

2/S2
v 3.3 (en)

CEILING DIFFUSERS

ANK, ANO



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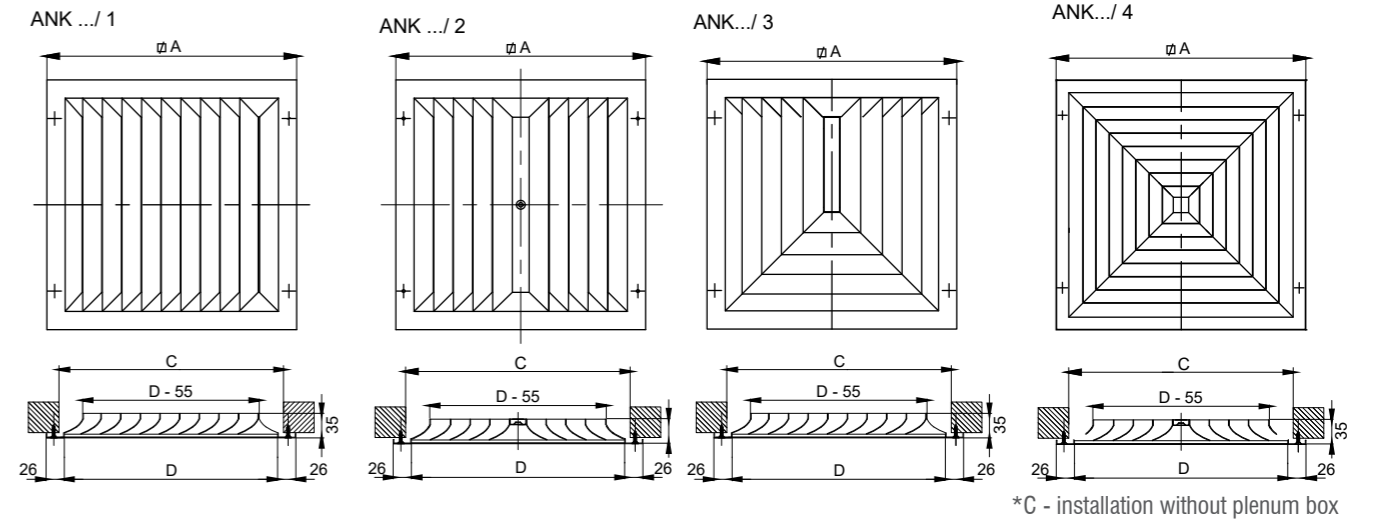


ANK

- Ceiling diffuser for room heights from 2,3 to 4m.
- Frame and blades made out of steel sheet, standard RAL 9010
- Fixed blades
- Fixing with visible screws

Options

- Damper (L, KL)
- RAL...
- Plenum box
- Fixing with central screw (ANK../2, ANK../3, ANK../4)

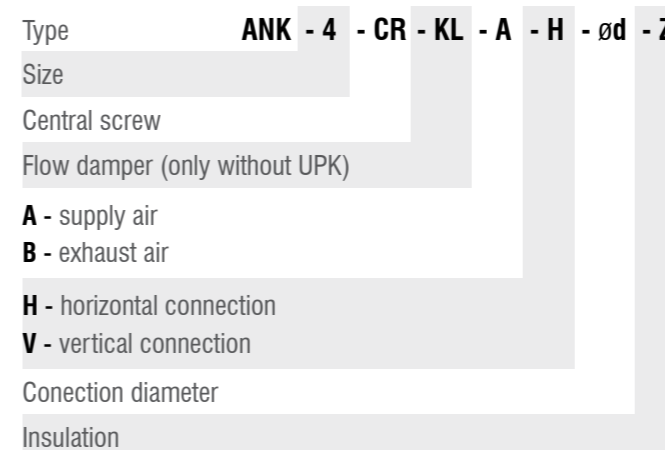


ANK	Size	1	2	3	4	5	6	7	8
	A[mm]	244	300	355	412	468	498	598	623
	C[mm]	208	264	320	375	432	462	562	587
	D[mm]	192	248	304	360	416	445	546	571

Definition of symbols:

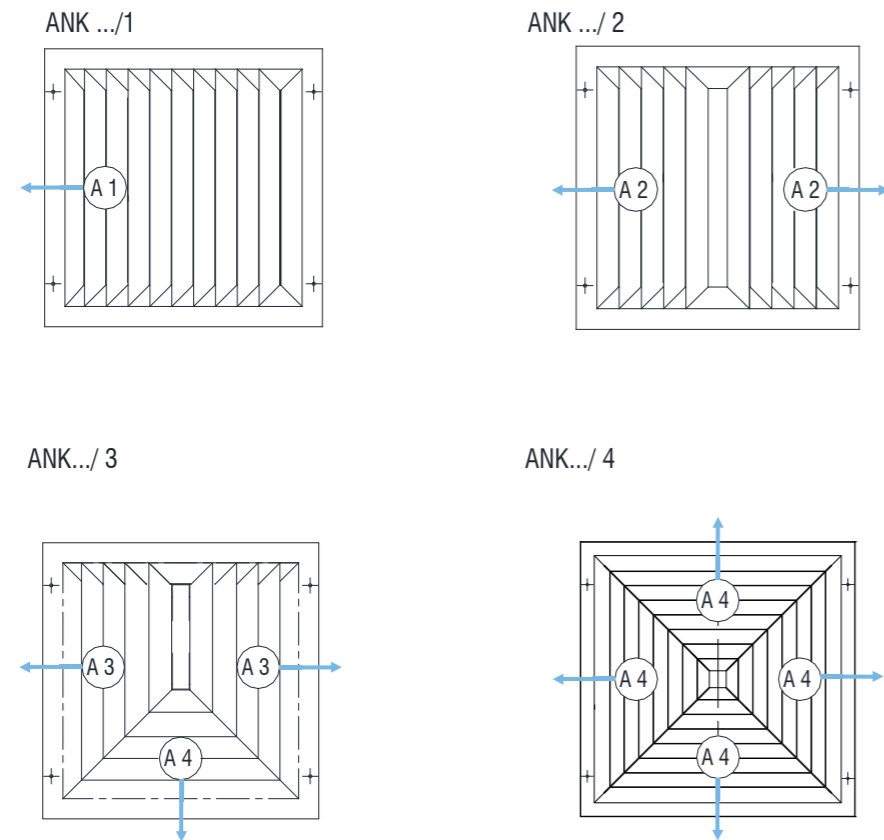
V [m ³ /h]	- Air flow	v_h [m/s]	- Average core velocity at distance h (m) from diffuser
V_{uk} [m ³ /h]	- Total air volume in motion	Δp [Pa]	- Total pressure drop
h [m]	- Distance from the ceiling to the occupied zone	t_p [°C]	- Air temperature in the room
H [m]	- Room height	t_z [°C]	- Supply air temperature
A, B [m]	- Distance between diffusers	t_m [°C]	- Core air temperature
x [m]	- Distance from wall	Δt_z [°C]	- ($t_z - t_p$)
L [m]	- Throw distance (x+h)	Δt_L [°C]	- ($t_m - t_p$)
A_{ef} [m ²]	- Effective discharge area	i	- Induction V_{uk}/V
v_{ef} [m/s]	- Effective jet velocity	L_{WA} [dB(A)]	- Sound power level
v_L [m/s]	- Average core velocity at distance L (m) from diffuser		

Ordering key:

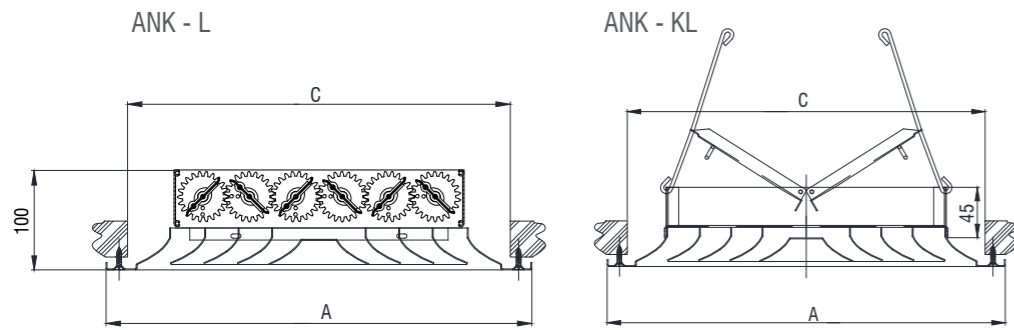


- *Screws are not delivered
- **Ordering key for Plenum box on page 184
- ***Only plenum box UPK1

Diffuser ANK with 1, 2, 3 or 4 discharge directions



Dampers

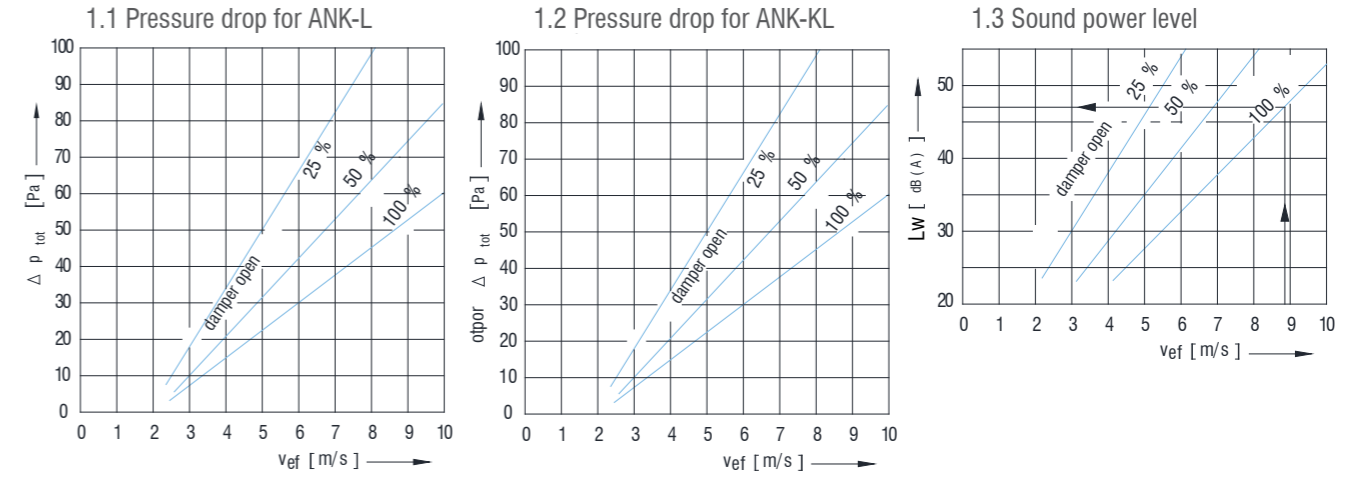


Effective discharge area table

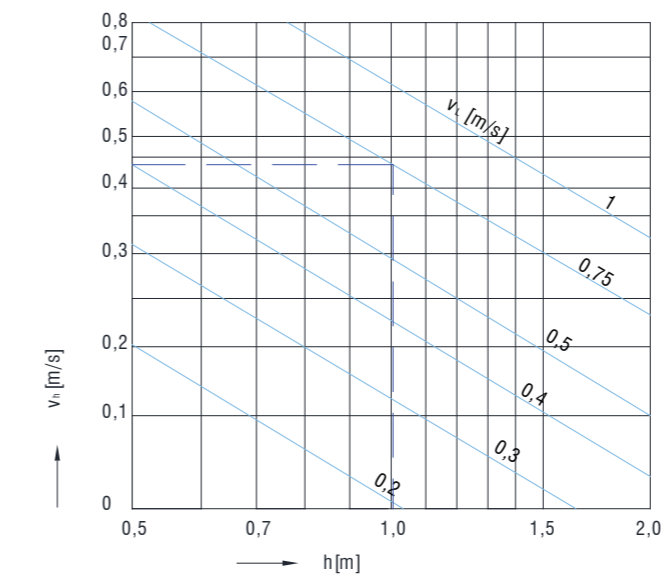
ANK A_{ef} [m ² /per outlet section]	Size	1	2	3	4	5	6	7	8
	A1	0,011	0,021	0,033	0,048	0,067	0,071	0,115	0,127
	A2	0,005	0,011	0,015	0,022	0,031	0,036	0,057	0,057
	A3	0,004	0,004	0,011	0,021	0,024	0,027	0,042	0,044
A4	0,0027	0,0046	0,0074	0,0110	0,0157	0,0182	0,0293	0,0320	

*C - installation without plenum box

Selection diagrams



1.4 Vertical air-stream velocity between two ceiling diffusers



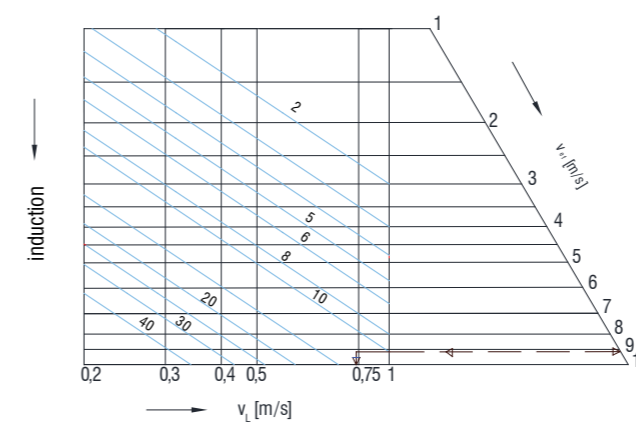
ANK

Size	A_{ef} [m ²]
1	0,0104
2	0,0185
3	0,0295
4	0,0440
5	0,0628
6	0,0728
7	0,1175
8	0,1280

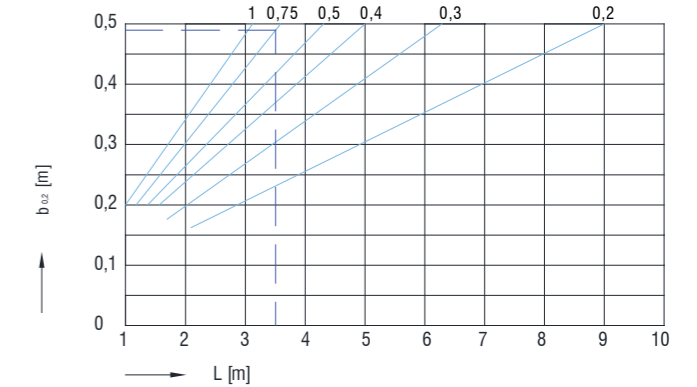
Sound power level correction 1.3

Size	Correction [dB(A)]
1	-3
2	-3
3	-2
4	-1
5	0
6	0
7	4
8	5

1.5 Induction



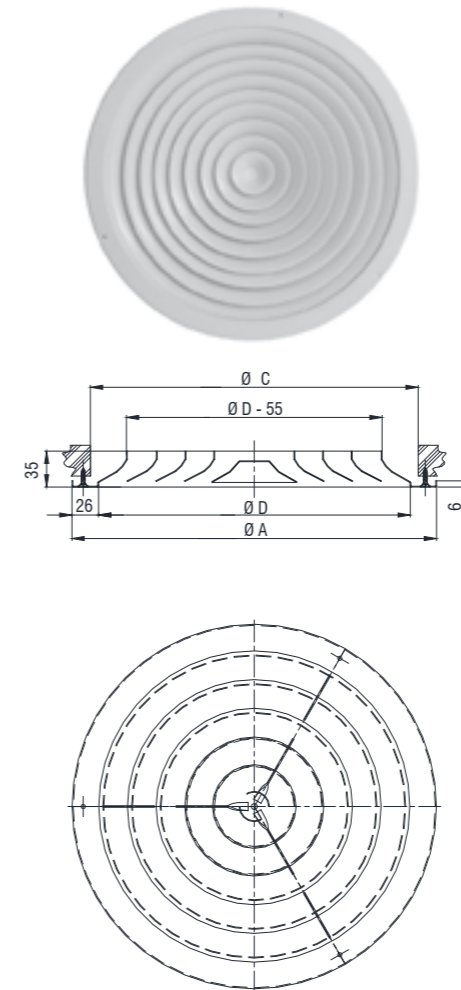
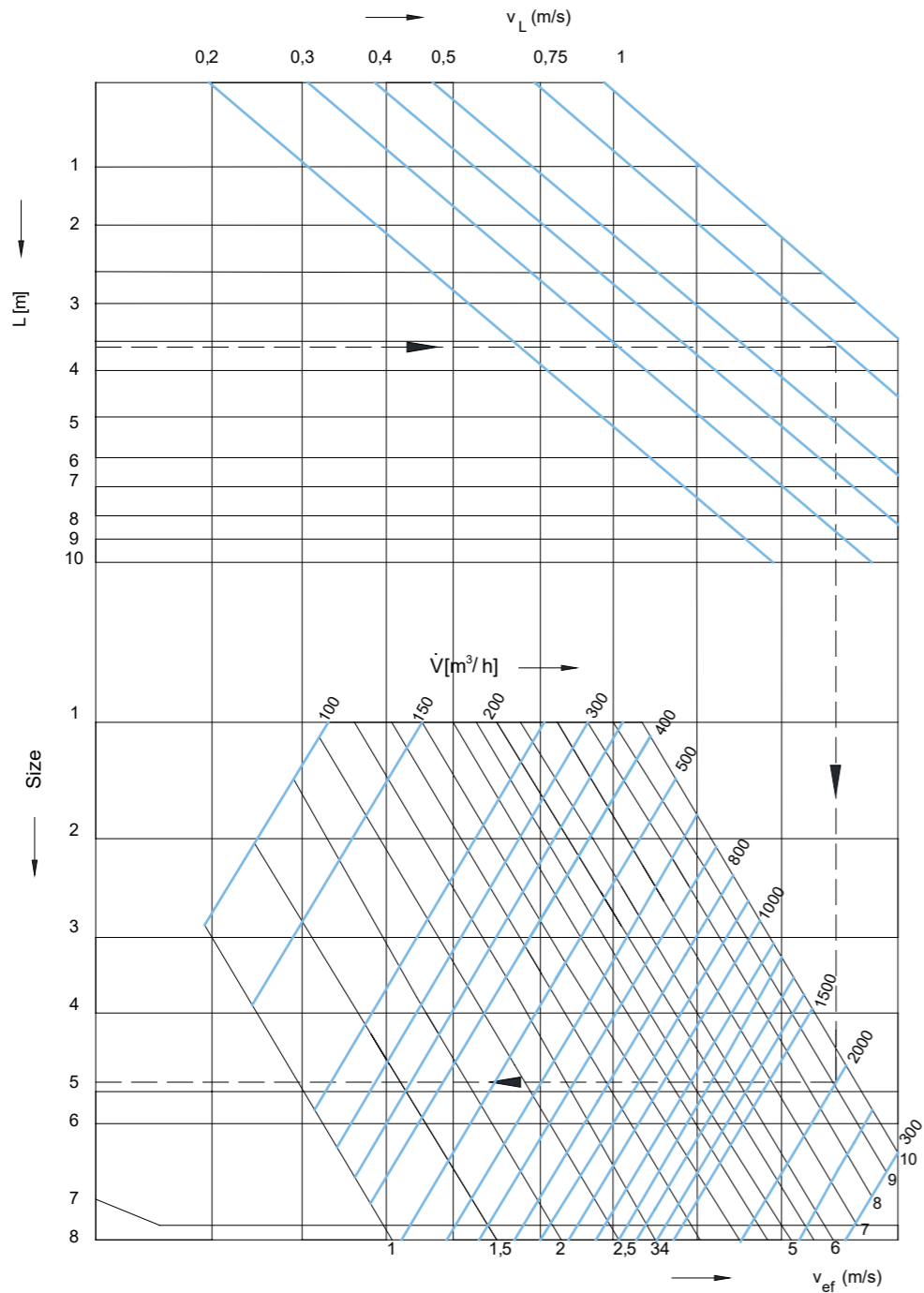
1.6 $b_{0,2}$ diagram



Example 1:

Given:	Solution:	
ANK-L L = 3.6 m V = 2000 m ³ /h v _L = 0.75 m/s h = 1 m (damper 100% open)	Diagram 1.7 Model 5 v _{ef} = 9 m/s Diagram 1.5 i = 11 Diagram 1.6 b ₀₂ = 0.49 m	Diagram 1.4 v _n = 0.44 m/s Diagram 1.1 Δρ = 54 Diagram 1.3 L _{WA} = 47 dB (A) Correction L _{WA} = 47 - 0 = 47 dB (A)

1.7 Selection diagram for ANK



ANO

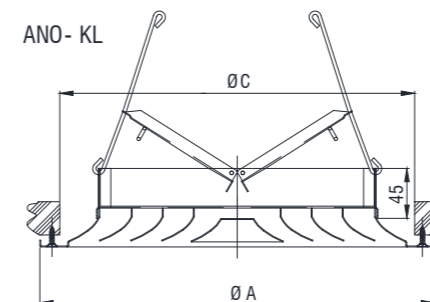
- Ceiling diffuser for room heights from 2,3 to 4m.
- Frame and blades made out of steel sheet, standard RAL 9010
- Fixed blades
- Fixing with visible screws

Options

- Damper (KL)
- RAL...
- Plenum box
- Fixing with central screw

Size	ØA [mm]	ØC [mm]	ØD [mm]
1	244	208	192
2	300	264	248
3	356	320	304
4	412	376	360
5	468	432	416
6	542	506	472
7	598	562	528
8	654	618	584

Flow damper



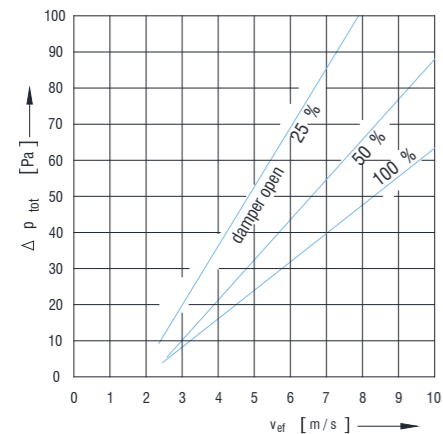
Ordering key:

Type **ANO - 4 - CR - KL - A - H - ød - Z**
 Size
 Central screw
 Flow damper (only without UPK)
A - supply air
B - exhaust air
H - horizontal connection
V - vertical connection
 Connection diameter
 Insulation

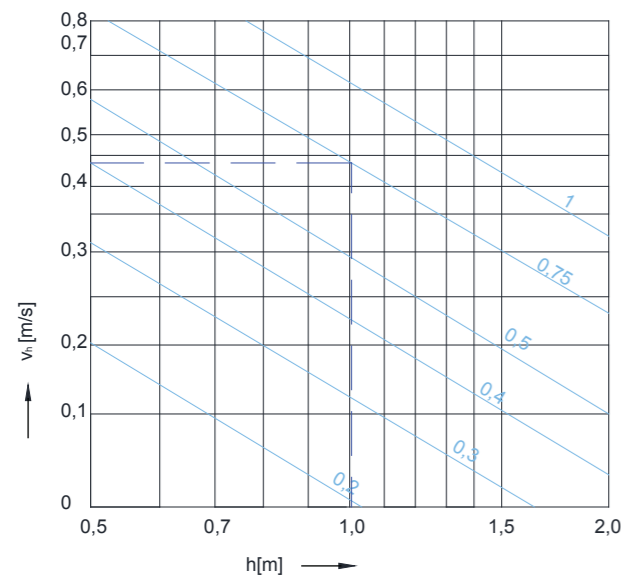
*Screws are not delivered
 **Ordering key for Plenum box on page 184
 ***Only plenum box UPK2

SELECTION DIAGRAM

2.2 Pressure drop for ANO-KL



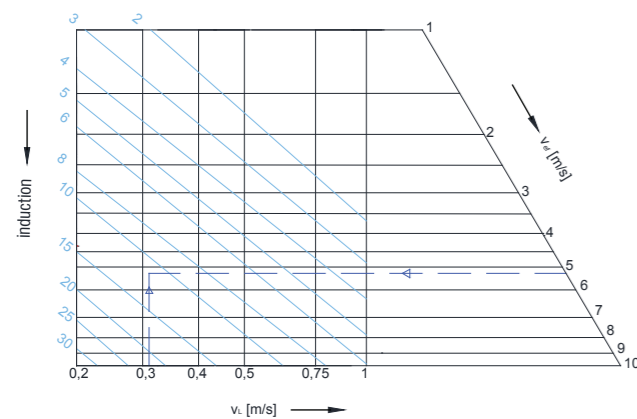
2.4 Vertical air-stream velocity between two ceiling diffusers



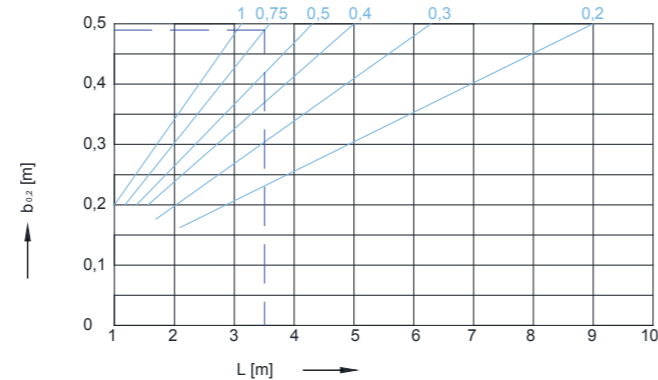
ANO	
Size	A _{eff} [m ²]
1	0,0085
2	0,0157
3	0,0257
4	0,0381
5	0,0536
6	0,0730
7	0,0955
8	0,1150

Sound power level correction 2.3	
Size	Correction [dB(A)]
1	-3
2	-3
3	-2
4	-1
5	0
6	0
7	4
8	5

2.5 Induction diagram



2.6 b_{0,2} diagram



Example 2:

Given:

ANO
L = 2 m
V = 500 m³/h
v_L = 0.3 m/s
h = 0.6 m
(damper open 100%)

Solution:

Diagram 2.7
Model 3
v_{eff} = 4.8 m/s
Diagram 2.5
i = 11
Diagram 2.6
b_{0,2} = 0.2 m
Diagram 2.4
v_h = 0.27 m/s

Diagram 2.2
Δp = 23 Pa
Diagram 2.3
L_{WA} = 27 dB (A)
Correction L_{WA} = 27 - 1 = 26 dB (A)

2.7 Selection diagram for ANO

