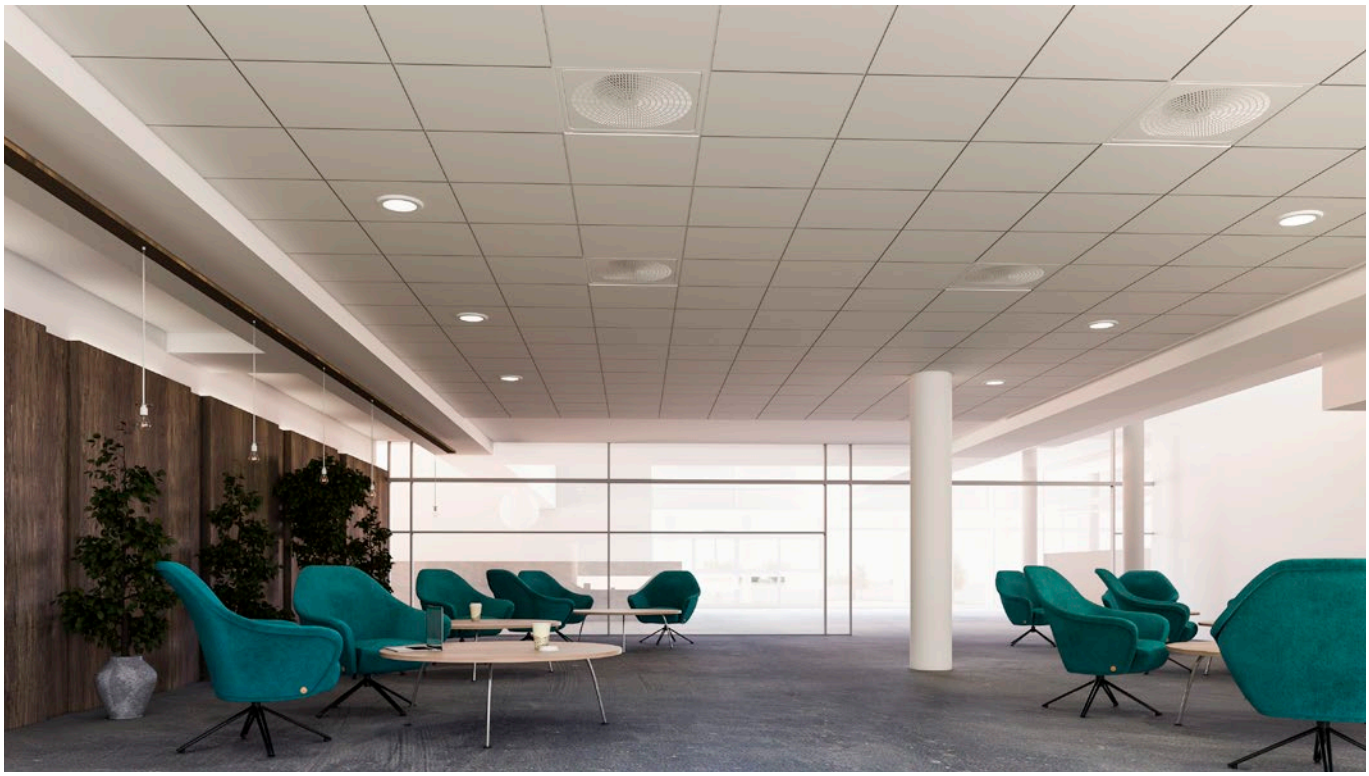
LOCKZONE Ceiling

Square ceiling air diffuser for supply air



QUICK FACTS

- Guide vane perforations arranged in a radial pattern
- Designed for flush ceiling mounting
- Also available in the extract air version
- Designed for modular suspended ceilings
- Fast and simple installation and commissioning through Swegon Quick Access
- ALS commissioning box with 1 or 2 transitions between the inlet and outlet
- Available in a version with low overall height
- Adapter for false ceilings
- Air diffuser size 250-500 and 315-500 adapted for ADAPTER
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)								
LOCKZONE C Size		25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m³/h	l/s	m³/h	l/s	m³/h
125-400		38	137	43	155	50	180
125-600		33	119	39	141	45	166
160-400		53	191	60	216	72	260
160-600		47	169	54	195	67	242
200-500		80	288	90	324	105	378
200-600		78	281	90	324	105	378
250-500		102	367	120	432	135	486
250-600		110	396	130	468	147	593
315-500		138	497	161	580	186	670
315-600		135	486	150	540	175	630
400-600		220	792	255	918	285	1026
LOCKZONE C Size	ALS Size	25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m³/h	l/s	m³/h	l/s	m³/h
125-400	100-125	23	82	28	101	34	123
125-600	100-125	21	76	26	94	31	112
160-400	125-160	33	119	40	144	48	173
160-600	125-160	30	108	37	133	45	162
200-500	160-200	48	173	61	220	73	263
200-600	160-200	45	162	58	209	70	252
250-500	200-250	72	259	87	313	102	367
250-600	200-250	77	277	92	331	112	404
315-500	200-315	80	288	100	360	120	432
315-500	250-315	97	349	125	450	141	508
315-600	250-315	108	389	130	468	146	526
400-600	315-400	160	576	190	684	225	810

The data is specified for supply air at 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 m^2 room absorption area.*

Swegon

Contents

Technical description

Design

Rectangular perforated supply air diffuser consisting of two parts: a backing box and a diffuser face. The diffuser face has guide vane perforations arranged in a radial pattern for swirl diffusion. The diffuser face is equipped with hinges on one side and is fastened by means of springs on the opposite side. This fastening technique, called Quick Access, lets you open and close the diffuser face quickly and with ease to install, commission or clean it. The diffuser is also available in a low design where short overall height is required. The diffuser is then supplied without connection branch (Not size 400-600).

Materials and surface treatment

The backing box and the diffuser face are made of sheet steel. The connection branch is made of galvanized sheet steel. The inner and outer surfaces of the air diffuser 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:

The ALS is made of galvanized sheet steel. It contains a removable adjusting damper, fixed pressure measurement tappings and sound attenuating lining 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.

The commissioning box is also available in a low version with low overall height. The commissioning box is then supplied without outlet spigot.

The commissioning box is available with 1 or 2 transitions between the in- and outlet.

Frame:

SAR K. For aesthetic installation of lowered diffuser installation.

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 available in separate product sheet for ADAPTER.

Engineering

LOCKZONE Ceiling is available with 595 x 595 mm rectangular dimensions in all connection sizes. This makes LOCKZONE Ceiling very simple to install in 600 x 600 mm modular suspended ceilings. The diffuser is fitted to the T-bar framework and then secured to the duct system. See Figure 2. LOCKZONE Ceiling is also available in low version for installation where the overall height of the diffuser must be minimized.

Installation

When removing the diffuser face to install the diffuser, insert a thin object such as a Quick Access card or similar card in between the face and the diffuser box frame to release the springs. Slide the card from the centre outward toward the corners. See Figure 1. The connection branch of the backing box section is secured to the connecting duct by means of a screw or pop rivet. For flush mounting in fixed ceilings, secure the diffuser by means of screws through the sides or top of the diffuser section to the building structure. Diffusers and boxes for low overall height must be centred to one another by means of the rubber seal supplied. Secure the diffuser in the correct position by screwing the diffuser tight with sheet metal screws into the underside of the commissioning box. See Figure 3.

When mounting in suspended modular ceilings, it is advisable to use diffusers with 595 x 595 mm outer dimensions. These must be fitted directly onto the T-bar framework and then attached to the duct system or commissioning box. If the ALS commissioning box is used, it should be secured to the building structure by means of hangers or mounting straps. The distance between the commissioning box and the diffuser may be extended up to 500 mm using a normal circular duct without having to fit longer airflow measurement hoses or damper 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 commisioning box, see Figure 2. The requirements of straigh 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 ± 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 diffuser may be cleaned when necessary using lukewarm water with dishwashing detergent added. Access to the duct system is possible by opening the diffuser face. If the ALS commissioning box is used, the distribution plate must be moved to the side enable you to take hold of the damper unit and turn it to release it from its mounting bracket. See Figure 4.

Environment

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

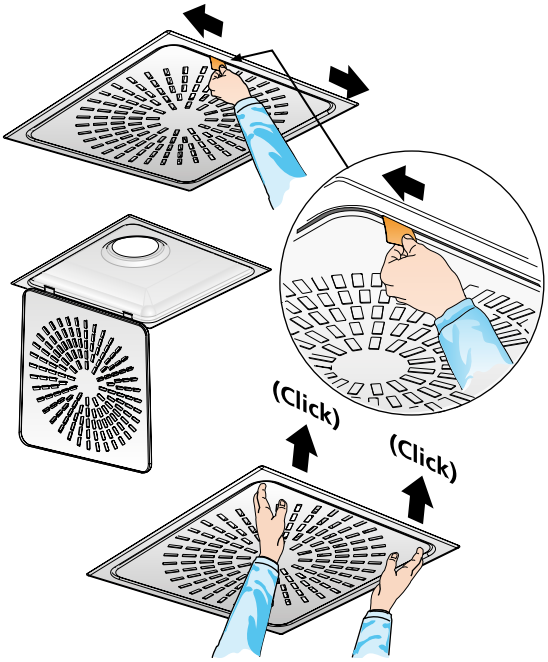


Figure 1. Quick Access, dismantling of the diffuser front.

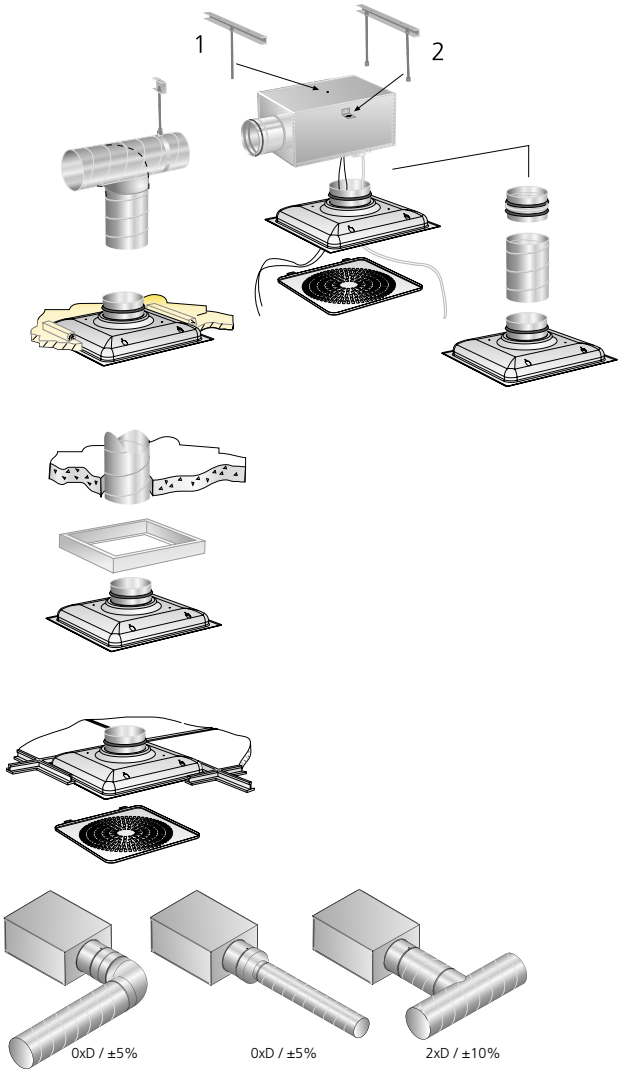


Figure 2. Installation alternatives.

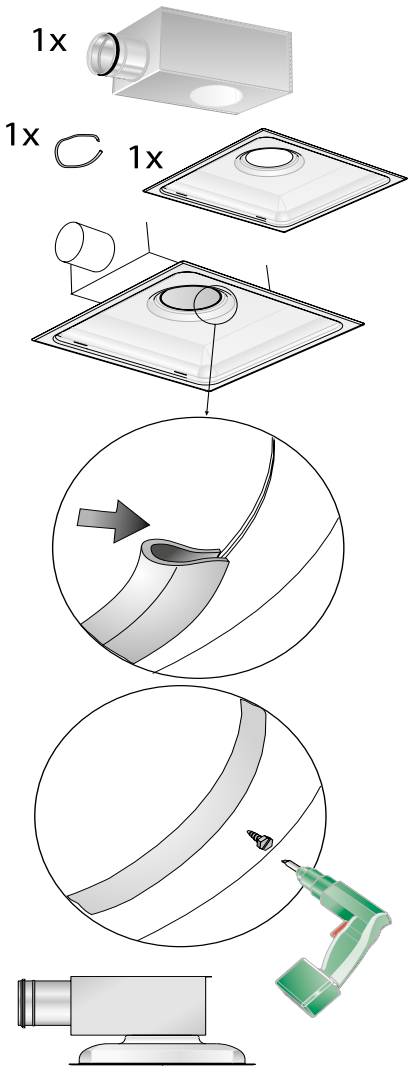


Figure 3. Installation of air diffusers and commissioning box with low installation height.

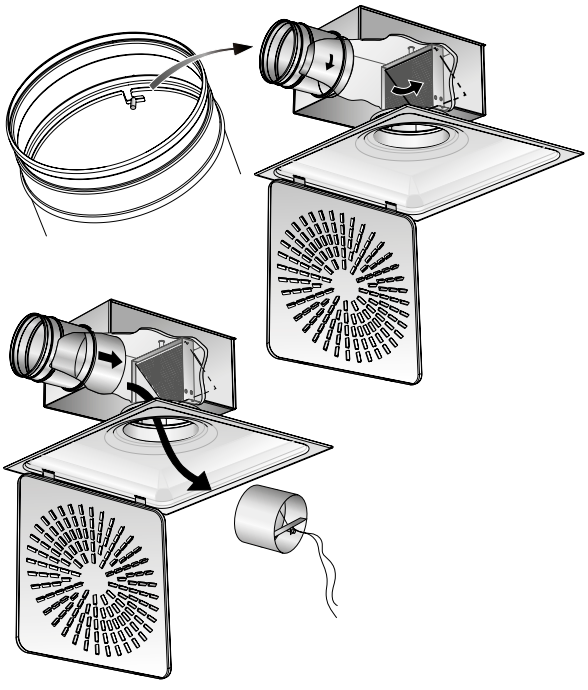


Figure 4. To dismantle the damper.

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.
- The throw $l_{0,2}$ is measured under isothermal conditions.
- The recommended maximum permissible temperature below room air temperature is 14 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 softwares 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

LOCKZONE Ceiling – 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
125-400	-2	-2	-2	0	2	-9	-24	-27
125-600	-5	-2	2	6	-4	-14	-27	-24
160-400	-3	-1	-1	0	2	-10	-25	-27
160-600	-7	-2	1	6	-3	-16	-28	-24
200-500	0	-1	-1	1	2	-11	-26	-25
200-600	-2	-1	0	5	-1	-16	-28	-25
250-600	-3	-2	0	3	1	-11	-27	-27
315-600	-6	-1	1	2	1	-11	-27	-25
400-600	0	-2	2	3	1	-9	-22	-23
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
125-400	20	15	10	5	3	5	5	4
125-600	20	15	10	5	3	5	5	4
160-400	19	14	9	4	3	5	5	4
160-600	19	14	9	4	3	5	5	4
200-500	19	14	8	3	3	4	5	5
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	13	8	4	1	0	0	0	0
Tol. ±	2	2	2	2	2	2	2	2

LOCKZONE Ceiling – Extract 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
250-600	-4	3	3	1	0	-4	-13	-21
315-600	-6	0	3	2	0	-5	-13	-21
400-600	-1	-4	0	1	1	-6	-19	-24
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
250-600	16	11	5	4	2	3	4	4
315-600	14	9	4	2	2	2	3	3
400-600	13	8	4	1	0	0	0	0
Tol. ±	2	2	2	2	2	2	2	2

Sound Data

LOCKZONE Ceiling + ALS – Supply air – One step

One transition between the inlet and outlet of the commissioning box

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

Size	Mid- frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
125-400	2	7	6	1	-1	-9	-17	-19
125-600	0	8	6	4	-4	-10	-17	-18
160-400	1	6	6	1	0	-9	-16	-19
160-600	-1	5	6	5	-4	-12	-19	-19
200-500	1	6	5	1	-1	-8	-15	-17
200-600	-1	5	4	3	-2	-9	-16	-18
250-600	-2	6	4	1	-1	-7	-13	-16
315-600	-1	5	3	2	0	-9	-19	-21
400-600	2	7	3	2	0	-8	-16	-17
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
125-400	21	16	9	17	23	16	11	13
125-600	21	16	9	17	23	16	11	13
160-400	19	14	10	17	19	12	10	12
160-600	19	14	10	17	19	12	10	12
200-500	16	11	8	16	18	12	11	11
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	10	5	8	14	11	10	11	12
Tol. ±	2	2	2	2	2	2	2	2

LOCKZONE Ceiling + ALS – Supply air – Two steps

Two transitions between the inlet and outlet of the commissioning box

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

Size	Mid- frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
160-400	-1	9	7	1	-4	-9	-14	-17
160-600	-3	7	8	2	-6	-10	-15	-18
200-500	2	8	7	0	-5	-7	-14	-17
200-600	2	8	7	1	-5	-8	-15	-16
250-600	3	8	5	-1	-4	-6	-12	-15
315-600	-2	8	4	-1	-2	-7	-13	-16
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
160-400	19	14	11	17	24	15	13	15
160-600	19	14	11	17	24	15	13	15
200-500	18	14	10	16	23	15	14	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

LOCKZONE Ceiling + ALS – Extract air

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

Size	Mid- frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
250-600	0	12	6	-3	-4	-8	-14	-20
315-600	1	9	4	-4	-2	-8	-14	-20
400-600	3	8	2	0	0	-6	-15	-19

Sound attenuation ΔL (dB)
Table ΔL

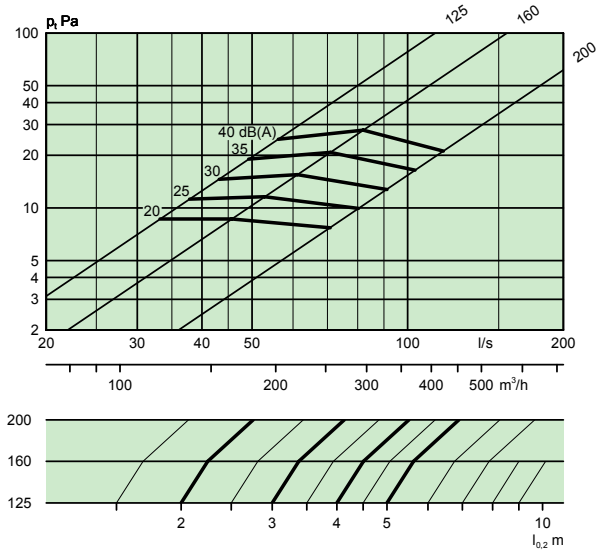
Size	Mid- frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
250-600	13	8	8	16	17	12	12	13
315-600	11	6	7	19	14	10	10	13
400-600	10	5	8	14	11	10	11	12

Engineering graphs

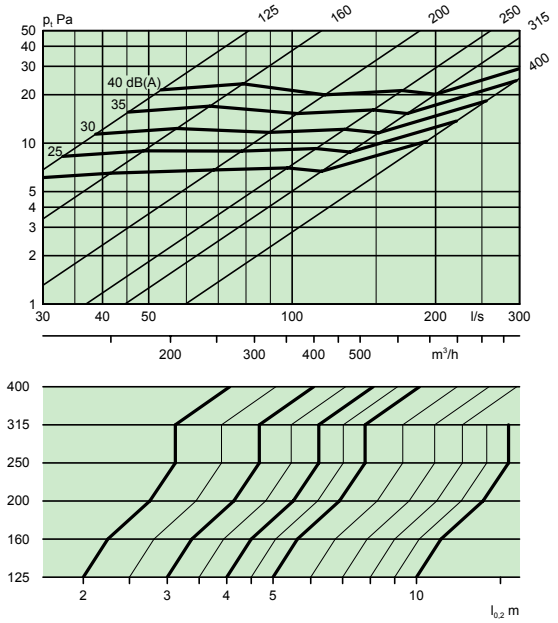
Airflow – Pressure drop – Sound level - Throw

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

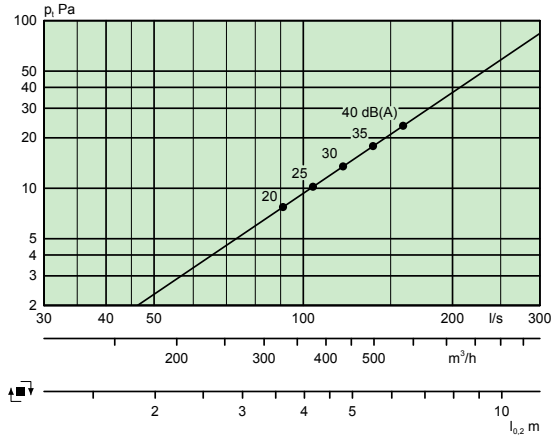
LOCKZONE C 125-400, 160-400 och 200-500 – Supply air



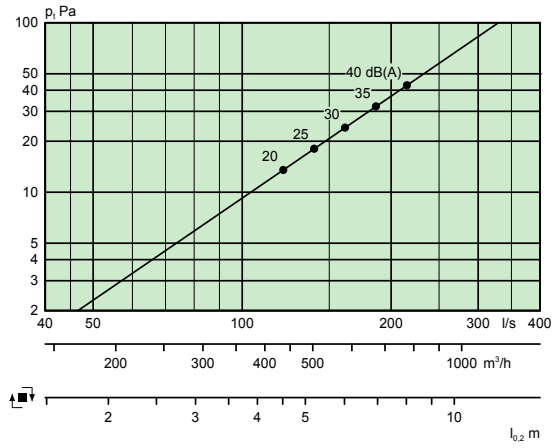
LOCKZONE C 125-600, 160-600, 200-600, 250-600, 315-600 och 400-600 – Supply air



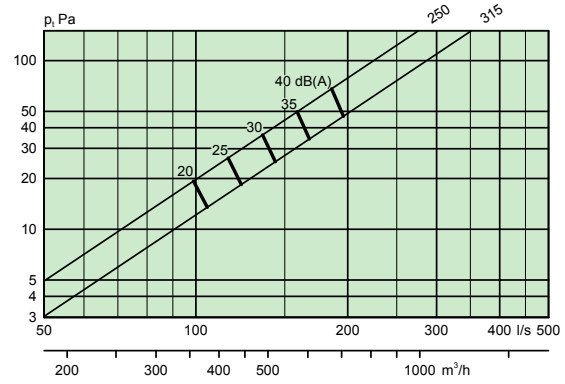
LOCKZONE C 250-500 – Supply air



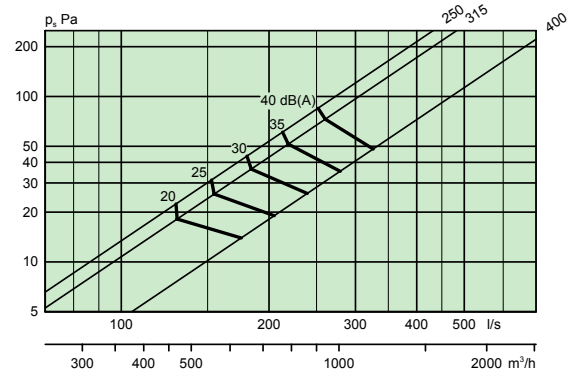
LOCKZONE C 315-500 – Supply air



LOCKZONE C 250-500, 315-500 – Extract air



LOCKZONE C 250-600, 315-600, 400-600 – Extract air

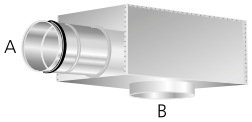


LOCKZONE Ceiling + ALS – Supply Air

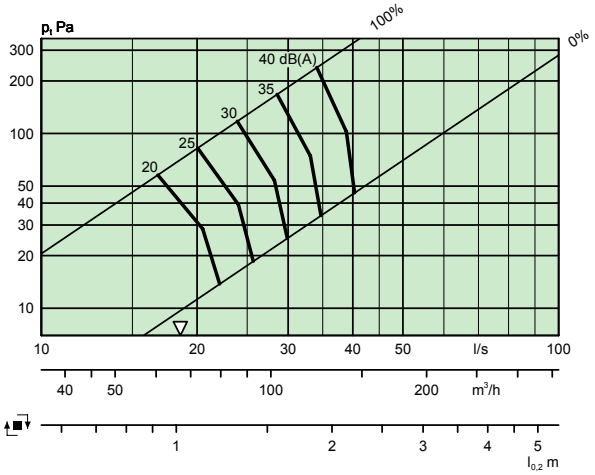
Airflow - Pressure drop - Sound level - Throw

- The graphs illustrate data for LOCKZONE Ceiling recessed in a ceiling.
- The graphs must not be used for commissioning.
- = min. permissible airflow necessary for obtaining adequate commissioning pressure.
- The dB(A) values are applicable to rooms with normal acoustic absorption (4 dB attenuation in a room).
- The dB(C) is normally 6-9 dB higher than the dB(A).
- Low ceiling height causes 3 dB(A) higher sound level than that specified in the graph.

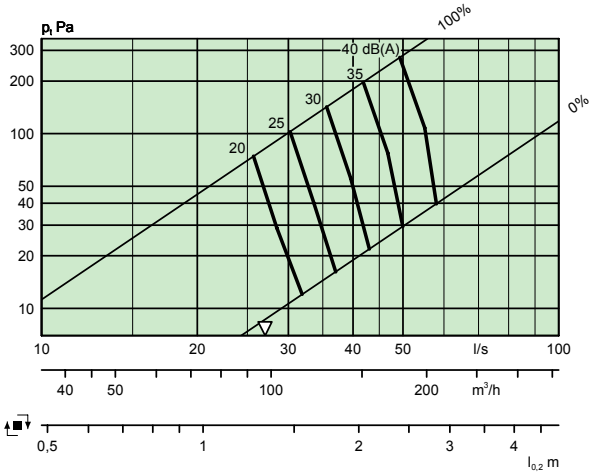
Explanation of the step model:
• One step = One dimensional change between A and B, for example, A = Ø160 mm and B = Ø200 mm.
• Two steps = Two dimensional changes between A and B, for example, A = Ø160 mm and B = Ø250 mm.



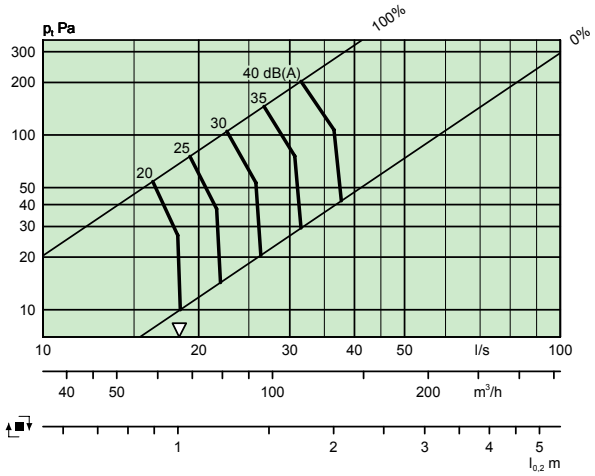
LOCKZONE C 125-400 + ALS 100-125 – One step



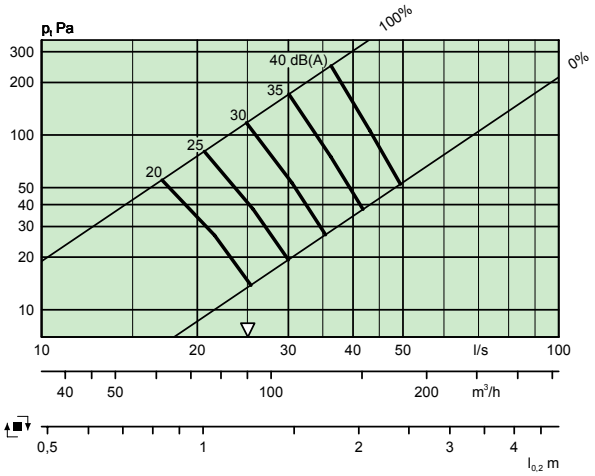
LOCKZONE C 160-400 + ALS 125-160 – One step



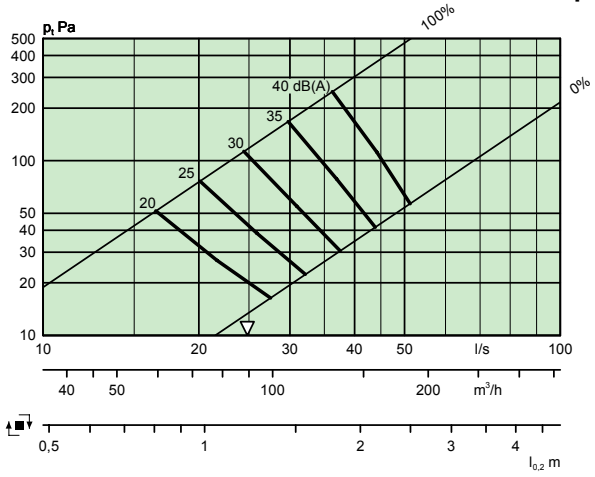
LOCKZONE C 125-600 + ALS 100-125 – One step



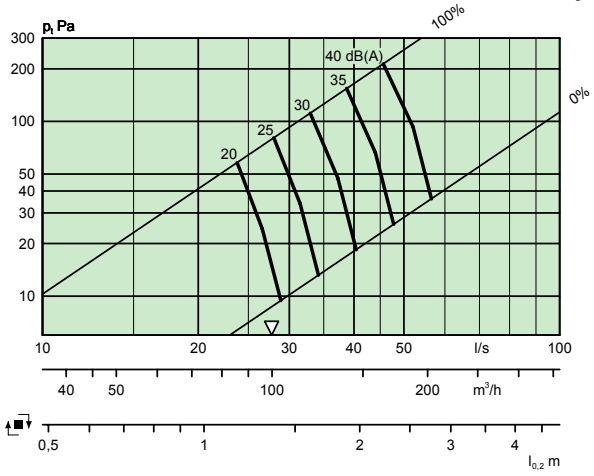
LOCKZONE C 160-600 + ALS 100-160 - Two steps



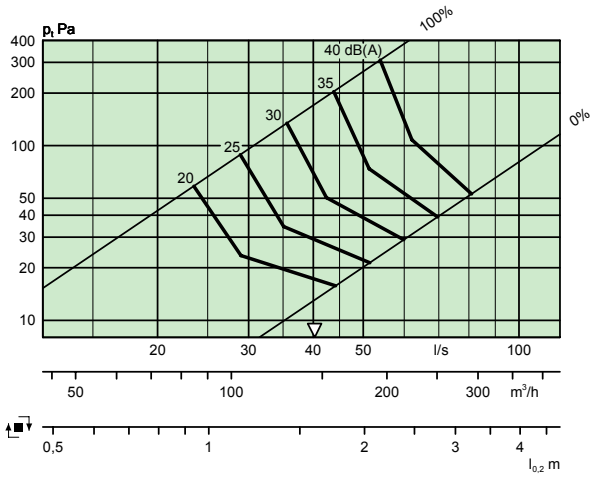
LOCKZONE C 160-400 + ALS 100-160 – Two steps



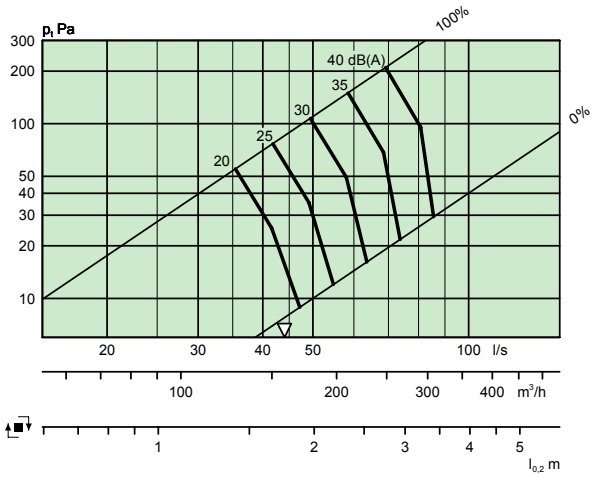
LOCKZONE C 160-600 + ALS 125-160 – One step



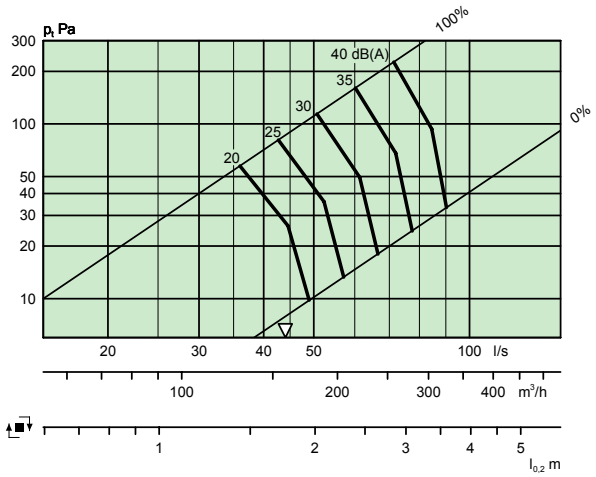
LOCKZONE C 200-500 + ALS 125-200 – Two steps



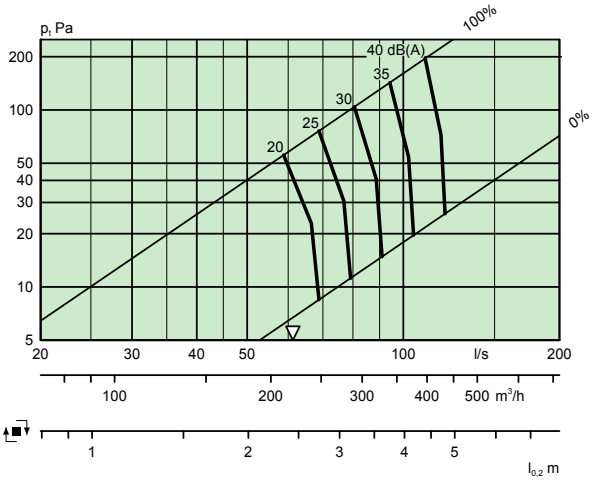
LOCKZONE C 200-600 + ALS 160-200 – One step



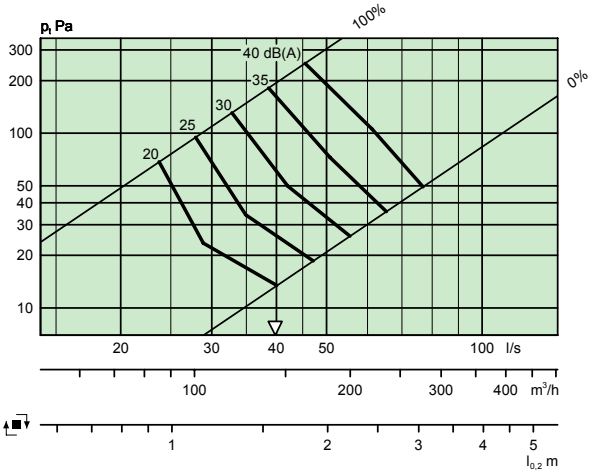
LOCKZONE C 200-500 + ALS 160-200 – One step



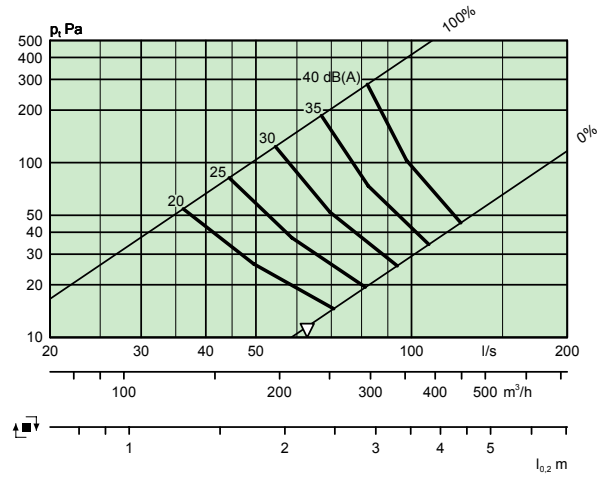
LOCKZONE C 250-500+ALS 200-250 – One step



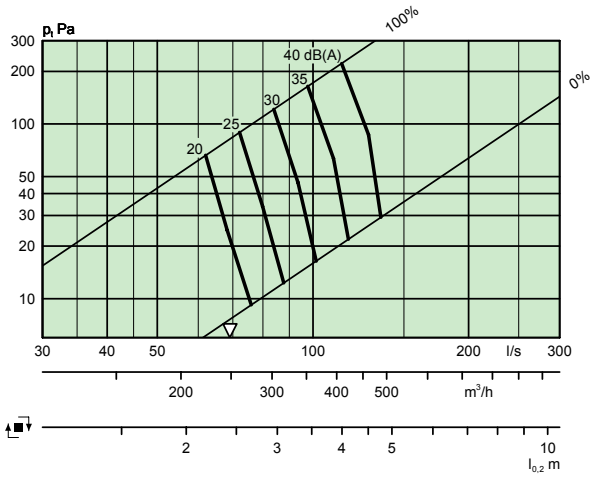
LOCKZONE C 200-600 + ALS 125-200 – Two steps



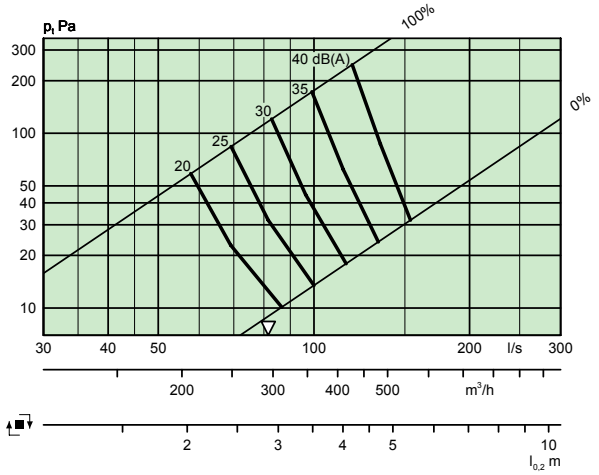
LOCKZONE C 250-600 + ALS 160-250 – Two steps



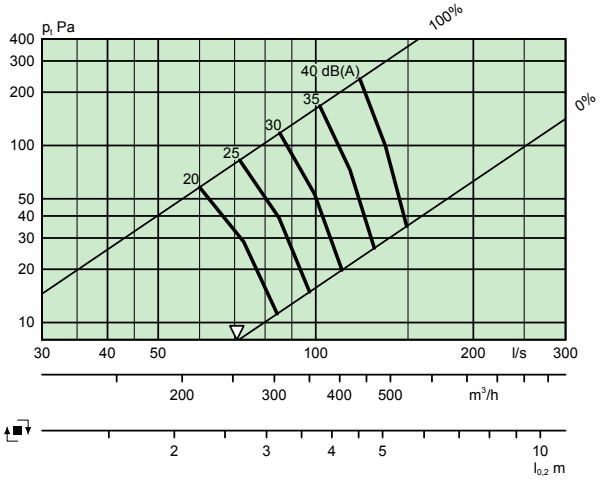
LOCKZONE C 250-600 + ALS 200-250 – One step



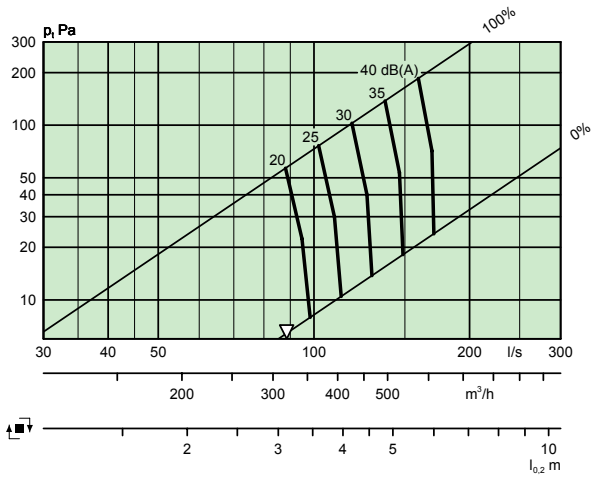
LOCKZONE C 315-600 + ALS 200-315 – Two steps



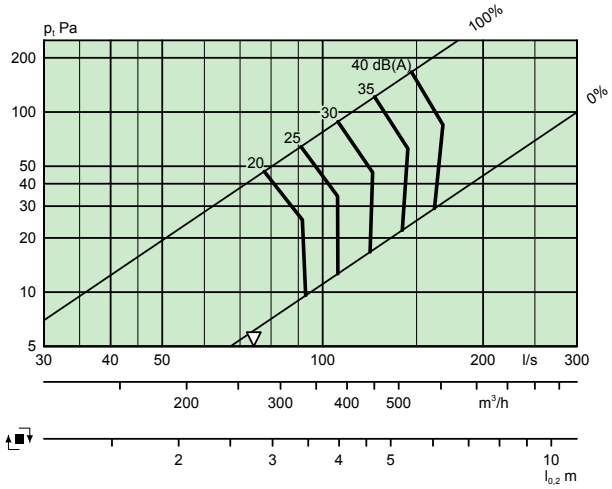
LOCKZONE C 315-500+ALS 200-315 – Two steps



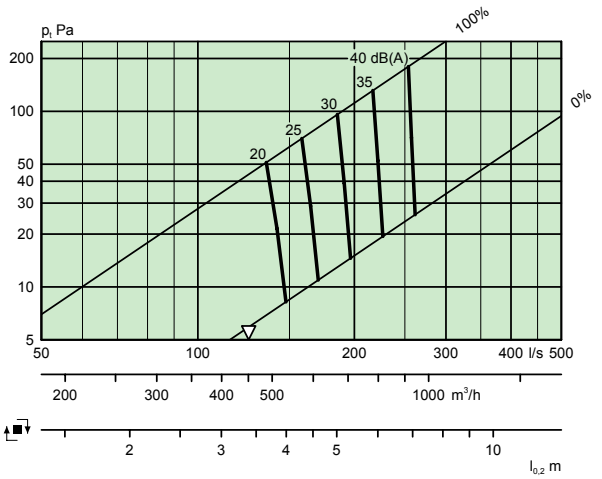
LOCKZONE C 315-600 + ALS 250-315 – One step



LOCKZONE C 315-500+ALS 250-315 – One step



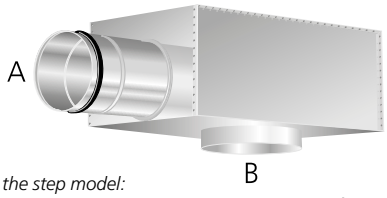
LOCKZONE C 400-600 + ALS 315-400 – One step



LOCKZONE Ceiling + ALS - Extract air - One step

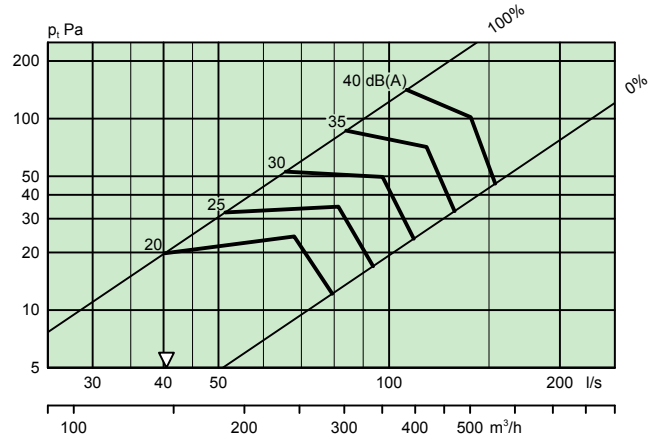
Airflow – Pressure drop – Sound level

- The sound level, dB(A), values are applicable to rooms with an equivalent sound absorption area of 10 m^2.
- ∇ = min. permissible airflow necessary for obtaining adequate 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 softwares available for download at www.swegon.com.

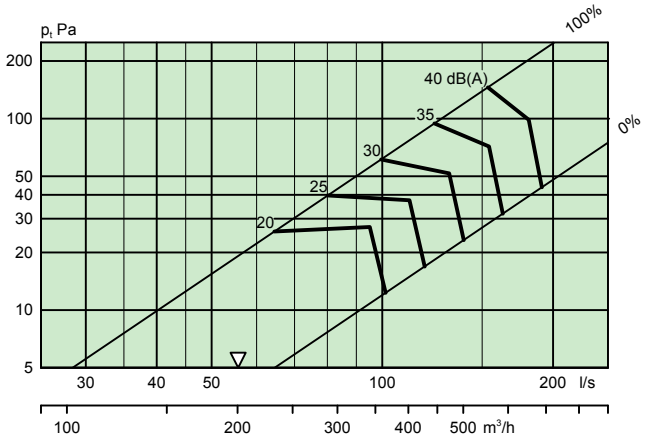


Explanation of the step model:
• One step = One dimensional change between A and B, for example, A = Ø160 mm and B = Ø200 mm.
• Two steps = Two dimensional changes between A and B, for example, A = Ø160 mm and B = Ø250 mm.

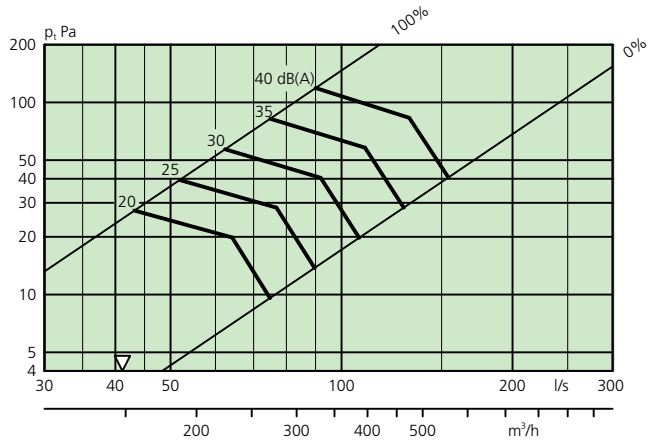
LOCKZONE C 250-500 + ALS 200-250 – One step



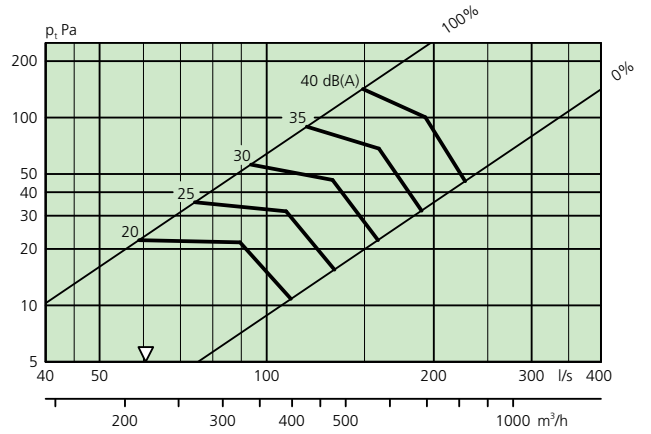
LOCKZONE C 315-500+ALS 250-315 – One step



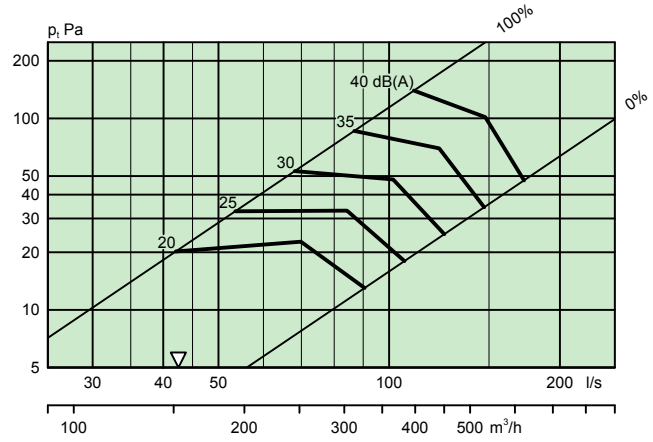
LOCKZONE C 250-600 + ALS 200-250 – One step



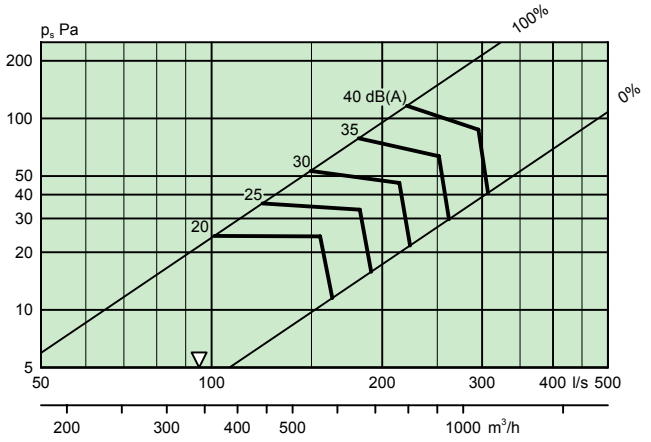
LOCKZONE C 315-600 + ALS 250-315 – One step



LOCKZONE C 315-500 + ALS 200-315 – Two steps



LOCKZONE C 400-600 + ALS 315-400 – One step



Dimensions and weights

LOCKZONE Ceiling

Size	A	ØD	Ød	l	M	Weight kg
125-400	395	290	124	375	70	1,5
125-600	595	290	124	575	70	3,7
160-400	395	290	159	375	70	1,5
160-600	595	290	159	575	70	3,7
200-500	495	390	199	475	70	2,5
200-600	595	390	199	575	70	3,7
250-500	495	390	249	475	70	3,2
250-600	595	490	249	575	70	3,7
315-500	495	390	314	475	70	3,2
315-600	595	490	314	575	50	3,7
400-600	595	490	399	575	50	3,5

Dimension of opening = l x l

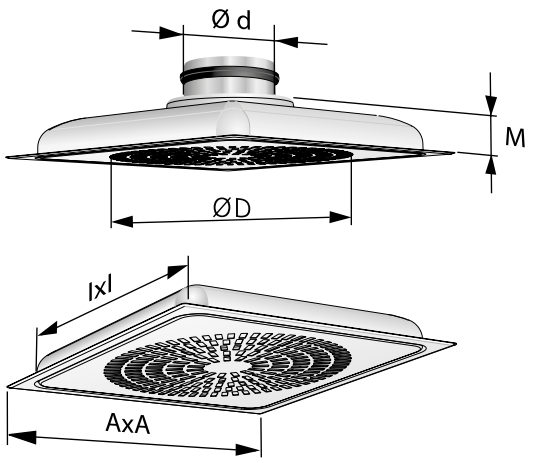


Figure 5. LOCKZONE Ceiling.

LOCKZONE Ceiling with ALS - One step

Size	A	B	C	ØD	Ød	E1	E2	F1	F2	G1	G2	H	K	Weight, kg
125-400	395	282	217	99	125	255	212	113	70	175	132	270	80	3,5
125-600	595	282	217	99	125	255	212	113	70	175	132	270	80	5,5
160-400	395	342	252	124	160	279	236	113	70	188	145	315	80	4,2
160-600	595	342	252	124	160	279	236	113	70	188	145	315	80	6,2
200-500	495	404	288	159	200	314	271	113	70	205	162	375	100	6,0
200-600	595	404	288	159	200	314	271	113	70	205	162	375	100	7,0
250-500	495	504	332	199	250	354	311	113	70	225	182	465	115	8,2
250-600	595	504	332	199	250	354	311	113	70	225	182	465	115	8,7
315-500	495	622	388	249	315	395	352	93	50	230	187	575	140	11,8
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

LOCKZONE Ceiling with ALS 2 steps

Size	A	B	C	ØD	Ød	E1	E2	F1	F2	G1	G2	H	K	Weight, kg
160-400	395	342	252	99	160	255	212	113	70	175	132	315	80	3,5
160-600	595	342	252	99	160	255	212	113	70	175	132	315	80	5,5
200-500	495	404	288	124	200	279	236	113	70	188	145	355	80	3,2
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
315-500	495	622	388	199	315	334	291	93	50	205	162	550	115	8,4
315-600	595	622	388	199	315	334	291	93	50	205	162	550	115	8,7

CL = Center line

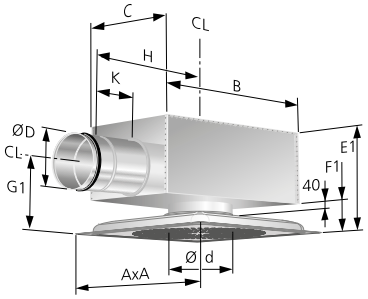


Figure 6. LOCKZONE Ceiling with ALS. CL = Centerline.

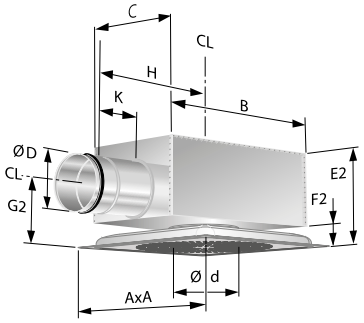


Figure 7. LOCKZONE Ceiling with ALS. Low building height.

Frame SARb K

Size	L	Weight, kg
400	395	1.0
500	495	1.0
600	595	1.0

For sizes 315-600 and 400-600, allow the connection of the ALS commissioning box to project 20 mm below the ceiling surface.

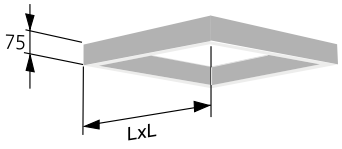


Figure 8. Frame SAR K.

Ordering key

Product

Rectangular ceiling diffuser for supply air	LOCKZONE C	a	aaa	-bbb	-c
Version					
Nominal connection dimension, mm 125, 160, 200, 250, 315, 400					
Nominal square dimension, mm 400, 500, 600					
Version for low overall height: L Specified only if version for low overall height is desired. All sizes except 400-600.					

Standard range

Size:	125-400
	125-600
	160-400
	160-600
	200-500
	200-600
	250-500
	250-600
	315-500
	315-600
	400-600

Accessories

Commissioning box	ALS	d	aaa-bbb	-c
Version:				

For LOCKZONE Ceiling:	ALS:
125-400 and 125-600	100-125
160-400 and 160-600	100-160
160-400 and 160-600	125-160
200-500 and 200-600	125-200
200-500 and 200-600	160-200
250-600	160-250
250-500, 250-600	200-250
315-500, 315-600	200-315
315-600	250-315
400-600	315-400

Version for low overall height: L
Specified only if version for low overall height is desired.

Frame	SAR	b	K	aaa
Version:				
K = quadratic				

For size:		
	125-400:	400
	160-400:	400
	200-500:	500
	250-500:	500
	315-500:	500
	125-600:	600
	160-600:	600
	200-600:	600
	250-600:	600
	315-600:	600
	400-600	600

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

Specification example

Swegon's complete rectangular perforated ceiling diffuser of LOCKZONE Ceiling type, with ALS commissioning box and the following functions.

- LOCKZONE guide vane perforation with swirl spread pattern.
- Designed for modular suspended cassette ceiling.
- Quick Access diffuser face.
- Removable commissioning damper.
- Measurement function with low method error.
- Interior acoustic lining with reinforced surface layer that prevents fibre entrainment.
- Powder coated white finish.

Size:	LOCKZONE Ca aaa-bbb-c with ALSd aaa-bbb-c	xx items
Accessories :		
Frame :	SARb K aaa	xx items