

HAWK Ceiling

Square ceiling diffuser for supply air



QUICK FACTS

Flush design

Also available in exhaust air version

Designed for modular suspended ceilings

Quick Access diffuser face

Adapter for systemized false ceilings

ALS commissioning box with 1 or 2 changes in dimension between the inlet and outlet

Available in a version with low installation height

Standard colour White RAL 9003

- 5 alternative standard colours
- Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)							
HAWK Ceiling Size		25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
125-600		39	140	45	162	54	194
160-600		61	220	75	270	85	306
200-600		90	324	105	378	120	432
250-600		135	486	155	558	175	630
315-600		145	522	175	630	205	738
400-600		200	720	240	864	285	1026
HAWK Ceiling Size	ALS Size	25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m ³ /h	l/s	m ³ /h	l/s	m ³ /h
125-600	100-125	27	97	33	119	40	144
160-600	125-160	37	133	46	166	58	209
200-600	160-200	56	202	71	256	90	324
250-600	200-250	85	306	110	396	150	540
315-600	250-315	126	454	145	522	170	612
400-600	315-400	170	612	205	738	245	882

The data specified in the table is applicable to 50 Pa total pressure when an ALS commissioning box is used.

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

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Technical description

Design

The square, perforated supply air diffuser consists of a diffuser backing box and a diffuser face. The diffuser face has perforations designed for managing high airflows. The diffuser face is hung on hinges on one side and secured by springs on the opposite side. This Quick Access fastening system makes it simpler and quicker to open and close the diffuser face for installation, commissioning and cleaning. The air diffuser is also available in a low version for installation in ceiling void where low installation height is required. The air diffuser is then supplied without any branch.

Materials and surface treatment

The backing box and diffuser face are made of sheet steel. The connection branch is made of galvanized sheet steel. The interior and exterior surfaces of the air diffusers are 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
 - White semi-gloss, 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. Contains removable commissioning damper, fixed measurement tapplings and sound absorbing material 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.

The air diffuser is also available in a low version if the height in the ceiling void is restricted. The commissioning box is then supplied without outlet branch.

The commissioning box is available with 1 or 2 differences in dimension between the inlet and outlet.

Frame:

SAR K. For aesthetic installation of a lowered diffuser.

Adapter:

ADAPTER, for adaptation to various variants and makes of systemized false ceilings: Ecophon, Gyproc, Dampa etc. Also used for adaptation to optional sizes of lay-in ceilings, for instance 625 x 625 or 675 x 675. Specification in separate product sheet for ADAPTER.

Planning

The HAWK Ceiling is available with square dimensions of 595 x 595 mm in all connection sizes. This makes the HAWK Ceiling very easy to install in suspended modular ceilings with insertion dimensions for 600 x 600 mm modules. Position the whole air diffuser on the surface of the T-bar framework and then secure it to the duct system. The HAWK Ceiling is also available in a low version for installation in ceiling void where its installation height must be minimized. See Figure 2.

Installation

To dismantle the face (see Figure 1) prior to installing the air dif-



fuser, insert a thin object, such as a Quick Access card or similar card, between the air diffuser face and backing box to release the springs. Then slide the card from the centre outward toward the corners, see figure 1. The inlet spigot of the diffuser backing box can be secured to the connecting ducting by means of self-tapping screws or blind rivets.

For flush-mounting in fixed ceiling constructions, secure the air diffuser by means of screws into place in the framework through either the sides or top of the diffuser backing box. The face and backing box in the version for low installation height must be centred and jointed together using the locking strip supplied. Secure the air diffuser in the correct position by means of self-tappingscrews to the underside of commissioning box. See figure 3.

Position these directly down in the T-bar framework, and then secure them to the duct system or to the commissioning box. If an ALS commissioning box is used, it must be secured to the building structure by means of hangers or mounting brackets. The distance between the air diffuser and the commissioning box can be increased by as much as 500 mm with an ordinary circular duct without having to lengthen the measuring tubes and damper adjustment cords. See Figure 2.

Commissioning

Commissioning should be carried out with the face plate mounted. Pull the measuring tube and damper adjusting cord out through the face plate. Connect a manometer to the right measuring tube. The red or blue tube is used for supply air depending on whether a one or two-step ALS commissioning box is used. For extract air, use the transparent tube only. The required commissioning pressure can be calculated by means of the K-factor of the air diffuser/register. Adjust the damper to the correct position and tie a commissioning knot on the damper cords to indicate the damper setting.

Measurement accuracy and requirement on straight duct before the commissioning box, see Figure 2. The requirements of straight duct depends on the type of disturbance before the commissioning box. Figure 2 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 specified on the product identification plate and also in the relevant commissioning instructions available at www.swegon.com.

Maintenance

The air diffuser can be cleaned, if necessary, using lukewarm water with dishwashing detergent added. The duct system can be accessed after opening the diffuser face. If an ALS commissioning box is used, pull the distributor plate aside and then twist the damper unit from of its mounting, see figure 4.

Environment

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

Installation

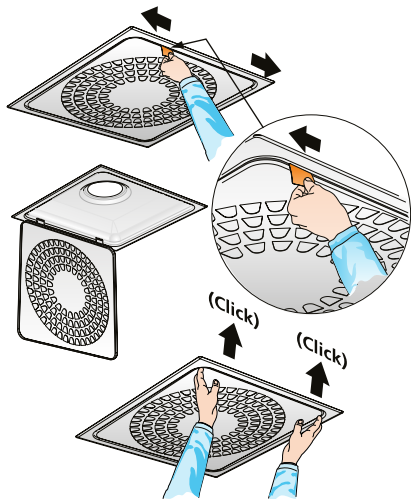


Figure 1. Quick Access, dismantling of the diffuser front.

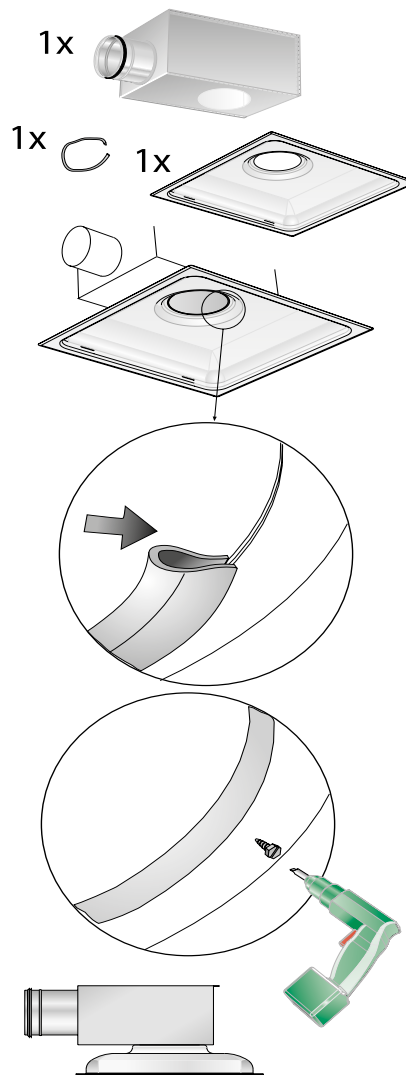


Figure 3. Installation of air diffusers and commissioning box with low installation height.

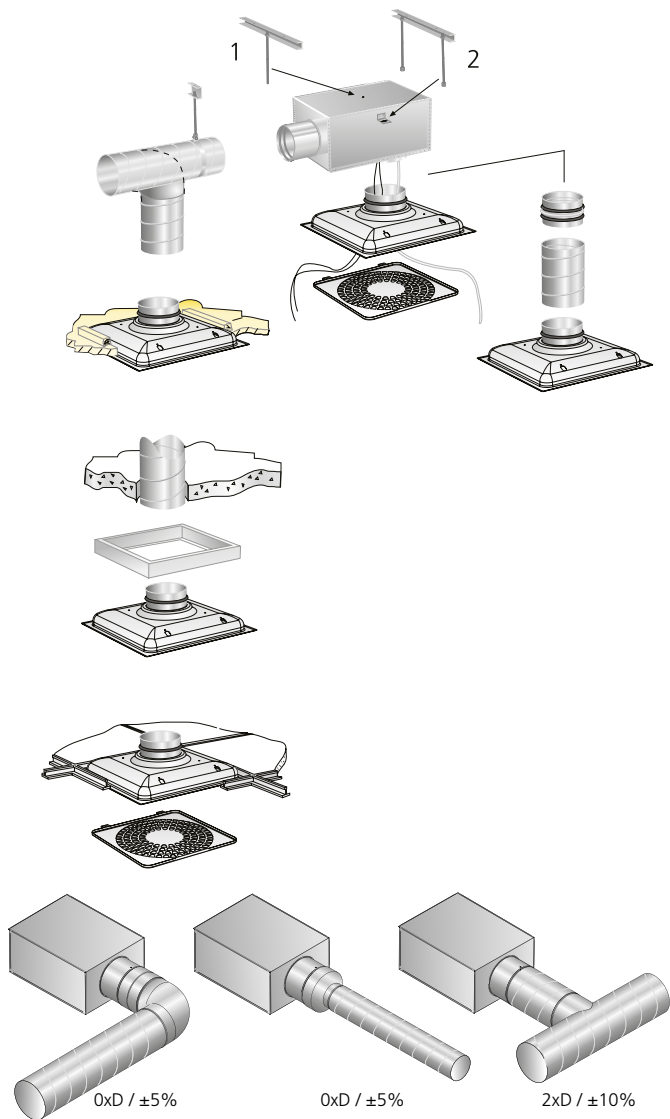


Figure 2. Installation.

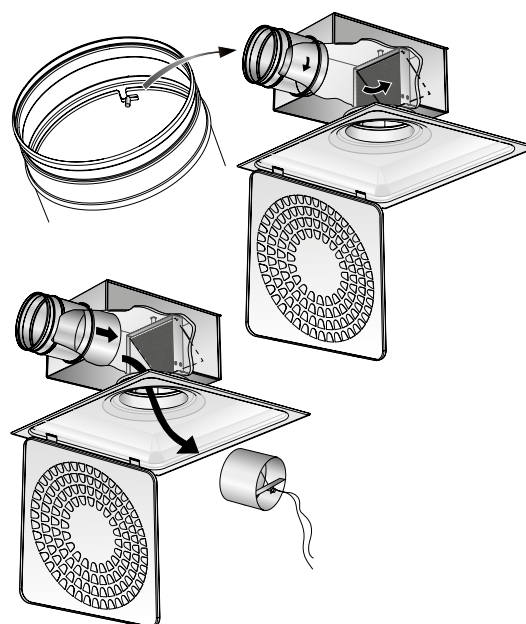


Figure 4. To dismantle the damper.

Sizing

- Sound pressure level dB(A) applies to rooms with 10 m² 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 discharge conditions.
- Recommended max. permissible temperature below room temperature is 10 K.
- 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 software available for download 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 - HAWK C - Supply air - Air diffuser only

Sound power level L_w (dB)

Table K_{ok}

Size	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
HAWK C								
125-600	3	6	6	9	-1	-14	-24	-15
160-600	2	5	5	8	0	-11	-21	-17
200-600	2	3	3	2	-12	-12	-22	-14
250-600	2	3	4	6	3	-8	-18	-11
315-600	2	4	4	5	4	-8	-16	-11
400-600	5	5	4	3	5	-4	-19	-21
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)

Table ΔL

Size	Mid-frequency (Octave band)							
	63	125	250	500	1000	2000	4000	8000
HAWK C								
125-600	20	15	10	5	3	5	5	4
160-600	19	14	9	4	3	5	5	4
200-600	19	14	8	3	3	4	5	5
250-600	16	11	5	4	2	3	4	4
315-600	14	9	4	2	2	2	3	3
400-600	14	8	4	1	0	0	0	0
Tol. ±	2	2	2	2	2	2	2	2

Sound data - HAWK C - Exhaust air - Diffuser only

Sound power level L_w (dB)

Table K_{ok}

Size	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
HAWK C								
250-600	-1	7	4	2	4	-1	-13	-12
315-600	4	6	5	4	4	-3	-13	-11
400-600	4	3	3	2	4	-2	-19	-22
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)

Table ΔL

Size	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
HAWK C								
250-600	16	11	5	4	2	3	4	4
315-600	14	9	4	2	2	2	3	3
400-600	14	8	4	1	0	0	0	0
Tol. ±	2	2	2	2	2	2	2	2

Sound data - HAWK C + ALS - Supply air - One step

One dimension in difference between the inlet and the outlet of the commissioning box

Sound power level L_w (dB)

Table K_{ok}

Size HAWK C + ALS	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
125-600	4	11	10	7	-1	-9	-15	-13
160-600	6	11	9	7	-2	-8	-14	-12
200-600	6	11	7	5	-1	-6	-10	-10
250-600	4	11	7	3	0	-5	-9	-7
315-600	6	10	6	5	3	-7	-14	-12
400-600	9	12	6	4	3	-5	-15	17
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)

Table ΔL

Size HAWK C + ALS	Mid-frequency (Octave band)							
	63	125	250	500	1000	2000	4000	8000
125-600	21	16	9	17	23	16	11	13
160-600	19	14	10	17	19	12	10	12
200-600	16	11	8	16	18	12	11	11
250-600	13	8	8	16	17	12	12	13
315-600	11	6	7	19	14	10	10	13
400-600	14	5	8	14	11	10	11	12
Tol. ±	2	2	2	2	2	2	2	2

Sound data - HAWK C + ALS - Supply air - Two steps

Two steps difference in dimensions between the inlet and outlet of the commissioning box.

Sound power level L_w (dB)

Table K_{ok}

Size HAWK C + ALS	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
160-600	3	12	11	5	-2	-6	-11	-10
200-600	4	12	10	4	-2	-4	-9	-10
250-600	6	13	8	2	-1	-4	-10	-8
315-600	3	12	7	1	-1	-5	-9	-7
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)

Table ΔL

Size HAWK C +ALS	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
160-600	19	14	11	17	24	15	13	15
200-600	18	14	10	16	23	15	14	15
250-600	15	9	9	20	19	15	16	14
315-600	13	8	10	19	16	13	16	16
Tol. ±	2	2	2	2	2	2	2	2

HAWK C + ALS - Extract air

Sound power level L_w (dB)

Table K_{ok}

Size HAWK C	Mittfrekvens (oktavband Hz)							
	63	125	250	500	1000	2000	4000	8000
250-600	2	15	9	1	-2	-5	-11	-15
315-600	4	13	7	0	0	-1	-14	-19
400-600	8	10	4	2	4	-3	-14	-19

Sound attenuation ΔL (dB)

Table ΔL

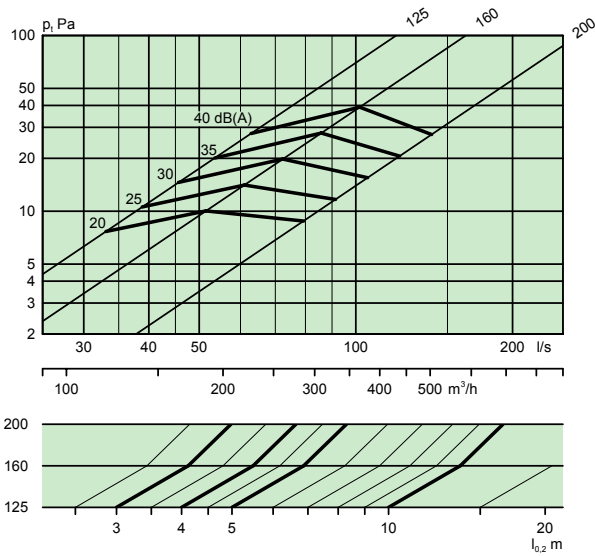
Size HAWK C	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
250-600	13	8	8	16	17	12	12	13
315-600	11	6	7	19	14	10	10	13
400-600	14	5	8	14	11	10	11	12

Engineering graphs – HAWK Ceiling

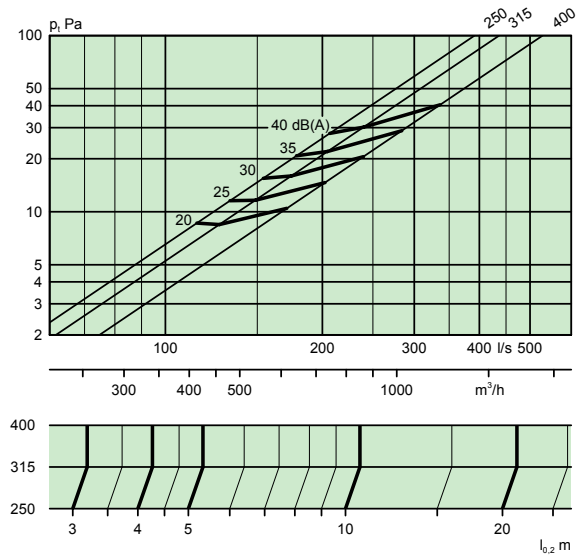
Air flow - Pressure drop - Sound level - Throw

- The graphs illustrate data for the HAWK C recessed in a ceiling.
- The graphs are not to be used for commissioning.
- The dB(A) values are applicable to rooms with normal acoustic absorption (4 dB room attenuation).
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.

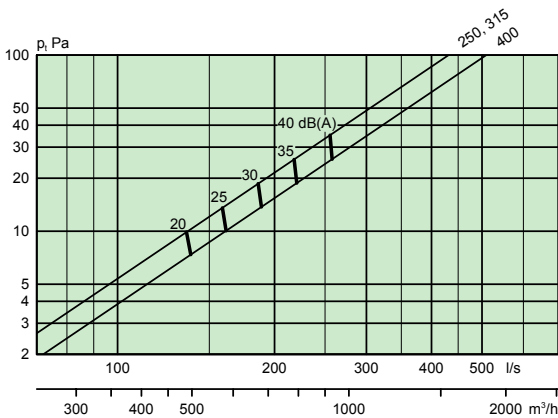
HAWK C 125-600, 160-600, 200-600 - Supply air



HAWK C 250-600, 315-600, 400-600 - Supply air



HAWK C 250-600, 315-600 and 400-600 - Exhaust air

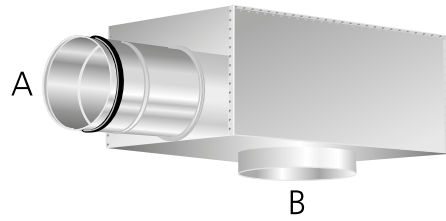


Size. 250 and 315 has the same pressure drop. 315 has 5 dB lower sound level.

Engineering graphs – HAWK Ceiling + ALS – Supply air

Air flow - Pressure drop - Sound level - Throw

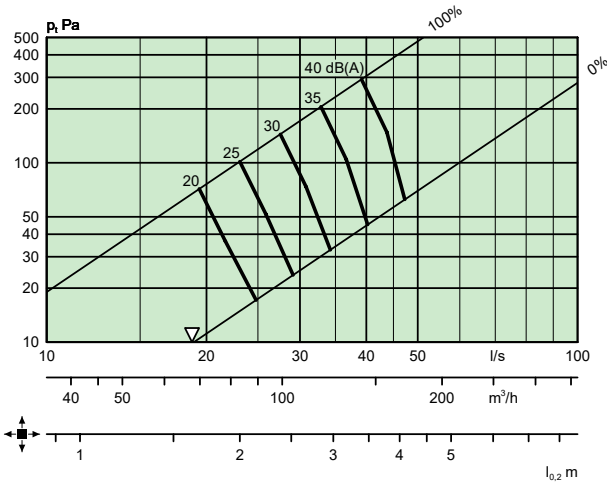
- The graphs illustrate data for the HAWK C recessed in a ceiling.
- The graphs are not to be used for commissioning.
- ∇ = Min. airflow required for obtaining sufficient commissioning pressure.
- The dB(A) values are applicable to rooms with normal acoustic absorption (4 dB room attenuation).
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.
- The version for low installation height generates 3 dB(A) higher sound level than the value plotted in the graph.



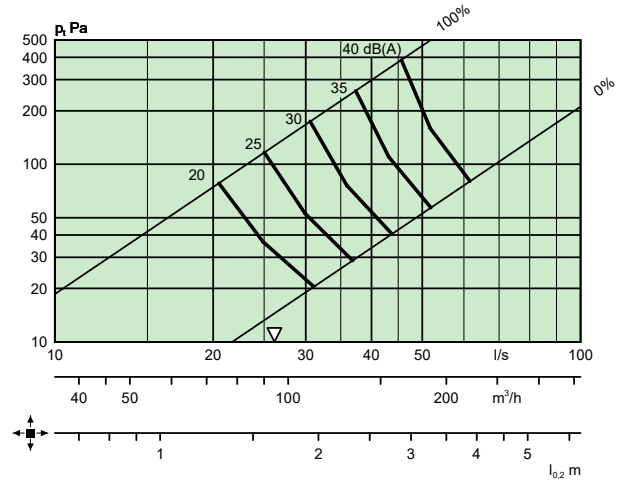
Explanation of the step model:

- One step = One dimensional change between A and B, for example, A = Ø160 mm and B = Ø200 mm.
- Two steps = Two dimensional changes between A and B, for example, A = Ø160 mm and B = Ø250 mm.

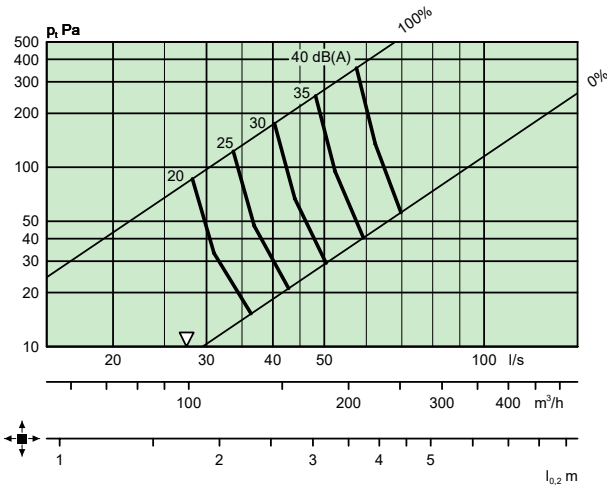
HAWK C 125-600 + ALS 100-125 - One step



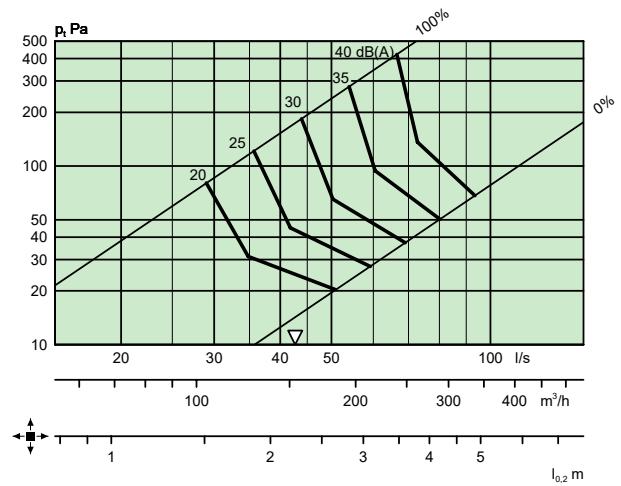
HAWK C 160-600 + ALS 100-160 - Two steps



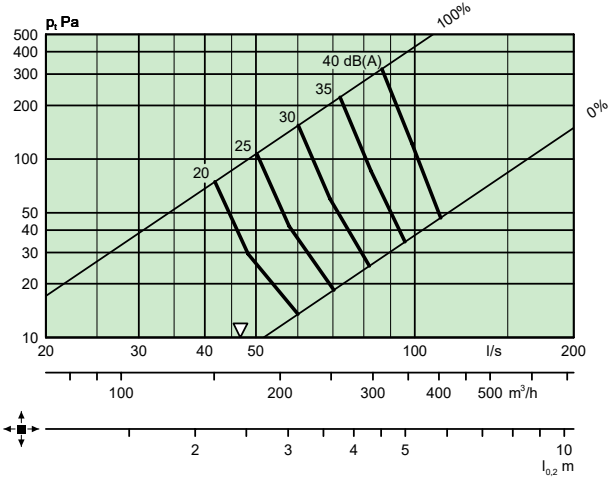
HAWK C 160-600 + ALS 125-160 - One step



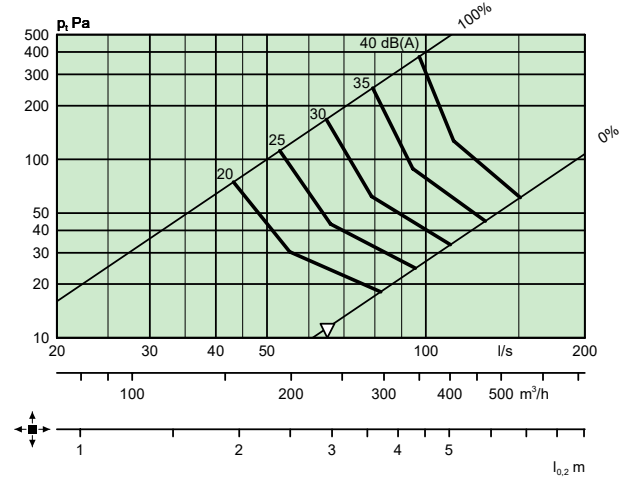
HAWK C 200-600 + ALS 125-200 - Two steps



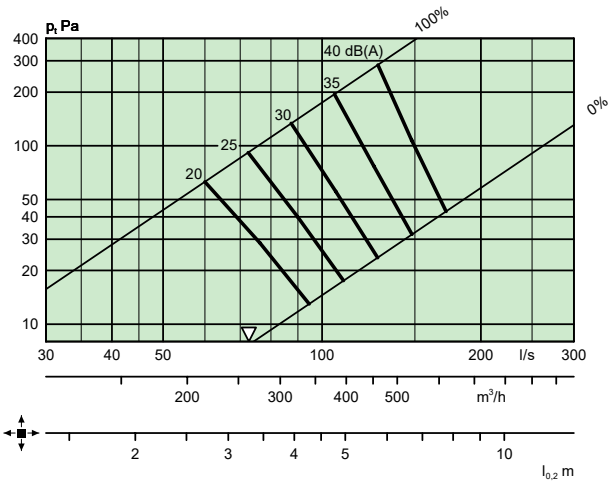
HAWK C 200-600 + ALS 160-200 - One step



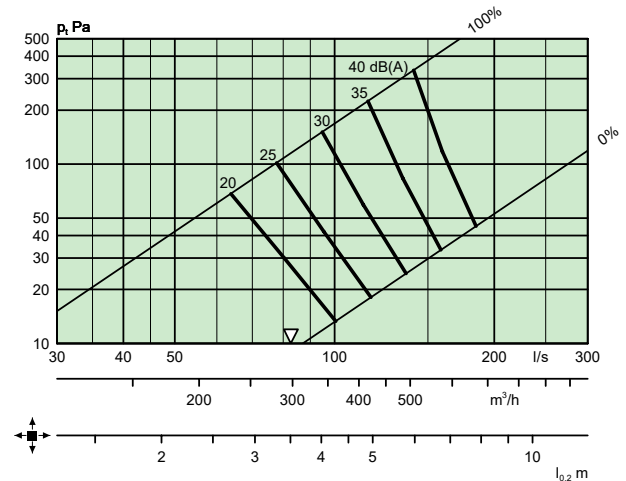
HAWK C 250-600 + ALS 160-250 - Two steps



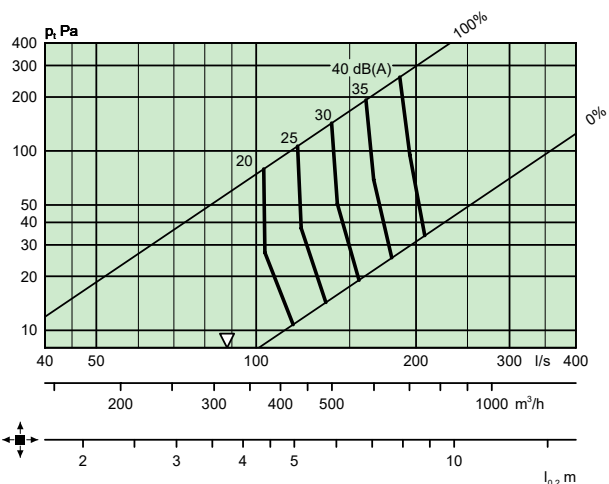
HAWK C 250-600 + ALS 200-250 - One step



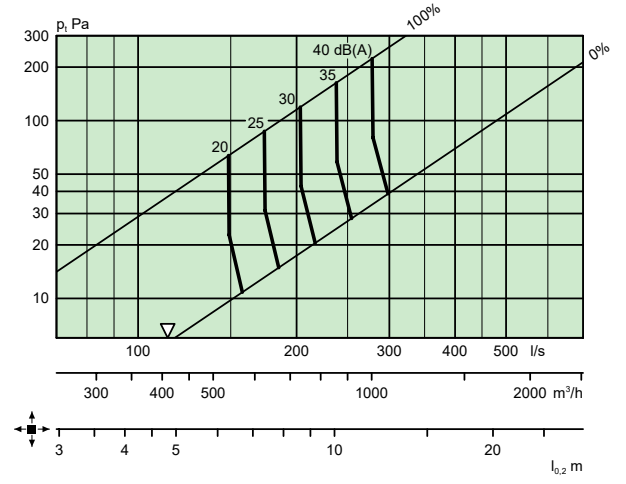
HAWK C 315-600 + ALS 200-315 - Two steps



HAWK C 315-600 + ALS 250-315 - One step



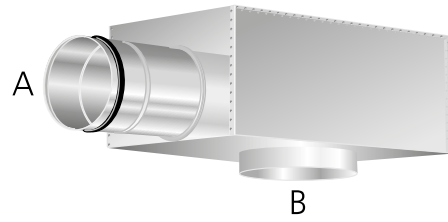
HAWK C 400-600 + ALS 315-400 - One step



HAWK C + ALS – Extract air

Air flow - Pressure drop - Sound level

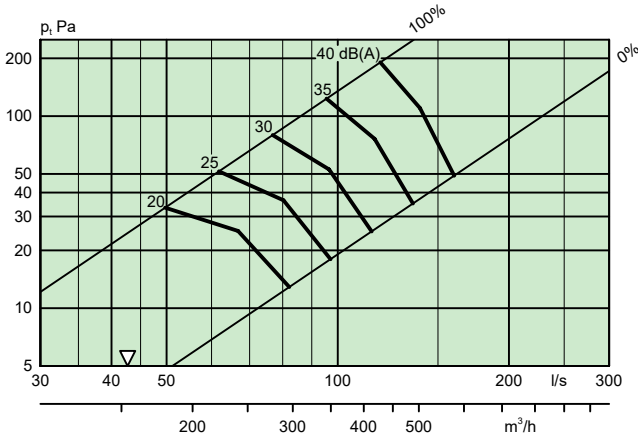
- The specified sound levels dB(A) are applicable to rooms with an equivalent sound absorption area of 10 m².
- ∇ = Min. airflow required for obtaining sufficient commissioning pressure.
- For calculating the width of the air stream, air velocities in the occupied zone or sound levels in rooms with other dimensions, please refer to our web calculation software available for download at www.swegon.com.



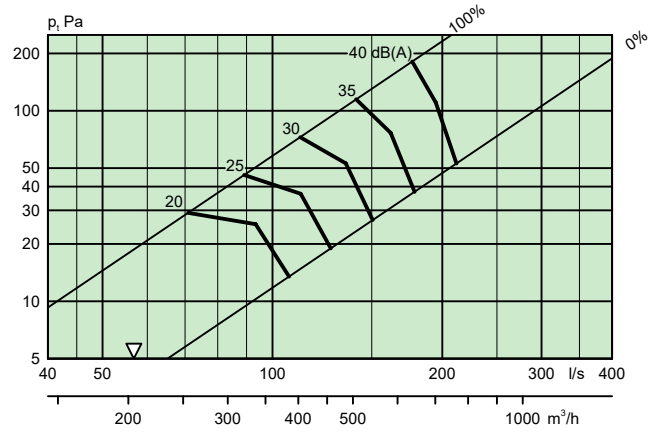
Explanation of the step model:

- One step = One dimensional change between A and B, for example, A = Ø160 mm and B = Ø200 mm.
- Two steps = Two dimensional changes between A and B, for example, A = Ø160 mm and B = Ø250 mm.

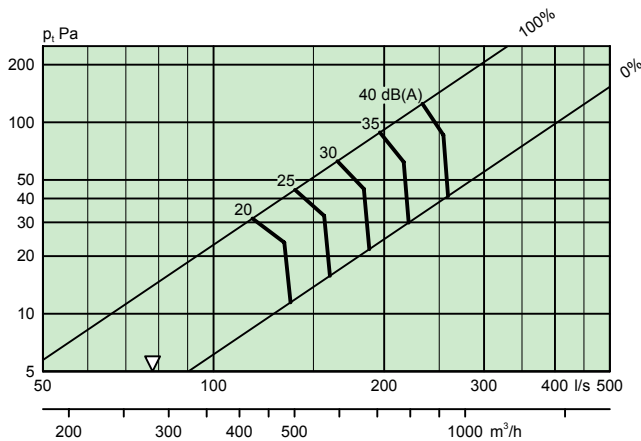
HAWK C 250-600 + ALS 200-250



HAWK C 315-600 + ALS 250-315



HAWK C 400-600 + ALS 315-400



Dimensions and weights

HAWK Ceiling

Size	A	ØD	ØD1	I	M	Weight, kg
125-600	595	340	124	575	70	3,7
160-600	595	340	159	575	70	3,7
200-600	595	420	199	575	70	3,7
250-600	595	500	249	575	70	3,7
315-600	595	500	314	575	50	3,7
400-600	595	500	399	575	50	3,5

Dimensions of opening = l x l

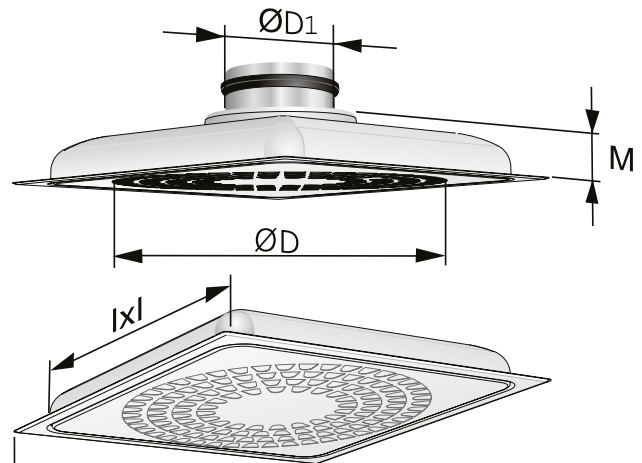


Figure 5. HAWK Ceiling

HAWK Ceiling with ALS - 1 step

Size	A	B	C	ØD	Ød	E1	E2	F1	F2	G1	G2	H	K	Weight, kg
125-600	595	282	217	99	125	255	212	113	70	175	132	270	80	5,5
160-600	595	342	252	124	160	279	236	113	70	188	145	315	80	6,2
200-600	595	404	288	159	200	314	271	113	70	205	162	375	100	7,0
250-600	595	504	332	199	250	354	311	113	70	225	182	465	115	8,7
315-600	595	622	388	249	315	395	352	93	50	230	187	575	140	11,8
400-600	595	767	488	314	400	455	-	93	-	262	-	712	175	15,0

HAWK Ceiling with ALS - 2 steps

Size	A	B	C	ØD	Ød	E1	E2	F1	F2	G1	G2	H	K	Weight, kg
160-600	595	342	252	99	160	255	212	113	70	175	132	315	80	5,5
200-600	595	404	288	124	200	279	236	113	70	188	145	355	80	4,2
250-600	595	504	332	159	250	314	271	113	70	205	162	450	100	7,0
315-600	595	622	388	199	315	334	291	93	50	205	162	550	115	8,7

CL = Center line

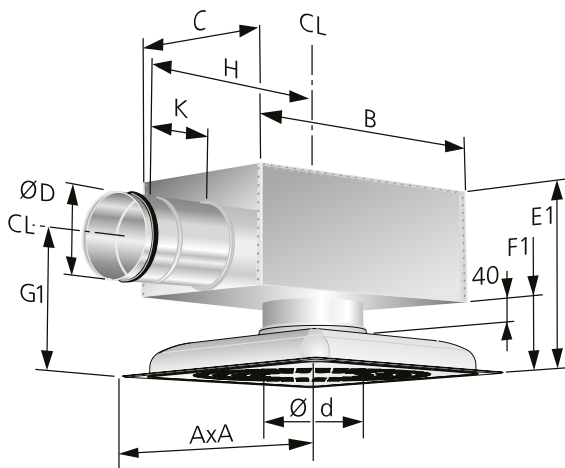


Figure 6. HAWK Ceiling with ALS. CL = Centerline.

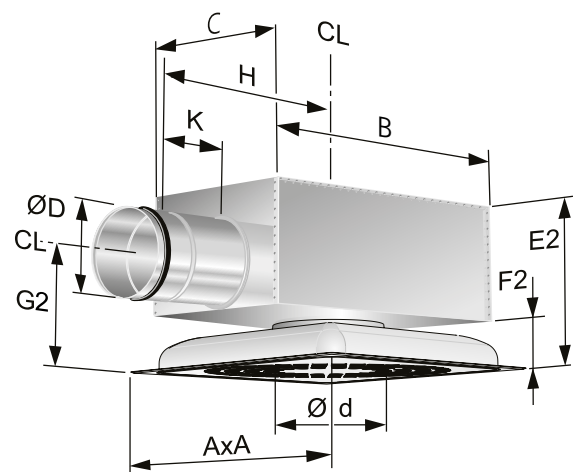


Figure 7. HAWK Ceiling with ALS. Low installation height.

SARb K Frame

Size	L	Weight, kg
600	595	1

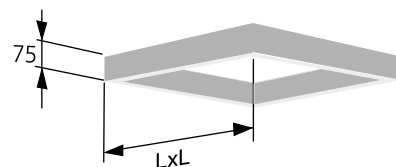


Figure 8. SAR K frame.

Order key

Product

Square ceiling air diffuser for supply air HAWK C a -aaa -600 -b

Version

Nominal connection dim., mm:
125, 160, 200, 250, 315, 400

Nominal square dimension 600 mm

Low version: L
Specify only if diffuser for low installation height is required.
(Except 400-600).

Standard range

Size:	125-600
	160-600
	200-600
	250-600
	315-600
	400-600

Accessories

Commissioning box ALS d -aaa - bbb -c

Version:

For HAWK Ceiling; ALS:

125-600	100-125
160-600	100-160
160-600	125-160
200-600	125-200
200-600	160-200
250-600	160-250
250-600	200-250
315-600	200-315
315-600	250-315
400-600	315-400

Low installation height: L
Specify only if diffusers in the low versions are selected.

Frame SAR b K -600

Version:

Quadratic:

Size:

ADAPTER for suspended ceiling systems. See ADAPTER specification in separate product sheet.

Specification example

Swegon's complete square, perforated type HAWK Ceiling air diffuser, with ALS commissioning box and the following functions:

- Designed for modular suspended ceilings (600 x 600 mm)
- Quick access diffuser face opening/closing action for quick access to the commissioning box and duct system
- Method of measurement with low systematic error
- Powder coated white
- Cleanable ALS commissioning box with removable adjustment damper, method of measurement with low systematic error and lined inside with sound absorbing material covered with woven surface layer.

Size: HAWK Ca -aaa-600-b with xx items
ALSd aaa-bbb-c

Accessories:

Frame: SARb K 600 xx items