 4	8
500	498	538	30 x 4	8
560	558	600	35 x 4	12
630	628	670	35 x 4	12
710	708	750	35 x 4	12
800	798	840	35 x 4	16
900	898	940	35 x 4	16
1000	998	1041	35 x 4	16

### Weight in kg

Nominal size	CA050 L in mm			CA100 L in mm			CB050 L in mm			CB100 L in mm		
	500	1000	1500	500	1000	1500	500	1000	1500	500	1000	1500
100	4	7		6	11							
125	5	9		7	13							
160	7	12		9	16							
200	7	13		9	17							
250	9	16	22	11	20	29	10	17	24	12	21	31
315	12	20	28	14	25	35	13	21	30	15	26	37
400	15	25	34	18	30	42	16	27	38	19	32	46
450						46				21	35	50
500						52				22	38	56
560						55				26	44	62
630						62				30	49	69
710						68				33	55	77
800						76				37	61	86
900										40	68	95
1000										45	75	106

# Construction · Dimensions · CF · CS

## Construction

The table below shows weights and the sizes of silencers available. (Type CS max length: 1500 mm).

## Constructional features

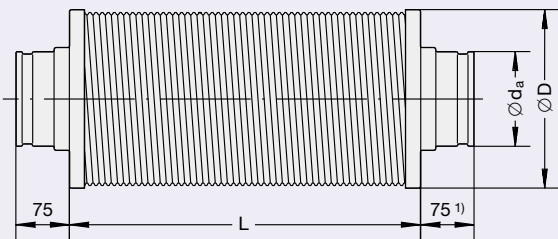
- Circular silencer in rigid (CS) or flexible (CF) construction
- Insertion loss tested according to DIN EN ISO 7235
- Casing air leakage complies with DIN EN 1751, class A.
- Construction with spigot connections suitable for circular connecting ducts to DIN EN 1506 or DIN EN 13180 with groove for lip seal (if lip seals are required, these will be factory fitted)

## Materials

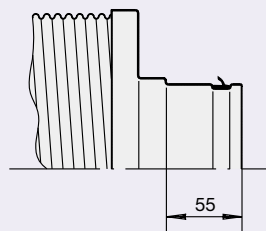
- Outer casing and inner duct are aluminium
- Lining is mineral wool conforming to DIN 4102, fire rating class A2, with RAL quality mark RAL-GZ 388, bio-degradable as defined by TRGS 905 and EU directive 97/69/EG
- Mineral wool faced with fibreglass as protection against erosion suitable for air velocities up to 20 m/s

### Type CF · CS (Type CF shown)

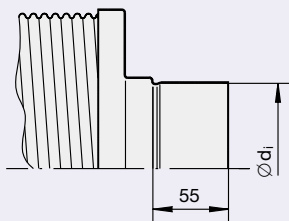
Construction with plug type spigots (standard)



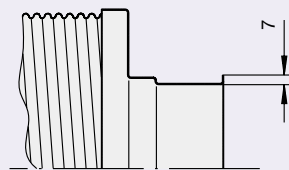
Construction with lip seal (VD2)



Construction with socket type spigots (AS2)



Construction with raised edges for quick locking system (BK2)



1) 69 mm for construction with raised edges

Casing air leakage complies with DIN EN 1751, class A

### Dimensions in mm

Nominal size	Ø da in mm	Ø di in mm	Insulation thickness	
			25 mm Ø D in mm	50 mm Ø D in mm
80	79	80	135	191
100	99	100	160	211
125	124	125	191	235
160	159	160	221	271
200	199	200	261	311
250	249	250	311	366
315	314	315	376	426
400	399	400	461	511

### Weight in kg

Nominal size	CF025 L in mm				CF050 L in mm				CS025 L in mm			CS050 L in mm		
	500	1000	1500	2000	500	1000	1500	2000	500	1000	1500	500	1000	1500
80	0.6	1.0	1.5	1.9	0.9	1.5	2.2	2.8	1.0	1.8	2.6	1.4	2.6	3.7
100	0.8	1.3	1.7	2.2	1.1	1.8	2.5	3.2	1.2	2.1	3.1	1.6	2.9	4.2
125	0.9	1.5	2.1	2.7	1.2	2.0	2.9	3.7	1.4	2.5	3.7	1.9	3.3	4.7
160	1.1	1.8	2.5	3.2	1.4	2.4	3.3	4.3	1.6	2.9	4.2	2.1	3.8	5.4
200	1.3	2.2	3.0	3.9	1.7	2.9	4.0	5.1	2.0	3.6	5.2	2.6	4.6	6.5
250	1.6	2.7	3.7	4.7	2.1	3.5	4.8	6.2	2.5	4.4	6.2	3.1	5.5	7.8
315	1.9	3.2	4.5	5.7	2.4	4.0	5.6	7.2	2.9	5.2	7.5	3.5	6.2	8.9
400	2.5	4.1	5.6	7.2	3.1	5.1	7.1	9.1	3.7	6.6	9.4	4.5	7.9	11.3

# Insertion Loss CA

## Insertion loss $D_e$

From the test conditions described in DIN EN ISO 7235, the duct/reverberation chamber method was chosen. This method involves an empty duct being exposed to a noise, the third octave levels of which are measured in the connecting reverberation chamber under defined conditions. The silencer to be tested is then inserted in the empty duct and the measurement repeated. The difference between the two measurements is the "insertion loss  $D_e$ "

The octave values are calculated from the third octave measurements.

Laboratory measurements exceeding 50 dB are indicated as 50 dB, in line with common practice.

## Pressure drop; Air-regenerated noise

Pressure drop and air-regenerated noise do not vary significantly from the values of the air flowing in circular ducts.

## Example

Given: TVR nominal size 315 for supply air  
 $\dot{V} = 410 \text{ l/s}$  or  $1480 \text{ m}^3/\text{h}$   
 Total pressure differential: 200 Pa  
 Required sound pressure level in the room 45 dB(A)

## Calculation procedure

$f_m$ in Hz	63	125	250	500	1k	2k	4k	8k
TVR nominal size 315 <sup>*)</sup> to ISO 5135-1999 $L_w$ in dB	68	66	59	55	52	56	55	48
CA050 / L = 1500 mm $D_e$ in dB	2	3	7	17	35	17	9	9
	66	63	52	38	17	39	46	39
End reflection attenuation nominal size 315 in dB	12	7	3	1	0	0	0	0
Room attenuation in dB	5	5	5	5	5	5	5	5
A-weighting	-26	-16	-9	-3	0	1	1	-1
Corrected level	23	35	35	29	12	35	42	33

Sound pressure level of air-regenerated noise  $L_{pA} = 45 \text{ dB(A)}$

<sup>\*)</sup> Data from leaflet 5/3/EN/...

## Insertion loss $D_{e, \text{oct}}$ in dB

### Type CA050 (without pod); Insulation thickness = 50 mm

Nominal size	Length L = 500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
100	3	5	8	14	23	30	18	13
125	3	4	7	12	21	23	12	10
160	2	3	6	10	18	17	8	8
200	1	2	5	9	16	13	5	6
250	1	2	4	8	14	10	3	4
315	1	1	3	7	12	7	2	3
400	1	1	3	6	11	6	1	2

### Type CA100 (without pod); Insulation thickness = 100 mm

Nominal size	Length L = 500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
100	4	9	12	18	35	33	26	14
125	4	7	10	17	31	26	19	11
160	3	6	9	15	28	20	13	8
200	3	5	8	15	25	16	9	7
250	2	4	7	14	21	13	6	5
315	2	3	6	13	18	10	4	4
400	1	3	6	12	17	8	3	3

Nominal size	Length L = 1000 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
100	4	9	15	27	42	50	43	25
125	4	7	12	23	38	42	29	20
160	3	5	9	19	34	30	18	15
200	2	4	8	16	31	22	12	11
250	2	3	6	14	28	17	8	9
315	1	2	5	12	25	13	5	6
400	1	2	4	10	22	10	3	5

Nominal size	Length L = 1000 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
100	5	17	24	35	50	50	47	25
125	5	14	21	32	48	44	33	20
160	5	11	18	30	42	33	22	15
200	4	9	16	28	38	26	16	12
250	3	8	14	26	33	21	11	9
315	3	6	12	24	29	16	8	7
400	2	5	11	23	25	12	5	5
450	2	5	10	22	23	11	4	5
500	2	4	10	21	22	10	4	4

Nominal size	Length L = 1500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	2	4	8	19	39	23	13	12
315	2	3	7	17	35	17	9	9
400	1	2	6	14	31	13	6	7

Nominal size	Length L = 1500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	4	11	21	37	41	27	15	12
315	3	9	18	34	35	21	10	9
400	3	7	16	32	31	16	7	7
450	2	6	15	31	29	14	6	6
500	2	6	14	30	27	13	5	6
560	2	5	13	29	25	11	4	5
630	2	5	12	28	23	10	4	4
710	2	5	11	27	22	9	3	4
800	2	4	11	26	20	8	2	3

# Insertion Loss CB

## Nomenclature

- $f_m$  in Hz: Octave band centre frequency
- $L$  in mm: Length
- $L_W$  in dB: Sound power level of the air-regenerated noise
- $L_{WA}$  in dB(A): A-weighted sound power level of air-regenerated noise
- $L_{pA}$  in dB(A): A-weighted sound pressure level of air-regenerated noise
- $L_p$  in dB: Sound pressure level
- $D_{e, oct.}$  in dB: Insertion loss
- $v_{tot}$  in m/s: Air velocity based on cross-sectional area
- $\Delta p_g$  in Pa: Total pressure differential

All sound power levels are based on 1 pW, all sound pressure levels on 20  $\mu$ Pa.

## Insertion loss $D_{e, oct.}$ in dB

### Type CB050 (with pod); Insulation thickness = 50 mm

Nominal size	Length L = 500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	1	3	6	11	17	20	23	23
315	1	3	5	10	15	17	18	18
400	1	2	5	8	13	15	14	13

Nominal size	Length L = 1000 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	3	5	9	18	42	48	47	35
315	2	5	8	15	40	42	36	27
400	2	4	6	12	38	35	28	20

Nominal size	Length L = 1500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	5	7	10	23	50	50	50	44
315	5	6	8	19	50	50	50	34
400	5	5	7	15	50	50	39	25

### Type CB 100 (with pod); Insulation thickness = 100 mm

Nominal size	Length L = 500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	2	5	10	17	24	23	26	24
315	2	5	9	16	21	20	21	18
400	1	4	8	14	18	17	16	14
450	1	4	7	14	16	16	14	12
500	1	3	7	13	16	15	13	11
560	1	3	6	13	15	14	11	10
630	1	3	6	12	15	13	10	9
710	1	3	6	12	14	12	9	8
800	1	2	5	11	13	11	8	7
900	1	2	5	10	13	10	7	6
1000	1	2	5	10	12	10	6	5

Nominal size	Length L = 1000 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	5	10	17	30	47	50	50	36
315	4	9	15	27	44	45	39	27
400	3	7	13	25	40	38	29	21
450	3	7	12	24	39	35	26	18
500	2	6	12	23	38	33	24	17
560	2	6	11	22	36	31	21	15
630	2	5	11	21	34	29	19	13
710	2	5	10	20	33	27	17	12
800	2	5	9	19	31	25	14	10
900	2	4	9	18	30	23	13	9
1000	2	4	8	17	29	22	12	8

Nominal size	Length L = 1500 mm							
	$f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
250	7	14	22	41	50	50	50	44
315	7	12	20	37	50	50	50	34
400	6	10	17	33	50	50	40	26
450	5	9	16	31	50	50	36	23
500	5	9	16	30	50	50	33	21
560	4	8	15	30	50	48	29	19
630	4	8	14	29	50	44	26	16
710	4	7	13	28	50	41	23	14
800	3	6	13	26	49	37	20	12
900	3	6	12	24	47	34	17	11
1000	3	6	11	23	45	33	16	10

# Air-regenerated Noise · Pressure Differential CB

## Air-regenerated noise

The sound power levels stated for regenerated noise in the silencer were measured in the TROX laboratory to DIN EN ISO 7235 and evaluated to ISO 5135.

The evaluation allows for the end reflection losses from the connection duct when the sound exits into the reverberation chamber.

The values listed below show the actual regenerated noise in duct.

To calculate the sound power level radiating into the space, the end reflection from the duct connecting to the space or the end reflection from the grille or diffuser must be subtracted from the listed values.

## Pressure differential

The pressure losses stated were calculated in the TROX laboratory by measuring the difference in pressure between entering and exiting the silencer, with the unit installed in smooth straight ducting.

The values apply to an silencer length of 1000 mm.

See table below for correction factors for other lengths.

Pressure drop-correction factor for length $\neq$ 1000 mm						
Length in mm	Nominal size					
	250	315	400	450	500	560
500	0.72	0.76	0.80	0.82	0.82	0.83
1500	1.28	1.24	1.20	1.18	1.18	1.17

## Air-regenerated noise · Pressure differential

### Nominal size 250 mm

$\dot{V}$		$v_{tot}$	$\Delta p_g$	L <sub>w</sub> in dB								L <sub>WA</sub> in dB(A)
in l/s	in m <sup>3</sup> /h			in m/s	in Pa	f <sub>m</sub> in Hz						
				63	125	250	500	1000	2000	4000	8000	
192	690	4	18	42	38	36	33	29	22	<15	<15	34
240	862	5	28	48	43	40	38	34	28	21	<15	39
287	1035	6	41	54	47	44	42	38	33	26	17	44
335	1207	7	56	59	51	47	45	42	37	30	21	47
383	1380	8	73	63	54	50	48	45	41	34	26	51
431	1552	9	92	67	57	53	50	47	44	37	29	53
479	1725	10	114	71	60	55	52	50	46	40	32	56
527	1897	11	138	75	63	57	54	52	48	43	35	58
575	2070	12	164	79	66	59	56	53	50	45	38	60

### Nominal size 315 mm

$\dot{V}$		$v_{tot}$	$\Delta p_g$	L <sub>w</sub> in dB								L <sub>WA</sub> in dB(A)
in l/s	in m <sup>3</sup> /h			in m/s	in Pa	f <sub>m</sub> in Hz						
				63	125	250	500	1000	2000	4000	8000	
306	1101	4	16	43	40	37	34	29	22	<15	<15	35
382	1376	5	26	49	44	42	39	35	29	20	<15	40
459	1651	6	37	54	48	46	43	39	34	25	16	45
535	1927	7	50	58	52	49	46	43	38	30	21	48
612	2202	8	66	62	55	52	49	46	41	34	25	52
688	2477	9	83	66	58	54	52	49	44	37	29	54
765	2752	10	102	69	61	56	54	51	47	40	32	57
841	3028	11	124	73	63	58	56	53	49	43	35	59
917	3303	12	147	76	65	60	58	55	51	45	37	61

### Nominal size 400 mm

$\dot{V}$		$v_{tot}$	$\Delta p_g$	L <sub>w</sub> in dB								L <sub>WA</sub> in dB(A)
in l/s	in m <sup>3</sup> /h			in m/s	in Pa	f <sub>m</sub> in Hz						
				63	125	250	500	1000	2000	4000	8000	
495	1783	4	15	44	41	39	35	30	22	<15	<15	36
619	2228	5	23	49	46	44	40	36	28	19	<15	41
743	2674	6	33	54	50	47	45	40	33	25	<15	45
867	3119	7	46	58	53	51	48	44	38	29	19	49
990	3565	8	60	61	56	53	51	47	41	33	24	52
1114	4011	9	75	65	59	56	53	50	45	37	27	55
1238	4456	10	93	68	61	58	55	52	47	40	31	58
1362	4902	11	113	71	64	60	57	55	50	43	34	60
1485	5348	12	134	74	66	62	59	56	52	45	37	62

### Nominal size 450 mm

$\dot{V}$		$v_{tot}$	$\Delta p_g$	L <sub>w</sub> in dB								L <sub>WA</sub> in dB(A)
in l/s	in m <sup>3</sup> /h			in m/s	in Pa	f <sub>m</sub> in Hz						
				63	125	250	500	1000	2000	4000	8000	
628	2260	4	14	45	42	40	36	30	21	<15	<15	36
785	2825	5	22	50	47	44	41	36	28	18	<15	41
942	3390	6	32	54	50	48	45	40	33	24	<15	46
1099	3955	7	44	58	54	51	49	44	38	29	19	50
1255	4520	8	57	61	57	54	51	48	41	33	23	53
1412	5085	9	72	65	59	56	54	50	45	37	27	56
1569	5649	10	89	68	62	59	56	53	47	40	30	58
1726	6214	11	108	70	64	61	58	55	50	43	33	61
1883	6779	12	128	73	66	62	60	57	52	45	36	63

### Nominal size 500 mm

$\dot{V}$		$v_{tot}$	$\Delta p_g$	L <sub>w</sub> in dB								L <sub>WA</sub> in dB(A)
in l/s	in m <sup>3</sup> /h			in m/s	in Pa	f <sub>m</sub> in Hz						
				63	125	250	500	1000	2000	4000	8000	
776	2794	4	14	45	43	40	36	29	21	<15	<15	36
970	3492	5	22	50	47	45	41	36	28	18	<15	42
1164	4190	6	31	54	51	49	46	40	33	24	<15	46
1358	4889	7	42	58	54	52	49	44	38	29	18	50
1552	5587	8	55	61	57	55	52	48	41	33	23	53
1746	6286	9	70	65	60	57	55	51	45	36	26	56
1940	6984	10	86	67	62	59	57	53	47	39	30	59
2134	7682	11	104	70	64	61	59	55	50	42	33	61
2328	8381	12	124	73	66	63	61	57	52	45	36	63

### Nominal size 560 mm

$\dot{V}$		$v_{tot}$	$\Delta p_g$	L <sub>w</sub> in dB								L <sub>WA</sub> in dB(A)
in l/s	in m <sup>3</sup> /h			in m/s	in Pa	f <sub>m</sub> in Hz						
				63	125	250	500	1000	2000	4000	8000	
975	3509	4	13	46	43	41	36	29	20	<15	<15	37
1218	4386	5	21	51	48	46	42	36	27	17	<15	42
1462	5263	6	30	55	52	49	46	40	33	23	<15	46
1706	6140	7	41	58	55	53	49	45	37	28	18	50
1949	7018	8	53	62	58	55	53	48	41	32	22	53
2193	7895	9	67	65	60	58	55	51	44	36	26	56
2437	8772	10	83	67	63	60	57	53	47	39	29	59
2680	9649	11	101	70	65	62	59	56	50	42	32	61
2924	10527	12	120	72	67	64	61	58	52	45	35	63

# Air-regenerated Noise · Pressure Differential CB

Pressure drop-correction factor for length $\neq$ 1000 mm					
Length in mm	Nominal size				
	630	710	800	900	1000
500	0.85	0.86	0.88	0.89	0.89
1500	1.15	1.14	1.12	1.11	1.11

## Air-regenerated noise · Pressure differential

### Nominal size 630 mm

$\dot{V}$		$v_{tot}$ in m/s	$\Delta p_g$ in Pa	$L_w$ in dB $f_m$ in Hz								$L_{WA}$ in dB(A)
in l/s	in m <sup>3</sup> /h			63	125	250	500	1000	2000	4000	8000	
1235	4446	4	13	47	44	41	36	29	20	<15	<15	37
1544	5558	5	20	51	49	46	42	35	27	16	<15	42
1853	6669	6	29	55	52	50	46	40	32	22	<15	47
2161	7781	7	39	59	56	53	50	45	37	27	17	50
2470	8892	8	52	62	58	56	53	48	41	32	21	54
2779	10004	9	65	65	61	58	56	51	44	35	25	57
3088	11115	10	81	67	63	61	58	54	47	39	28	59
3396	12227	11	97	70	65	63	60	56	50	41	31	61
3705	13339	12	116	72	67	64	62	58	52	44	34	64

### Nominal size 710 mm

$\dot{V}$		$v_{tot}$ in m/s	$\Delta p_g$ in Pa	$L_w$ in dB $f_m$ in Hz								$L_{WA}$ in dB(A)
in l/s	in m <sup>3</sup> /h			63	125	250	500	1000	2000	4000	8000	
1570	5653	4	12	47	45	41	36	29	19	<15	<15	37
1963	7066	5	20	52	49	47	42	35	26	16	<15	43
2355	8480	6	28	56	53	51	46	40	32	22	<15	47
2748	9893	7	38	59	56	54	50	44	36	27	16	51
3141	11306	8	50	62	59	57	53	48	40	31	20	54
3533	12720	9	63	65	62	59	56	51	44	35	24	57
3926	14133	10	78	67	64	61	58	54	47	38	28	59
4318	15546	11	94	70	66	63	61	56	50	41	31	62
4711	16959	12	112	72	68	65	62	58	52	44	34	64

### Nominal size 800 mm

$\dot{V}$		$v_{tot}$ in m/s	$\Delta p_g$ in Pa	$L_w$ in dB $f_m$ in Hz								$L_{WA}$ in dB(A)
in l/s	in m <sup>3</sup> /h			63	125	250	500	1000	2000	4000	8000	
1996	7184	4	12	48	45	42	36	28	18	<15	<15	37
2494	8980	5	19	52	50	47	42	35	25	15	<15	43
2993	10776	6	27	56	54	51	47	40	31	21	<15	47
3492	12572	7	37	60	57	54	50	44	36	26	15	51
3991	14368	8	49	62	60	57	54	48	40	30	20	54
4490	16164	9	61	65	62	60	56	51	43	34	23	57
4989	17960	10	76	68	64	62	59	54	47	37	27	60
5488	19756	11	92	70	66	64	61	56	49	40	30	62
5987	21552	12	109	72	68	66	63	59	52	43	33	64

### Nominal size 900 mm

$\dot{V}$		$v_{tot}$ in m/s	$\Delta p_g$ in Pa	$L_w$ in dB $f_m$ in Hz								$L_{WA}$ in dB(A)
in l/s	in m <sup>3</sup> /h			63	125	250	500	1000	2000	4000	8000	
2528	9100	4	12	48	46	42	36	28	18	<15	<15	38
3160	11375	5	18	53	51	47	42	34	25	<15	<15	43
3792	13650	6	27	57	54	51	47	40	30	20	<15	48
4424	15925	7	36	60	58	55	51	44	35	25	<15	51
5056	18200	8	47	63	60	58	54	48	39	29	19	54
5687	20475	9	60	66	63	60	57	51	43	33	23	57
6319	22750	10	74	68	65	63	59	54	46	37	26	60
6951	25025	11	90	70	67	65	61	56	49	40	29	62
7583	27300	12	107	72	69	66	63	59	51	42	32	64

### Nominal size 1000 mm

$\dot{V}$		$v_{tot}$ in m/s	$\Delta p_g$ in Pa	$L_w$ in dB $f_m$ in Hz								$L_{WA}$ in dB(A)
in l/s	in m <sup>3</sup> /h			63	125	250	500	1000	2000	4000	8000	
3123	11242	4	12	49	46	42	36	27	17	<15	<15	38
3903	14052	5	18	54	51	47	42	34	24	<15	<15	43
4684	16863	6	26	57	55	52	47	39	30	19	<15	48
5465	19673	7	36	61	58	55	51	44	35	24	<15	51
6246	22484	8	46	63	61	58	54	48	39	29	18	55
7026	25294	9	59	66	63	61	57	51	42	33	22	57
7807	28105	10	72	68	65	63	59	54	46	36	25	60
8588	30915	11	88	70	67	65	62	56	49	39	29	62
9368	33726	12	104	72	69	67	64	59	51	42	31	64

# Insertion Loss CF · CS

## Insertion loss $D_e$

From the test conditions described in DIN EN ISO 7235, the duct/reverberation chamber method was chosen. This method involves an empty duct being exposed to a noise, the third octave levels of which are measured in the connecting reverberation chamber under defined conditions. The silencer to be tested is then inserted in the empty duct and the measurement repeated. The difference between the two measurements is the "insertion loss  $D_e$ "

The octave values are calculated from the third octave measurements.

Laboratory measurements exceeding 50 dB are indicated as 50 dB, in line with common practice.

## Pressure drop; Air-regenerated noise

Pressure drop and air-regenerated noise do not vary significantly from the values of the air flowing in circular ducts.

### Insertion loss $D_{e, oct.}$ in dB

#### Type CF025.../CS025; Insulation thickness = 25 mm

Nominal size	Length L = 500 mm $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	1	2	4	9	20	16	15	10
100	1	1	4	8	17	14	12	9
125	1	1	3	8	15	11	9	7
160	1	1	2	5	14	10	8	6
200	1	1	2	5	14	9	6	5
250	0	1	2	5	13	8	5	4
315	0	1	1	4	9	7	4	3
400	0	0	1	3	6	5	3	3

Nominal size	Length L = 1000 mm $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	3	5	10	21	44	46	37	23
100	2	3	8	17	44	34	28	21
125	2	3	7	17	43	30	24	17
160	1	1	4	12	40	27	20	16
200	1	1	3	11	35	22	16	13
250	1	1	3	11	30	19	12	10
315	0	1	3	9	21	10	12	8
400	0	1	3	8	16	8	8	7

Nominal size	Length L = 1500 mm $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	3	5	13	28	47	48	44	31
100	2	4	12	24	47	41	34	26
125	2	3	10	22	45	34	28	20
160	2	2	6	16	42	30	25	19
200	2	2	5	15	41	27	19	15
250	1	2	5	15	38	25	14	11
315	1	2	4	12	27	19	13	10
400	1	1	4	10	23	17	11	8

Nominal size	Length L = 2000 mm (only type CF) $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	3	6	15	35	50	50	50	39
100	2	5	15	30	50	49	41	31
125	2	4	12	28	48	37	32	23
160	2	3	8	20	47	34	28	21
200	1	3	7	19	47	32	20	16
250	1	3	6	17	43	30	15	13
315	1	2	6	14	32	27	13	11
400	1	2	4	10	23	22	11	9

#### Type CF050.../CS050; Insulation thickness = 50 mm

Nominal size	Length L = 500 mm $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	4	5	11	20	30	27	16	12
100	3	4	9	17	24	21	12	10
125	2	3	7	14	20	16	11	9
160	2	2	6	12	17	14	8	6
200	1	2	5	12	16	11	6	5
250	1	2	4	12	15	8	5	4
315	1	1	3	9	12	6	4	3
400	1	1	3	7	9	6	4	3

Nominal size	Length L = 1000 mm $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	8	14	23	47	50	50	44	27
100	7	10	21	38	50	50	29	22
125	5	7	16	32	50	42	25	22
160	4	5	12	26	47	34	20	16
200	3	5	11	25	45	26	16	13
250	2	4	9	25	40	19	12	10
315	1	4	8	22	28	13	12	8
400	0	4	8	18	23	11	10	7

Nominal size	Length L = 1500 mm $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	11	14	33	48	50	50	47	37
100	10	11	27	44	50	50	37	30
125	7	9	21	41	50	46	33	27
160	5	7	17	37	48	42	24	19
200	4	6	14	37	48	34	18	15
250	3	5	11	35	45	25	14	11
315	2	4	10	26	35	19	12	10
400	2	4	9	20	26	17	11	8

Nominal size	Length L = 2000 mm (only type CF) $f_m$ in Hz							
	63	125	250	500	1k	2k	4k	8k
80	15	15	42	50	50	50	50	47
100	12	12	34	50	50	50	46	37
125	9	11	27	50	50	50	40	31
160	6	9	22	48	50	50	29	21
200	5	8	18	47	50	42	22	18
250	4	6	15	45	50	30	16	13
315	3	4	12	33	41	27	14	11
400	3	3	9	22	29	22	11	9

## Specification text Type CA050 or CA100

Type CA circular silencer for ventilation systems; insertion loss tested to DIN EN ISO 7235.

Absorption material non-combustible mineral wool with RAL quality mark RAL-GZ 388, to DIN 4102, fire rating class A2; with glass fibre scrim facing covered with perforated plate as protection against erosion suitable for air velocities up to 20 m/s. Casing and perforated inner duct galvanised sheet steel.

Spigot connections suitable for circular connecting ducts to DIN EN 1506 or DIN EN 13180 with groove for lip seal.

Casing air leakage complies with DIN EN 1751, class A

Dimensions:

Nominal size

Length in mm

Insulation thickness in mm

Flow rate in m<sup>3</sup>/h (in l/s)

Insertion loss in dB

at 250 Hz octave band centre frequency

Item

Type (in accordance with order code; see below)

CA...-

Make

TROX

## Specification text Type CB050 or CB100

Type CB circular silencer for ventilation systems; insertion loss, sound power level of air-regenerated noise and pressure drop tested to DIN EN ISO 7235.

Sound-absorbing pod for better acoustic performance. Coned end upstream to reduce pressure drop. Absorption material non-combustible mineral wool with RAL quality mark RAL-GZ 388, to DIN 4102, fire rating class A2; with glass fibre scrim facing covered with perforated plate as protection against erosion suitable for air velocities up to 20 m/s. Casing and perforated inner duct galvanised sheet steel.

Spigot connections on both ends suitable for circular connecting ducts to DIN EN 1506 or DIN EN 13180 with groove for lip seal.

Casing air leakage complies with DIN EN 1751, class A

Dimensions:

Nominal size

Length in mm

Insulation thickness in mm

Flow rate in m<sup>3</sup>/h (in l/s)

Insertion loss in dB

at 250 Hz octave band centre frequency

Max. permitted flow resistance in Pa (pressure differential)

Item

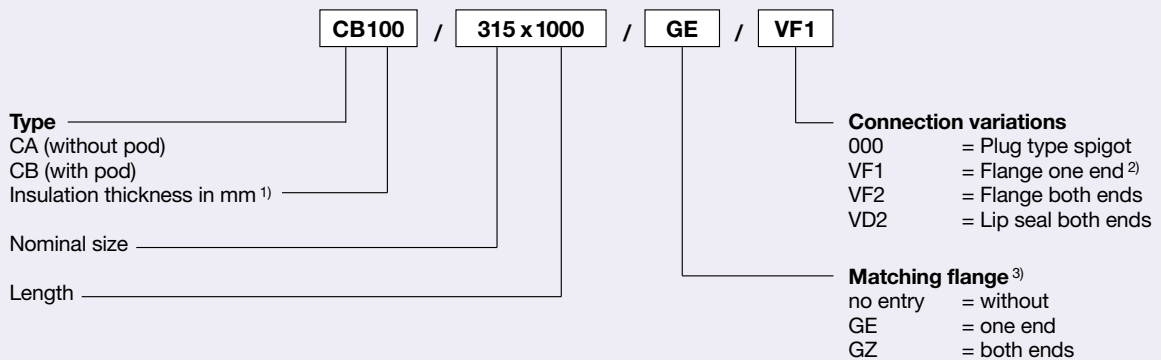
Type (in accordance with order code; see below)

CB...-

Make

TROX

## Order code

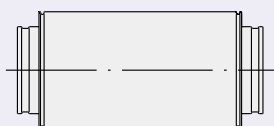


1) 50 mm up to size 400 possible. (If insulation details are missing from the order, standard delivery is 100 mm.)

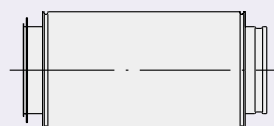
2) In type CB.../VF1: Standard flange and cone at the same end

3) Connection variation VF1 and VF2 only

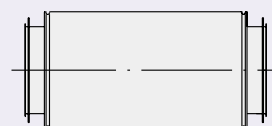
## Connection variations



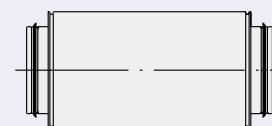
Plug type - 000 -



Flange one end - VF1 -



Flange both ends - VF2 -



Lip seal - VD2 -

# Order Details CF · CS

## Specification text Type CF025 or CF050

Flexible circular silencer Type CF for ventilation systems; Suitable for attenuation of air-regenerated noise and reduction of sound transmission to adjacent rooms. Insertion loss tested to DIN EN ISO 7235. Absorption material non-combustible mineral wool with RAL quality mark RAL-GZ 388, to DIN 4102, fire rating class A1. Outer casing and inner duct are aluminium.

Spigot connections suitable for circular connecting ducts to DIN EN 1506 or DIN EN 13180 with groove for lip seal.

Casing air leakage complies with DIN EN 1751, class A

Dimensions:

Nominal size

Length in mm

Insulation thickness in mm

Flow rate in m<sup>3</sup>/h (in l/s)

Insertion loss in dB  
at 250 Hz octave band centre frequency

Item

Type (in accordance with order code; see below)	CF...-
Make	TROX

## Specification text Type CS025 or CS050

Circular silencer Type CS for ventilation systems; Suitable for attenuation of air-regenerated noise and reduction of sound transmission to adjacent rooms. Insertion loss tested to DIN EN ISO 7235. Absorption material non-combustible mineral wool with RAL quality mark RAL-GZ 388, to DIN 4102, fire rating class A1. Outer casing and inner duct are aluminium.

Spigot connections suitable for circular connecting ducts to DIN EN 1506 or DIN EN 13180 with groove for lip seal.

Casing air leakage complies with DIN EN 1751, class A

Dimensions:

Nominal size

Length in mm

Insulation thickness in mm

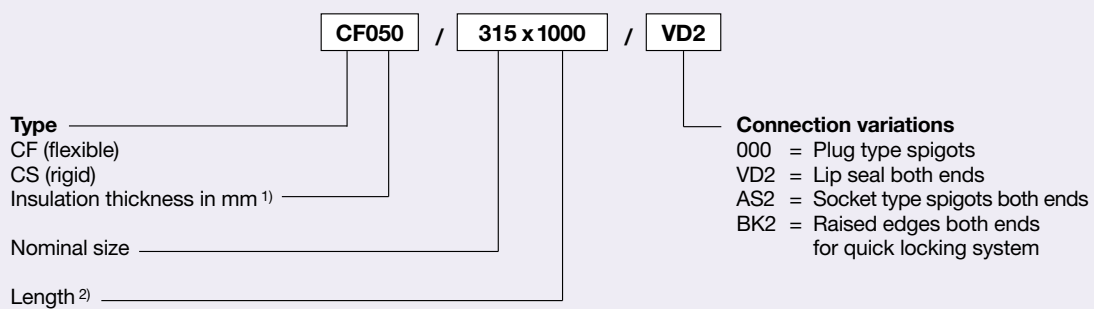
Flow rate in m<sup>3</sup>/h (in l/s)

Insertion loss in dB  
at 250 Hz octave band centre frequency

Item

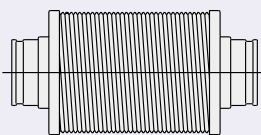
Type (in accordance with order code; see below)	CS...-
Make	TROX

## Order code

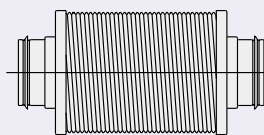


1) 25 mm and 50 mm available. (If insulation details are missing from the order, standard delivery is 50 mm.)  
2) Type CS maximum length 1500 mm. Type CF maximum length 2000 mm.

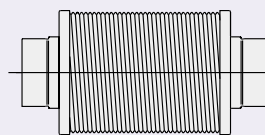
## Connection variations (Type CF shown)



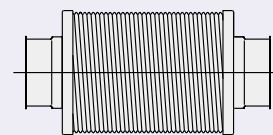
Plug type - 000 -



Lip seal - VD2 -



Socket type spigots - AS2 -



Raised edge - BK2 -