

EAGLE™ Free

Circular ceiling terminal with discs for rooms without suspended ceiling

EAGLE Free



Quick facts

- ▶ Adjustable discs
- ▶ 100% flexible spread pattern
- ▶ Provision for vertical air diffusion
- ▶ Swirl function
- ▶ Substantial induction capacity
- ▶ Designed for installation in rooms without suspended ceiling.
- ▶ Easy access
- ▶ Available in alternative colours on special order
- ▶ Available in a galvanized version
- ▶ Included in the MagiCAD and CadVent databases

Quick guide

AIRFLOW - SOUND LEVEL			
EAGLE F Size	l/s		
	25 dB(A)	30 dB(A)	35 dB(A)
100	13	18	37
125	20	26	40
160	36	48	69
200	58	76	105
250	86	110	130
315	-	140	176
400	-	225	265

The data specified in the table is applicable to supply air and 50 Pa total pressure.

Technical description

Design

The supply air diffuser consists of a circular commissioning box and a removable diffuser face. The commissioning box contains a removable commissioning damper, fixed measurement tappings and sound absorbing material with reinforced surface layer, to Fire Resistance Class B-s1,d0 according to EN ISO 11925-2. The diffuser face is equipped with aerodynamically shaped, rotatable discs.

Materials and surface treatment

The diffuser face is made of sheet steel. The commissioning box is made of galvanized sheet steel. The interior and exterior surfaces of the air diffusers are painted in our standard colour: RAL 9010. The air diffusers are also available in optional colours: RAL 7037 Dusty grey, RAL 9006 white aluminium, RAL 9005 jet black, RAL 9007 grey aluminium and RAL 9003 signal white (NCS 0500).

The discs are made of ABS plastic.

Customisation

Besides the standard sizes, the air diffusers can be ordered with custom dimensions, alternative number of discs, special disc pattern, etc. The EAGLE F is also available in a galvanized version. For further information, contact your nearest Swegon representative.

Planning

The discs 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. The EAGLE F is equipped with components for differential pressure method of measurement in the inlet air branch. This requires a length of straight duct upstream of the ceiling diffuser's measurement unit, see Table 1, so as not to exceed the specified error of method.

The measurement tapping is positioned in the duct connection branch of the ceiling diffuser. Acoustic, pressure and airflow data for air diffusers for exhaust air are available from your nearest Swegon representative.

Installation

The air diffuser is suspended with hangers from the ceiling. An M8 pop nut, i.e. a threaded grommet that facilitates installation, is provided at the top and in the centre of the air diffuser. On the size 315 and 400 air diffusers, there are three M8 pop nuts for more stable mounting. See Figure 1.

Commissioning

Commissioning must be carried out with the diffuser face mounted. Pull the measuring tubes and damper adjustment cords out of the air diffuser through the discs. Lockable damper setting. 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 tepid water with a mild detergent added. The duct system can be accessed after removing the diffuser face (see Installation paragraph). The perforated air distribution plate and damper in the commissioning box can be removed by turning the wing nuts, positioned on each side of the inlet, 3/4 of a turn. See Figure 1.

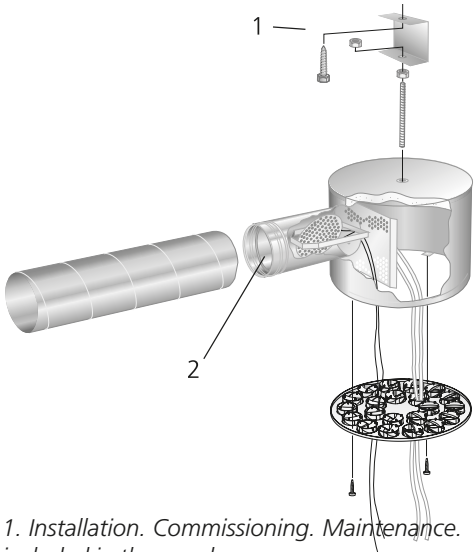


Figure 1. Installation. Commissioning. Maintenance.
1. Not included in the supply.
2. Unit of Measurement.

Type of obstruction upstream of	Length of straight duct upstream of the EAGLE F	
	For $m_2 = 5\%$	For $m_2 = 10\%$
EAGLE F		
One 90° bend	$3 \cdot \varnothing d$	$2 \cdot \varnothing d$
Two 90° bends in the same plane	$4 \cdot \varnothing d$	$2 \cdot \varnothing d$
Two 90° bends in the same plane perpendicular to one another	$4 \cdot \varnothing d$	$2 \cdot \varnothing d$
One 45° damper	$6 \cdot \varnothing d$	$3 \cdot \varnothing d$
One T-piece	$4 \cdot \varnothing d$	$3 \cdot \varnothing d$

m_2 = error of method according to NVG's Report T32:1982

Sizing

- The specified sound levels dB(A) are applicable to rooms with an equivalent sound absorption area of 10 m².
- The throw $l_{0.2}$ is measured under isothermal discharge conditions.
- A max. permissible temperature below room temperature of 14 K is recommended when setting the discs for clockwise swirling air discharge (standard).
- 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 ProAir web calculation software available at www.swegon.com.

Sound data – EAGLE F - Supply Air

Sound power level L_w (dB)

Table K_{OK}

EAGLE F Size	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	-4	8	10	-2	-4	-11	-18	-23
125	-7	8	10	-2	-5	-11	-19	-22
160	0	9	10	0	-3	-11	-19	-23
200	0	11	8	1	-2	-10	-18	-20
250	1	12	7	1	-3	-10	-18	-21
315	4	12	7	1	-2	-10	-19	-24
400	3	11	4	2	-2	-9	-18	-24
Tol. \pm	2	2	2	2	2	2	2	2

Sound Attenuation ΔL (dB)

Table ΔL

EAGLE F Size	Mid-frequency (Octave band) Hz							
	63	125	250	500	1000	2000	4000	8000
100	27	16	12	13	14	11	9	13
125	25	14	10	14	12	9	8	12
160	21	13	11	12	10	8	9	11
200	18	12	11	11	8	7	8	12
250	18	10	10	10	6	6	9	11
315	15	7	7	8	6	6	8	11
400	14	6	6	8	5	5	7	10
Tol. \pm	2	2	2	2	2	2	2	2

Throws

The throw $l_{0.2}$ is specified in the engineering graphs for standard disc settings, clockwise swirling air discharge. If a different setting is desirable, Table 2 can be used. See also Figure 3, Disc Settings, under Dimensions and Weights.

Table. 2 Factors for alternative disc settings

4-way	3-way	2-way	1-way
1,5	2,1	2,5	3,8

Example:

According to the graph, the EAGLE F 250 has a throw of $l_{0.2} = 2.3$ m.

For 2-way air diffusion $l_{0.2} = 2.3 \times 2.5 = 5.75$ m.

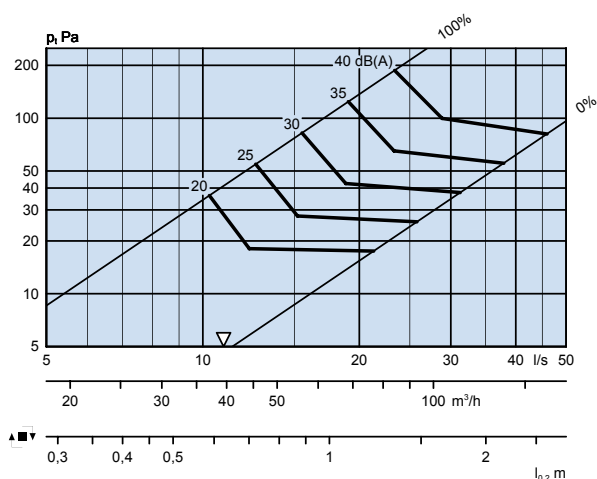
Engineering graphs

EAGLE F - Supply Air

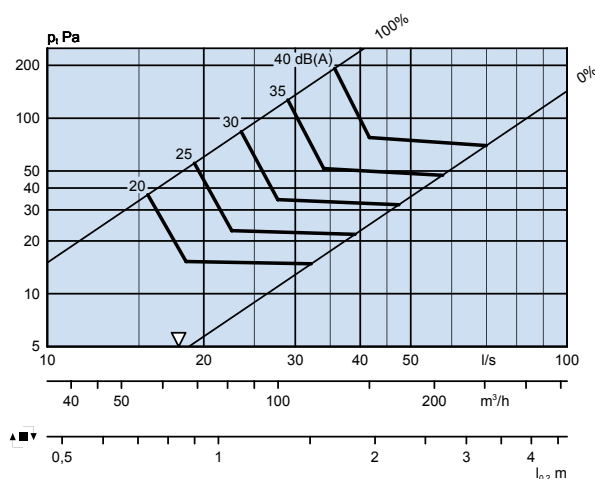
Air flow - Pressure drop - Sound level - Throw

- 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.
- For particulars of vertical distribution pattern, please refer to our ProAir web calculation software.
- For particulars of the throws, see Table 2: Factors for alternative disc settings

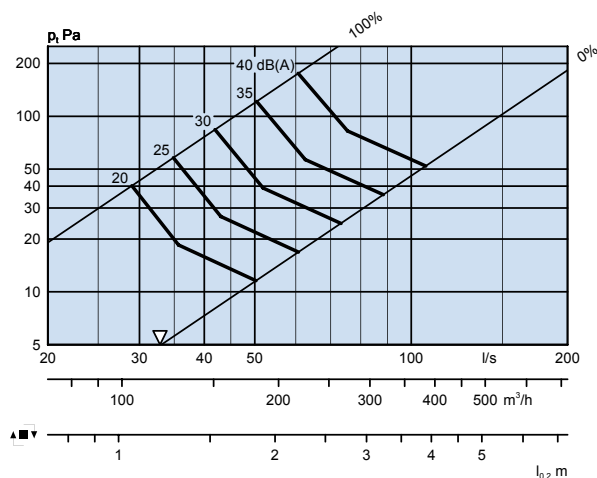
EAGLE F 100



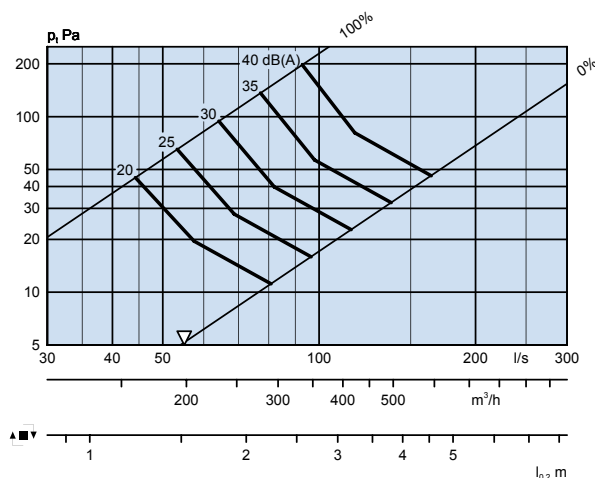
EAGLE F 125



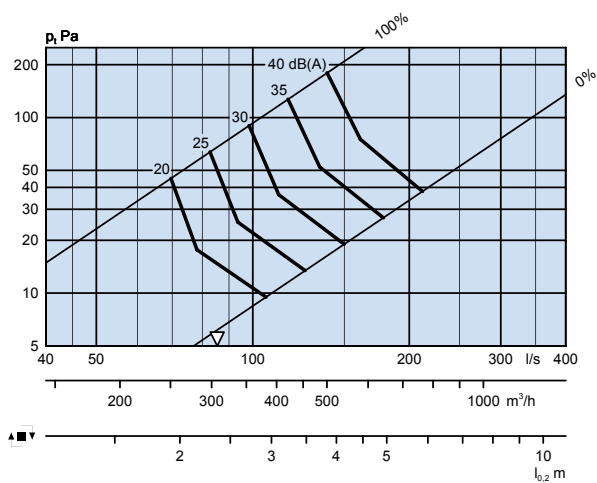
EAGLE F 160



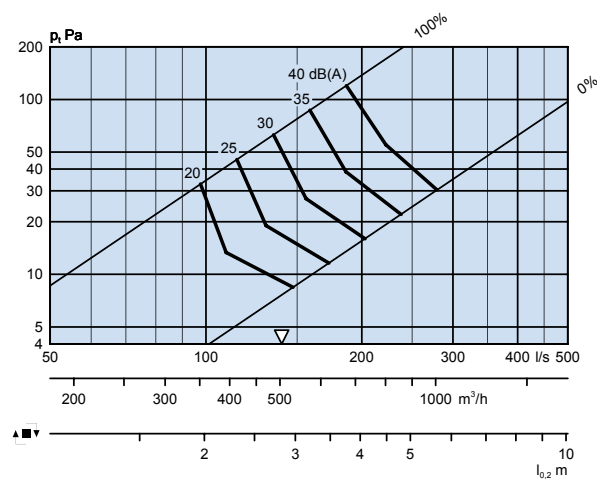
EAGLE F 200



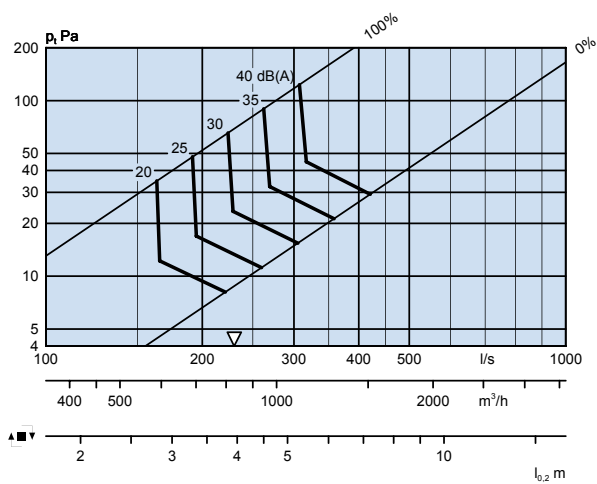
EAGLE F 250



EAGLE F 315

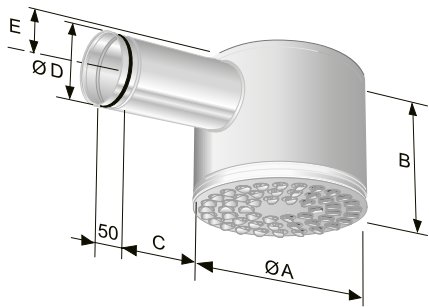


EAGLE F 400



Dimensions and weights

Size	A	B	C	D	E	Number of discs	Weight, kg
100	304	192	163	99	96	12	2,7
125	380	217	168	124	108	21	3,9
160	456	252	198	159	126	29	5,6
200	568	288	245	199	144	51	8,6
250	568	338	290	249	169	59	8,7
315	700	388	345	314	194	80	13,8
400	700	488	420	399	244	115	15,1



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Figure 2. EAGLE F.

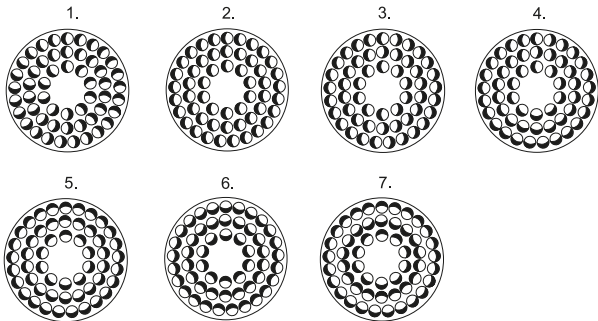


Figure 3. Discs settings.
 1. Clock-wise swirl, standard
 2. 1-way
 3. 2-way
 4. 3-way
 5. 4-way
 6. V1, Vertical, concentrated
 7. V1, Vertical, diffused

Ordering key

Product

Circular ceiling diffuser with discs	EAGLE F	b	-aaa
Version			
Nom. connection dimension, mm:			

Standard range

Size:	100
	125
	160
	200
	250
	315
	400

Specification example

SD XX

Swegon's complete circular type EAGLE F ceiling disc diffuser for visible installation in ceilings with the following functions:

- Complete round painted unit.
- 100% flexible spread pattern
- Individually adjustable discs
- Removable commissioning damper with lockable setting
- Measurement function with low error of method
- Interior sound-absorbing lining with fibre-migration-proof surface layer
- Cleanable
- Powder paint sprayed and baked white finish, RAL 9010

Size:	EAGLE F b -aaa	xx items
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