

# CDK/CKP

Circular ceiling diffuser for supply air - Conical upper section



## QUICK FACTS

- Cleanable
- Adjustable slot
- Aerodynamically shaped inlet cone
- Non-perforated diffuser face = CDK
- Perforated diffuser face = CKP
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

| AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *) |          |           |                   |           |                   |           |                   |
|---|----------|-----------|-------------------|-----------|-------------------|-----------|-------------------|
| CDK (CKP) Size                            |          | 25 dB(A)  |                   | 30 dB(A)  |                   | 35 dB(A)  |                   |
|   |          | l/s       | m <sup>3</sup> /h | l/s       | m <sup>3</sup> /h | l/s       | m <sup>3</sup> /h |
| 100                                       |          | 47 (40)   | 169 (144)         | 55 (48)   | 198 (173)         | 65 (58)   | 234 (209)         |
| 125                                       |          | 75 (70)   | 270 (252)         | 88 (80)   | 317 (288)         | 105 (95)  | 378 (342)         |
| 160                                       |          | 125 (115) | 450 (414)         | 145 (130) | 522 (468)         | 175 (150) | 630 (540)         |
| 200                                       |          | 190 (175) | 684 (630)         | 235 (205) | 846 (738)         | 280 (240) | 1008 (864)        |
| 250                                       |          | 240 (250) | 864 (900)         | 275 (300) | 990 (1080)        | 325 (350) | 1170 (1260)       |
| 315                                       |          | 275 (310) | 990 (1116)        | 320 (360) | 1152 (1296)       | 370 (410) | 1332 (1476)       |
| CDK (CKP) Size                            | ALS Size | 25 dB(A)  |                   | 30 dB(A)  |                   | 35 dB(A)  |                   |
|   |          | l/s       | m <sup>3</sup> /h | l/s       | m <sup>3</sup> /h | l/s       | m <sup>3</sup> /h |
| 100                                       | 80-100   | 18 (17)   | 65 (61)           | 33 (30)   | 119 (108)         | 38 (35)   | 134 (126)         |
| 125                                       | 100-125  | 30 (28)   | 108 (101)         | 50 (40)   | 180 (144)         | 60 (52)   | 216 (187)         |
| 160                                       | 125-160  | 50 (46)   | 180 (166)         | 80 (65)   | 288 (234)         | 95 (85)   | 342 (306)         |
| 200                                       | 160-200  | 77 (72)   | 277 (259)         | 115 (92)  | 558 (331)         | 145 (130) | 522 (468)         |
| 250                                       | 200-250  | 120 (100) | 432 (360)         | 160 (130) | 576 (468)         | 215 (160) | 774 (576)         |
| 315                                       | 250-315  | 175 (155) | 630 (558)         | 225 (180) | 810 (648)         | 300 (225) | 1080 (810)        |

Data applies to 360° spread pattern. Data for combination with ALS commissioning box is stated for a total pressure drop of 50 Pa. Values in brackets are for CKP.

\*) Lp10A = Sound pressure incl. A-filter with 4 dB room attenuation and 10 m<sup>2</sup> room absorption area.

# Contents

|                                      |          |
|--------------------------------------|----------|
| <b>Technical description .....</b>   | <b>3</b> |
| Design .....                         | 3        |
| Materials and surface treatment..... | 3        |
| Accessories .....                    | 3        |
| Installation .....                   | 3        |
| Commissioning with ALS .....         | 3        |
| Maintenance.....                     | 3        |
| <b>Sizing .....</b>                  | <b>4</b> |
| Sound data .....                     | 4        |
| CDK – Supply air .....               | 4        |
| CKP – Supply air .....               | 4        |
| Engineering graphs .....             | 5        |
| CDK, CKP with and without ALS.....   | 5        |
| CDK/CKP – Supply air .....           | 5        |
| CDK with ALS – Supply air .....      | 6        |
| CKP with ALS – Supply air.....       | 7        |
| <b>Dimensions and weights.....</b>   | <b>8</b> |
| <b>Ordering key .....</b>            | <b>9</b> |
| <b>Specification example .....</b>   | <b>9</b> |

# Technical description

## Design

The CDK and CKP consists of two parts: an aerodynamically shaped upper section with a connection spigot have including a rubber sealing ring, and a removable non-perforated diffuser face. Between the upper cone and the diffuser face there is a slot which can be adjusted in two positions. The diffuser face of the CDK is non-perforated and on CKP it is perforated. Both CDK and CKP are equipped with acoustic insulation.

## Materials and surface treatment

The upper part is manufactured in galvanized sheet steel. The diffuser face is made of sheet steel. The whole diffuser is painted inside and out.

- 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 made of galvanized sheet steel. Includes removable commissioning damper, fixed measurement unit and acoustic insulation with a 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.

### Frame:

SAR C. For the aesthetic installation with lowered diffuser.

## Project planning

The diffuser has an aerodynamically shaped inlet spigot, which means that it can handle extremely large airflows at low sound levels.

## Installation

The inlet spigot of the diffuser is fixed to the connecting duct with blind rivets. The diffuser face is removed by turning the springs which grip the pins of the diffuser face through  $\frac{1}{4}$  turn (see Figure 1). When the ALS commissioning box is used, the spigot between the ALS and the CDK can be extended using normal circular duct up to 500 mm long without needing to extend either the measurement tubes or the damper cords. See Figure 1.

## Commissioning with ALS

This must be carried out with the diffuser face in place. The measurement tubes and the damper cords are pulled out of the diffuser through the slots. The damper setting is lockable.

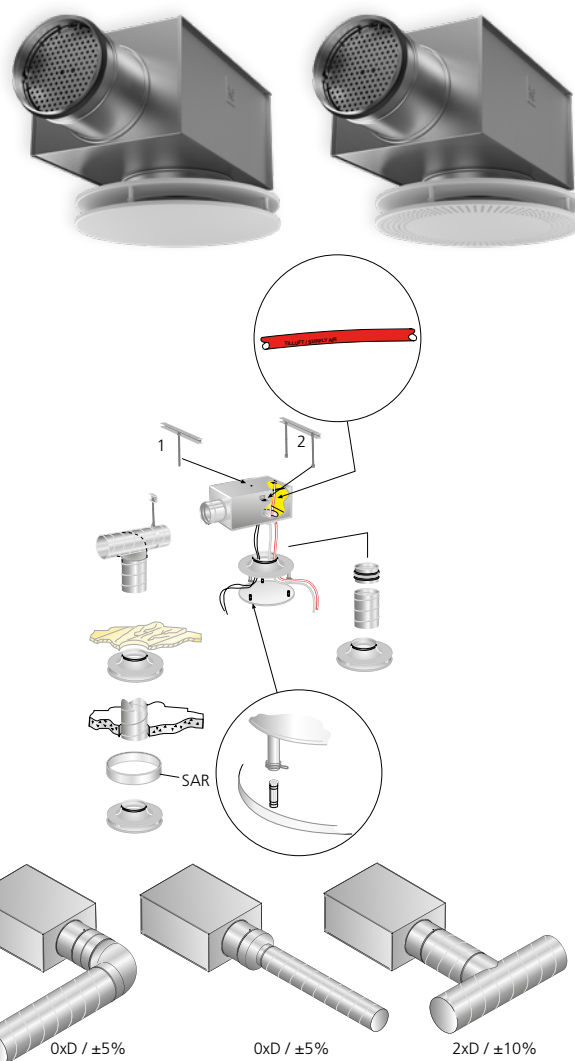


Figure 1. Installation.

Measurement accuracy and requirement on straight duct before the commissioning box, see Figure 1. The requirements of straight 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  $\pm 10\%$  of the flow.

The k-factor is stated on the product label, and is also in the relevant k-factor guide which can be accessed at [www.swegon.com](http://www.swegon.com).

## Maintenance

The diffuser can be cleaned when necessary using luke warm water with added detergent. The duct system can be accessed without the use of tools. The spreader plate is removed by turning the springs which grip the pins through  $\frac{1}{4}$  turn. If the commissioning box ALS is used, move the diffusion plate aside and the damper unit can then be removed by unscrewing it from its fastening.

# Sizing

- Sound pressure level dB(A) applies to rooms with 10 m<sup>2</sup> equivalent sound absorption area.
- Sound attenuation (ΔL) below is shown in the octave band. Orifice attenuation is included in the values.
- The throw  $l_{0.2}$  is measured under isothermal flow conditions
- Recommended maximal under temperature is 10 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.  
This increase in slot widths cause reductions in throw, pressure drop and sound levels with ca 20%.
- For calculating the width of the air stream, air velocities in the occupied zone or sound levels in rooms with other dimensions, please refer to our web calculation softwares available for download at [www.swegon.com](http://www.swegon.com)
- All the technical data applies to a 360° spread pattern.

$L_w$  = 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

### CDK – Supply air

#### Sound power level $L_w$ (dB)

Table  $K_{OK}$

| Size<br>CDK       | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|-------------------|--------------------------------|-----|-----|-----|------|------|------|------|
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 10                             | 14  | 3   | -1  | -2   | -6   | -18  | -26  |
| 125               | 10                             | 12  | 2   | -1  | -2   | -4   | -14  | -25  |
| 160               | 9                              | 11  | 2   | -1  | -1   | -3   | -17  | -27  |
| 200               | 11                             | 7   | 3   | -2  | 0    | -3   | -14  | -25  |
| 250               | 13                             | 10  | 7   | 2   | -2   | -8   | -23  | -31  |
| 315               | 14                             | 11  | 9   | 0   | -7   | -12  | -27  | -32  |
| Size<br>CDK + ALS | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 11                             | 14  | 7   | -1  | -2   | -11  | -15  | -21  |
| 125               | 10                             | 13  | 8   | -2  | -4   | -8   | -17  | -22  |
| 160               | 10                             | 14  | 7   | 0   | -6   | -7   | -16  | -21  |
| 200               | 9                              | 12  | 4   | -2  | -5   | -5   | -15  | -18  |
| 250               | 10                             | 14  | 5   | -2  | -5   | -6   | -16  | -20  |
| 315               | 9                              | 14  | 6   | 0   | -4   | -8   | -15  | -20  |
| Tol. ±            | 2                              | 2   | 2   | 2   | 2    | 2    | 2    | 2    |

#### Sound attenuation ΔL(dB)

Table ΔL

| Size<br>CDK       | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|-------------------|--------------------------------|-----|-----|-----|------|------|------|------|
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 22                             | 17  | 14  | 9   | 6    | 5    | 8    | 9    |
| 125               | 21                             | 17  | 12  | 7   | 5    | 5    | 9    | 9    |
| 160               | 20                             | 14  | 10  | 5   | 6    | 5    | 10   | 9    |
| 200               | 18                             | 14  | 9   | 7   | 5    | 5    | 10   | 9    |
| 250               | 17                             | 11  | 8   | 8   | 5    | 7    | 12   | 10   |
| 315               | 17                             | 11  | 9   | 9   | 6    | 11   | 13   | 10   |
| Size<br>CDK + ALS | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 18                             | 14  | 17  | 18  | 25   | 21   | 20   | 20   |
| 125               | 20                             | 15  | 15  | 19  | 24   | 19   | 20   | 19   |
| 160               | 20                             | 14  | 10  | 17  | 19   | 12   | 10   | 12   |
| 200               | 16                             | 12  | 14  | 19  | 21   | 17   | 20   | 18   |
| 250               | 18                             | 11  | 13  | 20  | 19   | 17   | 20   | 18   |
| 315               | 13                             | 6   | 12  | 21  | 18   | 18   | 21   | 19   |
| Tol. ±            | 2                              | 2   | 2   | 2   | 2    | 2    | 2    | 2    |

### CKP – Supply air

#### Sound power level $L_w$ (dB)

Table  $K_{OK}$

| Size<br>CKP       | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|-------------------|--------------------------------|-----|-----|-----|------|------|------|------|
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 10                             | 10  | 2   | 0   | 1    | -8   | -22  | -30  |
| 125               | 10                             | 10  | 3   | 0   | 0    | -8   | -21  | -28  |
| 160               | 9                              | 6   | 1   | 0   | 0    | -4   | -15  | -27  |
| 200               | 11                             | 6   | 1   | 1   | 1    | -5   | -20  | -28  |
| 250               | 13                             | 7   | 2   | 1   | 1    | -8   | -24  | -31  |
| 315               | 14                             | 5   | 2   | 2   | 1    | -8   | -24  | -31  |
| Size<br>CKP + ALS | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 11                             | 13  | 6   | -1  | -3   | -10  | -14  | -21  |
| 125               | 10                             | 12  | 7   | -1  | -4   | -7   | -17  | -21  |
| 160               | 10                             | 13  | 7   | -1  | -4   | -7   | -17  | -20  |
| 200               | 9                              | 10  | 4   | 0   | -4   | -7   | -17  | -19  |
| 250               | 10                             | 11  | 4   | 1   | -3   | -8   | -18  | -20  |
| 315               | 9                              | 9   | 3   | 4   | -2   | -10  | -22  | -24  |
| Tol. ±            | 2                              | 2   | 2   | 2   | 2    | 2    | 2    | 2    |

#### Sound attenuation ΔL(dB)

Table ΔL

| Size<br>CKP       | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|-------------------|--------------------------------|-----|-----|-----|------|------|------|------|
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 22                             | 18  | 13  | 8   | 2    | 1    | 2    | 3    |
| 125               | 21                             | 17  | 12  | 6   | 1    | 1    | 2    | 2    |
| 160               | 20                             | 14  | 10  | 5   | 2    | 1    | 2    | 4    |
| 200               | 18                             | 13  | 9   | 4   | 2    | 1    | 2    | 3    |
| 250               | 17                             | 11  | 7   | 4   | 2    | 2    | 3    | 3    |
| 315               | 17                             | 10  | 5   | 4   | 1    | 3    | 3    | 4    |
| Size<br>CKP + ALS | Mid-frequency (octave band) Hz |     |     |     |      |      |      |      |
|                   | 63                             | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| 100               | 18                             | 14  | 16  | 17  | 23   | 17   | 14   | 14   |
| 125               | 20                             | 15  | 14  | 18  | 21   | 14   | 13   | 15   |
| 160               | 20                             | 15  | 12  | 17  | 20   | 14   | 13   | 16   |
| 200               | 16                             | 12  | 13  | 19  | 18   | 14   | 14   | 15   |
| 250               | 18                             | 10  | 11  | 19  | 15   | 12   | 14   | 14   |
| 315               | 13                             | 6   | 7   | 19  | 14   | 10   | 10   | 13   |
| Tol. ±            | 2                              | 2   | 2   | 2   | 2    | 2    | 2    | 2    |

## Engineering graphs

### CDK, CKP with and without ALS

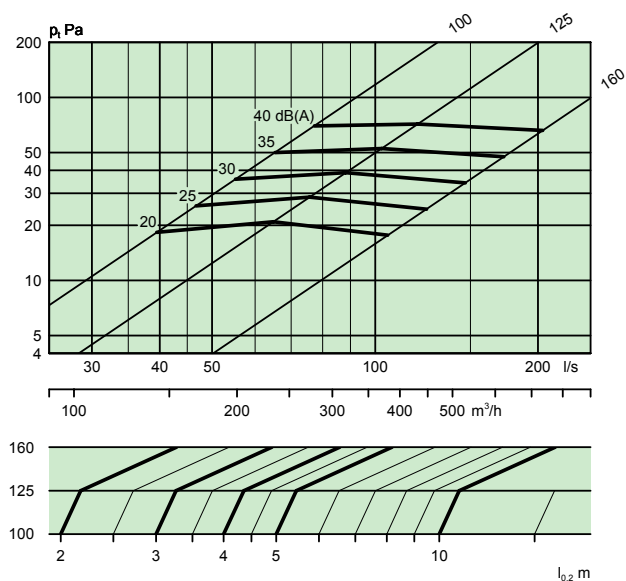
#### Air flow - Pressure drop - Sound level - Throw

- The graphs apply to a CDK/CKP installed in a ceiling.
- The graphs are not to be used for commissioning.
- The dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.

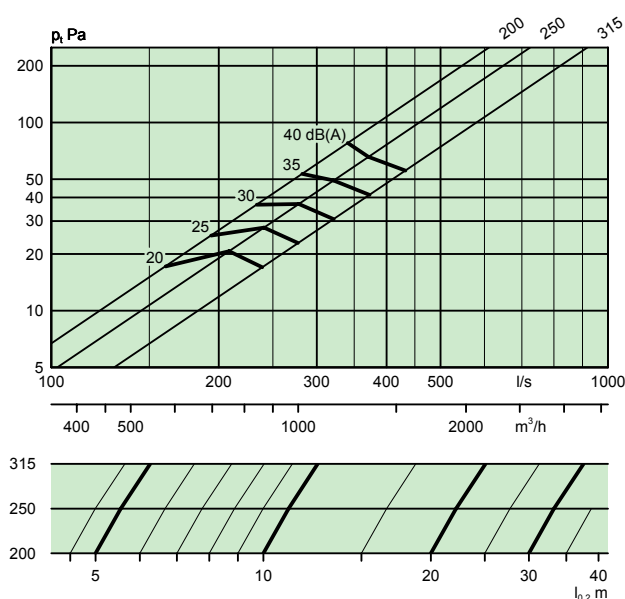
### CDK/CKP – Supply air

#### Air diffuser only

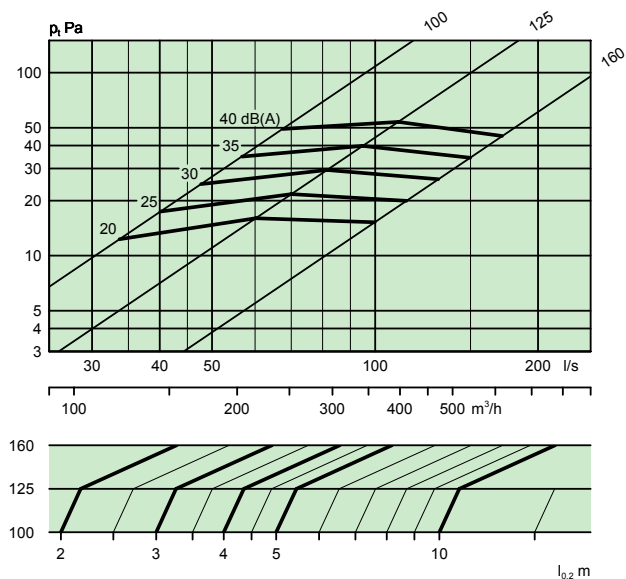
#### CDK 100, 125, 160



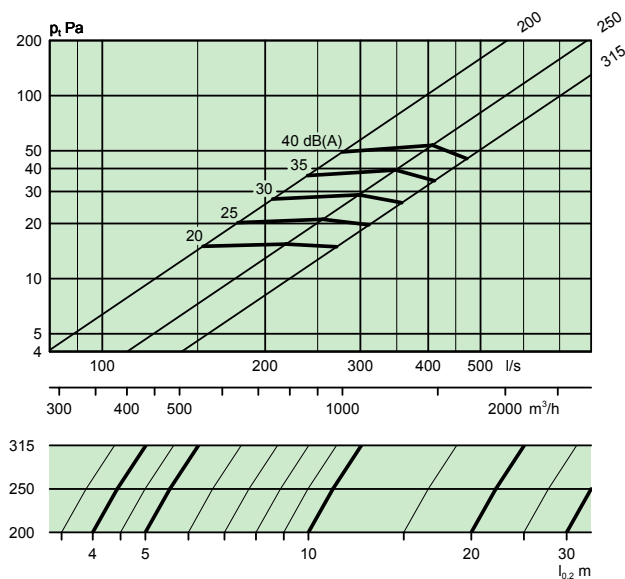
#### CDK 200, 250, 315



#### CKP 100, 125, 160



#### CKP 200, 250, 315



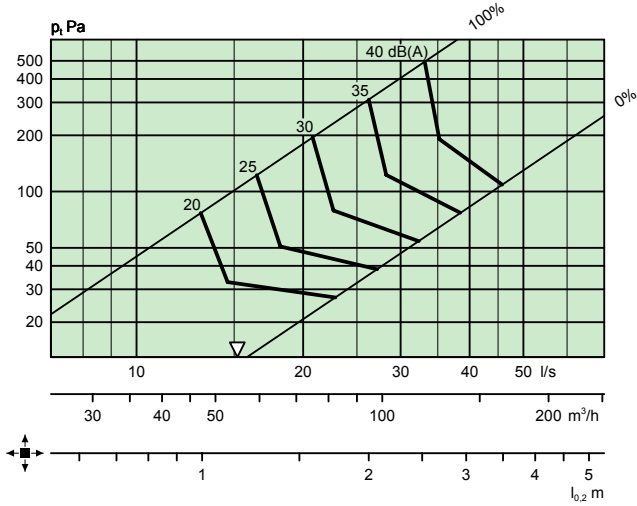
# CDK/CKP

## CDK with ALS – Supply air

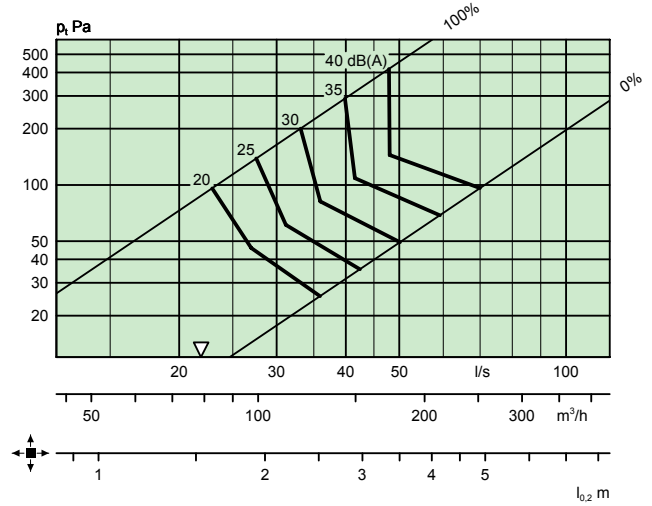
### Air diffuser with commissioning box

- $\Delta$  = the minimum flow required to obtain sufficient commissioning pressure.

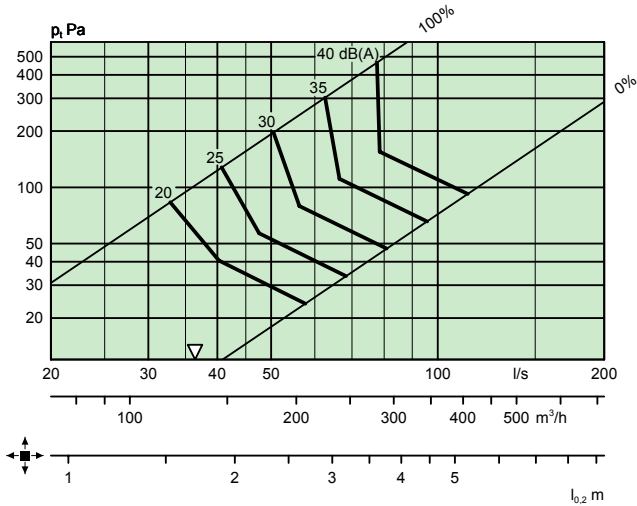
**CDK 100 + ALS 80-100**



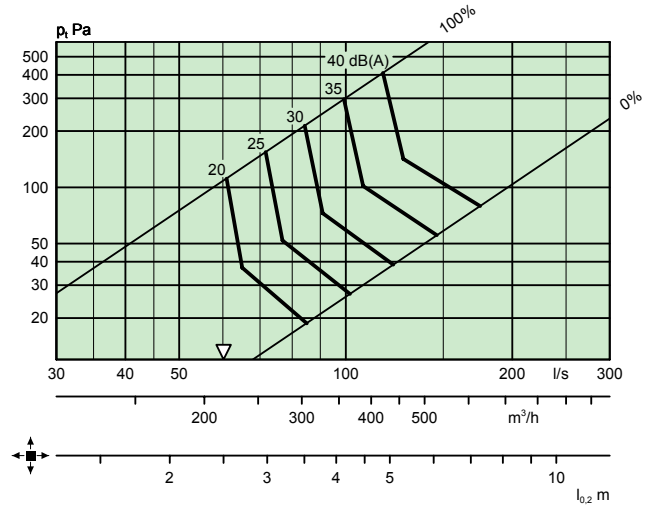
**CDK 125 + ALS 100-125**



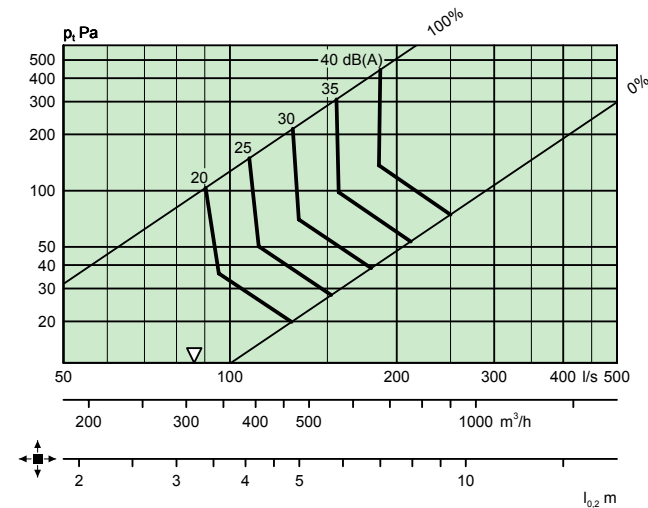
**CDK 160 + ALS 125-160**



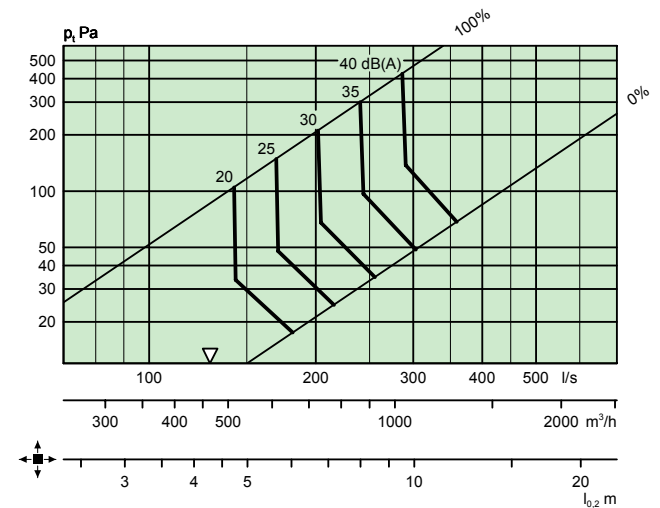
**CDK 200 + ALS 160-200**



**CDK 250 + ALS 200-250**



**CDK 315 + ALS 250-315**

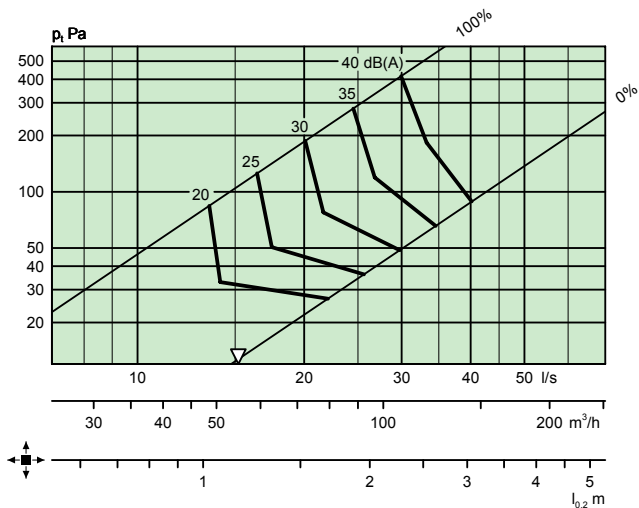


## CKP with ALS – Supply air

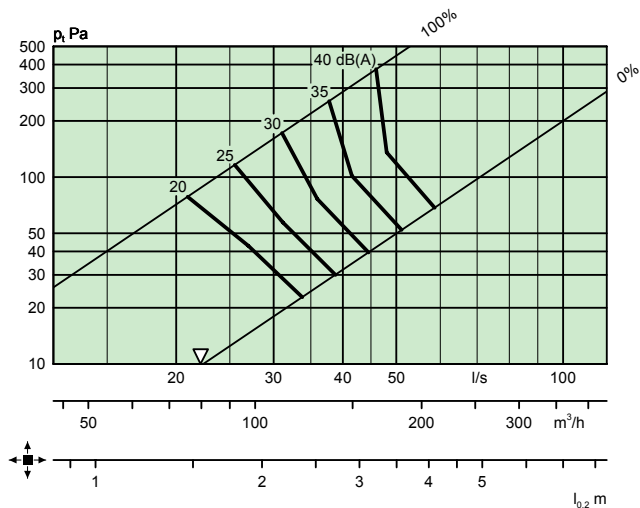
### Air diffuser with commissioning box

- $\Delta$  = the minimum flow required to obtain sufficient commissioning pressure.

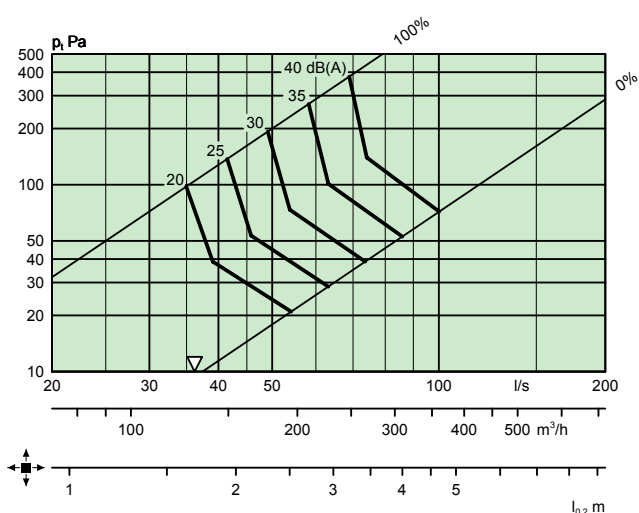
**CKP 100 + ALS 80-100**



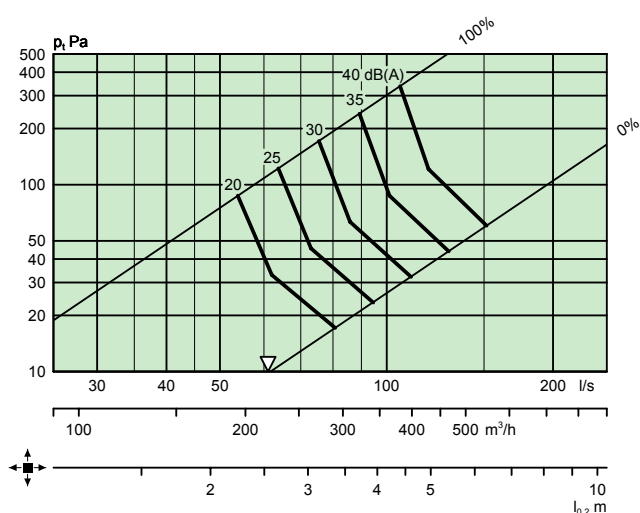
**CKP 125 + ALS 100-125**



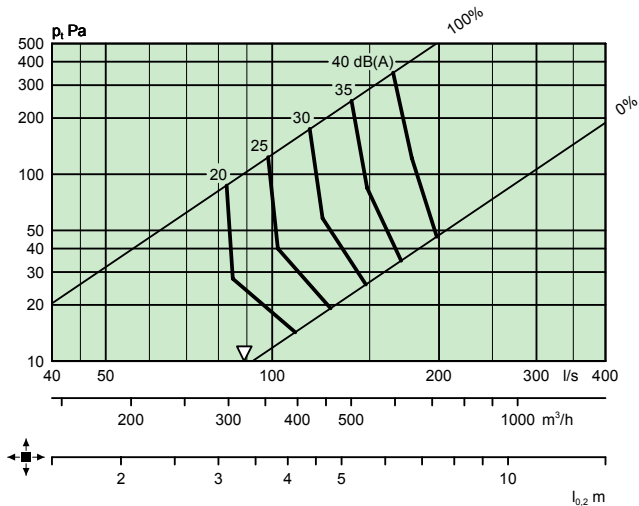
**CKP 160 + ALS 125-160**



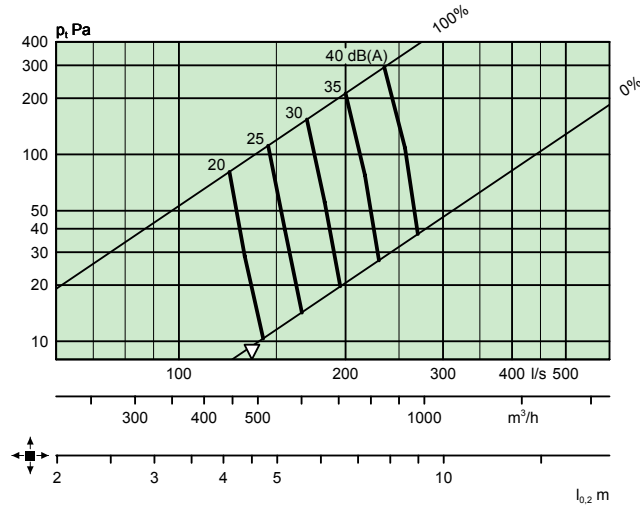
**CKP 200 + ALS 160-200**



**CKP 250 + ALS 200-250**



**CKP 315-ALS 250-315**



# Dimensions and weights

## CDK/CKP

| Size | ØA  | Ød  | E     | ØJ  | L   | Weight, kg |
|------|-----|-----|-------|-----|-----|------------|
| 100  | 192 | 99  | 36/46 | 125 | 51  | 0,6        |
| 125  | 228 | 124 | 36/46 | 160 | 56  | 0,8        |
| 160  | 304 | 159 | 46/56 | 215 | 73  | 1,3        |
| 200  | 380 | 199 | 46/56 | 280 | 87  | 1,8        |
| 250  | 456 | 249 | 50/60 | 350 | 95  | 2,5        |
| 315  | 568 | 314 | 50/60 | 450 | 114 | 3,7        |

ØJ = Hole-making size

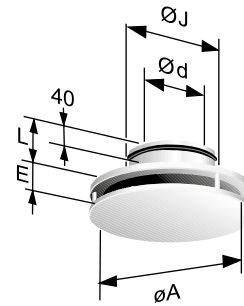


Figure 2. CDK/CKP.

## CDK/CKP + ALS

| Size | ØA  | B   | C   | ØD  | E     |
|------|-----|-----|-----|-----|-------|
| 100  | 192 | 227 | 192 | 79  | 36/46 |
| 125  | 228 | 282 | 217 | 99  | 36/46 |
| 160  | 304 | 342 | 252 | 124 | 46/56 |
| 200  | 380 | 404 | 288 | 159 | 46/56 |
| 250  | 456 | 504 | 332 | 199 | 50/60 |
| 315  | 568 | 622 | 388 | 249 | 50/60 |

| Size | F   | G   | H   | K   | Weight, kg |
|------|-----|-----|-----|-----|------------|
| 100  | 177 | 107 | 200 | 50  | 1,8        |
| 125  | 202 | 122 | 270 | 80  | 2,7        |
| 160  | 243 | 151 | 315 | 80  | 3,5        |
| 200  | 292 | 183 | 375 | 100 | 4,5        |
| 250  | 340 | 211 | 465 | 115 | 6,3        |
| 315  | 420 | 255 | 575 | 140 | 9,3        |

CL = Center line

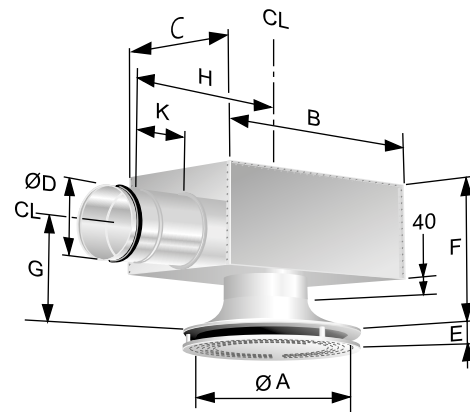


Figure 3. CDK/CKP + ALS.

## Frame SAR C

| Size | M   | Ø L |
|------|-----|-----|
| 100  | 40  | 187 |
| 125  | 40  | 223 |
| 160  | 65  | 299 |
| 200  | 65  | 375 |
| 250  | 100 | 451 |
| 315  | 100 | 563 |

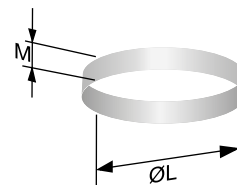


Figure 4. SAR C.



# Ordering key

## Product

Circular ceiling terminal with non-perforated front plate for supply air      CDK    b      -bbb

Version:

Nom. connection dimension, mm

Circular ceiling terminal with perforated front plate for supply air      CKP    a      -bbb

Version:

Nom. connection dimension, mm

Standard range:

Size:      100  
            125  
            160  
            200  
            250  
            315

## Accessories

Commissioning box      ALS    d      -aaa-bbb

Version

For CDK/CKP      ALS

|      |         |
|------|---------|
| 100: | 80-100  |
| 125: | 100-125 |
| 160: | 125-160 |
| 200: | 160-200 |
| 250: | 200-250 |
| 315: | 250-315 |

Frame      SAR    a    C      -aaa-bbb

Version:

C = circular

Size:

|     |         |
|-----|---------|
| 100 | 187-40  |
| 125 | 223-40  |
| 160 | 299-65  |
| 200 | 375-65  |
| 250 | 451-100 |
| 315 | 563-100 |

# Specification example

Swegons circular ceiling diffuser of the type CDK with commissioning box ALS, having the following functions:

- Aerodynamically shaped inlet cone
- Cleanable
- Powder-coated in white, RAL 9003/NCS S 0500-N
- Cleanable commissioning box ALS with removable commissioning damper, lockable setting, measurement function with low method error and internal acoustic insulation with reinforced surface layer.

Accessories:

Frame:      SARA C aaa - bbb      xx items

Size:      CDKb + ALSd aaa-bbb      xx items