

EAGLE Free

Circular ceiling terminal with discs for rooms without suspended ceiling



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

AIR FLOW - SOUND LEVEL						
EAGLE Free	25 dB(A)		30 dB(A)		35 dB(A)	
Size	l/s	m³/h	l/s	m³/h	l/s	m³/h
100	13	47	18	65	37	133
125	20	72	26	94	40	144
160	36	130	48	173	69	248
200	58	209	76	274	105	378
250	86	310	110	396	130	468
315	115	414	140	504	176	634
400	185	666	225	810	265	954

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 9003/NCS S 0500-N. 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 9010 white.

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

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 for supply air is located in the duct connection of the air diffuser whereas the measurement tapping for extract air is located inside the commissioning box.

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, $\frac{3}{4}$ of a turn. See Figure 1.

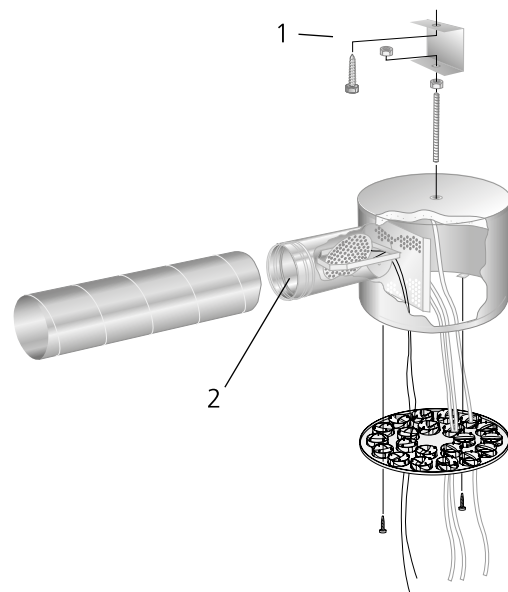


Figure 1. Installation. Commissioning. Maintenance.

1. Not included in the supply.

2. Unit of Measurement.

Type of obstruction upstream of EAGLE F	Length of straight duct upstream of the EAGLE F	
	For $m_2 = 5\%$	For $m_2 = 10\%$
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 web calculation softwares available for download at www.swegon.com.

Sound data

EAGLE F – Supply Air

Sound power level L_w (dB)

Table K_{OK}

EAGLE F	Mid-frequency (Octave band) Hz							
Size	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. ±	2	2	2	2	2	2	2	2

Sound Attenuation ΔL (dB)

Table ΔL

EAGLE F	Mid-frequency (Octave band) Hz							
Size	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. ±	2	2	2	2	2	2	2	2

EAGLE F – Extract air

Sound power level L_w (dB)

Table K_{OK}

EAGLE F	Mid-frequency (Octave band) Hz							
Size	63	125	250	500	1000	2000	4000	8000
100	-6	10	9	-2	-5	-8	-13	-20
125	-6	9	9	-1	-5	-7	-13	-20
160	-5	10	8	-1	-3	-7	-13	-21
200	-8	10	4	0	-1	-7	-13	-20
250	-3	12	4	0	-2	-7	-11	-21
315	3	9	4	1	-2	-6	-11	-21
400	4	9	2	1	-1	-5	-13	-23
Tol. ±	2	2	2	2	2	2	2	2

Sound Attenuation ΔL (dB)

Table ΔL

EAGLE F	Mid-frequency (Octave band) Hz							
Size	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. ±	2	2	2	2	2	2	2	2

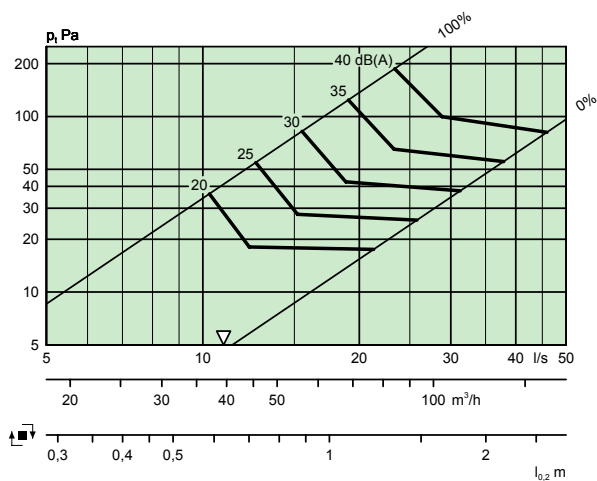
Engineering graphs

EAGLE F - Supply Air

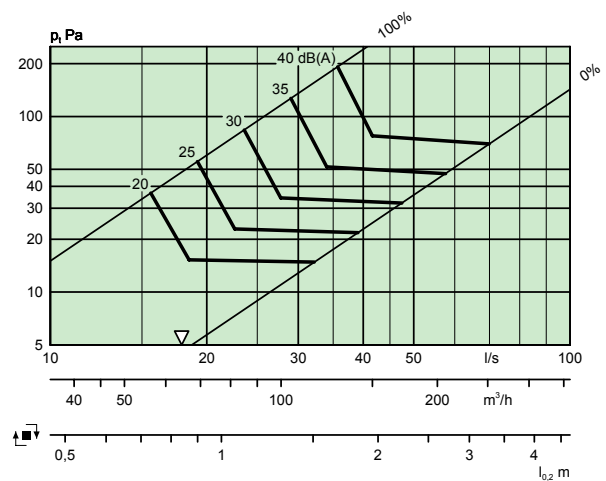
Air flow - Pressure drop - Sound level - Throw

- 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 web calculation software.
- For particulars of the throws, see Table 2: Factors for alternative disc settings

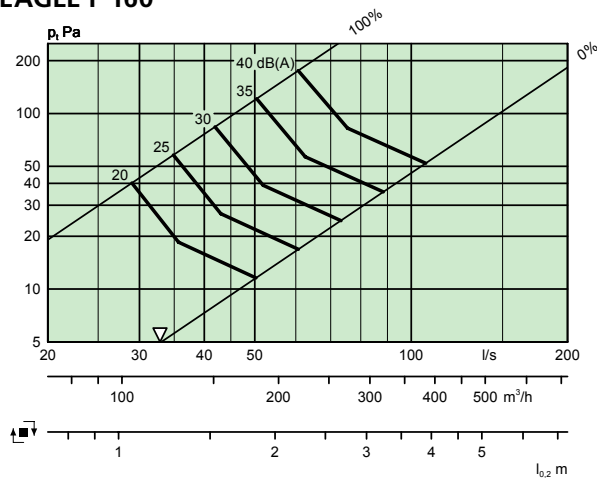
EAGLE F 100



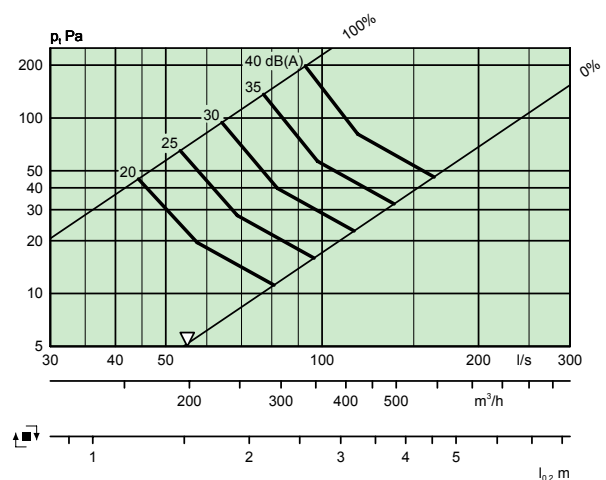
EAGLE F 125

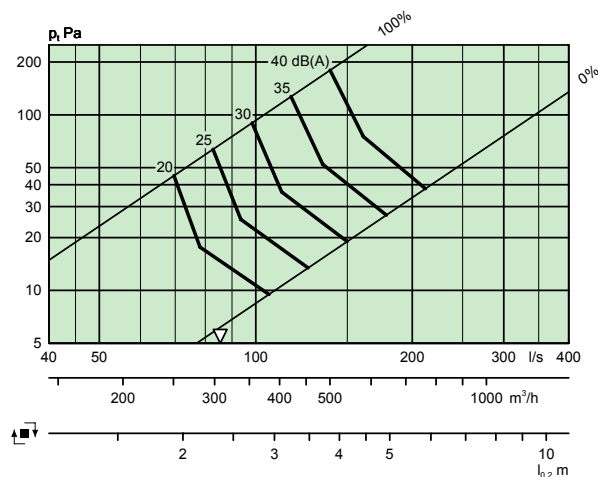
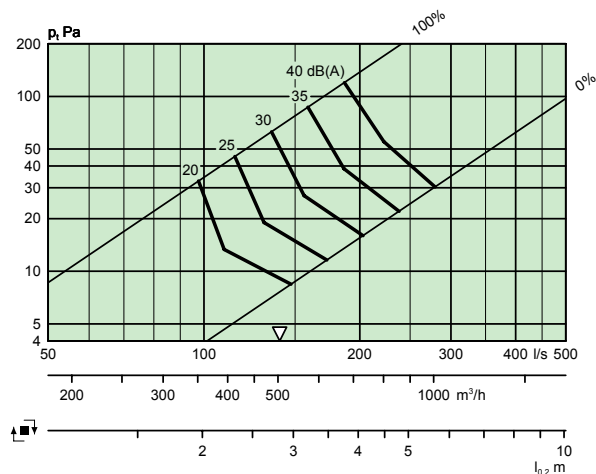
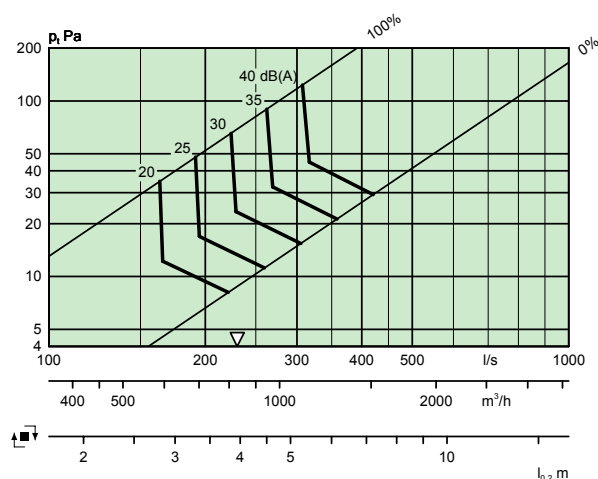


EAGLE F 160



EAGLE F 200



EAGLE 250**EAGLE F 315****EAGLE F 400****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.

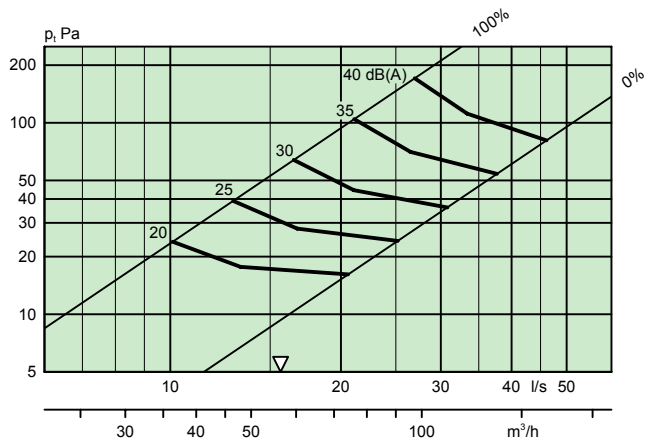
For 2-way air diffusion $l_{0.2} = 2.3 \times 2.5 = 5.75$ m.

EAGLE F – Extract air

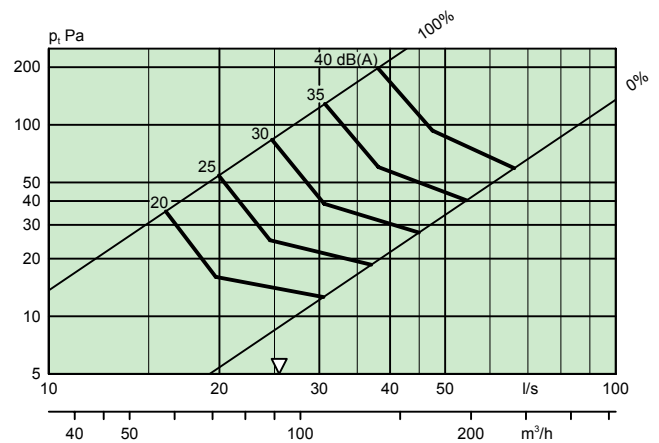
Air flow - Pressure drop - Sound level

- 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.

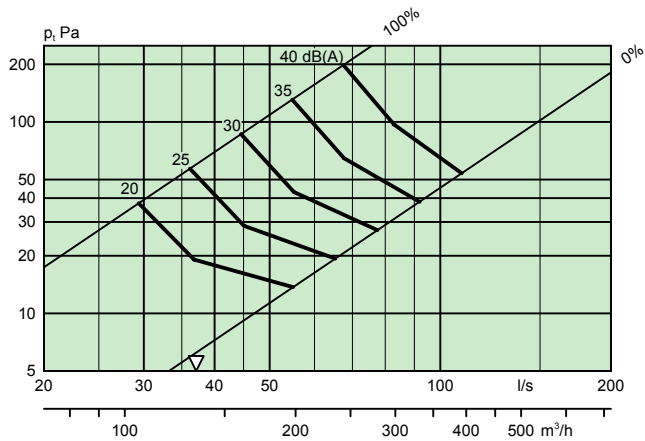
EAGLE F 100



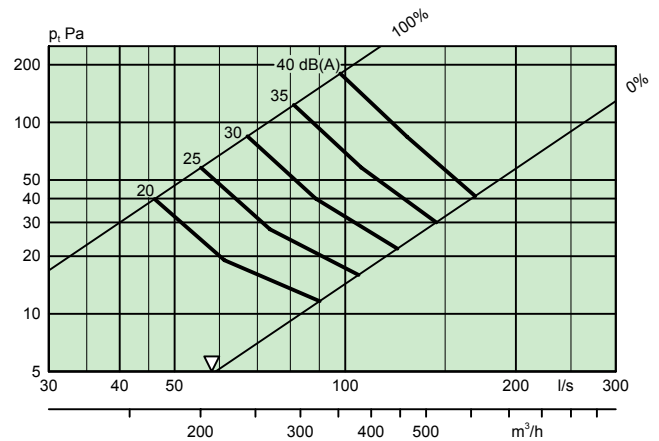
EAGLE F 125



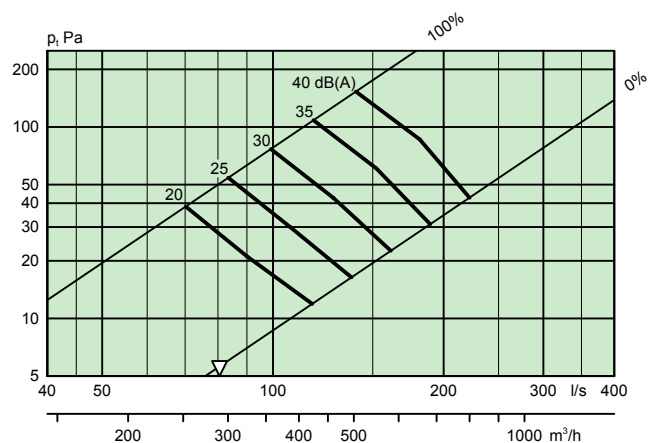
EAGLE F 160



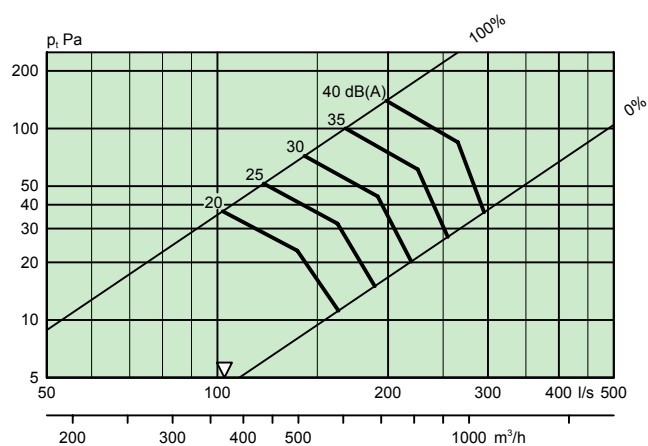
EAGLE F 200



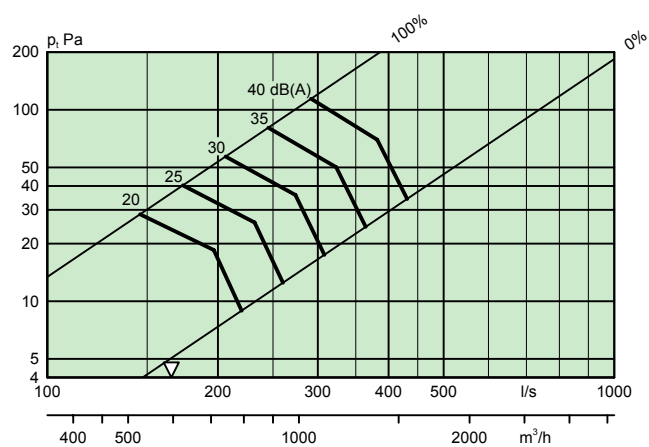
EAGLE F 250



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

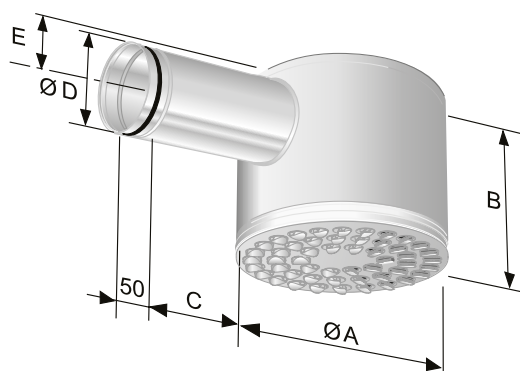


Figure 2. EAGLE F.

Disc settings, examples

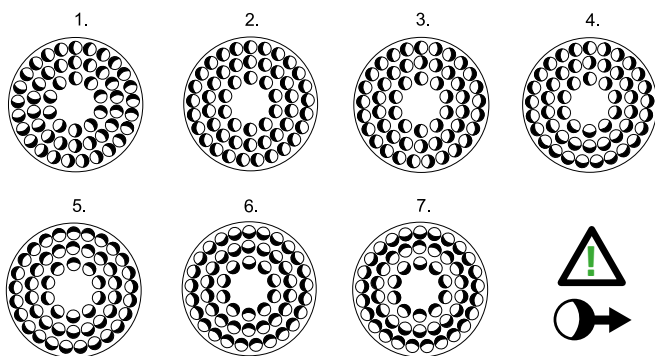


Figure 3. Discs settings.

NOTE: Air direction in the figure.

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 e -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
- White powder paint sprayed and baked finish, RAL 9003/NCS S 0500-N

Size: EAGLE Fe -aaa

xx items