EAGLE Ceiling

Square ceiling diffuser with discs for supply air

QUICK FACTS

- Adjustable discs
- 100% flexible spread pattern
- Can be used for vertical diffusion
- Swirl function
- Also available in the Extract air version
- Designed for modular suspended ceilings (600 x 600 mm)
- Quick Access diffuser face
- Adapter for 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) *)								
EAGLE Ceiling		25 dB(A)		30 dB(A)		35 dB(A)	
Size		l/s	m³/h	l/s	m³/h	l/s	m³/h
125-400		36	130	42	151	49	176
125-600		34	122	40	144	48	173
160-400		49	176	59	212	70	252
160-600		49	176	59	212	70	252
200-500		80	288	92	331	110	396
200-600		75	270	88	317	105	378
250-500		100	360	117	421	135	486
250-600		105	378	120	432	140	504
315-500		113	407	130	468	150	540
315-600		135	486	150	540	180	648
400-600		180	648	210	756	240	864
EAGLE Ceiling	ALS	25 dB(A)		30 dB(A)		35 dB(A)	
Size	Size	l/s	m³/h	l/s	m³/h	l/s	m³/h
125-400	100-125	25	90	31	112	37	133
125-600	100-125	24	86	30	108	37	133
160-400	125-160	37	133	47	169	59	212
160-600	125-160	36	130	45	162	57	205
200-500	160-200	54	194	68	245	84	302
200-600	160-200	52	187	66	238	81	292
250-500	200-250	77	277	97	349	113	407
250-600	200-250	83	299	99	356	114	410
315-500	250-315	98	353	120	432	137	493
315-600	250-315	112	403	132	475	156	562
400-600	315-400	155	558	180	648	215	774

The data specified in the table applies to 50 Pa total pressure.

**) Lp10A = Sound pressure incl. A-filter with 4 dB room attenuation and 10 m2 room absorption area.*

Swegon

Contents

Technical description

Design

The square supply air diffuser consists of a diffuser backing box and a diffuser face. The diffuser face is equipped with aerodynamically shaped, adjustable discs that are adjustable and ca be turned 360°. 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. air diffuser is also available in a low version for installation in a ceiling void where low installation height is required. The air diffuser is then supplied without sleeve coupling (not size 400-600).

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 of the air diffuser is painted in our white standard colour, RAL 9003/NCS S 0500-N. The air diffuser is also available in alternative standard colours: Dusty grey RAL 7037, white aluminium RAL 9006, jet black RAL 9005, grey aluminium RAL 9007 and white RAL 9010. The discs are made of plastic (PP-polypropylene).

Accessories

Commissioning box:

ALS. Made of galvanized sheet steel. Contains removable commissioning damper, fixed measurement tappings and sound absorbing material with reinforced surface layer*). The commissioning box is also available in a low version for installation in a ceiling void where low installation height is required. The air diffuser is then supplied without sleeve coupling. The commissioning box is available with 1 or 2 changes in dimension between the inlet and outlet. Tightness class C on the housing according to SS-EN 12237 and VVS/AMA 12.

*) Fire Resistance Class B-s1,d0 according to EN ISO 11925-2.

Frame:

SAR K. For aesthetic installation of a lowered diffuser.

Adapter:

See the ADAPTER product sheet 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 EAGLE Ceiling is available with square dimensions of 595 x 595 mm in all connection sizes. This makes EAGLE Ceiling very easy to install in 600 x 600 suspended ceiling modules. Position these directly down in the T-bar framework, and then secure them to the duct system or to the commissioning box. EAGLE Ceiling is also available in a low version for installation in ceiling void where low installation height is required. See Figure 2.

Installation

To dismantle the face (see Figure 1) prior to installing the air diffuser, 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. The inlet spigot of the diffuser backing box can be secured to the connecting ducting by means of self-tapping screws or a blind rivets. For flush-mounting in fixed ceiling constructions, secure the 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-tapping screws to the underside of commissioning box.

For mounting in modular suspended ceilings, it is advisable to select air diffusers with outer dimensions of 595 x 595 mm. 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 must be carried out with the diffuser face mounted. Pull out the measuring tubes and damper adjustment cords through the diffuser face discs. Connect a manometer to the measuring tubes. The desired commissioning pressure can be computed by applying the rated coefficient of performance of the air diffuser. Set the damper blade in the correct position and tie the damper adjustment cords in a commissioning knot to indicate the damper position.

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 rated coefficient of performance (K-factor) is specified on the identification label of the product and the relevant commissioning instructions are also 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 grip and twist the damper unit from of its mounting. See figure 4.

Environment

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

Installation

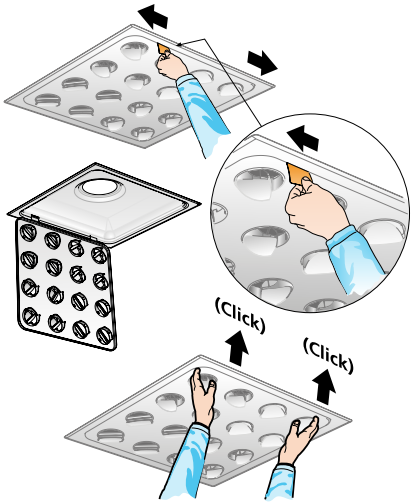


Figure 1. Opening and closing the diffuser face with Quick Access.

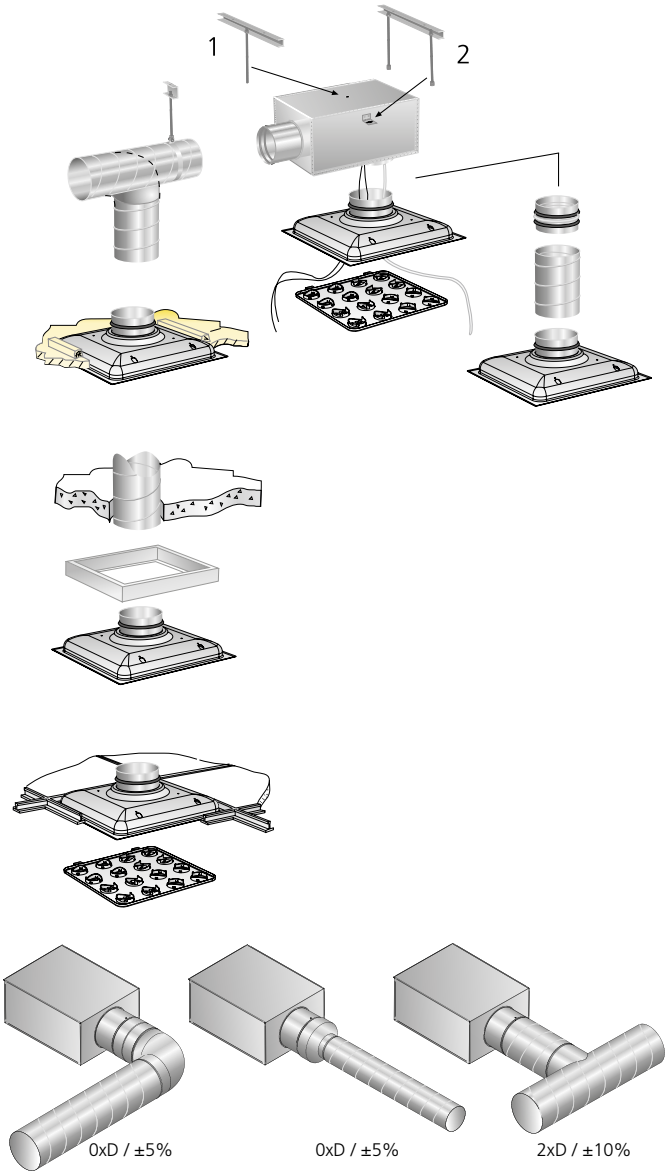


Figure 2. Installation alternatives.

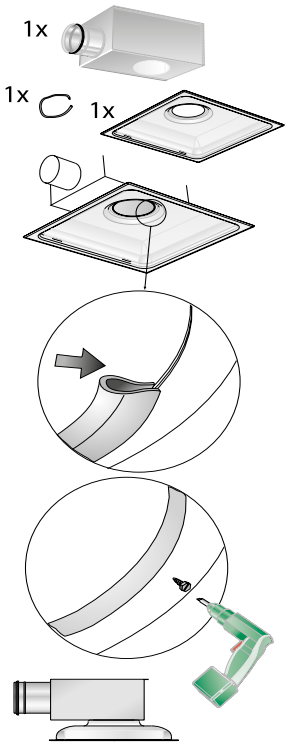


Figure 3. Installing air diffusers and commissioning box with low installation height.

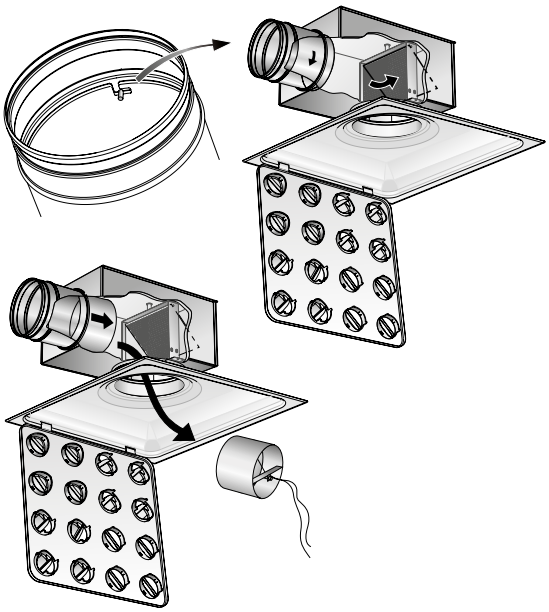


Figure 4. Damper removal.

Sizing

- Sound level L_A dB(A) applies to rooms of 10 m^2 equivalent absorption area.
- Throw $l_{0,2}$ is measured under isothermal conditions.
- Recommended max. permissible temperature below room temperature is 14K.
- 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

Sound data

EAGLE C – Supply air – Air diffuser only

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

Size	Mid-frequency (Octave band) Hz							
EAGLE C	63	125	250	500	1000	2000	4000	8000
125-400	-4	1	1	3	1	-11	-22	-25
125-600	1	3	5	5	-4	-13	-23	-23
160-400	-6	3	1	1	2	-9	-21	-27
160-600	-1	2	3	5	-3	-12	-23	-24
200-500	-3	3	1	2	1	-11	-23	-24
200-600	-6	3	2	5	-2	-13	-25	-24
250-500	-6	1	2	1	2	-9	-23	-29
250-600	-3	2	2	3	0	-11	-24	-25
315-500	-6	2	2	1	1	-8	-22	-28
315-600	-2	4	4	1	1	-9	-23	-28
400-600	4	6	6	4	3	-6	-19	-22
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)
Table ΔL

Size	Mid-frequency (Octave band) Hz							
EAGLE C	63	125	250	500	1000	2000	4000	8000
125-400	22	15	10	5	3	5	5	4
125-600	22	15	10	5	3	5	5	4
160-400	20	14	9	4	3	5	5	4
160-600	20	14	9	4	3	5	5	4
200-500	20	14	8	3	3	4	5	5
200-600	20	14	8	3	3	4	5	5
250-500	17	11	5	4	2	3	4	4
250-600	17	11	5	4	2	3	4	4
315-500	16	9	4	2	2	2	3	3
315-600	16	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

EAGLE C – Extract air – Air diffuser only

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

Size	Mid-frequency (Octave band) Hz							
EAGLE C	63	125	250	500	1000	2000	4000	8000
250-500	-2	5	0	0	2	-7	-17	-26
250-600	-1	7	1	1	1	-7	-17	-24
315-500	-5	4	0	0	1	-6	-16	-27
315-600	-4	8	3	2	1	-8	-18	-25
400-600	5	7	5	3	3	-5	-15	-19
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)
Table ΔL

Size	Mid-frequency (Octave band) Hz							
EAGLE C	63	125	250	500	1000	2000	4000	8000
250-500	16	11	5	4	2	3	4	4
250-600	16	11	5	4	2	3	4	4
315-500	14	9	4	2	2	2	3	3
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

EAGLE C + ALS – Supply air

One change in dimension between the inlet and outlet of the commissioning box.

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

Size	Mid-frequency (Octave band) Hz							
EAGLE C + ALS 1 step	63	125	250	500	1000	2000	4000	8000
125-400	1	8	6	3	-3	-12	-17	-18
125-600	3	9	8	3	-4	-12	-17	-21
160-400	6	8	7	1	-2	-10	-16	-17
160-600	6	7	7	3	-4	-10	-16	-17
200-500	2	6	5	0	-3	-8	-13	-16
200-600	1	6	6	2	-4	-8	-14	-15
250-500	-2	8	4	-1	-1	-7	-15	-20
250-600	-1	7	4	2	-1	-9	-15	-17
315-500	-6	2	2	1	1	-8	-22	-28
315-600	1	8	5	1	0	-8	-16	-20
400-600	7	11	6	3	2	-6	-15	-17
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)
Table ΔL

Size	Mid-frequency (Octave band) Hz							
EAGLE C + ALS 1 step	63	125	250	500	1000	2000	4000	8000
125-400	22	16	9	17	23	16	11	13
125-600	22	16	9	17	23	16	11	13
160-400	20	14	10	17	19	12	10	12
160-600	20	14	10	17	19	12	10	12
200-500	20	11	8	16	18	12	11	11
200-600	20	11	8	16	18	12	11	11
250-500	17	8	8	19	17	12	12	13
250-600	17	8	8	19	17	12	12	13
315-500	16	6	7	16	14	10	10	13
315-600	16	6	7	16	14	10	10	13
400-600	10	5	8	14	11	10	11	12
Tol. ±	2	2	2	2	2	2	2	2

Two changes in dimension between the inlet and outlet of the commissioning box.

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

Size	Mid-frequency (Octave band) Hz							
EAGLE C + ALS 2 step	63	125	250	500	1000	2000	4000	8000
160-400	0	10	7	2	-4	-8	-13	-17
160-600	0	10	7	2	-4	-8	-13	-17
200-500	2	9	7	1	-5	-7	-13	-17
200-600	2	8	7	1	-5	-8	-15	-16
250-600	2	9	5	-1	-4	-8	-14	-15
315-500	4	9	5	-2	-1	-6	-14	-20
315-600	2	10	5	-2	-3	-7	-13	-16
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL (dB)
Table ΔL

Size	Mid-frequency (Octave band) Hz							
EAGLE C +ALS 2 step	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
315-500	13	8	10	19	16	13	16	16
315-600	13	8	10	19	16	13	16	16
Tol. ±	2	2	2	2	2	2	2	2

EAGLE C + ALS – Extract air – One step

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

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

Sound attenuation ΔL (dB)
Table ΔL

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

Swegon reserves the right to alter specifications.

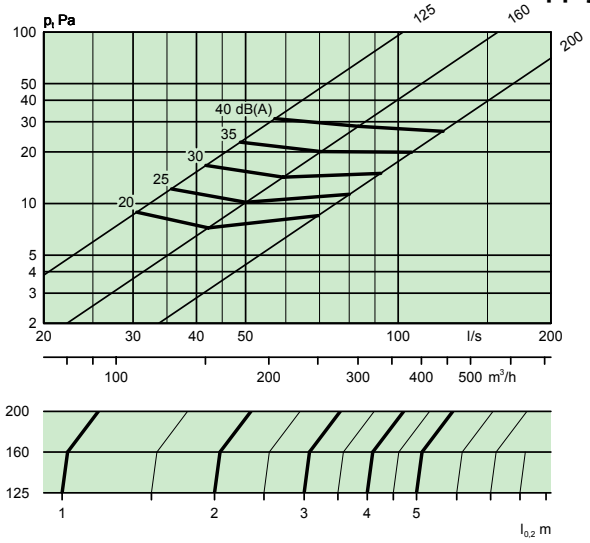
Engineering graphs

EAGLE C

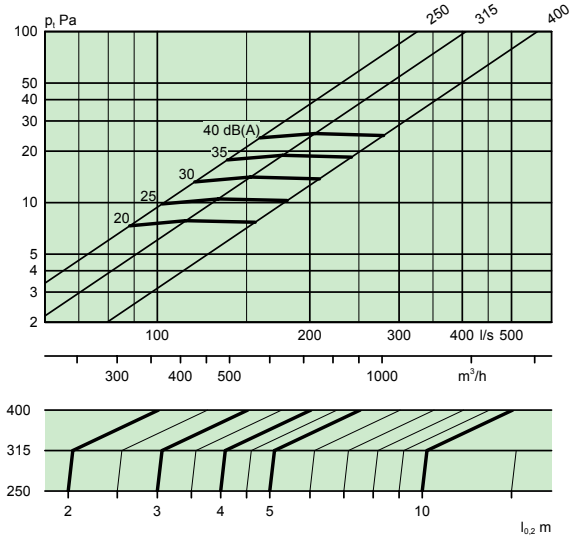
Air flow – Pressure drop – Sound level – Throw

- The graphs illustrate data for the EAGLE C recessed in a ceiling.
- The graphs must not to be used for commissioning.
- The dB(A) values are applicable to rooms with normal acoustic absorption of 4 dB.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.
- Throw for adjusting the swirl. For other adjustments, see the graphs for diffusers with the ALS commissioning box.

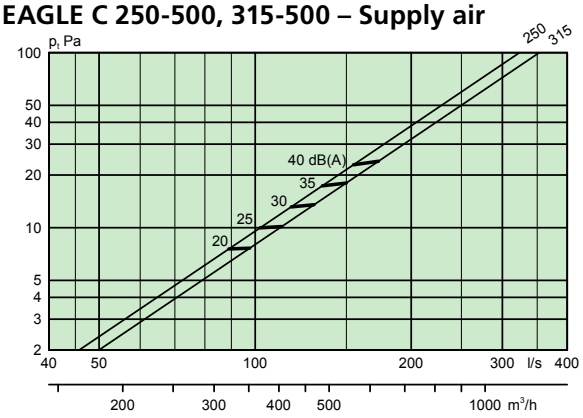
EAGLE C 125-400, 160-400 and 200-500 – Supply air



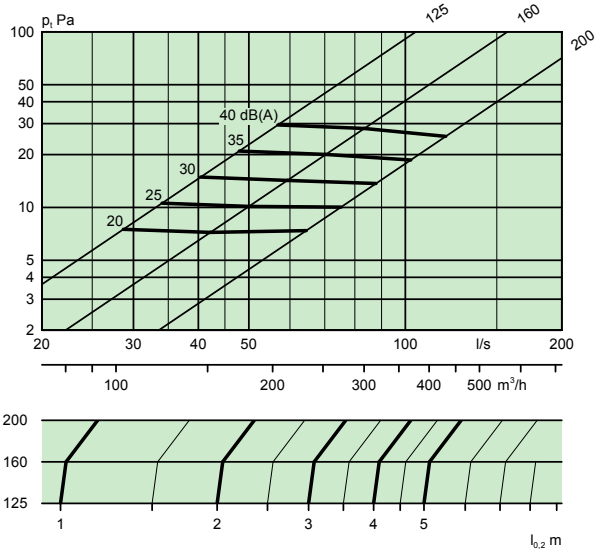
EAGLE C 250-600, 315-600 and 400-600 – Supply air



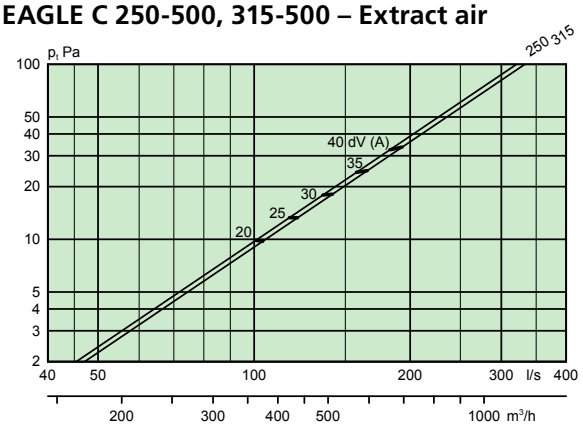
EAGLE C 250-500, 315-500 – Supply air



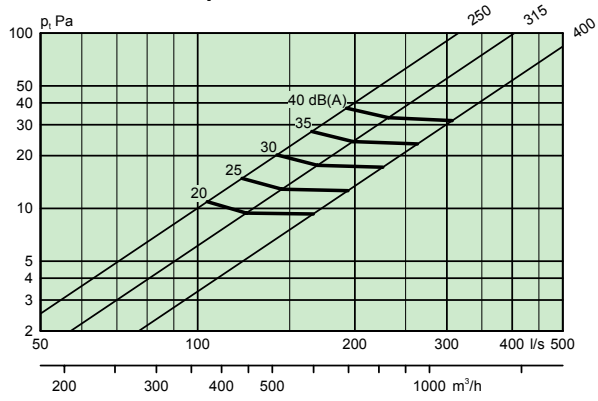
EAGLE C 125-600, 160-600 and 200-600 – Supply air



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



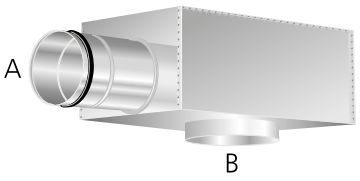
EAGLE C 250-600, 315-600 and 400-600 – Extract air



EAGLE Ceiling + ALS – Supply air

Air flow – Pressure drop – Sound level – Throw

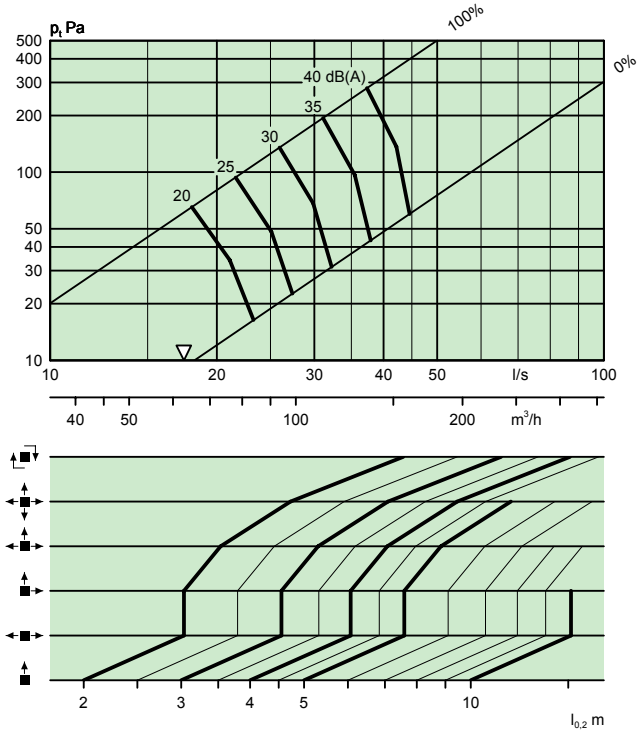
- The graphs illustrate data for the EAGLE C recessed in a ceiling.
- The graphs must not to be used for commissioning.
- ∇ = Min. airflow required for obtaining sufficient commissioning pressure.
- The dB(A) values are applicable to rooms with normal acoustic absorption of 4 dB.
- The dB(C) value is 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.



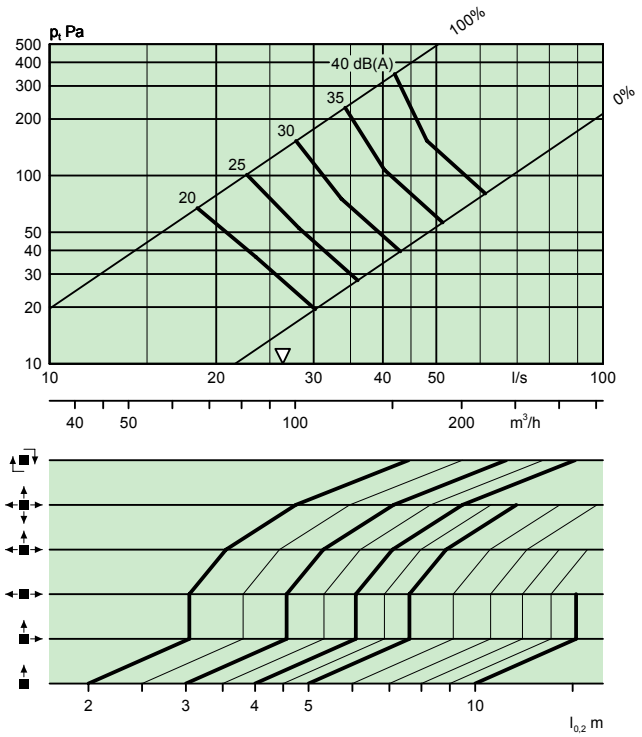
Explanation of the step model:

- *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.*

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

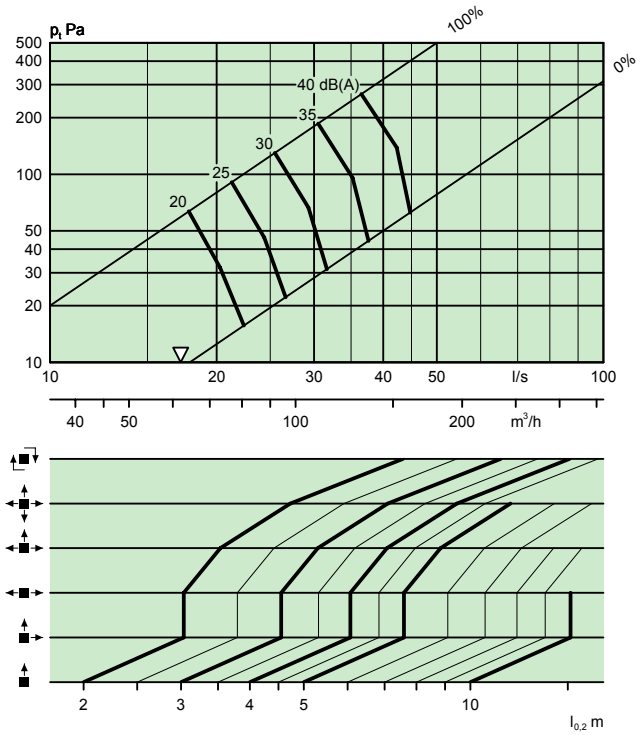


EAGLE C 160-400 + ALS 100-160 – Two steps

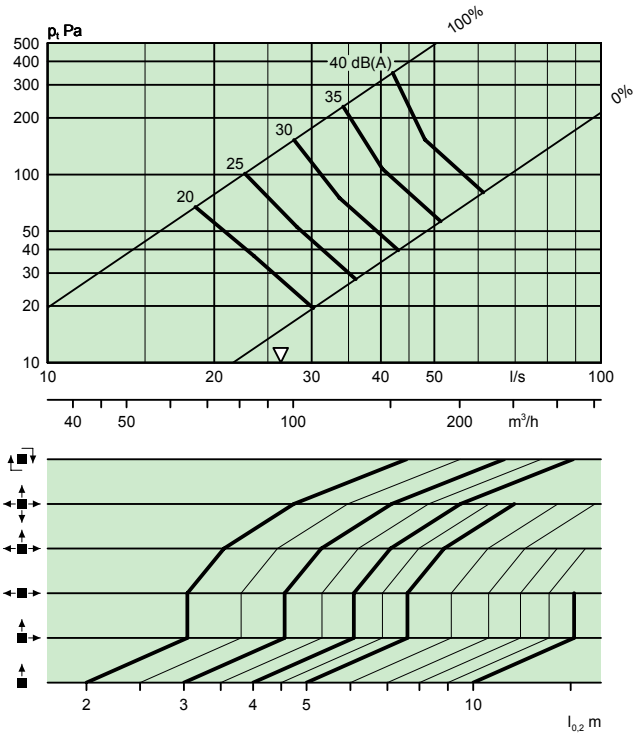


Swegon reserves the right to alter specifications.

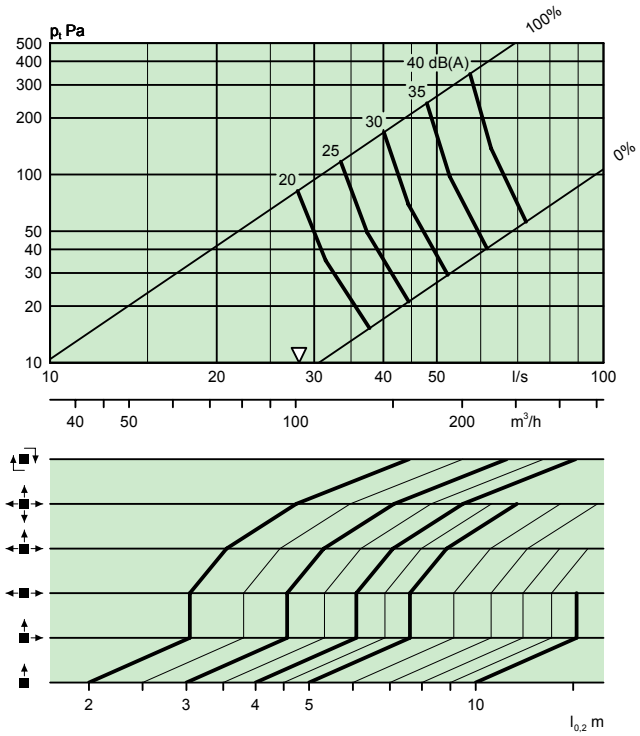
EAGLE C 125-600 + ALS 100-125 – One step



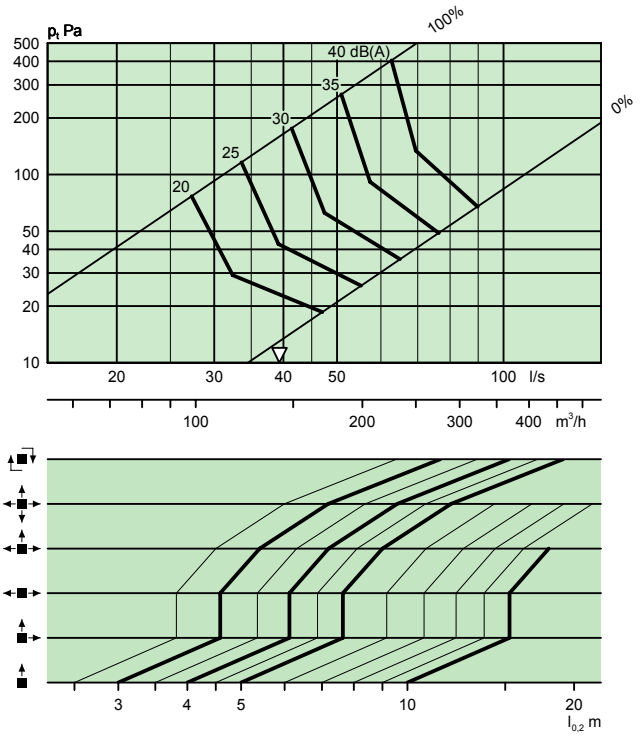
EAGLE C 160-600 + ALS 100-160 – Two steps



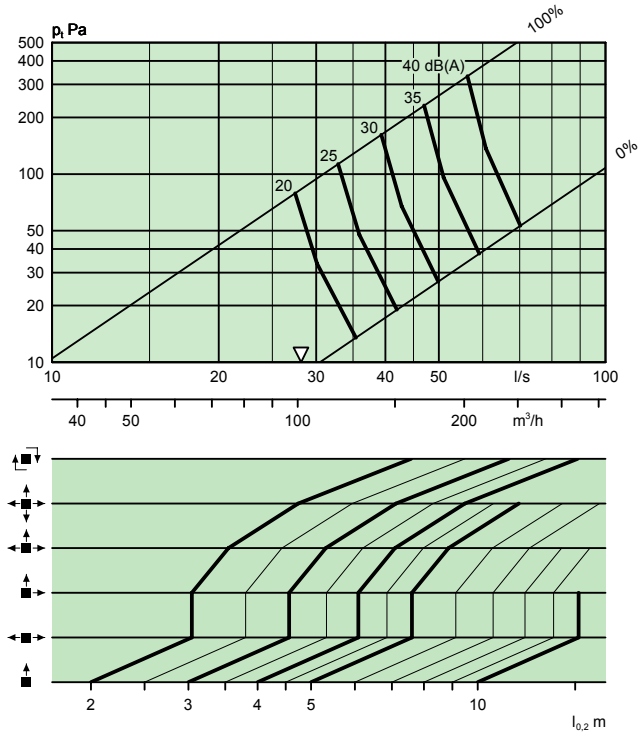
EAGLE C 160-400 + ALS 125-160 – One step



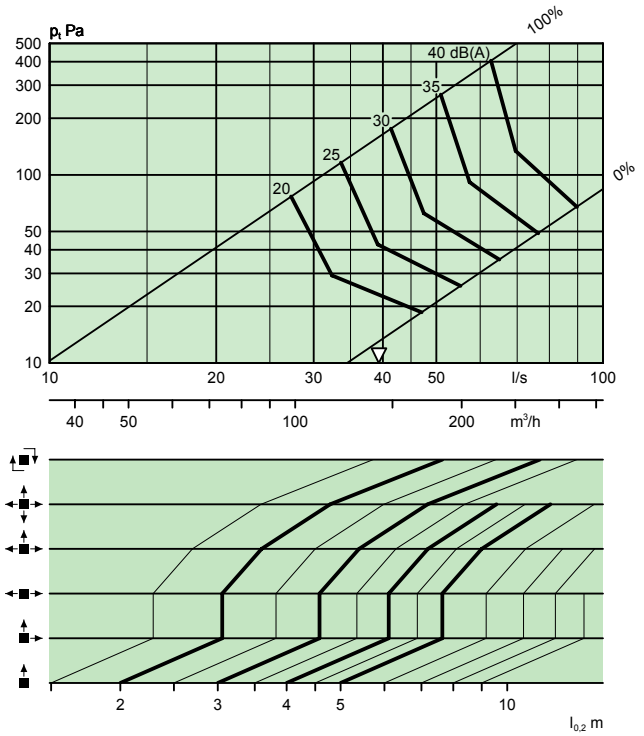
EAGLE C 200-500 + ALS 125-200 – Two steps



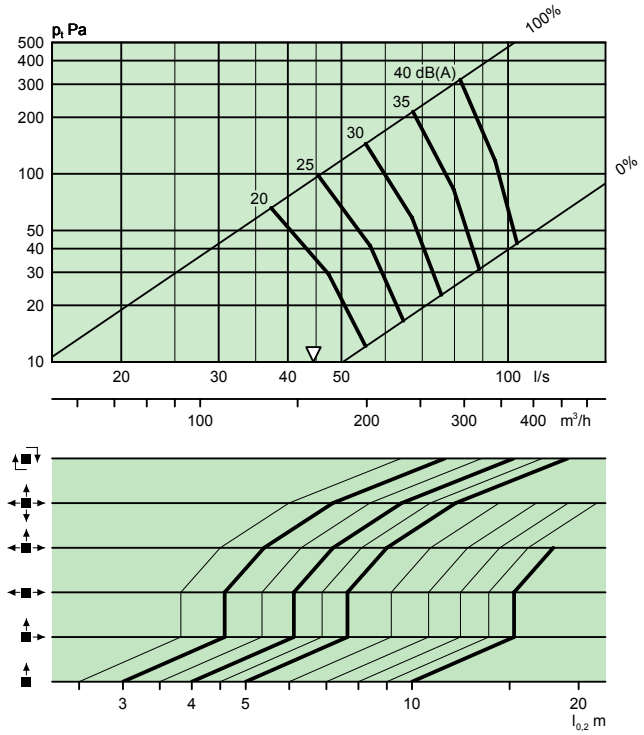
EAGLE C 160-600 + ALS 125-160 – One step



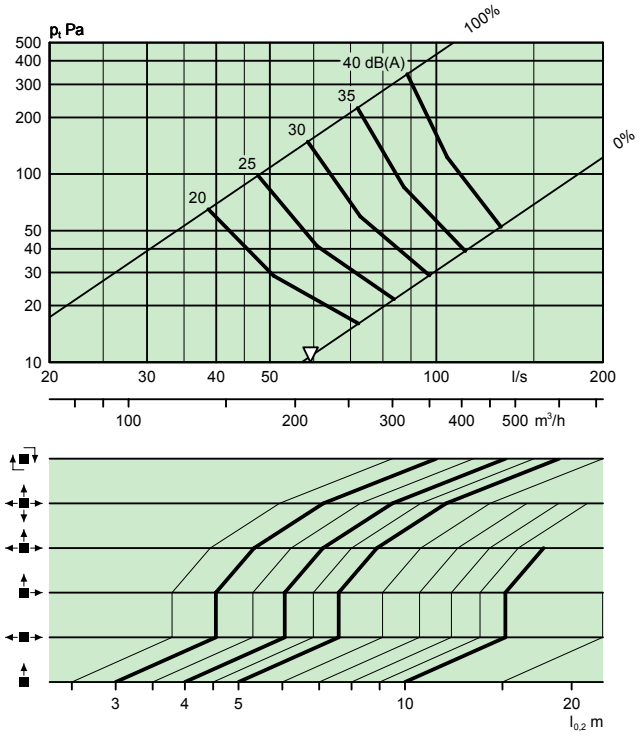
EAGLE C 200-600 + ALS 125-200 – Two steps



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

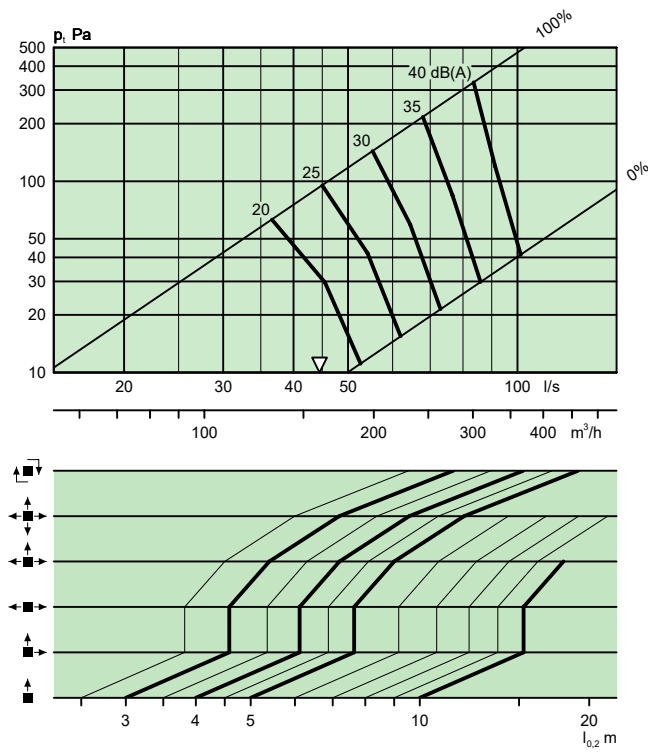


EAGLE C 250-600 + ALS 160-250 – Two steps

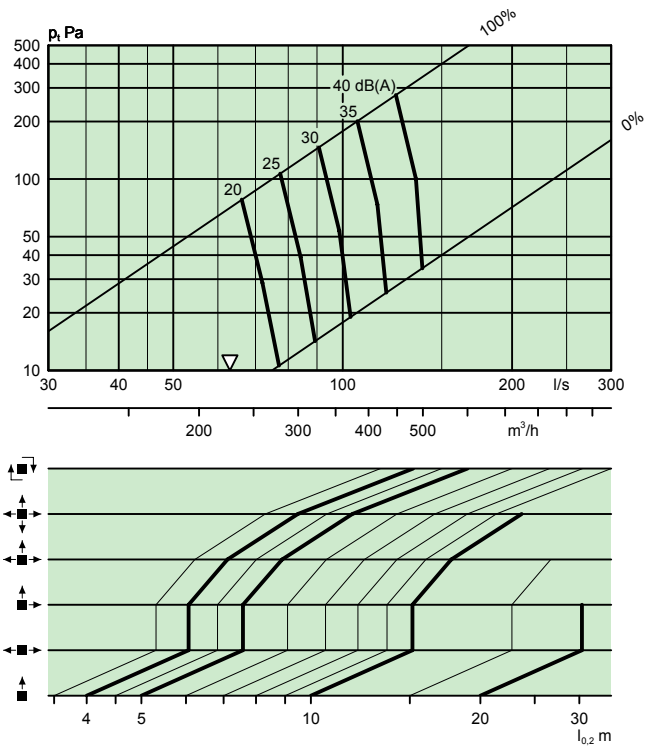


Swegon reserves the right to alter specifications.

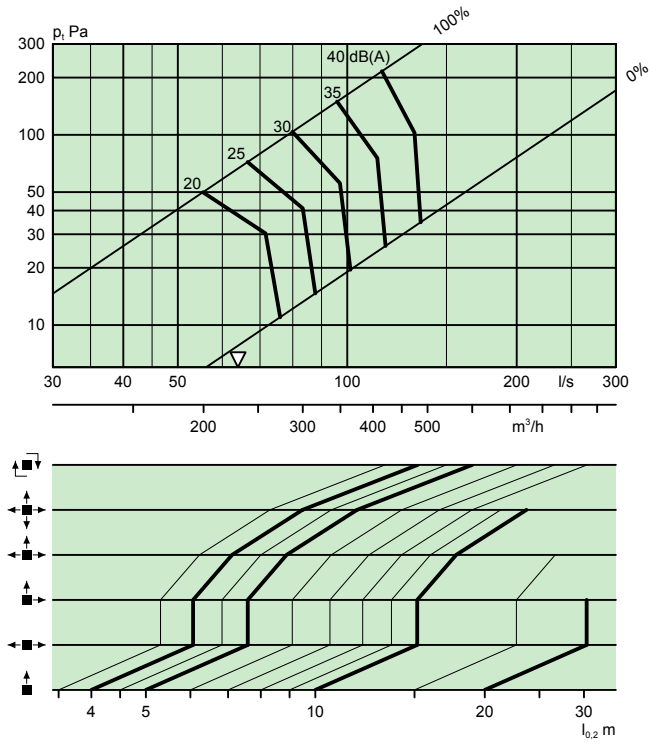
EAGLE C 200-600 + ALS 160-200 – One step



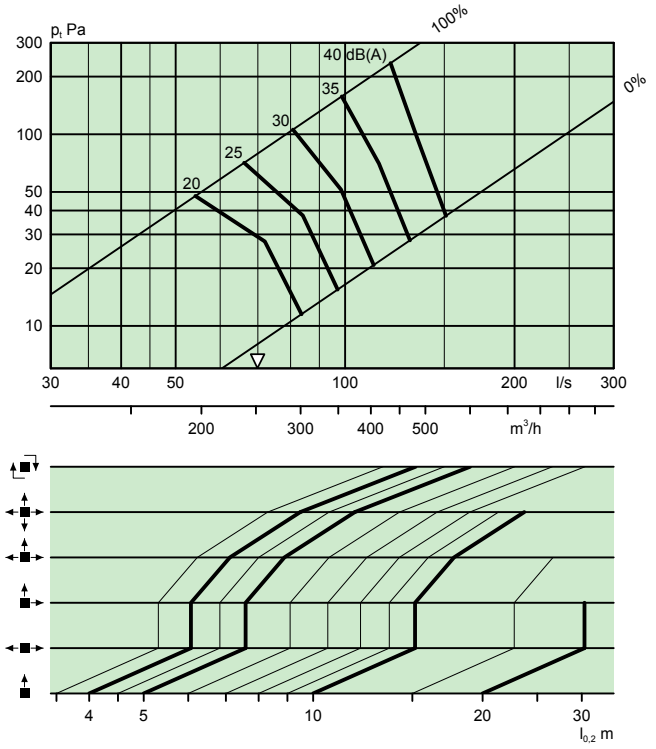
EAGLE C 250-600 + ALS 200-250 – One step



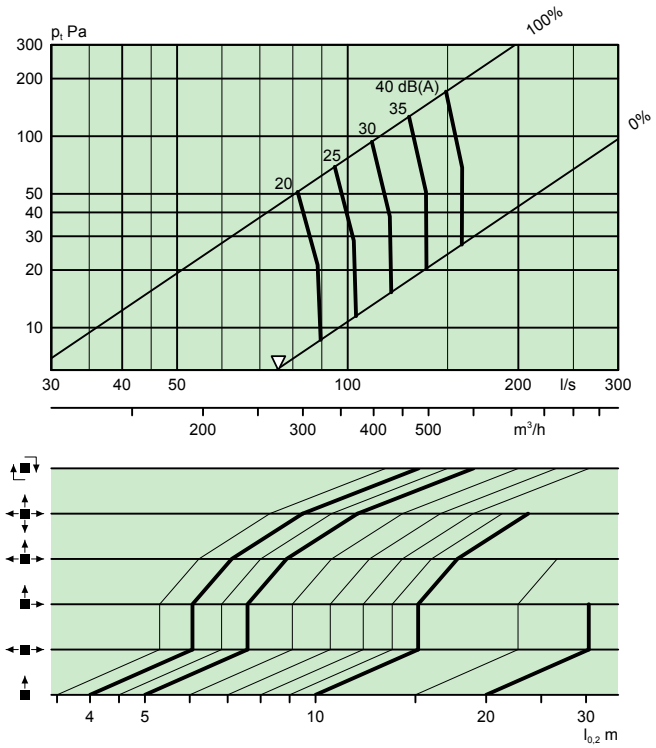
EAGLE C 250-500 + ALS 200-250 – One step



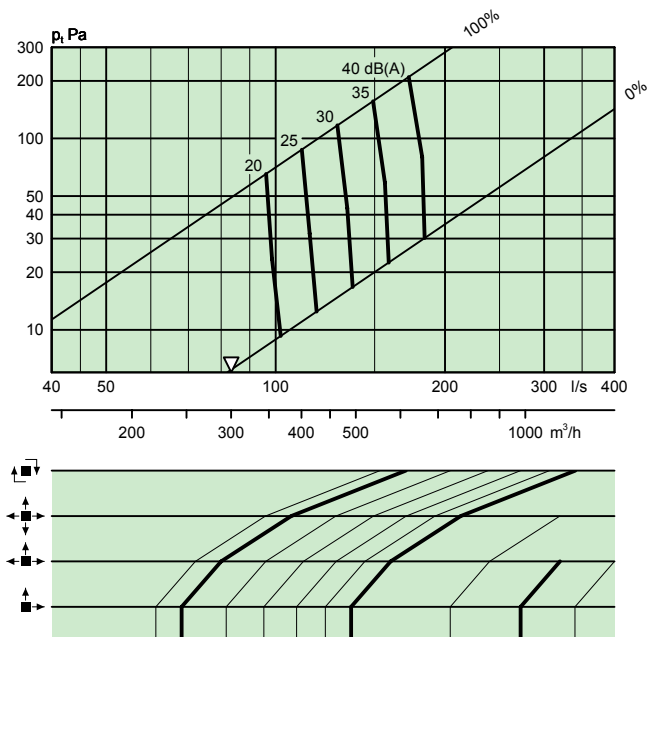
EAGLE C 315-500 + ALS 200-315 – Two steps



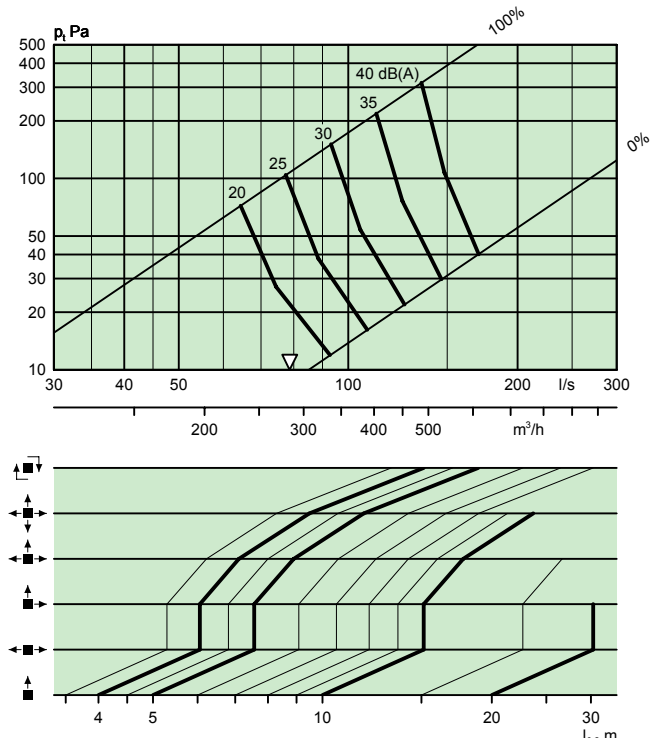
EAGLE C 315-500 + ALS 250-315 – One step



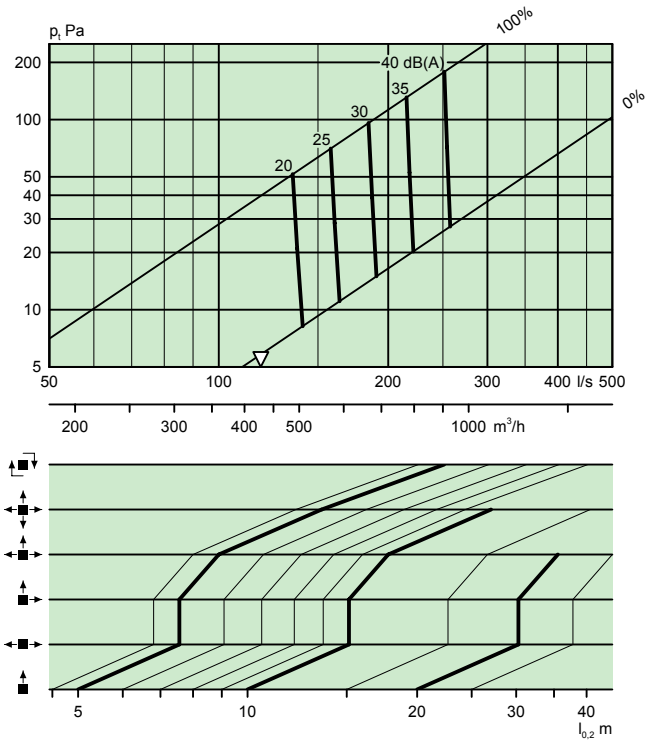
EAGLE C 315-600 + ALS 250-315 – One step



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



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

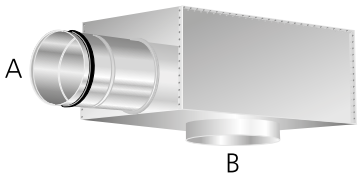


Swegon reserves the right to alter specifications.

EAGLE C + ALS – Extract air – One step

Air flow – Pressure drop – Sound level

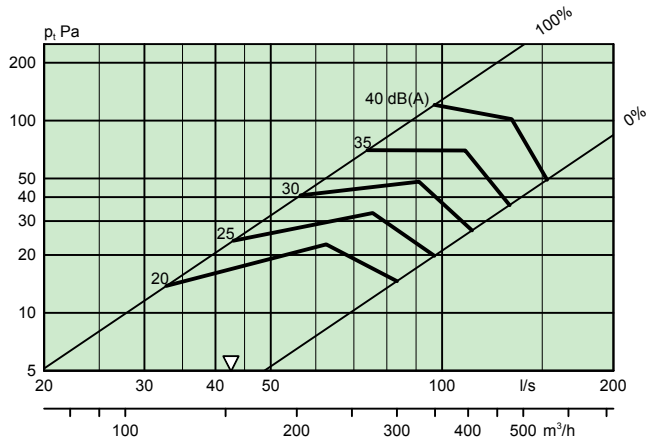
- The sound level, dB(A), values are applicable to rooms with an equivalent sound absorption area of 10 m^2 .
- For calculating the width of the air stream, air velocities in the occupied zone or sound levels in rooms with other dimensions, please refer to our web calculation softwares available for download at www.swegon.com



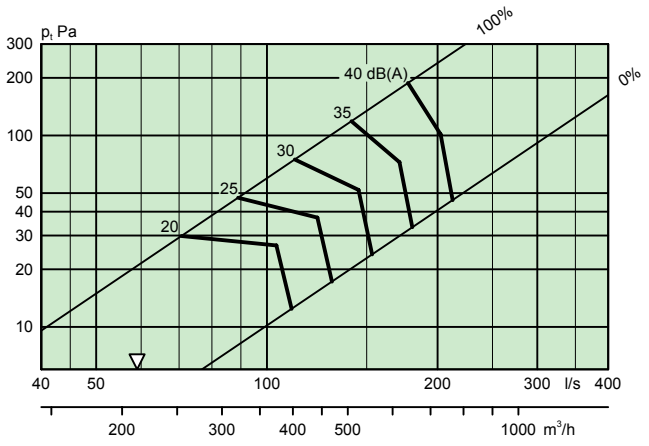
Explanation of the step model:

- *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.*

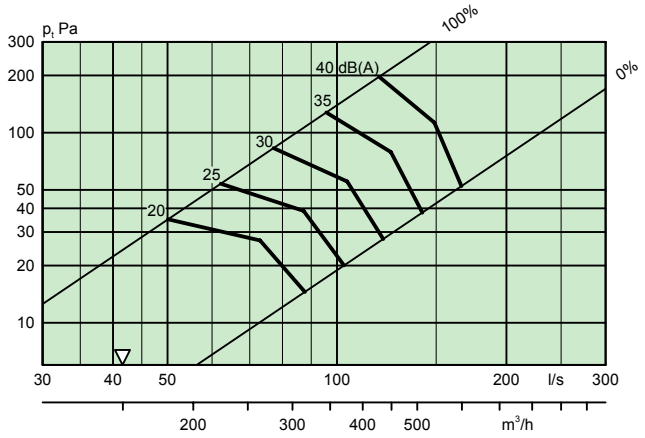
EAGLE C 250-500 + ALS 200-250 – Extract air



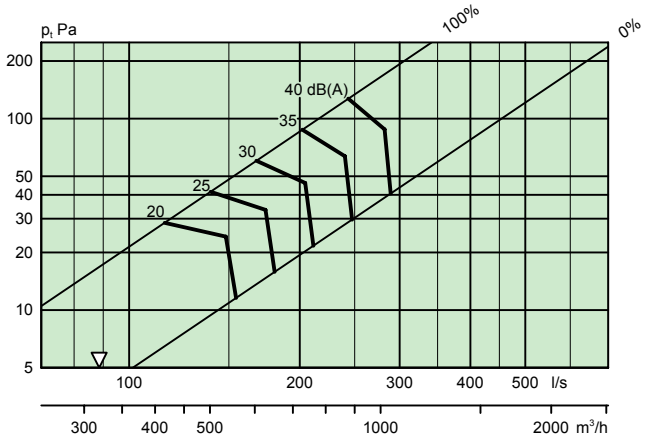
EAGLE C 315-600 + ALS 250-315 – Extract air



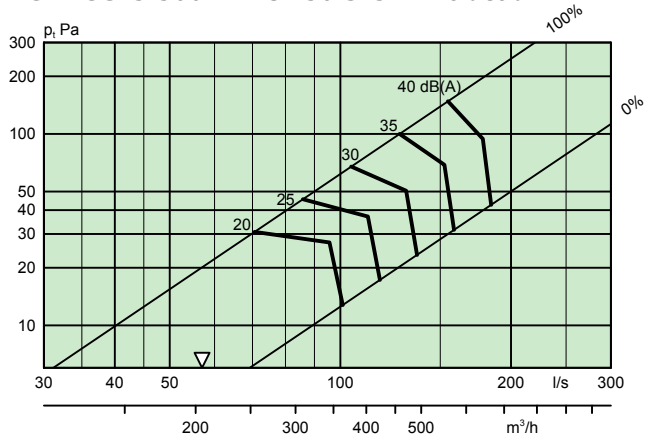
EAGLE C 250-600 + ALS 200-250 – Extract air



EAGLE C 400-600 + ALS 315-400 – Extract air



EAGLE C 315-500 + ALS 250-315 – Extract air



Dimensions and weights

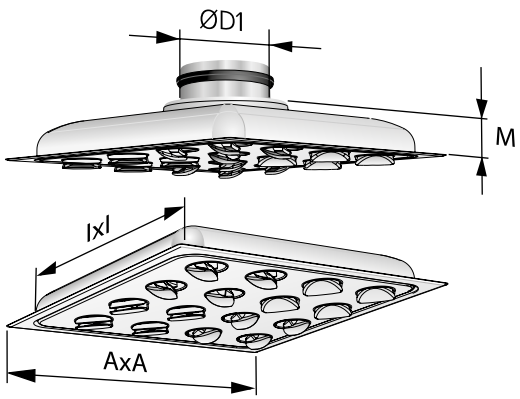


Figure 5. EAGLE Ceiling.

EAGLE C

Size	A	ØD1	l	M	Weight, kg	No. of Discs
125-400	395	124	375	70	1,5	16
125-600	595	124	575	70	3,5	16
160-400	395	159	375	70	1,5	25
160-600	595	159	575	70	3,5	25
200-500	495	199	475	70	2,5	36
200-600	595	199	575	70	3,5	36
250-500	495	249	475	70	3,4	49
250-600	595	249	575	70	3,5	49
315-500	495	314	475	70	3,4	49
315-600	595	314	575	50	3,5	64
400-600	595	399	575	50	3,5	81

Dimensions of opening in ceiling = l x l

EAGLE C with ALS 1-step

Size	A	B	C	ØD2	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	8,7
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	11,5
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

CL = Centre line

EAGLE C with ALS 2-steps

Size	A	B	C	ØD2	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
315-600	595	622	388	199	315	334	291	93	50	205	162	550	115	8,7

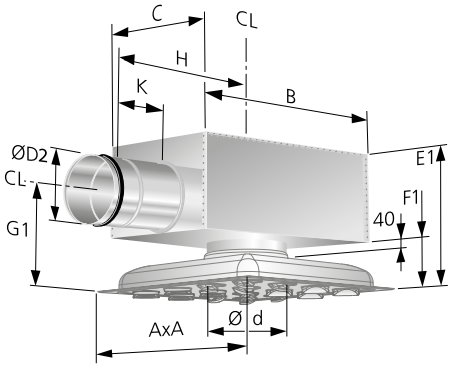


Figure 6. EAGLE Ceiling with ALS.

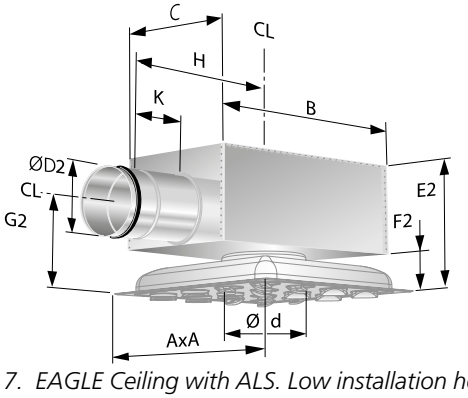


Figure 7. EAGLE Ceiling with ALS. Low installation height.

Swegon reserves the right to alter specifications.

Frame SARb K

Size	L	Weight,kg
400	395	1
500	495	1
600	595	1

When installing size 315-600 and 400-600 diffusers, position the ALS box so that its branch extends 20 mm below the ceiling surface.

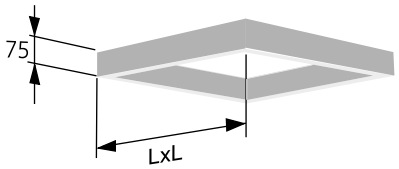


Figure 8. Frame SAR K.

Disc settings, examples

1. Standard
2. V1 Vertical concentrated
3. V2 Vertical diffused
4. 4-way
5. 3-way
6. 2 M-way
7. 2 H-way
8. 1-way

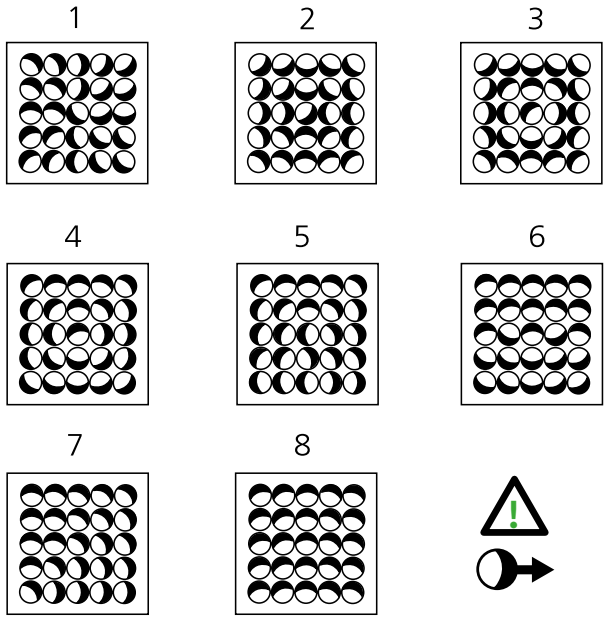


Figure 9. Disc settings.
NOTE: Air direction in the figure.

Order key

Product

Square ceiling diffuser for supply air	EAGLE C	b	-aaa	-bbb	-c
Version					
Nom. connection size, mm 125, 160, 200, 250, 315, 400					
Nom. square dimension (mm): 400, 500, 600					
Low version: L, is specified only if low installation height is desirable, all sizes except 400-600.					

Standard range

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

Accessories

Commissioning box	ALS	d	-aaa - bbb	-c	
Version					
For EAGLE 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				
315-500, 315-600	250-315				
400-600	315-400				
Low installation height: L, is specified only if low installation height is desirable, except 315-400.					

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 ceiling see separate product sheet.

Specification example

SD XX
Swegon's complete square ceiling diffuser with discs, type EAGLE Ceiling with ALS commissioning box and the following features:

- Designed for modular suspended ceilings (600 x 600 mm)
- 100% flexible spread pattern
- Individually adjustable discs, 360° turn
- Quick Access diffuser face opening/closing action for quick access to the commissioning box and duct system
- Powder paint sprayed and baked white finish, RAL 9003/ NCS S 0500-N
- Cleanable ALS commissioning box with removable adjustment damper, measuring method with low systematic error and lined inside with sound absorbing material covered with woven surface layer that prevents fibre migration.

Size:	EAGLE Cb -aaa-bbb-c with ALSd aaa-bbb-c	xx items
Accessories:		
Frame:	SARb K aaa	xx items

Swegon reserves the right to alter specifications.