CBE

Circular diffuser with unidirectional spread of supply air

QUICK FACTS

- Unidirectional spread, rotatable
- Short throw lengths
- Simple installation
- Can be used with commissioning box ALS
- Cleanable
- Suitable for concrete hollow-core floor/ceiling slabs.
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)							
CBE Size		25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m³/h	l/s	m³/h	l/s	m³/h
100		23	83	27	97	33	119
125		36	130	42	151	50	180
160		55	198	65	234	75	270
CBE Size	ALS Size	25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m³/h	l/s	m³/h	l/s	m³/h
100	100-125	16	58	21	76	27	97
125	100-125	26	94	33	119	41	148
160	125-160	40	144	52	187	68	245

Data valid for CBE in combination with ALS commissioning box, at a total pressure drop of 50 Pa.

**) L_{p10A} = Sound pressure incl. A-filter with 4 dB room attenuation and 10 m2 room absorption area.*

Technical description

Design

Circular single-cone diffuser for supply air. Consists of two parts: circular removable diffuser face with screening, plus fixing frame.

Materials and surface treatment

The terminal is manufactured in sheet steel. The fixing frame is made in galvanized sheet steel. The terminal is painted.

- Standard colour:
  - White semi-gloss, lustre 40, RAL 9003/NCS S 0500-N
- Alternative standard colours:
  - Silver gloss, lustre 80, RAL 9006
  - Grey aluminium gloss, lustre 80, RAL 9007
  - Blanc semi-brillant, lustre 40, RAL 9010
  - Black semi-gloss, lustre 35, RAL 9005
  - Grey semi-gloss, lustre 30, RAL 7037
- Non-painted finish and other colours available on request.

Accessories

Commissioning box:

ALS. Manufactured in galvanized sheet steel. Contains removable commissioning damper, fixed measurement unit and acoustic lining with reinforced surface layer, to Fire Resistance Class B-s1,d0 according to EN ISO 11925-2. Tightness class C on the housing according to SS-EN 12237.

Fixing frame:

CBET 1, a specially made fixing frame for frame installation in conrete hollow-core floor/ceiling slab systems.

Planning

CBE can be rotated through 360° in order to redirect the spread of supply air.

Installation

The mounting frame is pressed into the open end of the duct and fixed in place using blind rivets. When the commissioning box ALS is used, the spigot between ALS and CBE can be extended using normal circular ducting up to 500 mm long without having to extend the measuring tube or damper cords. See figure 1.

Commissioning with ALS

Commissioning must take place with the diffuser face mounted in place. The measurement tubes and damper cords are pulled out of the terminal through the slot.

Measurement accuracy and requirement on straight duct before the commisioning box, see Figure 1. The requirements of straigh duct depends on the type of disturbance before the commissioning box. Figure 1 shows a bend, a dimensional change and a T-piece. Other types of disturbances requires at least 2xD straight (D = connection

dimension) for measurement accuracy of ± 10% of the flow.

The damper setting is lockable. The K-factor is shown on the product label. The K-factor can also be found in the relevant K-factor guide. This is available at www.swegon.com. See figure 1.

Maintenance

The terminal is cleaned when necessary using lukewarm water with detergent added.

Access to the duct system is possible by pulling the terminal out of the mounting frame. If the commissioning box ALS is used, the distribution plate is hinged out of the way and the damper unit twisted out of its mounting by a simple hand movement.

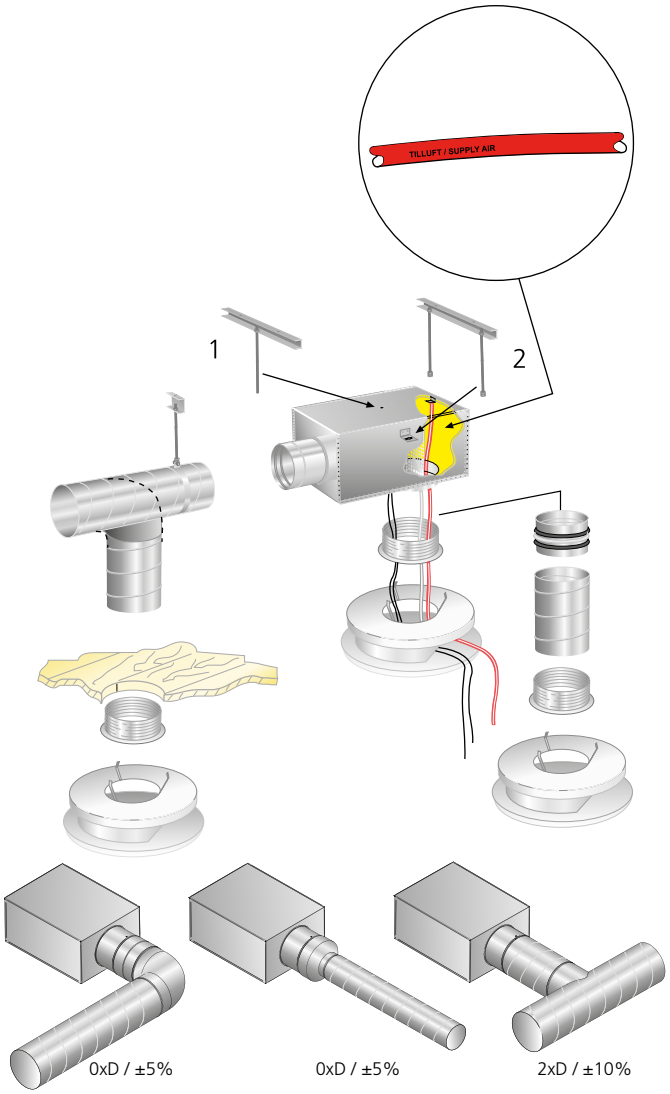


Figure 1. Installation. Commissioning.

Sizing

- Sound pressure level dB(A) applies to rooms with 10 m^2 equivalent sound absorption area.
- Sound attenuation (ΔL) below is shown in the octave band. Orifice attenuation is included in the values.
- Throw length $l_{0.2}$ is measured with isothermic supply air.
- Recommended maximum under temperature of 10 K.
- For calculation of the width of air stream, air velocity in the affected area, or sound levels in rooms with other dimensions, refer to our selection software ProAir web available at www.swegon.com.

L_W = Sound power level

L_{p10A} = Sound pressure level dB (A)

K_{ok} = Correction for producing the L_W value in the octave band

$L_W = L_{p10A} + K_{OK}$ gives the frequency divided octave band

Sound data - CBE - Supply air

Sound power level L_w(dB)
Table K_{OK}

Size	Mid-frequency (octave band) Hz							
CBE	63	125	250	500	1000	2000	4000	8000
100	10	4	1	3	-2	-7	-11	-7
125	10	5	1	2	-2	-6	-11	-7
160	10	10	2	5	-4	-12	-25	-27
Size	Mid-frequency (octave band) Hz							
CBE + ALS	63	125	250	500	1000	2000	4000	8000
100	16	15	7	-1	-3	-10	-18	-22
125	17	12	8	-1	-2	-8	-18	-23
160	17	11	8	-1	-2	-7	-19	-23
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL(dB)
Table ΔL

Size	Mid-frequency (octave band) Hz							
CBE	63	125	250	500	1000	2000	4000	8000
100	21	15	11	7	4	3	0	0
125	20	14	10	5	3	2	0	0
160	16	13	8	4	3	1	0	0
Size	Mid-frequency (octave band) Hz							
CBE + ALS	63	125	250	500	1000	2000	4000	8000
100	14	14	13	16	26	16	10	11
125	18	16	9	17	23	16	11	13
160	16	14	10	17	19	12	10	12
Tol. ±	2	2	2	2	2	2	2	2

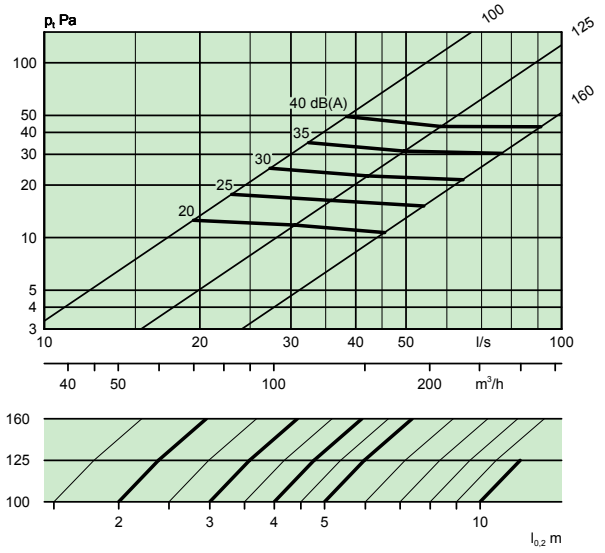
Engineering graphs

CBE - Supply air

Airflow – Pressure drop – Sound level – Throw

- The graphs refer to data for CBE installed in a ceiling.
- The graphs must not be used for commissioning.
- dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- dB(C) values normally lie 6 –9 dB higher than dB(A) values.

CBE

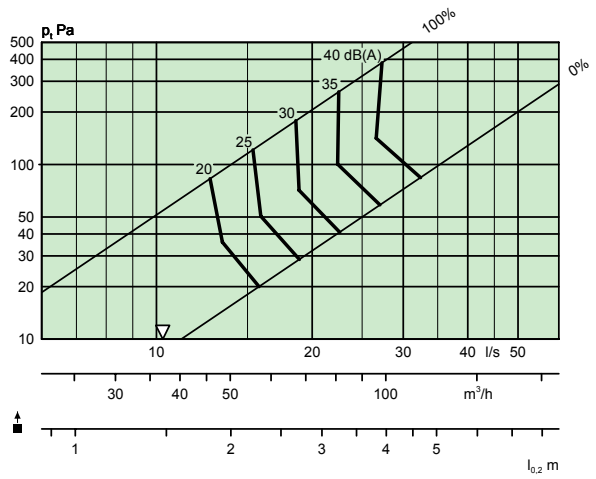


CBE with ALS - Supply air

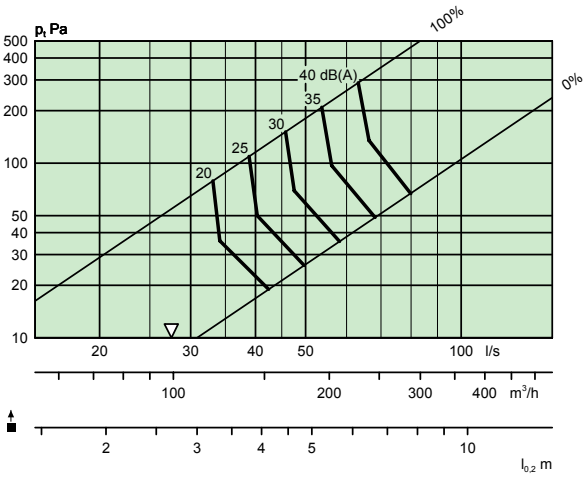
Airflow – Pressure drop – Sound level – Throw

- The graphs must not be used for commissioning.
- ∇ = Min. flow required to obtain sufficient commissioning pressure.
- dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- dB(C) values normally lie 6 - 9 dB higher than dB(A) values.

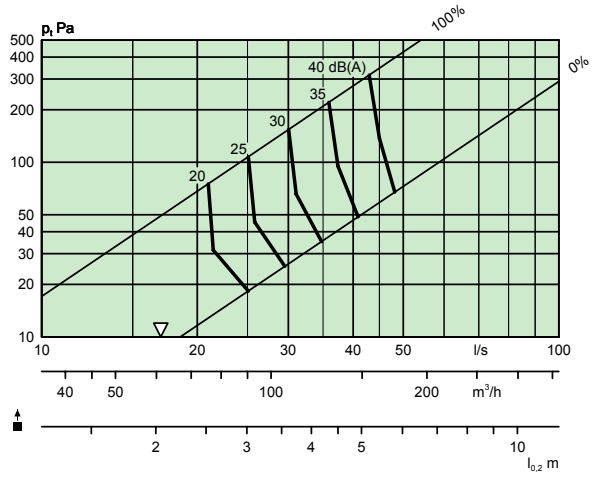
CBE 100 + ALS 80-100



CBE 160 + ALS 125-160



CBE 125 + ALS 100-125



Dimensions and weight

CBE

Size	ØA	C	Ød	ØI	Weight (kg)
100	182	40	99	105	0.4
125	225	50	124	130	0.7
160	292	65	159	165	1.0

ØI = Hole size

CBE with ALS

Size	ØA	B	C	ØD	E	F
100	182	227	192	79	40	160
125	225	282	217	99	50	180
160	292	342	252	124	65	204

Size	G	H	K	Weight (kg)
100	90	200	50	1.6
125	100	270	80	2.7
160	112	315	80	3.7

CL = Center line

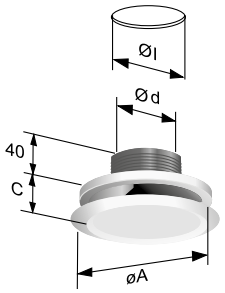


Figure 2. CBE.

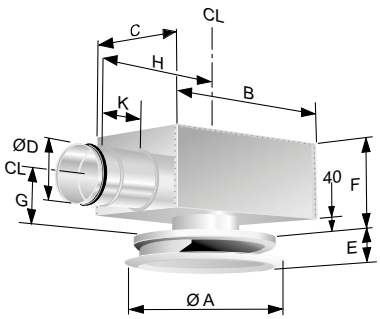


Figure 3. CBE with ALS. CL = Centerline

CBET1 Fixing frame

Size	Ød2	ØD2
100	99	140
125	124	175
160	159	210

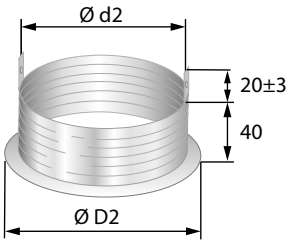


Figure 4. Fixing frame CBET1.

Order key

Product

Single cone diffuser for supply air	CBE	a	-aaa
Version:			
Size: 100, 125, 160			

Accessories

Commissioning box	ALS	d	-aaa-bbb
Version:			
For CBE	ALS		
100, 125, 160	80-100, 100-125, 125-160		

Mounting frame for concrete hollow-core floor/ceiling slab systems.	CBET 1	a	-aaa
Version:			
Size: 100, 125, 160			

Specification example

Swegons circular single cone diffuser of type CBE with commissioning box ALS, with the following functions:

- Unidirectional spread pattern
- Cleanable
- Powder painted in white
- Cleanable commissioning box ALS with removable commissioning damper and lockable controls, measurement function with low method error and interior acoustic insulation with reinforced surface layer

Accessories:		
Fixing frame:	CBET 1a - aaa	xx items
Size:	CBEa with ALSd aaa - bbb	xx items