



**CIRCULAR SILENCER
TYPE CS**

TYPE CS

FOR THE REDUCTION OF NOISE IN CIRCULAR DUCTS, ALUMINIUM CONSTRUCTION

Circular silencers, in rigid 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

Application

Application

- Circular silencers Type CS for the reduction of air-regenerated 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

Special features

- Insertion loss measured according to ISO 7235
- Absorption material is non-combustible
- Insulation thickness 25 mm or 50 mm

Nominal sizes

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

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

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
- 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

- 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

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	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.

Sizing example

Given data

Circular duct nominal size 160

$V = 195 \text{ l/s}$ (702 m³/h)

$D_e = 5$ dB at 250 Hz

Quick sizing

CS025, length 1500 mm

CS050, length 500 mm

Selected

CS050, length 500 mm

$\Delta p_{st} = 4$ Pa

CS025 (insulation thickness 25 mm), insertion loss

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

CS050 (insulation thickness 50 mm), insertion loss

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

CS, differential pressure

Nominal size	V		Nennlänge [mm]		
	l/s	m³/h	500	1000	1500
Nominal size	V		Δp_{st}		
	l/s	m³/h	Pa		
80	20	72	2	4	6

	40	144	6	12	16
80	50	180	8	16	25
	55	198	12	25	35
100	30	108	2	2	4
	60	216	4	8	12
100	75	270	6	12	18
	90	324	8	18	25
125	50	180	2	2	4
	95	342	4	6	10
125	120	432	6	10	14
	145	522	6	14	20
160	80	288	2	2	2
	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
200	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
315	310	1116	<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	1245	4482	<2	2	4
	1495	5382	<2	4	4

Circular silencers for air conditioning systems, rigid 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 features

- Insertion loss measured according to ISO 7235
- Absorption material is non-combustible
- Insulation thickness 25 mm or 50 mm

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]
- V _____ [m³/h]
- D_e at 250 Hz _____ [dB]
- Δp_{st} _____ [Pa]

Order example: CS050/250x1500/VD2

Insulation thickness	50 mm
Nominal size	250 mm
Length	1500 mm
Type of connection	Spigot with lip seal on both ends

CS – 025 / 160x1000 / VD2



1 Type

CS Circular silencer

3 Nominal size [mm]

80
100
125
160
200
250
315
400

2 Insulation thickness [mm]

025 25
050 50

4 Nominal length [mm]

500
1000
1500

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

Variants, Dimensions and weight



CS

Variant

- Circular silencer for the reduction of noise
- Spigot

CS/.../AS2

Variant

- Circular silencer for the reduction of noise
- Socket-type spigots to make connections to the ducting

CS/.../BK2

Variant

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

CS, dimensions

Nominal size	CS-025 ØD ₃ mm	CS-050 ØD ₃ mm	ØD mm	ØD ₂ 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

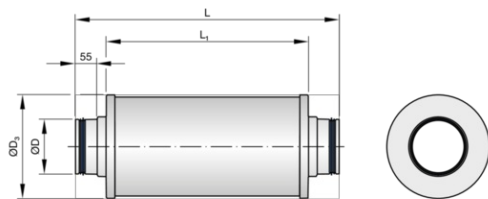
CS, lengths

Nominal length mm L _N	CS L mm	CS/.../AS2 L mm	CS/.../BK2 L mm	L ₁ mm
500	650	650	638	500
1000	1150	1150	1138	1000
1500	1650	1650	1638	1500

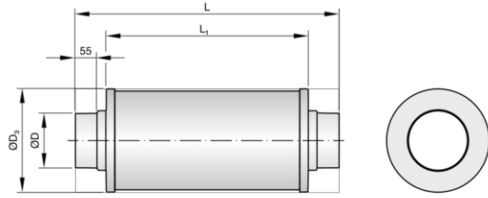
CS, weights

Nominal size	CS-025		CS-050		CS-050	
	500 m kg	1000 m kg	1500 m kg	500 m kg	1000 m kg	1500 m kg
80	1.0	1.8	2.6	1.4	2.6	3.7
100	1.2	2.1	3.1	1.6	2.9	4.2
125	1.4	2.5	3.7	1.9	3.3	4.7
160	1.6	2.9	4.2	2.1	3.8	5.4
200	2.0	3.6	5.2	2.6	4.6	6.5
250	2.5	4.4	6.2	3.1	5.5	7.8
315	2.9	5.2	7.5	3.5	6.2	8.9
400	3.7	6.6	9.4	4.5	7.9	11.3

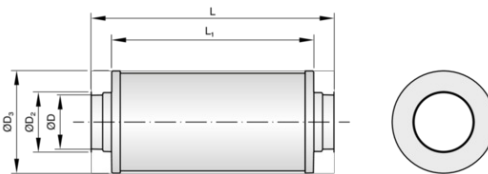
CS



CS/.../AS2



CS/.../BK2



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_m [Hz]

Octave band centre frequency

L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

D_e [dB]

Insertion loss

V [m³/h] and [l/s]

Volume flow rate

Δp_{st} [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.

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