



CHB

Slot Diffuser

Description

CHB type diffusers are designed for ceiling applications. They can be used for supply or extract air.

Properties

The CHB type diffusers have adjustable cylindrical blades. Due to the blade characteristic, they have fixed net areas. They are suitable for horizontal and vertical throws.

These diffusers are recommended for use with ceiling heights up to 4m., with a supply air temperature difference of (+/-) 10°C.

Materials

The frame is manufactured from ETIAL-60 norm aluminium profiles, and the cylindrical blades from black plastic.

Surface Treatment

The surface of the diffusers are first cleaned, then treated with chromating process; after which are painted electrostatically, with 20% gloss RAL 9010 (white) as standard. Other colours are also available upon request.

Accessories

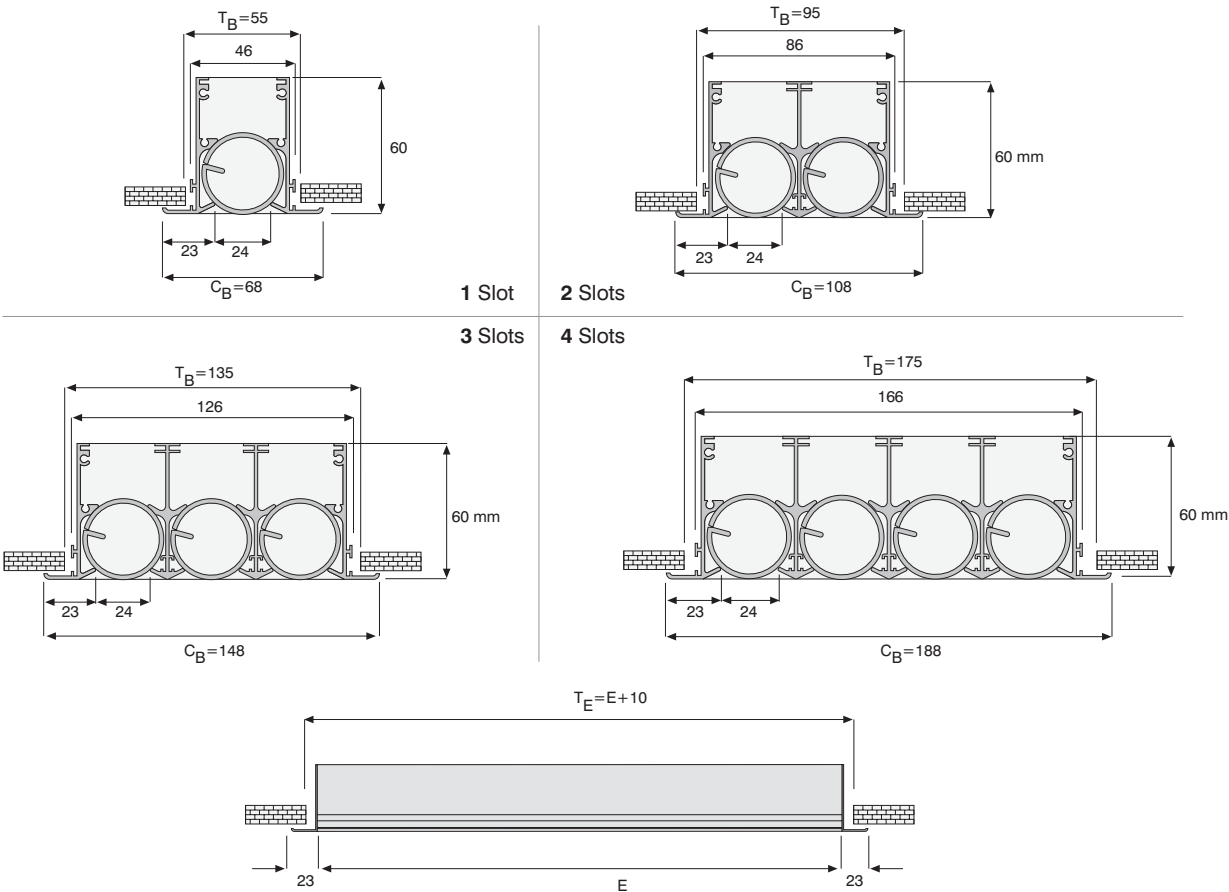
Plenum Box

The plenum box is used to achieve optimum throw characteristics. It has the inlet at one side. A damper is installed at the inlet, which can be operated internally, through a slot.

The plenum boxes are made from 0.6 mm thick galvanized steel sheets and have 4 hanging brackets on their body.

Optionally, a 6 mm thick acoustic foam can be laid inside the plenum box.

Dimensions

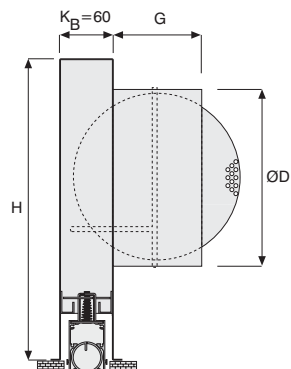


Standard Dimensions (mm)

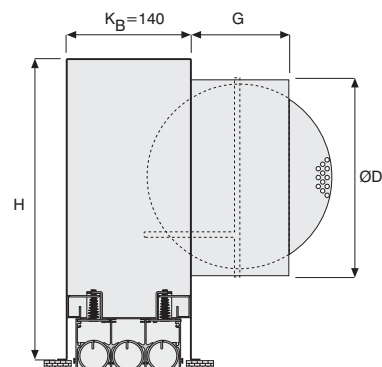
1 Slot	E	2 Slots	E	3 Slots	E	4 Slotlu	E
	470		470		470		470
	625		625		625		625
	780		780		780		780
	935		935		935		935
	1090		1090		1090		1090
	1245		1245		1245		1245
	1400		1400		1400		1400
	1555		1555		1555		1555

Plenum Box Dimensions

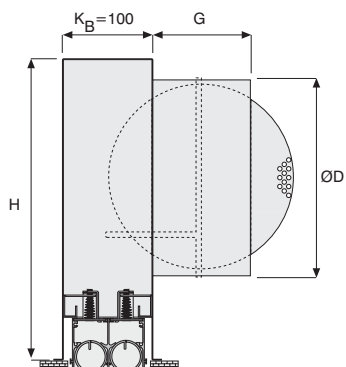
1 Slot



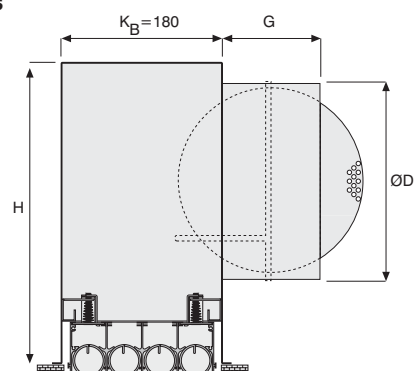
3 Slots



2 Slots



4 Slots

Plenum Box length $K_E = E$

Standard Dimensions (mm)

1 Slot	E	H	ØD	G
	470	240	117x1	80
	625	240	142x1	80
	780	240	150x1	80
	935	240	117x2	80
	1090	240	117x2	80
	1245	240	130x2	80
	1400	240	130x2	80
	1555	240	142x2	80

2 Slots	E	H	ØD	G
	470	285	150x1	80
	625	285	193x1	80
	780	285	193x1	80
	935	285	170x2	80
	1090	285	170x2	80
	1245	285	170x2	80
	1400	285	193x2	80
	1555	285	193x2	80

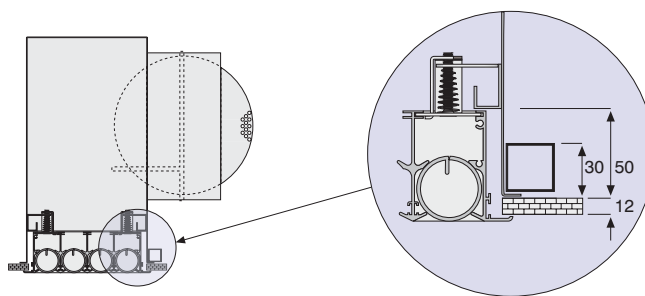
3 Slots	E	H	ØD	G
	470	310	193x1	80
	625	310	219x1	110
	780	310	219x1	80
	935	310	193x2	80
	1090	310	193x2	80
	1245	310	219x2	110
	1400	310	219x2	110
	1555	310	219x2	110

4 Slots	E	H	ØD	G
	470	340	219x1	110
	625	340	219x1	80
	780	340	193x2	80
	935	340	219x2	110
	1090	340	219x2	110
	1245	340	219x2	80
	1400	340	244x2	110
	1555	340	244x2	110

Installation

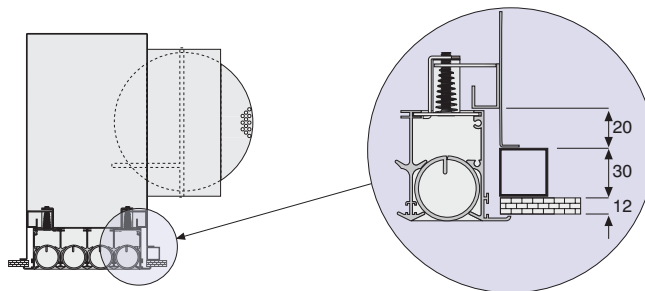
Type a

This type is suitable for ceiling thicknesses of 12-22mm. For other thicknesses, please contact us.

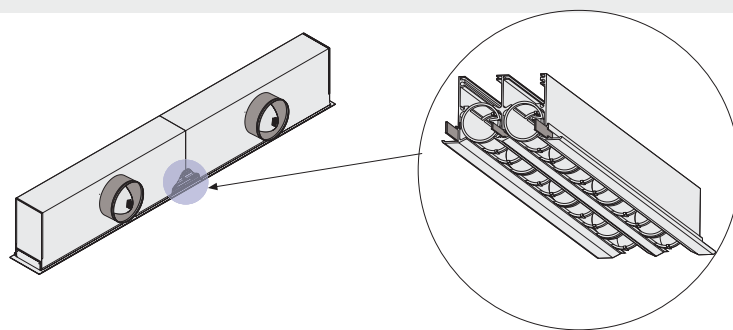


Type B

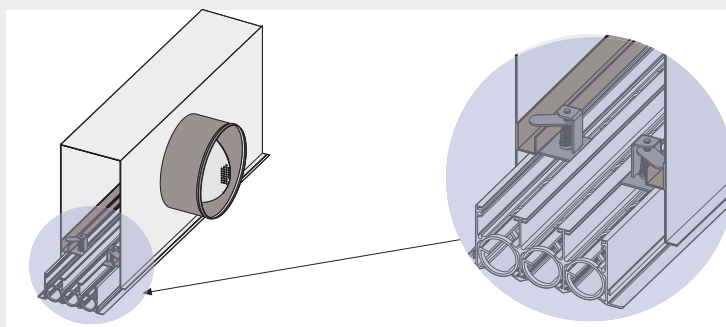
This type is suitable for ceiling thicknesses of 12-22 mm and carrying member thickness of 30 mm (total max. 52 mm). For other thicknesses please contact us.



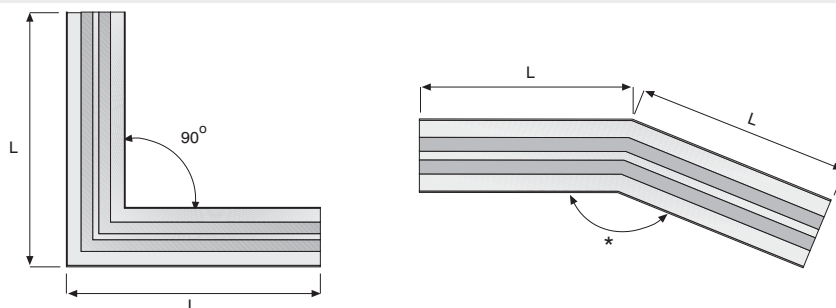
Adjacent Installation of Diffusers



Detail of Concealed Fixing

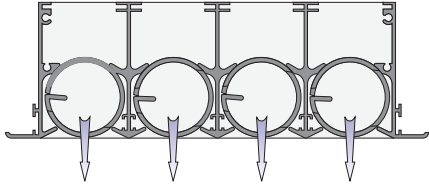


Specially Mitered Parts

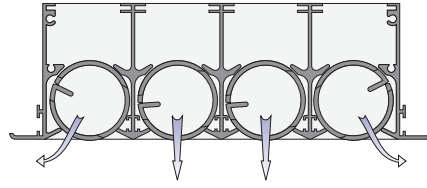


* Please Advise

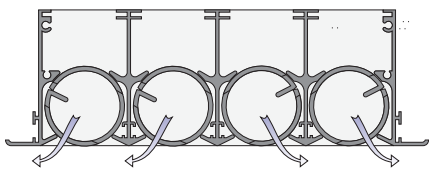
Vertical Supply



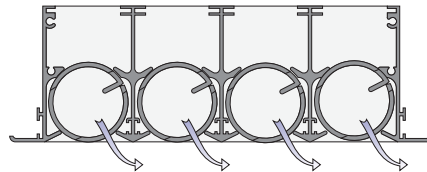
Multi-way Supply



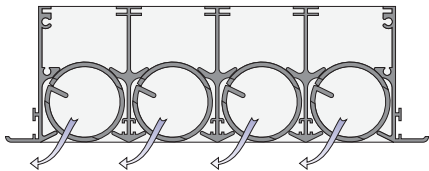
Multi-way Supply



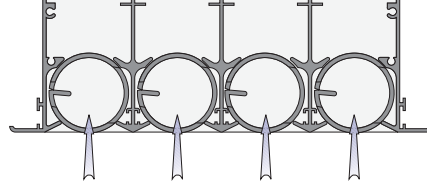
One-way Supply



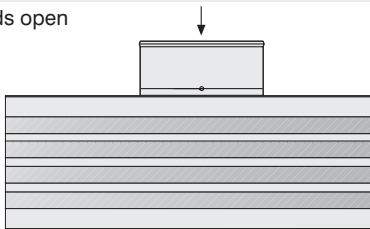
One-way Supply



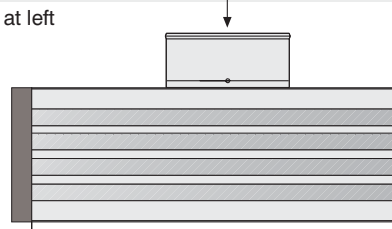
Extract



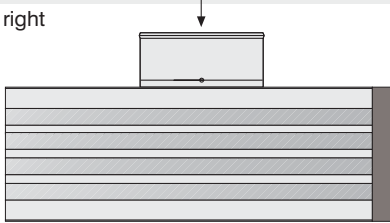
Both ends open



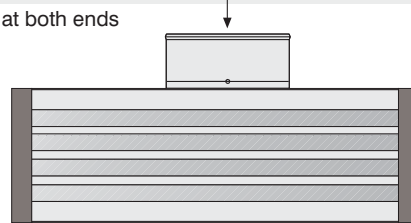
Cover at left



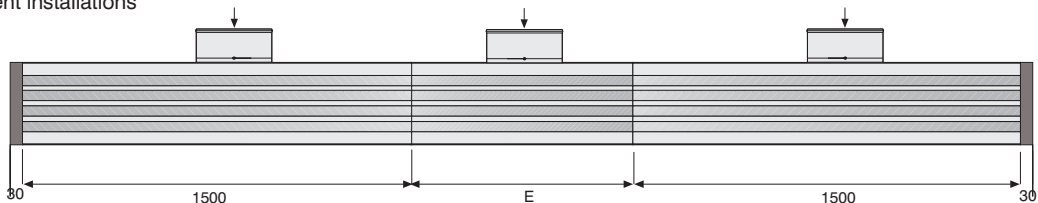
Cover at right



Cover at both ends

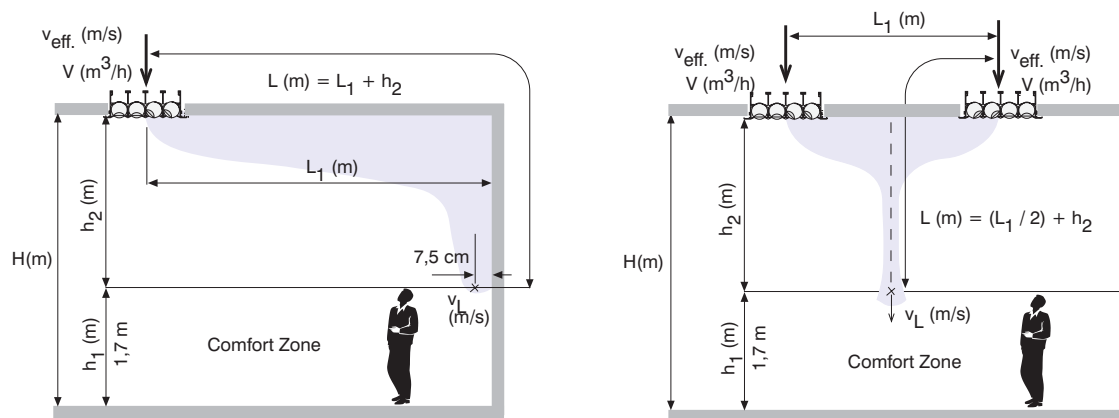


Adjacent installations



* Dimensions $E_{\max}=1500$ mm

Nomenclature

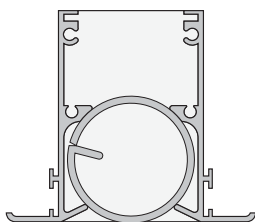


L_1	Distance between diffuser centres or diffuser centre and wall. (m)
h_1	Comfort zone height (m)
h_2	Distance between a diffuser and comfort zone (m)
v_{eff}	Effective outlet velocity (m/s)
v_L	Velocity of core in comfort zone
Δt_0	Difference between supply air and room temperature ($^{\circ}\text{C}$)
Δt_L	Difference between core and comfort zone temperature ($^{\circ}\text{C}$)
L	Throw distance (m)
V	Air flow rate (m^3/h)
H	Room height (m)
S	Sound power level dB(A)

To achieve "Coanda effect", the outlet velocity must be greater than 2m/s. The general comfort conditions require that the sound power level is below 40 dB(A). The height of the comfort zone is taken as 1.70m above

the floor. It is important that 0.25 m/s core velocity is not exceeded in this zone.

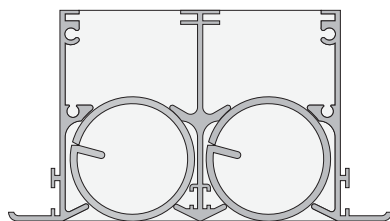
1 Slot



KESKlima

Dimensions E (mm)	Flow Rate V (m³/h)	Throw, L (m) $v_L = 0,25$ m/s	Pressure loss ΔP (Pa)	Sound power level S (dB(A))
470	50	3,40	5	<20
	65	4,40	8	<20
	85	5,80	12	21
	100	7,10	16	25
	120	9,50	22	29
625	65	3,40	5	<20
	85	4,40	10	<20
	110	5,80	12	22
	130	7,10	14	25
	155	9,50	16	28
780	80	3,40	7	<20
	110	4,40	11	<20
	135	5,80	15	21
	165	7,10	20	25
	190	9,50	26	30
935	100	3,50	6	<20
	135	4,60	10	<20
	170	6,10	14	21
	205	7,40	18	25
	240	10,00	23	28
1090	110	3,40	6	<20
	150	4,40	10	<20
	190	5,90	14	21
	225	7,10	18	25
	265	9,50	23	28
1245	130	3,50	7	<20
	175	4,50	10	<20
	220	5,90	14	21
	265	7,20	18	25
	310	9,70	24	28
1400	140	3,40	7	<20
	190	4,30	10	<20
	240	5,80	14	21
	290	7,00	18	25
	335	9,30	24	28
1555	150	3,30	7	<20
	200	4,30	10	<20
	255	5,60	14	21
	305	6,90	18	25
	360	9,30	24	28

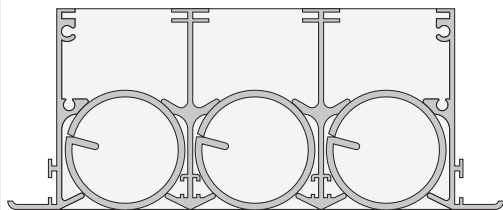
2 Slots



KESKlima

Dimensions E (mm)	Flow Rate V (m³/h)	Throw, L (m) $v_L = 0,25 \text{ m/s}$	Pressure loss ΔP (Pa)	Sound power level S (dB(A))
470	100	3,70	7	<20
	130	4,80	11	<20
	170	6,40	17	25
	200	7,80	23	30
	240	10,50	31	35
625	130	3,70	8	<20
	170	4,80	12	<20
	220	6,40	16	25
	260	7,80	21	30
	310	10,50	24	35
780	160	3,70	9	<20
	220	4,80	14	<20
	270	6,40	18	25
	330	7,80	25	30
	380	10,50	30	34
935	200	3,90	8	<20
	270	5,10	12	<20
	340	6,70	15	20
	410	8,10	20	25
	480	11,00	25	30
1090	220	3,70	8	<20
	300	4,80	12	<20
	380	6,50	16	20
	450	7,80	20	25
	530	10,50	25	30
1245	260	3,90	8	<20
	350	5,00	11	<20
	440	6,50	15	20
	530	7,90	20	24
	620	10,70	25	28
1400	280	3,70	7	<20
	380	4,70	11	<20
	480	6,40	15	20
	580	7,70	20	24
	670	10,20	25	28
1555	300	3,60	7	<20
	400	4,70	10	<20
	510	6,20	15	20
	610	7,60	19	23
	720	10,20	23	27

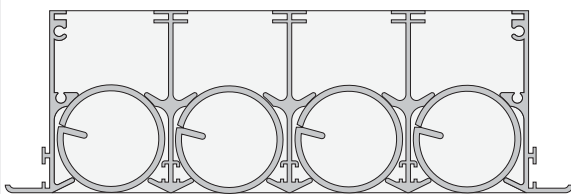
3 Slots



KES KLIMA

Dimensions E (mm)	Flow Rate V (m³/h)	Throw, L (m) $v_L = 0,25 \text{ m/s}$	Pressure loss ΔP (Pa)	Sound power level S (dB(A))
470	150	3,60	8	<20
	195	4,60	13	23
	255	6,10	21	29
	300	7,50	28	33
	360	10,00	40	37
625	195	3,60	8	<20
	255	4,60	15	22
	330	6,10	20	24
	390	7,50	28	26
	465	10,00	36	29
780	240	3,60	8	<20
	330	4,60	13	21
	405	6,10	18	25
	495	7,50	26	30
	570	10,00	33	34
935	300	3,70	5	<20
	405	4,80	9	<20
	510	6,40	13	21
	615	7,80	19	25
	720	10,50	25	29
1090	330	3,60	5	<20
	450	4,60	9	<20
	570	6,20	13	20
	675	7,50	17	24
	795	10,00	23	27
1245	360	3,50	5	<20
	480	4,90	8	<20
	600	6,20	12	<20
	735	7,40	16	23
	870	9,90	22	26
1400	420	3,60	4	<20
	570	4,50	7	<20
	720	6,10	11	<20
	870	7,40	16	22
	1005	9,80	20	25
1555	450	3,50	4	<20
	600	4,50	7	<20
	765	5,90	10	<20
	915	7,20	15	21
	1080	9,80	19	24

4 Slots



KESKLIMA

Dimensions E (mm)	Flow Rate V (m³/h)	Throw, L (m) $v_L = 0,25 \text{ m/s}$	Pressure loss ΔP (Pa)	Sound power level S (dB(A))
470	200	3,70	9	22
	260	4,80	15	27
	340	6,40	23	32
	400	7,80	32	36
	480	10,50	44	41
625	260	3,70	9	20
	340	4,80	16	24
	440	6,40	19	26
	520	7,80	27	28
	620	10,50	36	31
780	320	3,70	8	<20
	440	4,80	14	25
	540	6,40	19	29
	660	7,80	27	34
	760	10,50	34	37
935	400	3,90	6	<20
	540	5,10	10	20
	680	6,70	15	25
	820	8,10	21	29
	960	11,00	28	33
1090	440	3,70	6	<20
	600	4,80	10	20
	760	6,50	15	25
	900	7,80	19	28
	1060	10,50	26	32
1245	480	3,60	5	<20
	640	5,20	9	<20
	800	6,50	13	23
	980	7,70	18	27
	1160	10,30	25	31
1400	560	3,70	5	<20
	760	4,70	8	<20
	960	6,40	12	23
	1160	7,70	17	26
	1340	10,20	22	29
1555	600	3,60	5	<20
	800	4,70	8	<20
	1020	6,20	12	21
	1220	7,60	16	25
	1440	10,20	22	29

Technical Data

Temperature gradients along the throw path are read from the table below, depending on the Δt_o , Δt_L and throw length values. The temperature of the core at L metres from the diffuser, differs from the room temperature by the value read

from the tables. The difference is plus in heating and minus in cooling. The less the difference, the better the comfort conditions.

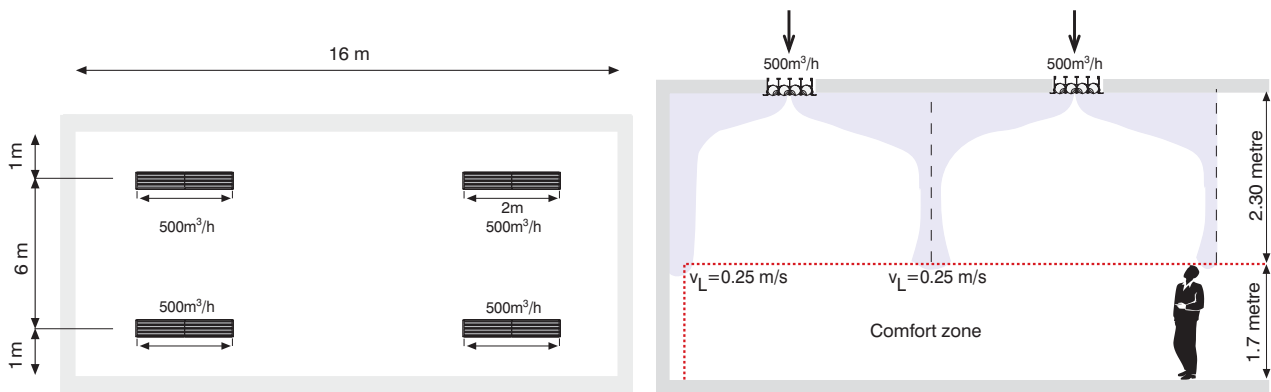
Temperature gradients along the throw path

No.of slots	Throw (L) m	Δt_L (°C) Values					
		Δt_o (°C)					
		4	6	8	10	12	14
1	3	0,54	0,81	1,08	1,35	1,62	1,89
	4	0,46	0,69	0,92	1,15	1,38	1,61
	5	0,42	0,63	0,84	1,05	1,26	1,47
	6	0,38	0,57	0,76	0,95	1,14	1,33
	7	0,35	0,53	0,70	0,88	1,06	1,23
	8	0,33	0,49	0,66	0,82	0,98	1,15
	9	0,31	0,46	0,62	0,77	0,92	1,08
	10	0,30	0,44	0,59	0,74	0,89	1,04
	11	0,28	0,42	0,56	0,71	0,86	1,02
2	3	0,76	1,14	1,52	1,90	2,28	2,66
	4	0,66	0,98	1,31	1,64	1,97	2,30
	5	0,60	0,90	1,20	1,50	1,80	2,10
	6	0,54	0,80	1,07	1,34	1,61	1,88
	7	0,49	0,74	0,98	1,23	1,48	1,72
	8	0,46	0,68	0,91	1,14	1,37	1,60
	9	0,44	0,66	0,88	1,10	1,32	1,54
	10	0,42	0,63	0,84	1,05	1,26	1,47
	11	0,40	0,60	0,80	1,00	1,20	1,40
3	3	1,00	1,50	2,00	2,50	3,00	3,50
	4	0,89	1,33	1,78	2,22	2,66	3,11
	5	0,80	1,20	1,60	2,00	2,40	2,80
	6	0,70	1,06	1,41	1,76	2,11	2,46
	7	0,66	0,99	1,32	1,65	1,98	2,31
	8	0,62	0,94	1,25	1,56	1,87	2,18
	9	0,60	0,90	1,20	1,50	1,80	2,10
	10	0,56	0,84	1,12	1,40	1,68	1,96
	11	0,54	0,81	1,08	1,35	1,62	1,89
4	3	1,28	1,92	2,56	3,20	3,84	4,48
	4	1,12	1,68	2,24	2,80	3,36	3,92
	5	1,02	1,53	2,04	2,55	3,06	3,57
	6	0,94	1,41	1,88	2,35	2,82	3,29
	7	0,88	1,32	1,76	2,20	2,64	3,08
	8	0,80	1,20	1,60	2,00	2,40	2,80
	9	0,74	1,12	1,49	1,86	2,23	2,60
	10	0,70	1,05	1,40	1,75	2,10	2,45
	11	0,68	1,02	1,36	1,70	2,04	2,38

Example:

Air at $2000 \text{ m}^3/\text{h}$, is to be supplied into a room with dimensions $16 \times 8 \text{ m}$, and a height of 4 m . The supply air is 8°C below room temperature and 4 diffusers will be used.

Determine diffuser spacings so that the core velocity in comfort zone is below 0.25 m/s .



Solution:

- 1) Diffusers are placed on the ceiling plan symmetrically
- 2) Air flow rate per diffuser is calculated as $2000 / 4 = 500 \text{ m}^3/\text{h}$.
- 3) Calculation of path length to the comfort zone:
Minimum distance: $L = 1.0 + 2.30 = 3.30 \text{ m}$
- 4) From the tables on pages 8-9-10-11, the most suitable size is found as $1395 \text{ mm} \times 4 \text{ slots}$; for $500 \text{ m}^3/\text{h}$ and 3.30 m throw.
- 5) From the same table, pressure loss is calculated, by interpolation, as 5 Pa and sound power level as $<20 \text{ dB(A)}$.
- 6) From the table on page 12; for $1395 \text{ mm} \times 4 \text{ slots}$ size, $\Delta t_0 = 8^\circ\text{C}$, and 3.30 m throw, Δt_L is found by interpolation as 2.46°C .

Specification Text

Air diffuser for ceiling installation. The diffuser will be manufactured from ETIAL-60 norm aluminium profiles, and chromated. After chromating, will be painted to ordered request with electrostatic powder paint and a minimum thickness of 60 μ . The diffuser will have black plastic adjustable cylindrical blades. The plenum box will be manufactured from 0.6 mm galvanized steel sheets by seams. There will be 4 hanging brackets on the box. The entry spigot will be equipped with a volume control damper, operated internally and through a slot. A layer of 6-mm thick acoustic foam (according to BS 476 Part 6 & 7 Class 0) will be installed inside the plenum box.

Order Code

Model		CHB.23.AA.3 0-935 x 4-9010	
Frame	23 mm	Standard Dimensions	Colour Code
Installation	3.....Concealed fixing		
Installation Accessories	0.....Without installation subframe 1.....With installation subframe		

E (mm) x No. of slots
Refer to page 3

Indicate
RAL
Colour
Code

Plenum Box Order Code

Model		PLA.30.S C.01-950 x 175 x 310 x 219 x 2	
Installation	3.....Concealed fixing	Plenum Box dimensions	Please indicate if special dimensions are requested $K_E \times K_B \times H \times \varnothing D$ (mm) x s (No. of inlet spigots)
Box inlet	S.....Side inlet		
Spigot Damper	A.....Without damper C.....Internally operated		
Insulation	00...Without insulation 01...With acoustic insulation		

C

CHB

Slot Diffuser

KES KLİMA
INDUSTRIAL AND TRADE CO.

Uzay Çağı Caddesi No:10
06370 ÖstİM/ANKARA
Phone: +90.312.385 76 57
Fax : +90.312.354 12 31
www.kesklima.com



TÜV Rheinland Group



DIN EN ISO 9001:2000
Zertifikat: 01 100 042854