CVH

Circular ceiling diffuser for supply air

Quick facts

- Can handle large air flows
- Horizontal or vertical spread pattern
- Motorised adjustment of spread pattern possible
- Suitable for heating purposes
- Can be used together with ALS commissioning box
- Cleanable
- Available in alternative colours
- Included in the MagiCAD and CadVent databases

Quick guide

AIR FLOW-SOUND LEVEL				
CVH Size		l/s 25 dB(A)	30 dB(A)	35 dB(A)
125		45	52	61
160		65	77	90
200		110	125	145
250		160	190	225
315		250	290	340
400		360	420	475
500		520	600	700
CVH Size	ALS Size	l/s 25 dB(A)	30 dB(A)	35 dB(A)
125	100-125	27	35	47
160	125-160	42	52	70
200	160-200	65	80	100
250	200-250	95	120	150
315	250-315	135	180	245
400	315-400	250	300	375

Data applies to the combination of CVH + ALS commissioning box at total pressure drop of 50 Pa and horizontal spread pattern.

Technical description

Design
The diffuser consists of an outer cylinder with a rubber seal on the connection spigot (up to size 400) and an aerodynamically shaped multi-cone unit. The cone unit is adjustable vertically and is removable. The cone unit can be adjusted either manually or via an electric motor. CVH with an electric motor is only available in sizes 315, 400 and 500. The connection nipple is extended in versions with electrical manoeuvring. See dimensions print.

Materials and surface treatment
The whole diffuser is manufactured in sheet steel. It is painted on both exterior and interior with our pure white standard paint, RAL 9010. The unit is also available in other standard colours: Dusty grey 7037, white aluminium RAL 9006, jet black RAL 9005, grey aluminium RAL 9007 and signal white RAL 9003 (NCS 0500).

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

Controller for resetting motor controlled diffusers with variable spread patterns for cooling and heating:

VHC: The controller resets motor controlled diffusers intended both for cooling and heating with supply air. The controlling parameter is the temperature difference between supply air and room air. See separate product sheet for VHC.

Planning
When used in a air heating system, the spread pattern should be calculated from computer produced values. Use our diffuser selection program ProAir, which is available at www.swegon.com. The terminal is available in size 315 and larger with motor control of the cone position to facilitate changing from horizontal or vertical spread pattern or vice versa via thermostat or other exterior switch.

Installation
The inlet spigot of the diffuser is fixed in the connection duct using blind rivets. When used in conjunction with the ALS commissioning box, the spigot between the diffuser and the commissioning box ALS can be extended using ordinary circular duct up to 500 mm long without necessitating the extension of either the measuring tube or the damper regulator. See Figure 3.

Commissioning
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 slot. The damper setting can be locked. The k-factor is shown on the product marking and is also indicated in the relevant k-factor guide which can be accessed at www.swegon.com. See Figure 3.

Maintenance
The diffuser can be cleaned when necessary using lukewarm water and detergent. The duct system can be accessed without the use of tools. The cone unit is removed by taking out the plastic buttons (sizes 125 - 250) or unscrewing the plastic funnels (for sizes 315 - 500). The buttons or funnels are found on the inside of the outer cone. If the ALS commissioning box is used, the distribution plate is pulled aside and the damper unit twisted from its mounting with a simple hand movement. See Figure 3.

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

Figure 3. Installation.

Sizing

- The sound level dB(A) applies to rooms of 10 m² equivalent absorption area.
- The throw $l_{0.2}$ is measured under isothermal flow conditions.
- The maximum recommended under-temperature is 10 K.
- Horizontal spread pattern is obtained with the inner cone unit in the lower position (See measurement drawing).
- Vertical spread pattern is obtained with the inner cone unit in the upper position (See measurement drawing).
- For calculating the width of the airstream, air velocities in the zone of occupation or sound levels in rooms with other dimensions, please refer to our calculation programmes ProAir web, which is available at www.swegon.com.
- For the CVHb with motor control, the following apply:
  LH24A
  Voltage feed 24 V AC 50/60 Hz
  Power consumption 3 VA
  Delay time interval 150 s

  LH230A
  Voltage feed 240 V AC 50/60 Hz
  Power consumption 5 VA
  Delay time interval 150 s

Wiring

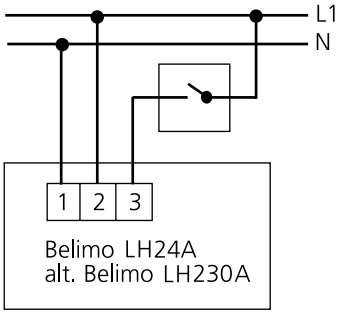


Figure 1. Wiring diagram for CVH with actuator - Actuator with 2-pointscontrol. Change-over switch not included.

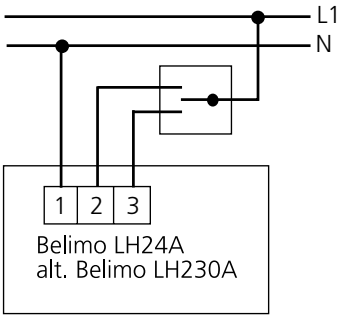


Figure 2. Wiring diagram for CVH with actuator - Actuator with 3-pointscontrol. Change-over switch not included.

Sound data - CVH - Supply air

Horizontal and vertical spread patterns

Sound power level L_w(dB)

Table K_{OK}

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

Sound attenuation ΔL(dB)

Table ΔL

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

Engineering graphs

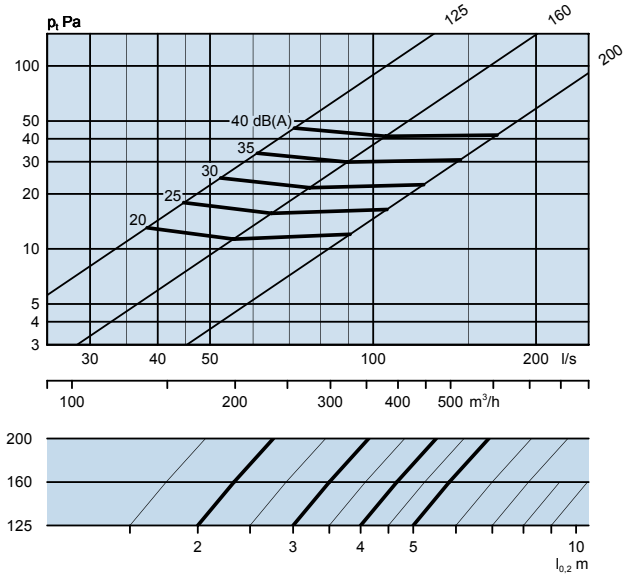
CVH – Supply air

Horizontal and vertical spread patterns

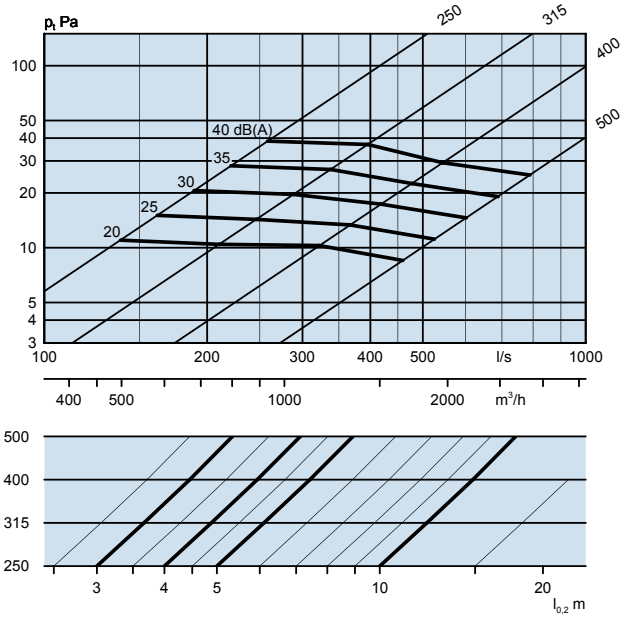
Air flow - Pressure drop - Sound level - Throw

- The diagrams illustrate data for a ceiling mounted CVH.
- 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.

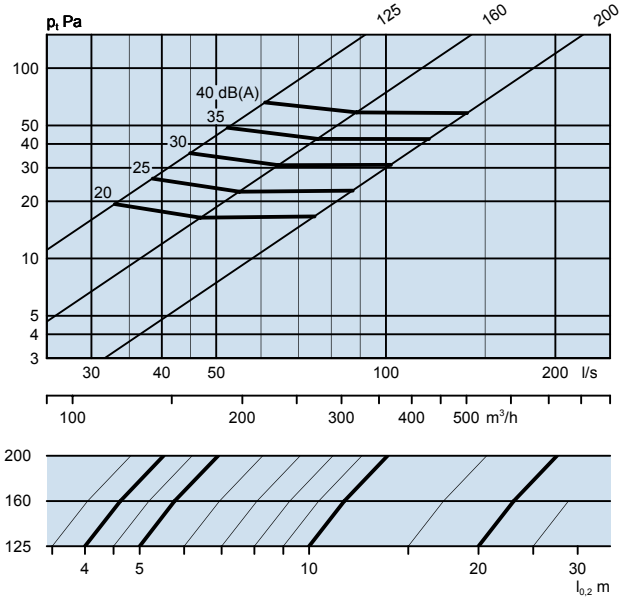
CVH 1-125, 160, 200 Horizontal



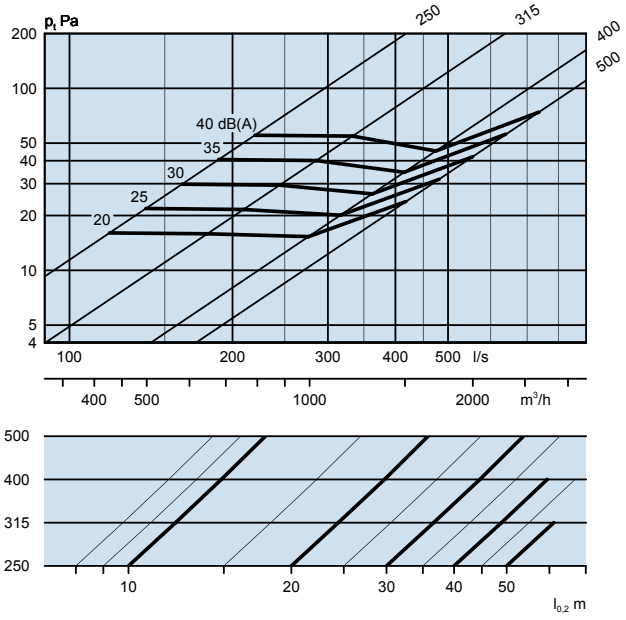
CVH 1-250, 315, 400, 500 Horizontal



CVH 1-125, 160, 200 Vertical



CVH 1-250, 315, 400, 500 Vertical



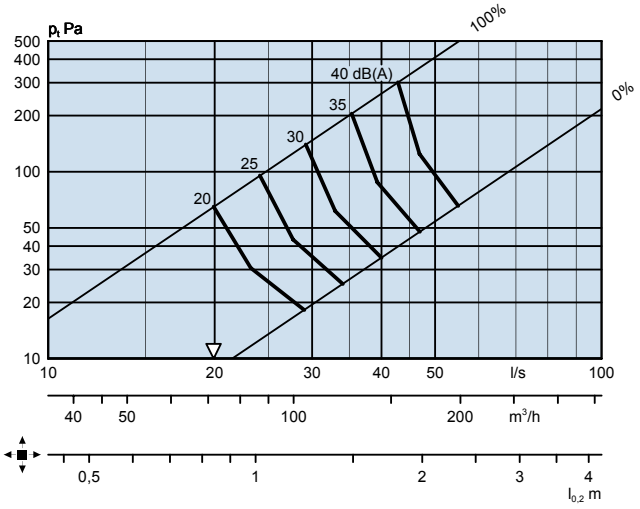
CVH with ALS - Supply air

Horizontal spread patterns

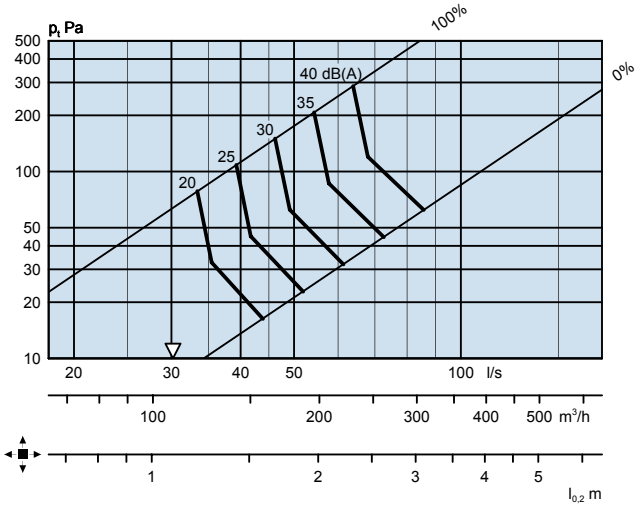
Air flow - Pressure drop - Sound level - Throw

- 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.

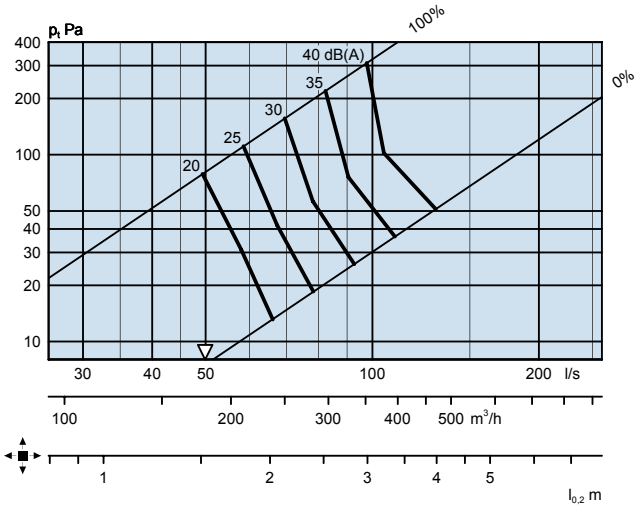
CVH 125 + ALS 100-125, Horizontal



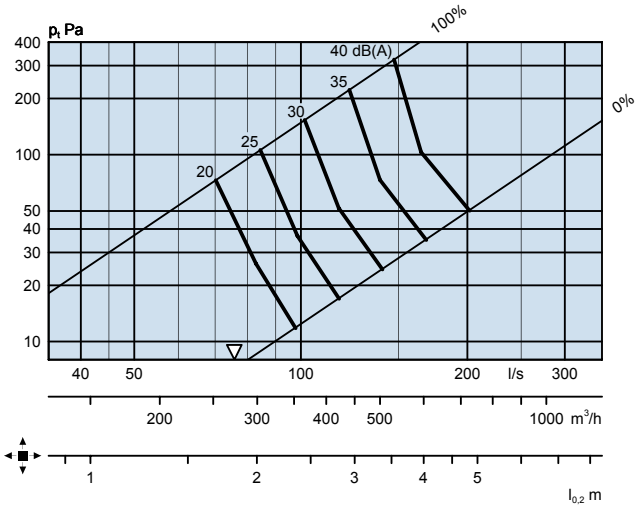
CVH 160 + ALS 125-160, Horizontal



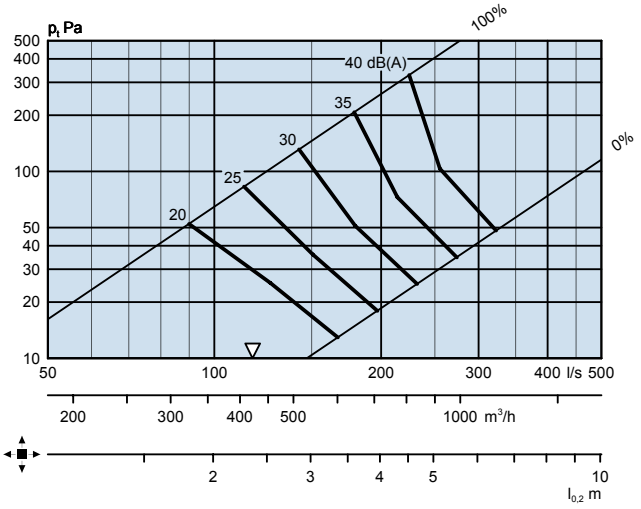
CVH 200 + ALS 160-200, Horizontal



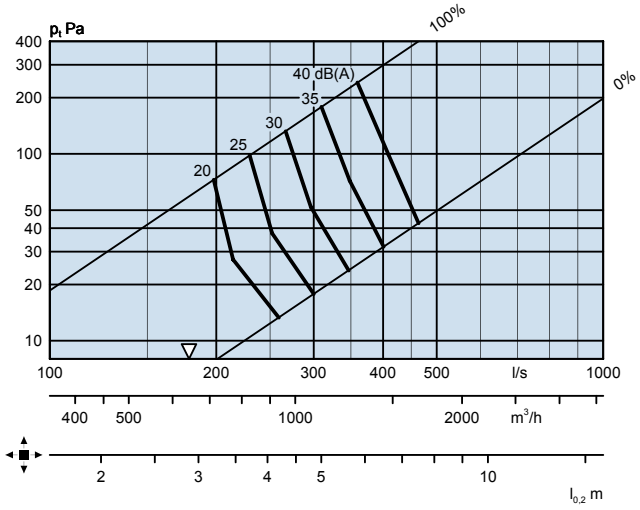
CVH 250 + ALS 200-250, Horizontal



CVH 315 + ALS 250-315, Horizontal



CVH 400 + ALS 315-400, Horizontal



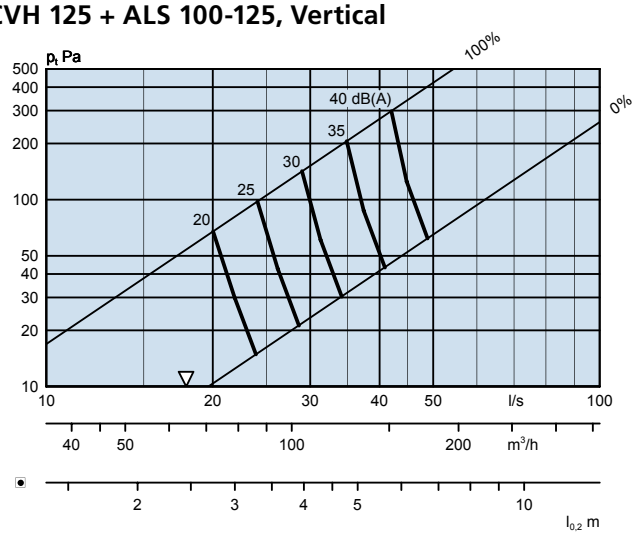
CVH with ALS - Supply air

Vertical spread patterns

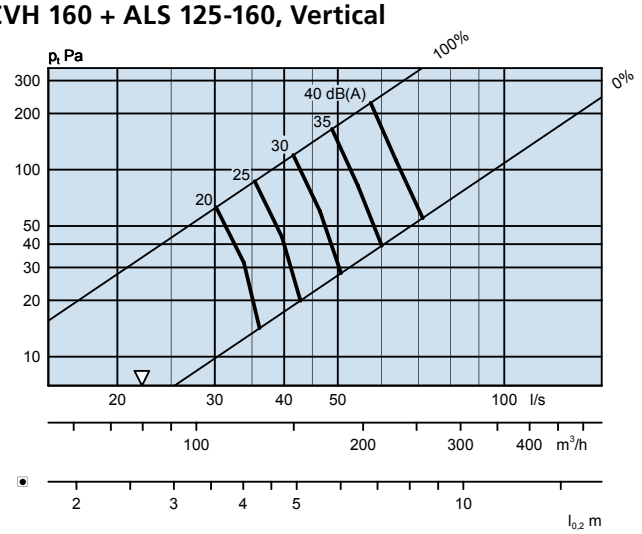
Air flow - Pressure drop - Sound level - Throw

- 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.

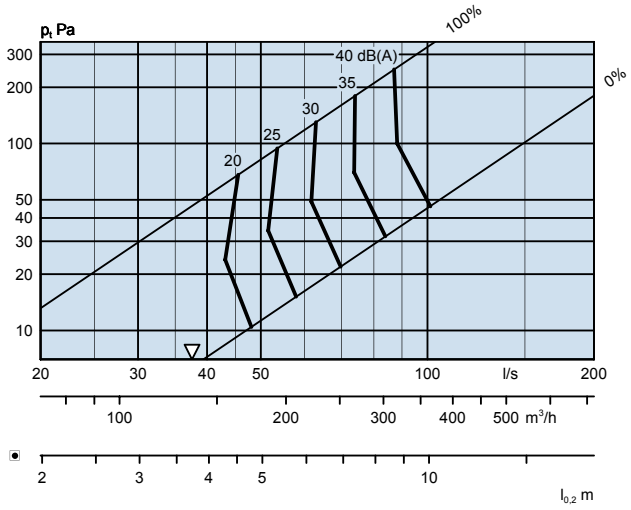
CVH 125 + ALS 100-125, Vertical



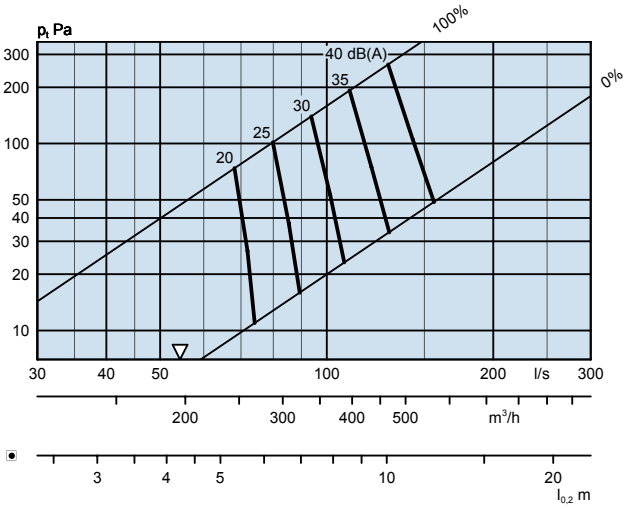
CVH 160 + ALS 125-160, Vertical



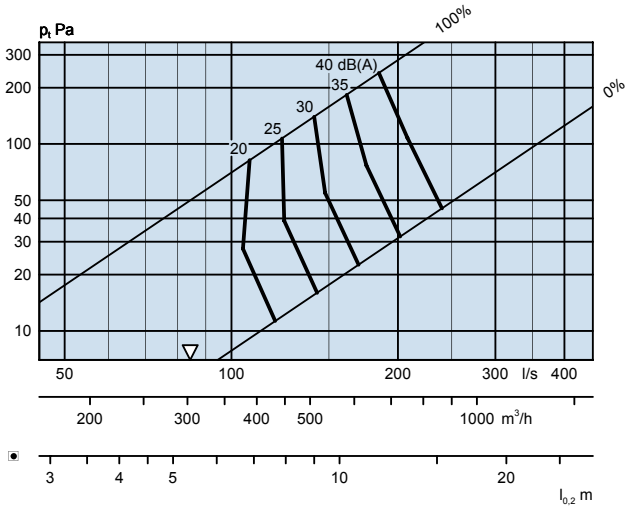
CVH 200 + ALS 160-200, Vertical



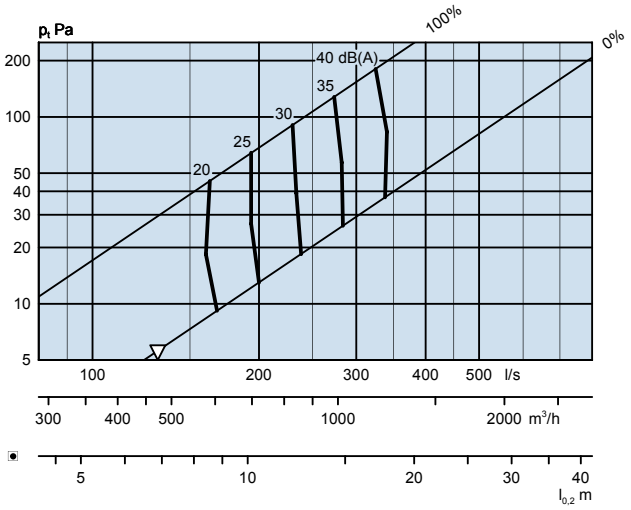
CVH 250 + ALS 200-250, Vertical



CVH 315 + ALS 250-315, Vertical



CVH 400 + ALS 315-400, Vertical



Dimensions and weight

CVH

Size	ØA	Ød	ØJ	F	G	H	Weight,kg
125	305	124	270	82	9.5	10	1.0
160	305	159	270	72	13	10	1.0
200	378	199	330	84	14	13	1.5
250	477	249	420	99	17	16	2.2
315	591	314	530	116	20	20	3.4
400	703	399	630	128	24	24	5.1
500	853	499	780	135	30	30	8.0

Hole making size = ØJ

G = lower position - horizontal spread pattern

H = Upper position - vertical spread pattern

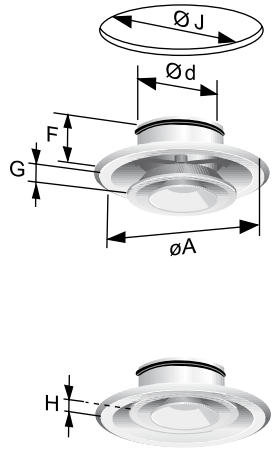


Figure 4. CVH 1-aa.

CVH with actuator

Size	Ød	L
315	314	425
400	399	430
500	499	430

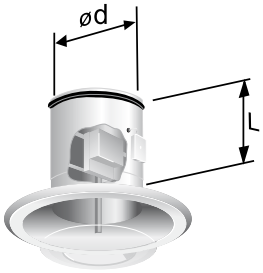


Figure 5. CVH 2-aa with actuator.

CVH with ALS

Size	ØA	B	C	ØD	E
125	305	282	217	99	235
160	305	342	252	124	249
200	378	404	288	159	292
250	477	504	332	199	346
315	591	622	388	249	421
400	703	767	488	314	489

Size	F	G	H	K	Weight, kg
125	180	100	270	80	3.0
160	204	112	315	80	3.7
200	239	130	375	100	5.0
250	279	150	465	115	7.4
315	340	175	575	140	11.4
400	400	212	712	175	15.5

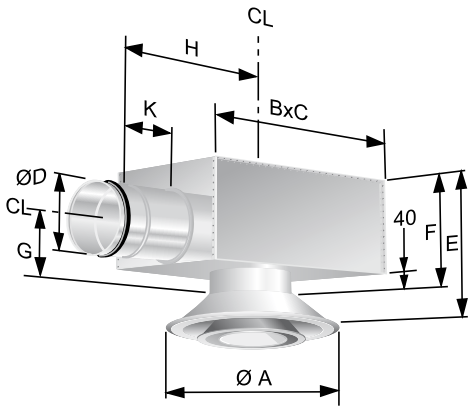


Figure 6. CVH + ALS.

Ordering key

Product

Circular ceiling terminal for supply air	CVH	b	-a	-bbb
Version				
Manually operated: 1 Motor operated: 2				
Size: 125, 160, 200, 250, 315, 400, 500				

Accessories

Commissioning box			ALS	c	-aaa - bbb
Version					
For CVH	125 160 200 250 315 400	ALS	100-125 125-160 160-200 200-250 250-315 315-400		
Controller			VHCa		

Specification example

SD XX
Swegons circular multi-cone diffuser for ceiling mounting of type CVHb with commissioning box ALS with the following functions:

- Adjustable horizontal / vertical spread patterns
- Powder coated in white, RAL 9010
- Cleanable commissioning box ALS with removable commissioning damper including a lockable adjustment, measurement function with low method error and internal acoustic attenuation with reinforced surface layer.

Size:	CVHb a - bbb with ALSc aaa-bbb	xx items