

EAGLE Single

Circular ceiling diffuser with nozzles for supply air



QUICK FACTS

- Adjustable nozzles, 360°
- 100% flexible spread pattern
- Can be used for vertical air diffusion
- Swirl function
- Substantial induction capacity
- Can be used with ALS commissioning box
- May be ordered in a galvanized version
- Standard colour White RAL 9003
 - 5 alternative standard colours
 - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)							
EAGLE Single 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	100-125	24 (34)	86 (122)	29 (40)	104 (144)	36 (47)	130 (169)
160	125-160	37 (50)	133 (180)	45 (58)	162 (209)	55 (70)	198 (252)
200	160-200	54 (78)	194 (281)	70 (92)	252 (331)	85 (108)	306 (389)
250	200-250	84 (105)	302 (378)	101 (122)	364 (439)	124 (142)	446 (511)
315	250-315	120 (143)	432 (515)	145 (168)	522 (605)	170 (200)	612 (720)
400	315-400	180 (230)	648 (828)	220 (265)	792 (954)	265 (310)	954 (1116)

The data for the air diffuser + commissioning box is specified for 50 Pa total pressure. The data for the air diffuser alone is in brackets.

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

Contents

Technical description	3
Design	3
Accessories	3
Planning	3
Installation	3
Commissioning with ALS	3
Sizing	4
EAGLE S - Supply air	4
EAGLE S - Supply air	5
Engineering graphs - EAGLE S with ALS - Supply air	6
Dimensions and weight.....	8
Nozzle settings, examples	8
Order key.....	9
Specification example	9

Technical description

Design

The supply air diffuser consists of a diffuser box and a removable diffuser face. The diffuser box has a connection nipple with a rubber seal ring. The diffuser face is equipped with aerodynamically shaped nozzles that are fully adjustable.

Materials and surface treatment

The diffuser is manufactured in galvanized sheet steel and sheet steel. The whole unit is 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.

The nozzles are made of plastic (PP-polypropylene).

Accessories

Commissioning box:

ALS is manufactured in galvanized sheet steel. It includes a removable commissioning damper, fixed measurement unit and acoustic lining with a reinforced surface layer, to Fire Resistance Class B-s1,d0 according to EN ISO 11925-2.

Planning

The nozzles are rotatable through 360°. This makes it possible to achieve an infinite number of horizontal or vertical air diffusion combinations without altering the airflow, sound level or pressure drop.

Installation

When freely suspended, the diffuser's inlet spigot is fastened to the connecting duct using blind rivets. When attached to a fixed ceiling, the diffuser is screwed into place through the top plate of the diffuser.

The diffuser face is removed by slackening the visible screws on the diffuser face. When the commissioning box ALS is used, the sleeve between the ALS and the diffuser can be extended using ordinary circular duct by up to 500 mm long without having to extend the measuring tube or the damper cords. See Figure 1.



Commissioning with ALS

Commissioning must be carried out with the diffuser section in place. The measuring tubes and damper cords are pulled out of the diffuser through the nozzles. The damper setting can be locked. The K-factor is shown on the product label and is also indicated in the relevant k-factor guide which can be accessed at www.swegon.com. See Figure 1.

Maintenance

The diffuser can be cleaned when necessary using luke-warm water and detergent. The duct system can be accessed without the use of tools. The diffuser is removed by undoing the screws on the diffuser face. If the ALS commissioning box is used, the distribution plate is hinged aside and the damper unit twisted from its mounting with a simple hand movement. See Figure 1.

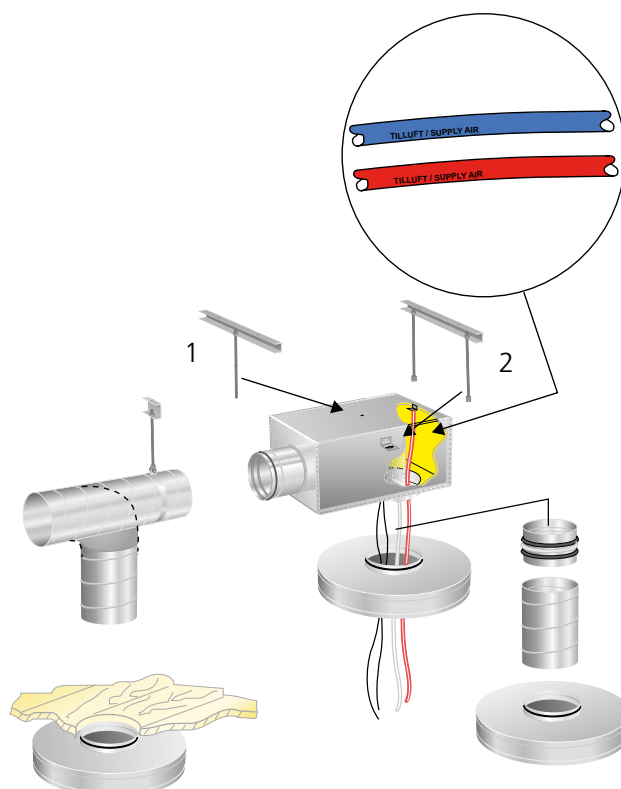


Figure 1. Installation. Commissioning.

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 flow conditions.
- The maximum recommended under 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.
- All the technical data refers 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

EAGLE S - Supply air

Sound power level L_w (dB)

Table K_{OK}

EAGLE S Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
125	3	5	4	6	4	-10	-21	-23
160	2	5	7	8	1	-12	-23	-23
299	-1	5	6	8	1	-12	-23	-25
250	-4	7	6	7	1	-11	-21	-25
315	-1	6	8	8	0	-13	-24	-27
400	4	6	6	7	2	-10	-21	-23
EAGLE S + ALS Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
125	6	12	10	6	1	-10	-14	-17
160	5	1	10	7	-2	-10	-14	-13
299	6	9	8	5	-1	-6	-10	-13
250	2	10	7	6	0	-7	-13	-15
315	4	9	7	8	0	-8	-16	-20
400	6	10	6	7	1	-8	-13	-20
Tol. ±	2	2	2	2	2	2	2	2

Throw lengths

The throw $l_{0,2}$ is specified in the engineering graphs for standard nozzle settings, clockwise swirling air discharge. If a different setting is desirable, Table 1 can be used. See also Figure 4, Nozzle Settings, under Dimensions and Weights.

4-way	3-way	2-way	1-way
1.5	2.1	2.5	3.8

E.g. According to the graph, the EAGLE S has a throw of $l_{0,2} = 2,3$ m

For 2M-way air diffusion $l_{0,2} = 2,3 \times 2,5 = 5,75$ m

Sound attenuation ΔL (dB)

Table ΔL

EAGLE S Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
125	22	16	9	4	9	10	6	5
160	19	13	5	3	10	9	5	4
200	19	13	4	5	5	7	5	5
250	16	10	2	6	5	5	5	4
315	16	10	3	5	4	5	5	5
400	10	9	5	3	4	4	4	4
EAGLE S + ALS Size	Mid-frequency (octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
125	21	14	14	14	27	24	18	20
160	21	14	10	11	26	21	16	17
200	19	12	9	14	21	19	16	16
250	17	10	7	18	19	15	15	15
315	12	5	6	20	17	17	15	15
400	10	5	8	14	11	10	11	12
Tol. ±	2	2	2	2	2	2	2	2

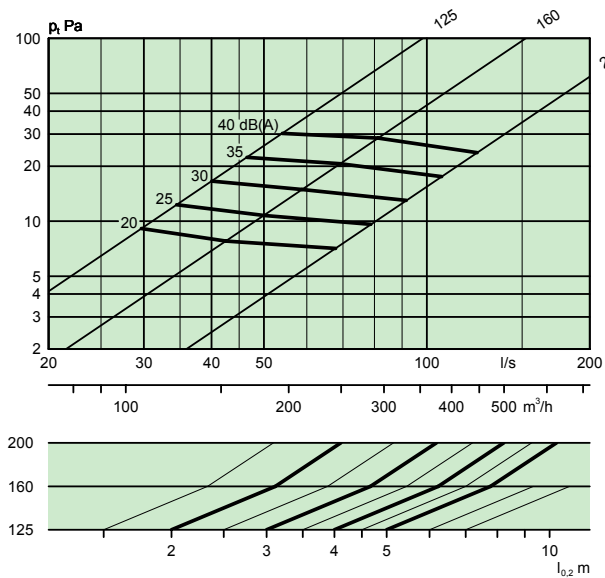
Engineering graphs

EAGLE S - Supply air

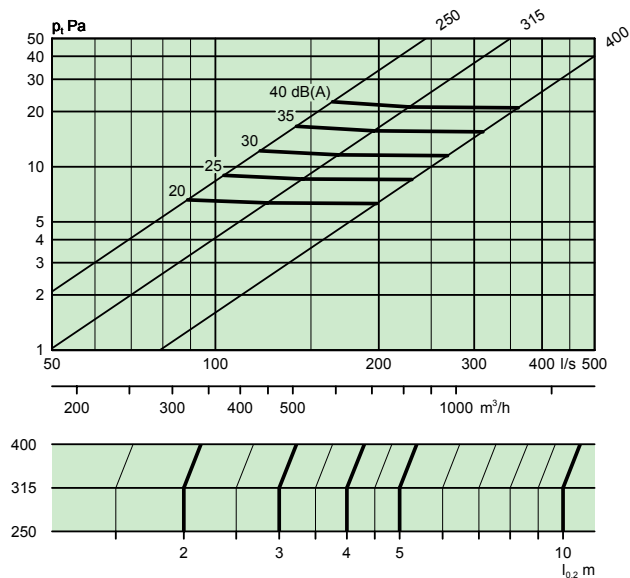
Air flow - Pressure drop - Sound level - Throw

- The graphs must not 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.
- For other throw lengths, refer to table of throw lengths under Sizing.

EAGLE S 125, 160, 200



EAGLE S 250, 315, 400

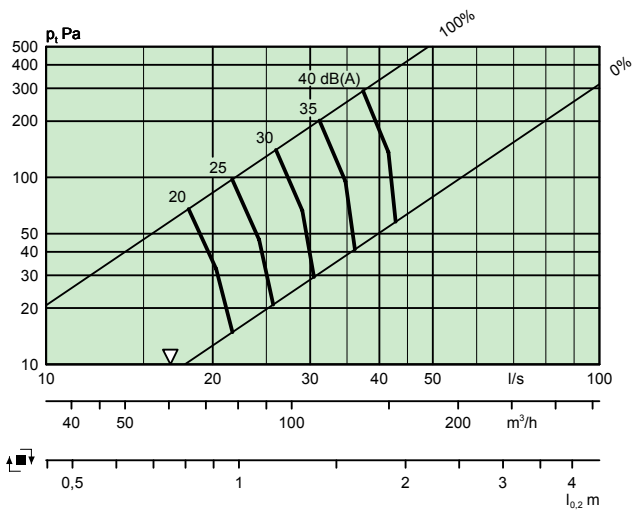


Engineering graphs - EAGLE S with ALS - Supply air

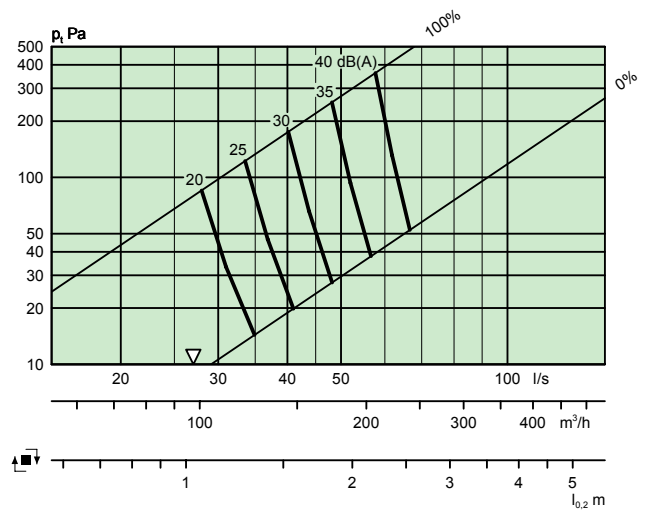
Air flow - Pressure drop - Sound level - Throw

- The graphs must not be used for commissioning.
- ∇ = min. airflow to obtain sufficient commissioning pressure.
- The dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value. For more accurate calculations.
- For other throw lengths, refer to table of throw lengths under Sizing.

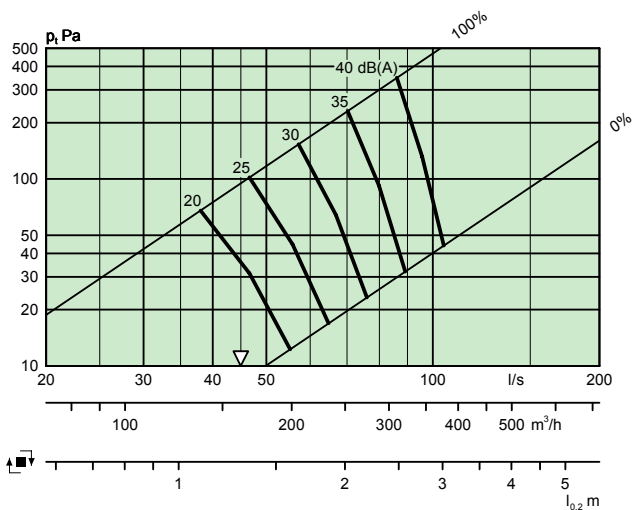
EAGLE S 125 + ALS 100-125



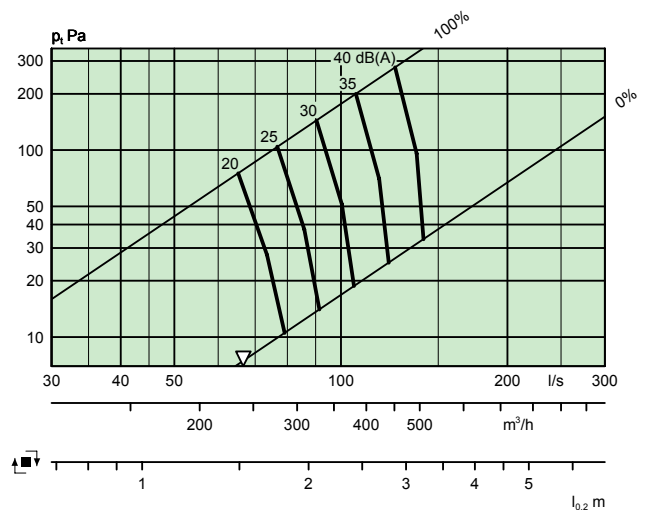
EAGLE S 160 + ALS 125-160



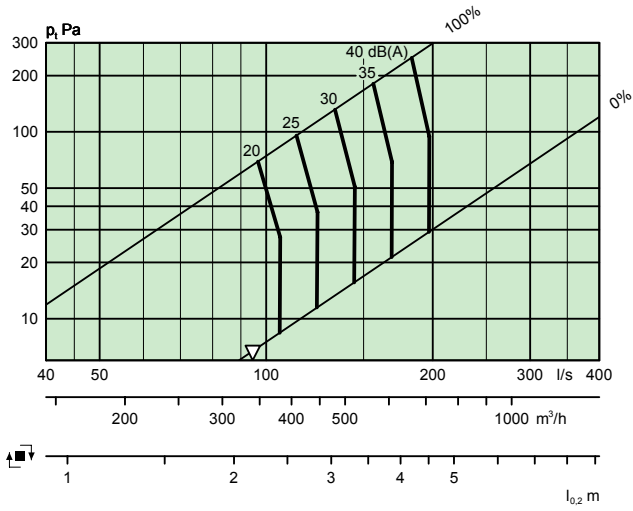
EAGLE S 200 + ALS 160-200



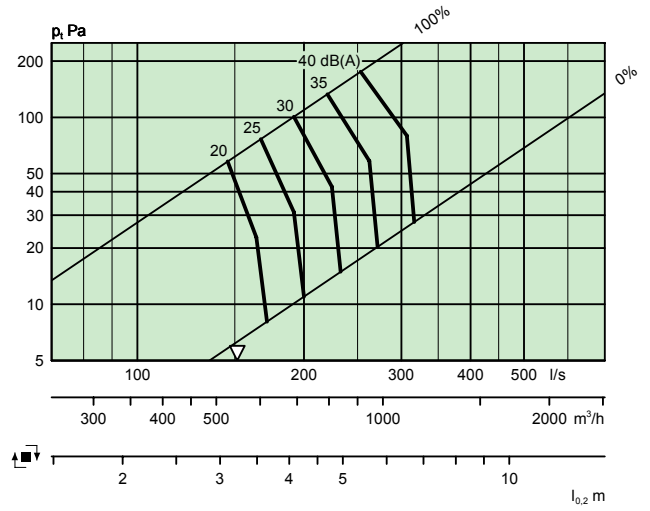
EAGLE S 250 + ALS 200-250



EAGLE S 315 + ALS 250-315



EAGLE S 400 + ALS 315-400



Dimensions and weight

EAGLE S

Size	ØA	B	ØD	Number of nozzles	Weight, kg
125	380	60	124	21	1.4
160	456	88	159	29	2.9
200	568	88	199	51	4.2
250	568	88	249	59	4.2
315	700	117	314	80	6.4
400	700	117	399	115	6.4

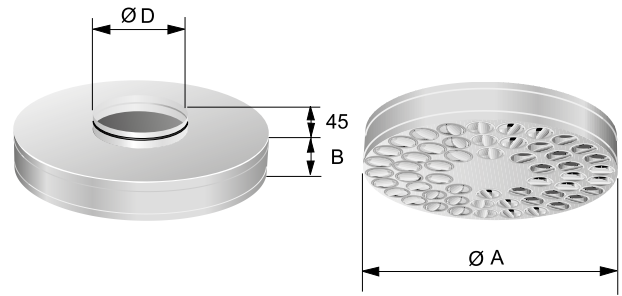


Figure 2. Nozzle diffuser EAGLE S.

EAGLE S with ALS

Size	A	B	C	D	E	F
125	380	282	217	99	60	182
160	456	342	252	124	88	206
200	568	404	288	159	88	241
250	568	504	332	199	88	281
315	700	622	388	249	117	342
400	700	767	488	314	117	402

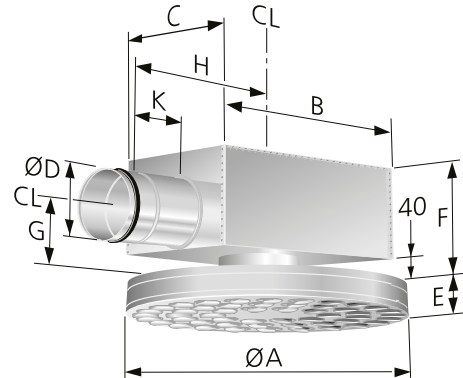


Figure 3. EAGLE S with ALS.

Size	G	H	J	K	Weight, kg
125	100	270	130	80	3.5
160	112	315	165	80	5.8
200	130	375	205	100	8.3
250	150	465	255	115	9.9
315	175	575	320	140	14.9
400	210	712	405	175	18.2

J = Dimension for hole cutting
CL = Center line

Nozzle settings, examples

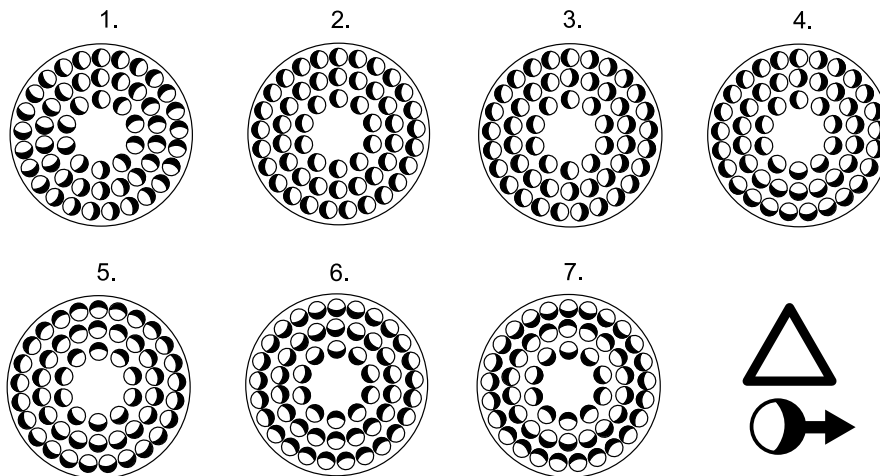


Figure 4. Nozzle setting rotation EAGLE S. NOTE: Air direction in the figure.

- 1. Rotation Standard
- 2. 1-way
- 3. 2-way
- 4. 3-way
- 5. 4-way
- 6. VK Vertical concentrated
- 7. VD Vertical diffused

Order key

Product

Circular nozzle diffuser EAGLE S -b -aaa

Version:

Nominal connection dimension:
125, 160, 200, 250, 315, 400

Standard range

Size: 125
160
200
250
315
400

Accessories

Commissioning box ALS d -aaa - bbb

Version

For EAGLE S	ALSd
125	100-125
160	125-160
200	160-200
250	200-250
315	250-315
400	315-400

Specification example

Swegon's complete circular diffuser type EAGLE S for ceiling mounting with a type ALS commissioning box and with the following functions:

- 100% flexible spread pattern
- Individually adjustable nozzles (55 mm) in recyclable plastic
- Cleanable
- Powder-coated in white, 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 Sb -aaa with xx items
ALSd aaa-bbb