ROC

ROBUST Circular supply and exhaust air terminal

QUICK FACTS

- Robust design
- Supply or extract air
- Easy ceiling mounting
- Guide vane perforation
- Can be used with commissioning box ALS
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)							
ROC Size		25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m³/h	l/s	m³/h	l/s	m³/h
100		22	79	26	94	29	104
125		32	115	36	130	42	151
160		47	169	54	194	63	227
200		77	277	88	317	100	360
250		108	389	123	443	140	504
315		150	540	175	630	205	738
400		209	752	242	871	280	1008
ROC Size	ALS Size	25 dB(A)		30 dB(A)		35 dB(A)	
		l/s	m³/h	l/s	m³/h	l/s	m³/h
100	80-100	15	54	18	65	21	76
125	100-125	24	86	27	97	32	115
160	125-160	35	126	41	148	47	169
200	160-200	59	212	68	245	78	281
250	200-250	86	310	100	360	115	414
315	250-315	120	432	139	500	161	580
400	315-400	174	626	202	727	234	842

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

The data specified in the lower table is applicable to supply air with an open damper when an ALS commissioning box is used.

Technical description

Design

The circular perforated supply air terminal consists of two parts, the diffuser box and the diffuser face. The diffuser face has guide vane perforations in a swirl pattern. The diffuser section is attached to the diffuser box using steel pop rivets; which prevents the terminal from being opened.

Materials and surface treatment

The diffuser face and diffuser box are manufactured in 0.9 mm sheet steel. The complete terminal is powder coated.

- 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:

ALS: Manufactured of galvanized sheet steel. Includes removable commissioning damper, fixed measurement unit and sound attenuating lining with 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.

Planning/Installation

The diffuser box is screwed tightly to the ceiling. The connecting duct is fixed to the spigot with pop rivets.

When the commissioning box ALS is used, this should be secured to the building structure with drop-rods or installation band. The distance between the commissioning box ALS and the diffuser can be extended by up to 500 mm without the need of extending the measurement hose and damper control. The diffuser face is pop riveted to the diffuser box using steel pop rivets. See Figure 1.

Commissioning with ALS

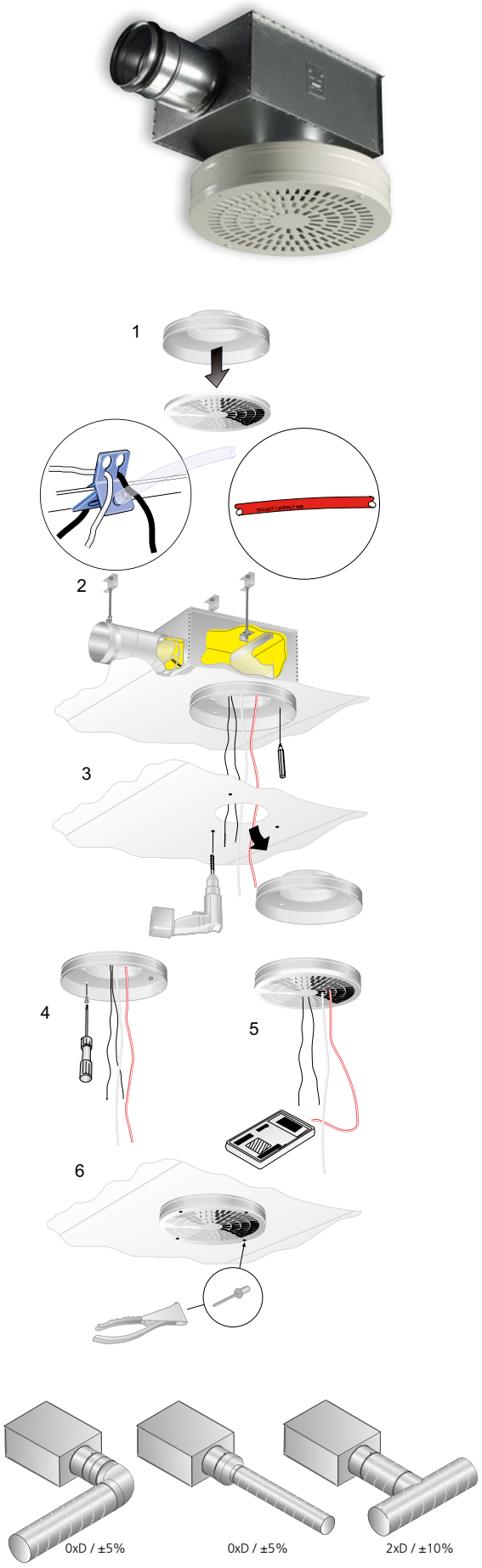
Commissioning should be done with the diffuser face assembled. The measurement hose and damper control is pulled out through the perforation of the diffuser face. A manometer is connected to the measurement hose. The desired commissioning pressure can be calculated with the help of the terminal's K-factor. The damper is set in the right position, an adjustment knot is tied on the damper chords to indicate the damper position. To lock the commissioned damper position, the damper cords are fixed with the cord screw in the top part of the diffuser box.

Measurement accuracy and requirement on straight duct before the commisioning box, see Figure 1. The requirements of straigh duct depends on the type of disturbance before the commissioning box. Figure 1 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 stated on the product's label, as well as in the current commissioning instructions, which can be downloaded from from www.swegon.com. See Figure 1.

Maintenance

The diffuser is cleaned if necessary with tepid water and a detergent. Access to the duct system is possible by drilling out the steel pop rivets, the diffuser face is then released from its spring clips. When the commissioning box ALS is used, the distribution plate in the box is moved to the side, to gain access to the commissioning damper. The damper unit is then turned anticlockwise and pulled out of its holder.



Figur 1. ROC + ALS.

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.
- Throw length $l_{0.2}$ is measured with isothermal supply air temperature.
- Recommended max under temperature is 10 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

ROC – Supply air

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

Size	Mid-frequency (octave band) Hz							
ROC	63	125	250	500	1000	2000	4000	8000
100	-3	-10	-5	0	2	-6	-18	-22
125	-12	0	1	2	1	-12	-22	-21
160	-11	-3	0	2	2	-15	-23	-22
200	-5	0	0	0	2	-9	-24	-27
250	-3	0	1	1	2	-9	-21	-20
315	-4	-2	4	2	0	-10	-19	-20
400	0	-2	4	3	0	-12	-20	-19
Size	Mid-frequency (octave band) Hz							
ROC + ALS	63	125	250	500	1000	2000	4000	8000
100	-7	4	2	1	-1	-7	-15	-18
125	-5	5	5	2	-1	-10	-18	-21
160	-3	3	4	1	0	-9	-17	-21
200	-2	4	5	2	-2	-10	-17	-21
250	-4	6	4	3	-3	-10	-16	-19
315	-1	4	3	3	-2	-11	-18	-20
400	0	5	3	3	-1	-10	-17	-20
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL(dB)
Table ΔL

Size	Mid-frequency (octave band) Hz							
ROC	63	125	250	500	1000	2000	4000	8000
100	22	17	13	8	4	4	1	0
125	20	15	10	5	3	5	5	4
160	19	14	9	4	3	5	5	4
200	19	14	8	3	3	4	5	5
250	16	11	5	4	2	3	4	4
315	14	9	4	2	2	2	3	3
400	13	8	4	1	0	0	0	0
Size	Mid-frequency (octave band) Hz							
ROC + ALS	63	125	250	500	1000	2000	4000	8000
100	22	16	12	17	22	16	11	15
125	21	16	9	17	23	16	11	13
160	19	14	10	17	19	12	10	12
200	16	11	8	16	18	12	11	11
250	13	8	8	16	17	12	12	13
315	11	6	7	19	14	10	10	13
400	10	5	8	14	11	10	11	12
Tol. ±	2	2	2	2	2	2	2	2

ROC – Extract air

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

Size	Mid-frequency (octave band) Hz							
ROC	63	125	250	500	1000	2000	4000	8000
100	-6	5	0	0	2	-8	-16	-20
125	-6	5	0	0	2	-8	-16	-20
160	-4	4	0	0	2	-7	-15	-20
200	4	8	2	0	0	-5	-14	-18
250	1	3	3	1	0	-4	-13	-17
315	-3	-1	2	2	0	-6	-15	-18
400	2	2	3	3	0	-7	-16	-18
Size	Mid-frequency (octave band) Hz							
ROC+ ALS	63	125	250	500	1000	2000	4000	8000
100	-9	9	5	1	-4	-7	-11	-18
125	-9	7	9	2	-6	-8	-15	-21
160	-6	11	8	1	-6	-7	-14	-21
200	-2	11	7	0	-6	-8	-15	-24
250	0	10	6	-3	-5	-8	-14	-22
315	0	10	6	-2	-4	-8	-14	-22
400	-1	6	1	-1	-2	-7	-15	-24
Tol. ±	2	2	2	2	2	2	2	2

Sound attenuation ΔL(dB)
Table ΔL

Size	Mid-frequency (octave band) Hz							
ROC	63	125	250	500	1000	2000	4000	8000
100	22	17	13	8	4	4	1	0
125	20	15	10	5	3	5	5	4
160	19	14	9	4	3	5	5	4
200	19	14	8	3	3	4	5	5
250	16	11	5	4	2	3	4	4
315	14	9	4	2	2	2	3	3
400	13	8	4	1	0	0	0	0
Size	Mid-frequency (octave band) Hz							
ROC + ALS	63	125	250	500	1000	2000	4000	8000
100	22	16	12	17	22	16	11	15
125	21	16	9	17	23	16	11	13
160	19	14	10	17	19	12	10	12
200	16	11	8	16	18	12	11	11
250	13	8	8	16	17	12	12	13
315	11	6	7	19	14	10	10	13
400	10	5	8	14	11	10	11	12
Tol. ±	2	2	2	2	2	2	2	2

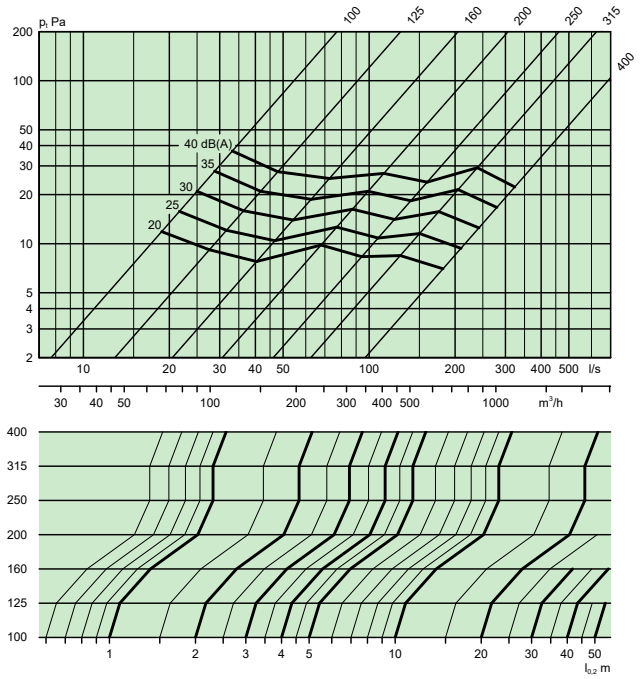
Engineering graphs

Airflow – Pressure drop – Sound level – Throw

- dB(A) applies for a normally attenuated room, 4 dB room attenuation/10 m^2 equivalent room absorption area.
- Throw length $l_{0.2}$ is measured with isothermal supply air temperature.
- Recommended max under temperature is 10 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.
- The diagrams show data for diffuser recessed in the ceiling.
- The diagrams should not be used for commissioning.
- ∇ = Min flow to obtain sufficient commissioning pressure.
- dB(A) applies for a normally attenuated room (4 dB room attenuation).
- dB(C) the value normally lies 6-9 dB higher than the dB(A) value.

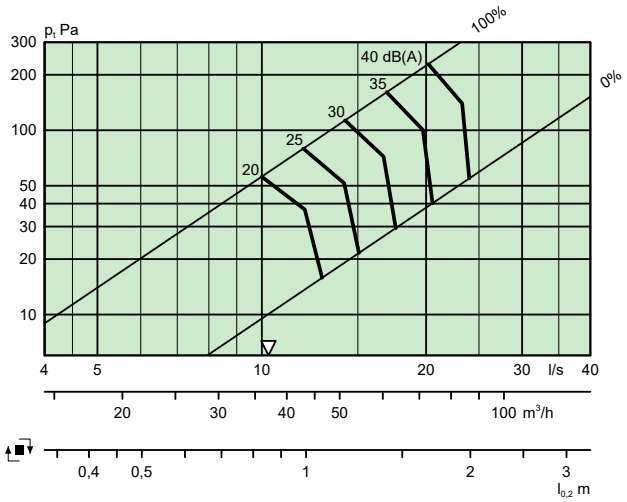
ROC – Supply air

ROC 100-400, Supply air

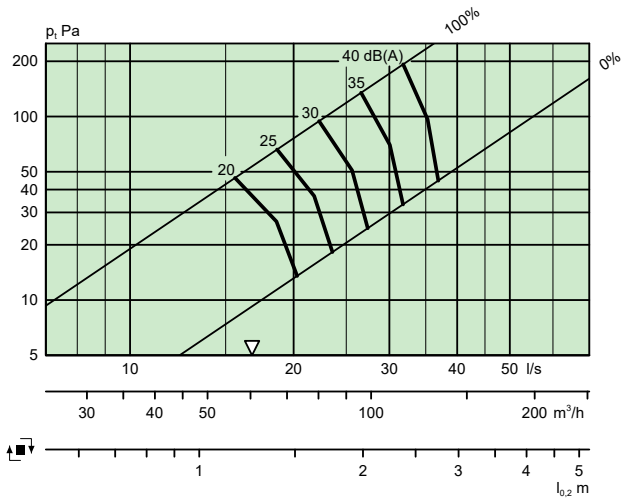


ROC + ALS – Supply air

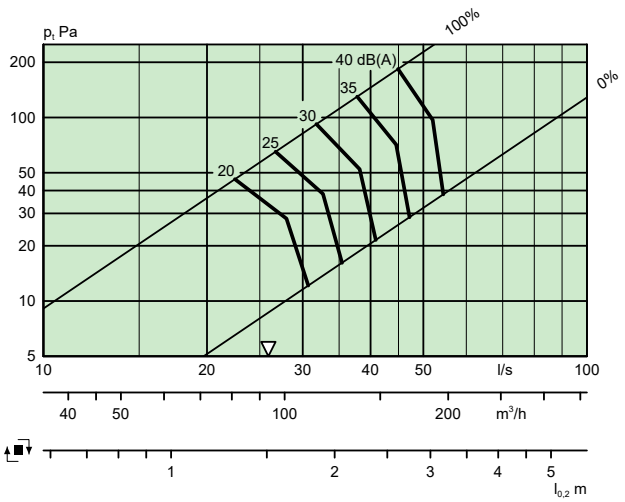
ROC 100 + ALS 80-100, Supply air



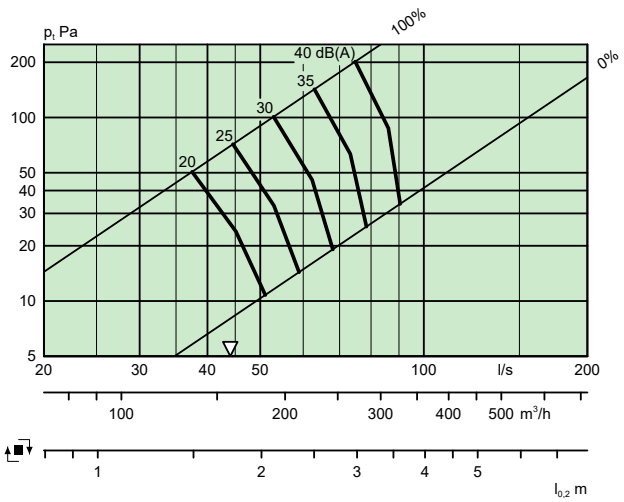
ROC 125 + ALS 100-125, Supply air



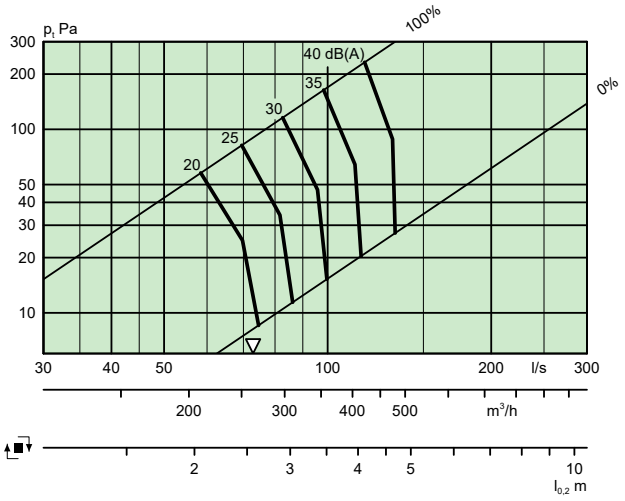
ROC 160 + ALS 125-160, Supply air



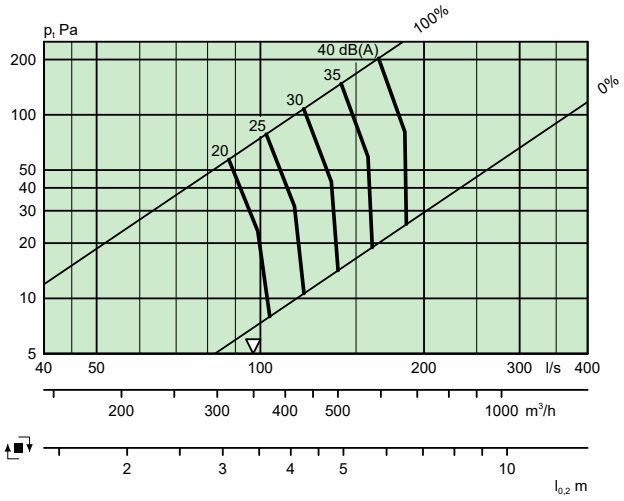
ROC 200 + ALS 160-200, Supply air



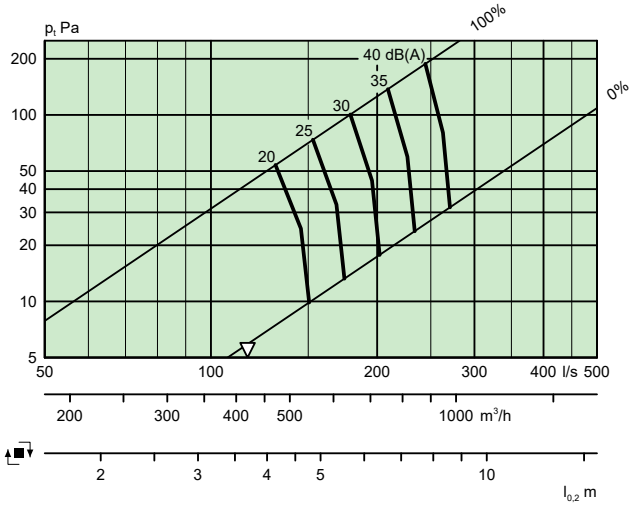
ROC 250 + ALS 200-250, Supply air



ROC 315 + ALS 250-315, Supply air

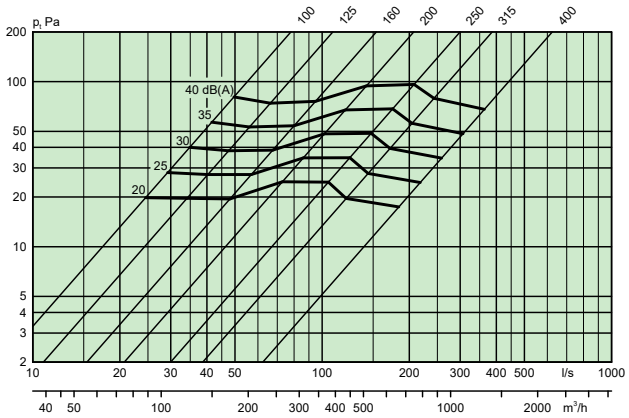


ROC 400 + ALS 315-400, Supply air

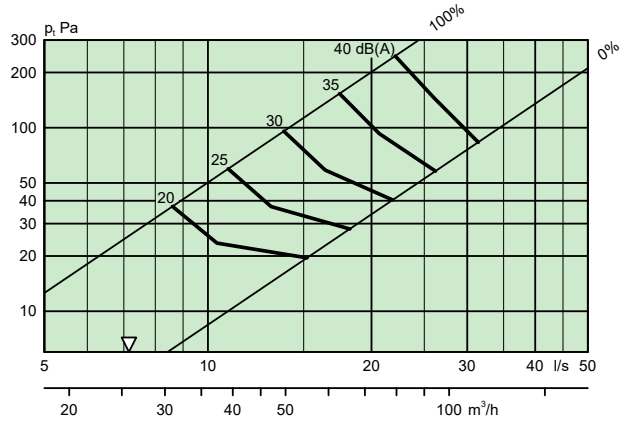


ROC – Extract air

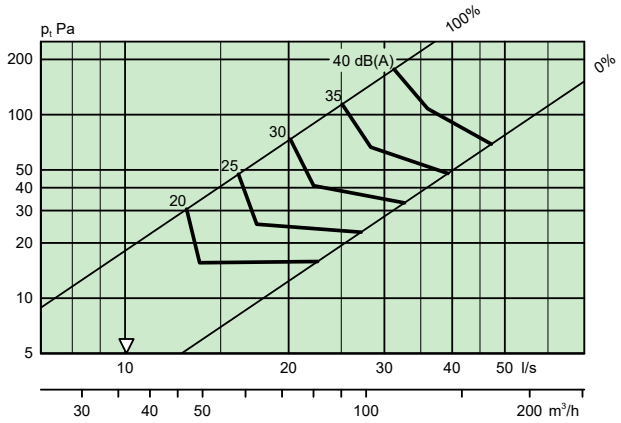
ROC 100-400, Extract air



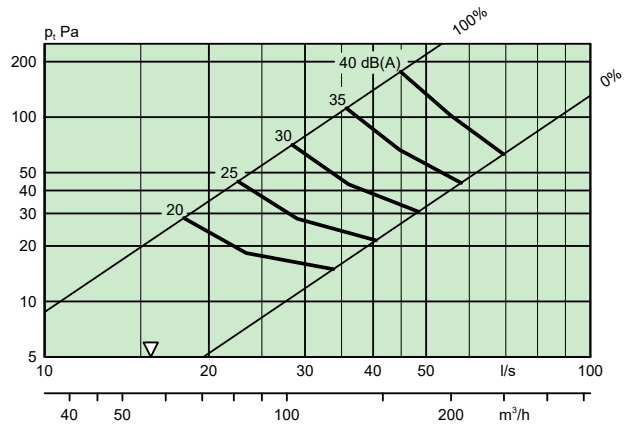
ROC 100 + ALS 80-100, Extract air



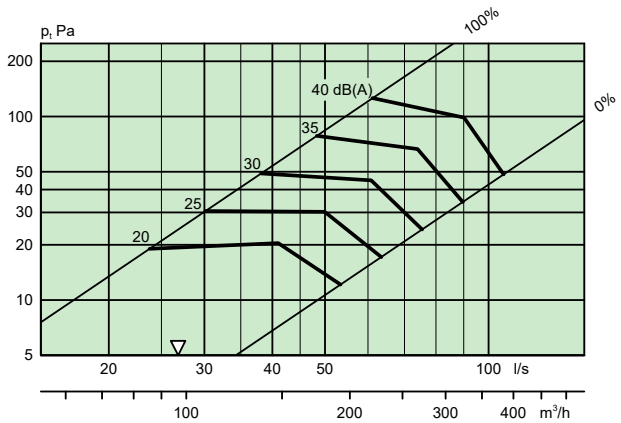
ROC 125 + ALS 100-125, Extract air



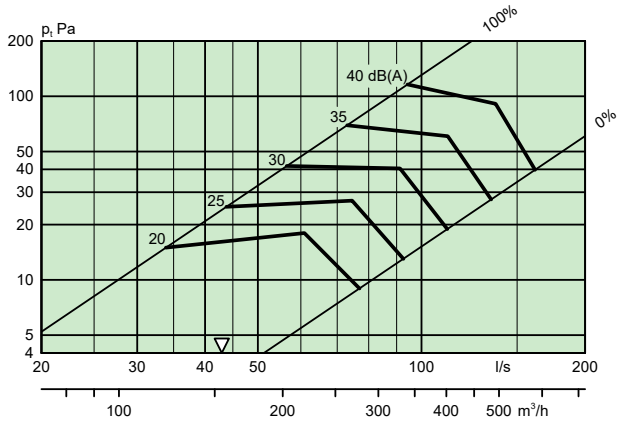
ROC 160 + ALS 125-160, Extract air



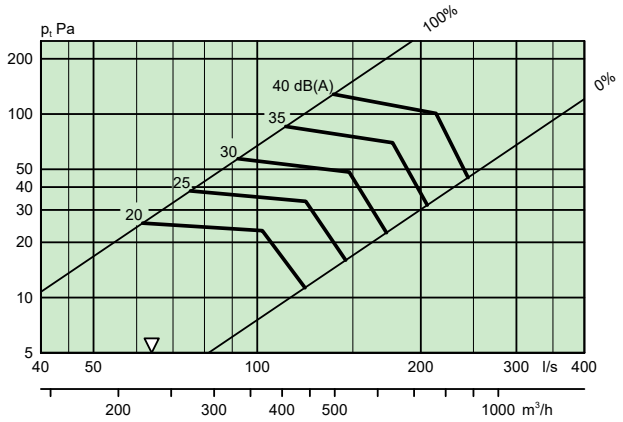
ROC 200 + ALS 160-200, Extract air



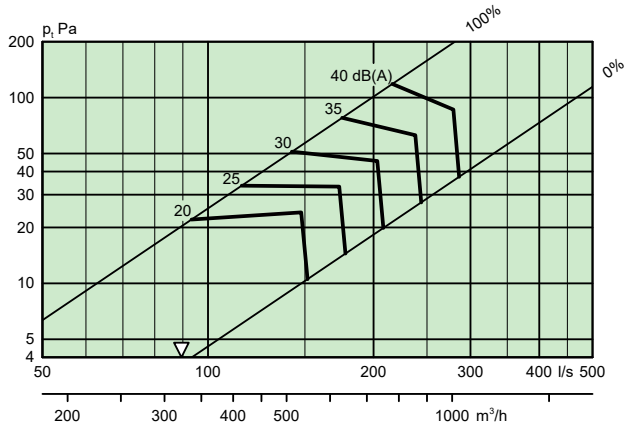
ROC 250 + ALS 200-250, Extract air



ROC 315 + ALS 250-315, Extract air



ROC 400 + ALS 315-400, Extract air



Dimensions and weight

											ROC	inc. ALS
Size	A	B	C	ØD	Ød	E	F	G	H	K	Weight, kg	Weight, kg
100	228	227	192	79	99	60	160	90	200	50	1.2	3.1
125	304	282	217	99	124	60	180	100	270	80	1.8	4.3
160	380	342	252	124	159	60	204	112	315	80	2.6	6.1
200	456	404	288	159	199	88	241	130	375	100	3.9	7.4
250	568	504	332	199	249	117	281	150	465	115	6.0	11.0
315	568	622	388	249	314	117	342	175	575	140	5.9	13.4
400	568	767	488	314	399	117	402	210	712	175	5.6	16.9

CL = Center line

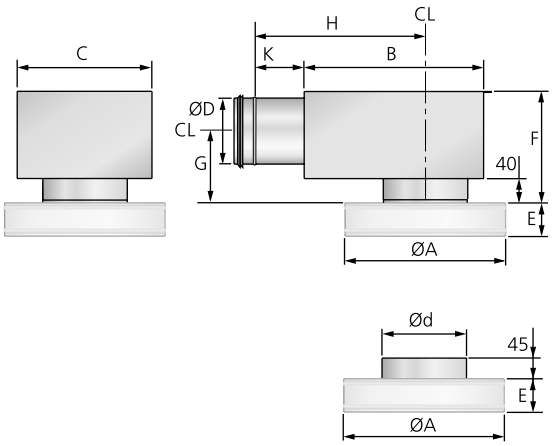


Figure 2. ROC + ALS.

Order key

Product

Circular ceiling terminal with guide vane perforations	ROC	a	aaa
Version			
Nom. connection dimension, mm: 100, 125, 160, 200, 250, 315, 400			

Accessories

Commissioning box			ALS	d	aaa-bbb
Version					
For ROC	100	ALS	80-100		
	125		100-125		
	160		125-160		
	200		160-200		
	250		200-250		
	315		250-315		
	400		315-400		

Specification example

Swegons reinforced circular terminal type ROCa with commissioning box ALS and the following functions:

- Design in 0.9 mm sheet steel.
- Guide vane perforations.
- Cleanable ALS commissioning box with removable commissioning damper.
  - Method of measurement with low systematic error.
  - Interior sound absorbing lining with reinforced surface layer.
- Powder coated white RAL 9003/NCS S 0500-N.

Specification	**ROC**	
Corrosivity class:	C2 (Powder paint Epoxy Polyester)	
Specification	**ALS**	
Air tightness class, casing:	C	
Corrosivity class:	C3	
Size:	ROCa aaa with ALSd aaa-bbb	xx pcs