

ACD

Circular ceiling terminal for rooms without suspended ceiling



Quick facts

- ▶ Designed for rooms without suspended ceilings
- ▶ Aerodynamically shaped outlet cone
- ▶ Low installation height
- ▶ Adjustable slot
- ▶ Spread pattern may be shielded off
- ▶ Removable damper
- ▶ Cleanable
- ▶ Available in alternative colours

Quick guide

AIR FLOW - SOUND LEVEL			
ACD	l/s		
Size	25 dB(A)	30 dB(A)	35 dB(A)
100	17	19	28
125	24	28	41
160	43	50	69
200	62	75	100
250	95	115	145
315	140	170	210

Data applies for supply air and 360° spread pattern and a total pressure drop of 50 Pa.

Technical Description

Design

Circular single cone terminal for supply air, consisting of two parts. Circular commissioning box containing fixed measurement outlet and removable damper, acoustic insulation with reinforced surface layer, to Fire Resistance Class B-s1,d0 according to EN ISO 11925-2. Removable diffuser part with aerodynamically shaped upper section. ACD are equipped with acoustic insulation. The slot height is adjustable in two alternative positions.

Materials and surface treatment

The commissioning box is manufactured in galvanized sheet steel. The diffuser face is made of sheet steel. The whole unit is painted with Swegon's pure white standard paint, RAL 9003/NCS S 0500-N. The unit is also available in other standard colours: dusty grey 7037, white aluminium RAL 9006, jet black RAL 9005, grey aluminium RAL 9007, and white RAL 9010.

Accessories

Sector shielding: SAV.

Customizing

In addition to the sizes specified, the air diffuser is available in alternative sizes, etc. For further particulars, get in touch with your nearest Swegon representative.

Planning

The diffuser operates using differential pressure measurement in the inlet spigot. This means that straight sections are required before the diffuser for the stated method errors to be obtained, see Table 1.

The test socket, which is placed in the duct connection, is adapted for supply air. (ACD-0-xxx).

If the terminal is to be used for exhaust air (ACD-1-xxx) the test socket placed in the terminal's top is an option. There are no demands on straight sections for the exhaust air design.

Sound, pressure and air flow data for the exhaust air model can be obtained from the closest sales representative.

Installation

The terminal is hung from the ceiling. In the centre of the upper side of the terminal there is an M8 pop nut, a threaded fitting to facilitate installation. See Figure 1.

Commissioning

This is to be done with the diffuser section in place. The measurement tubes and damper cords are pulled out through the slot. The damper setting can be locked. The k-factor is stated on the product labeling, and is also in the relevant k-factor guide which can be accessed at www.swegon.com.

On the supply air model two metering hoses should be connected to the pressure gauge. On the exhaust air model one metering hose should be connected to the pressure gauge.



Maintenance

The diffuser can be cleaned when necessary using luke-warm water with detergent added. The duct system can be accessed by removing the diffuser face and the inner cone (see installation above). The perforated distribution plate and the damper in the commissioning box are removed by slackening the wing nuts on each side of the inlet by $\frac{3}{4}$ turn.

Environment

The Declaration of construction materials is available at www.swegon.com.

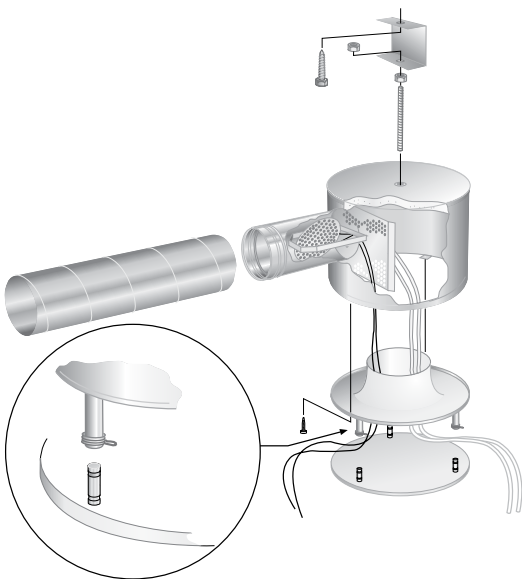


Figure 1. Installation.

Type of obstruction before diffuser	Straight section before diffuser	
	For m= 5%	For m= 10%
One 90° bend.	3 x Ød	2 x Ød
Two 90° bends on the same plane.	4 x Ød	2 x Ød
Two 90° bends on planes at right angles.	4 x Ød	2 x Ød
One damper 45°.	6 x Ød	3 x Ød
One T-piece.	4 x Ød	3 x Ød

m_2 = method error in accordance with NVG's report T32: 1982.

Sizing

- Sound level dB(A) applies to rooms of 10 m² equivalent absorption area.
- The throw $l_{0.2}$ is measured under isothermal conditions.
- Recommended maximum undertemperature 12 K.
- All technical data applies to the following slot widths:
20 mm for sizes 100 and 125
30 mm for sizes 160, 200, 250 and 315.
- The slot widths can be increased to:
30 mm for sizes 100 and 125
40 mm for sizes 160, 200, 250 and 315.
- Increased slot widths cause reductions in throw, pressure drop and sound levels with ca 20%.
- For calculating the width of the airstream, air velocities in the zone of occupation or sound levels in rooms with other dimensions, please refer to our calculation programme ProAir web, which is available at www.swegon.com.
- All the technical data applies to a 360° spread pattern.

Shielding off the spread pattern

The air stream can easily be shielded off, if there are obstacles, walls or other objects too close to the terminal.

In order to be able to use the graphs for "Airflow - Throw length" and "Airflow - Pressure drop - Sound level" when the spreader is shielding off in one sector, the airflow is corrected as in the adjoining diagram.

Example:

Desired airflow 100 l/s

Sector shielding 90°

Follow the line on the graph for 90° shielding and read off the correction factor of 1.2 on the vertical axis.

Multiply the correction factor of 1.2 by the desired airflow of 100 l/s, giving 120 l/s.

Use this airflow (120 l/s) when selecting throw length, pressure drop and sound level.

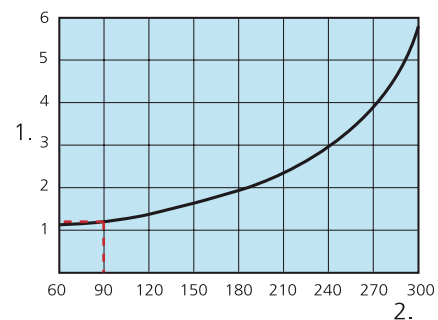


Figure 2. Correction factor for shielding.

1. Correction factor
2. Shielding (°)

Sound data - ACD - Supply air

Sound power level L_w (dB)

Table K_{OK}

Size ACD	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	6	9	8	-2	0	-12	-24	-30
125	8	10	7	-1	0	-10	-24	-30
160	6	12	3	3	-2	-10	-22	-27
200	8	10	2	5	-4	-12	-25	-27
250	8	9	2	5	-3	-11	-23	-28
315	5	7	6	4	-3	-13	-25	-30
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)

Table ΔL

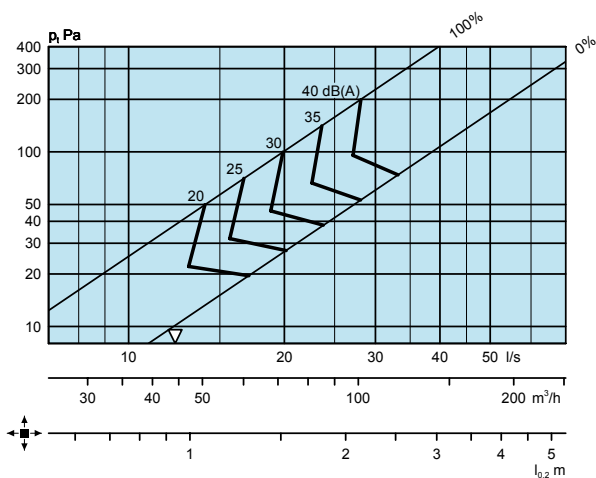
Size ACD	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	19	15	14	19	18	14	15	13
125	19	14	14	19	18	14	14	13
160	22	13	16	19	15	15	14	15
200	22	13	17	18	14	15	14	14
250	18	10	17	14	14	15	14	15
315	17	11	16	14	13	13	14	18
Tol. ±	2	2	2	2	2	2	2	2

Engineering graphs - ACD - Supply air

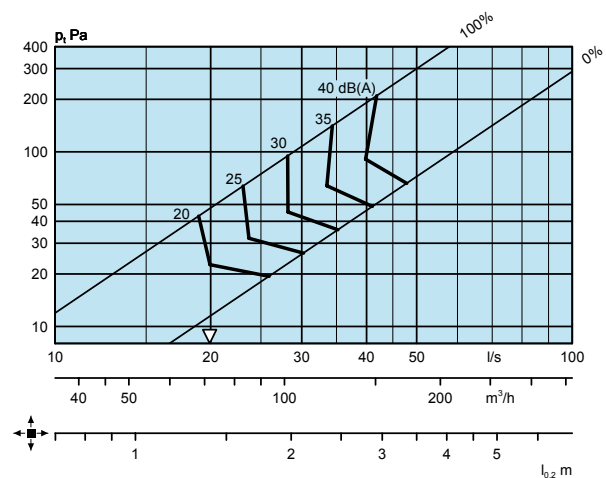
Air flow - Pressure drop - Sound level - Throw

- The graphs must not be used for commissioning.
- ∇ = the minimum flow required to obtain sufficient commissioning pressure.
- The dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- The dB(C) value is normally 6-9 dB's higher than the dB(A) value.
- All the data in the graphs applies to a 360° spread pattern

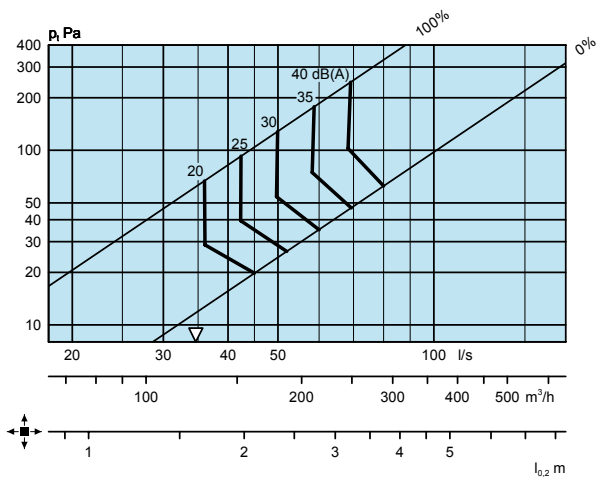
ACD 100



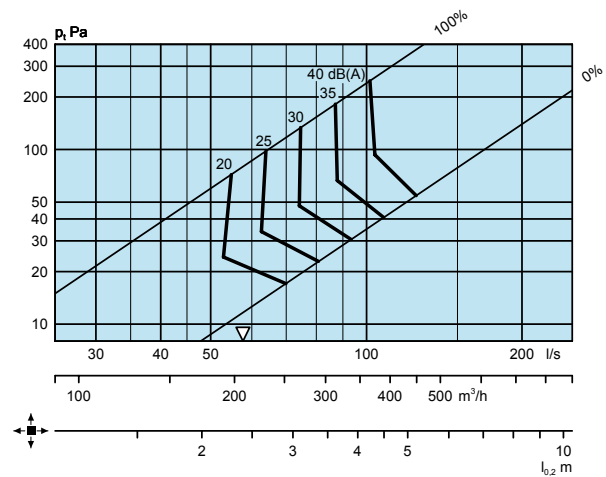
ACD 125



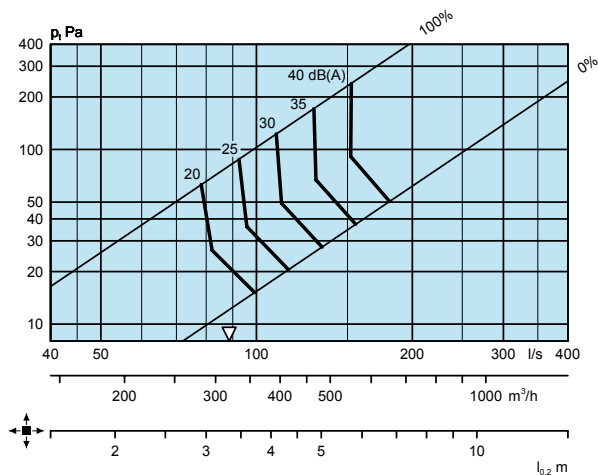
ACD 160



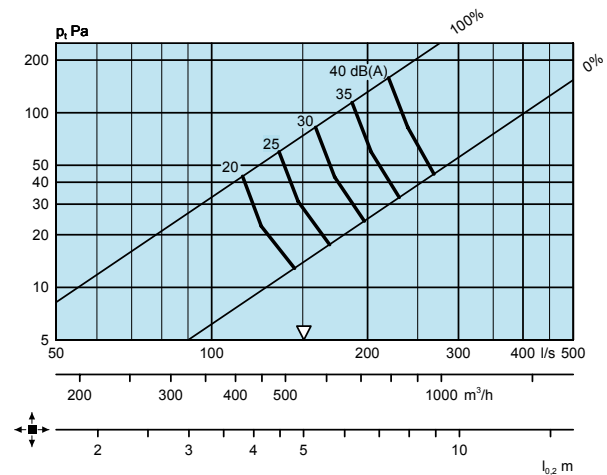
ACD 200



ACD 250



ACD 315



Dimensions and weight

ACD

Size	ØA	B	C	ØD	E	F	Weight, kg
100	192	184	155	99	100	20-30	1.6
125	228	217	165	124	112	20-30	2.0
160	304	262	200	159	130	30-40	2.7
200	380	315	250	199	150	30-40	3.9
250	456	382	300	249	175	30-40	5.6
315	568	467	370	314	208	30-40	8.6

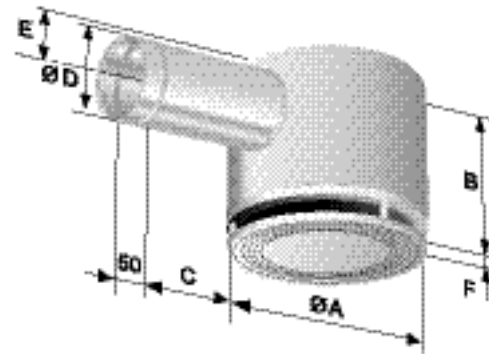


Figure 3. ACD.

Order key

Product

Circular ceiling terminal for supply air

ACD a -b -ccc

Version

0 = Supply air design
1 = Extract air design

Nom. connection dimension mm

Standard range:

Size:

100

125

160

200

250

315

Accessories

Sector shielding

SAV a -aaa -bbb

Version

Size:
100, 125, 160, 200, 250, 315

Shielded sector in degrees: 90°, 180°

Specification example

SD XX

Swegons complete circular ceiling diffuser of the type ACD, having the following functions:

- Complete painted unit
- Perforated under-plate
- Aerodynamically shaped exit cone
- Adjustable air slot
- Removable commissioning damper with lockable setting
- Measurement function with low method error
- Internal acoustic attenuation with fibre-proof surface layer
- Cleanable
- Electrostatically powder-coated in white

Accessories:

Sector shielding: SAVa aaa - bbb xx items