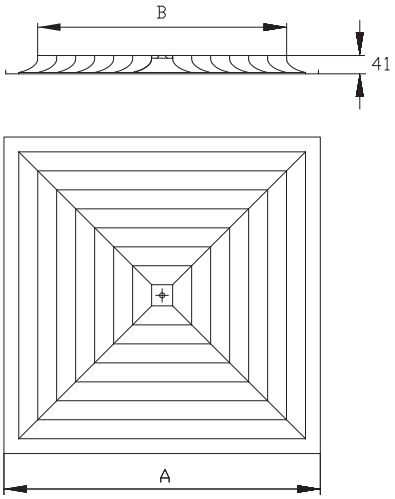
Square diffusers

Square diffusers KD-1A-N



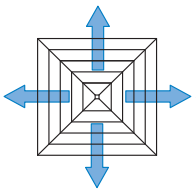
KD-1A-N

- Fixed diffuser rings
- Central screw installation
- Registers F1

Size	A (mm)	B (mm)	AKD-1N A_{ef} (m^2)
1	245	135	0.010
2	301	191	0.015
3	357	247	0.025
4	412	302	0.042
5	469	359	0.060
6	498	388	0.070
7	595	488	0.115
8	623	513	0.125

Types of diffuser faces

KD-1A



Ordering key

KD-1A-N / F / Z - Size 4

1 2 3 4

1 Diffuser type	
KD-1A-N	Square diffuser with four-way inlet
AKD-1A-N	Aluminum square diffuser with four-way inlet
KD-1-N INOX	AISI 304 square diffuser with four-way inlet
2 Register	
F	Register
-	
3 Plenum box	
Z	Plenum box for air supply
A	Plenum box for exhaust air
4 Dimensions	
Size 1	245
Size 2	301
Size 3	357
Size 4	412
Size 5	469
Size 6	498
Size 7	595
Size 8	623

Registers

When adjusting the system, desired operating conditions are obtained by the means of ventilation elements control. Registers are installed for additional air volume control, thus influencing air velocity and throw distance as well. Registers are made of galvanised sheet steel.

F1

Register F1 is equipped with wide counter-directional blades, which can be moved. It is designed to control the air flow volume. Material galvanized steel or AISI 304.

Rectangular plenum box K/Z/S/M

Application

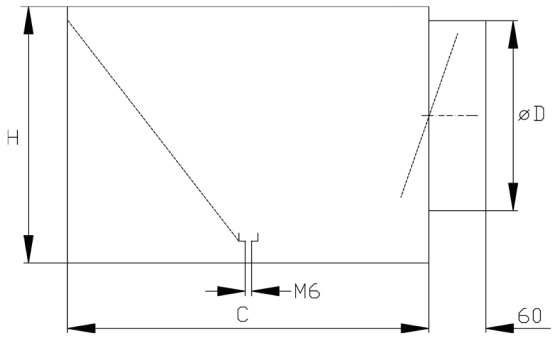
Rectangular plenum box K is designed to be fitted on OC IMP Klima diffusers.

Description

Rectangular plenum box features a side spigot and is fitted with a volume control damper and dispersing mesh for better supply. The plenum box is made from galvanised sheet steel. On request the plenum boxes can be fitted with 6 mm thick thermal insulation or 10 mm thick sound and thermal insulation.

Construction and dimensions

C Width / Length [mm]
H Height [mm]
ØD Spigot diameter [mm]



Size	C	H	ØD	H
245	240	240	98	228
301	296	296	123	253
357	352	352	158	288
412	407	407	198	328
469	464	464	198	328
498	493	493	248	378
595	590	590	313	443
623	618	618	313	443

Fast selection diagram for square diffuser KD-1A-N

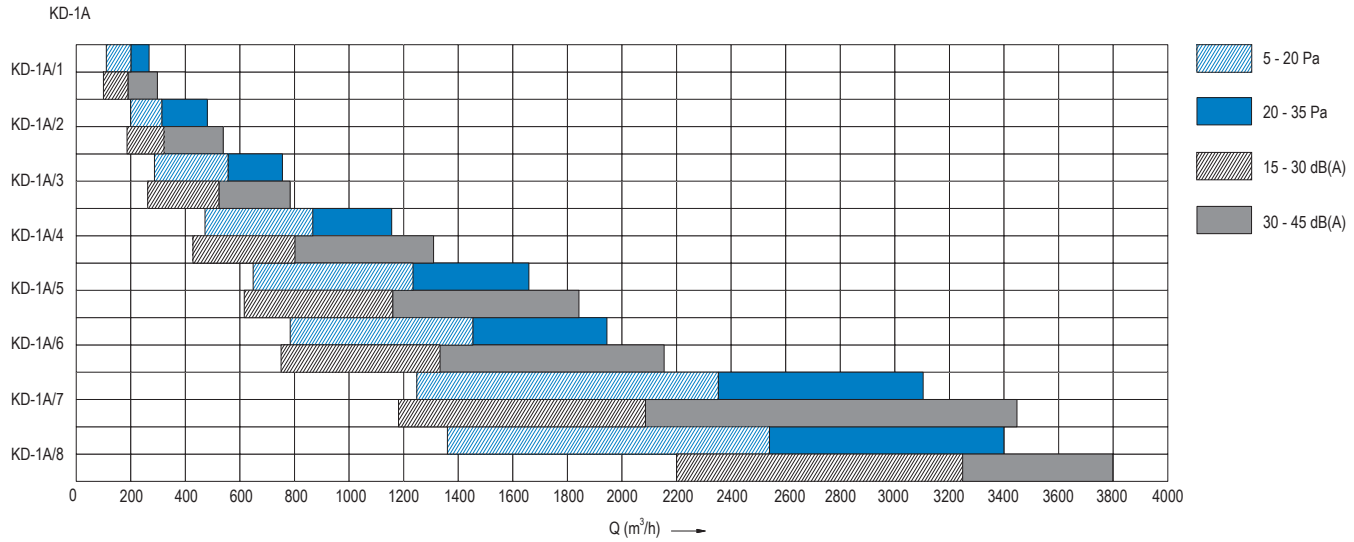
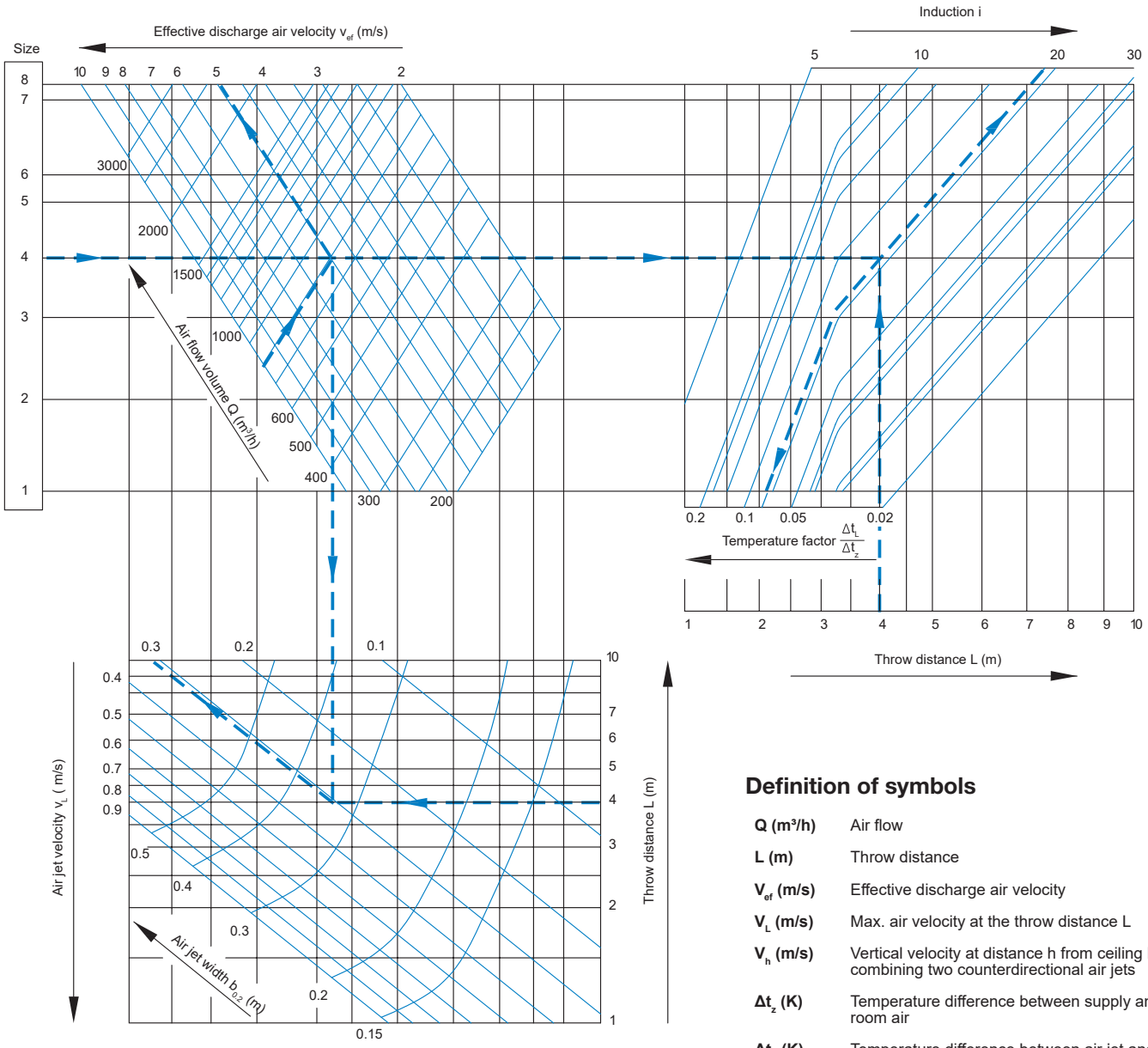
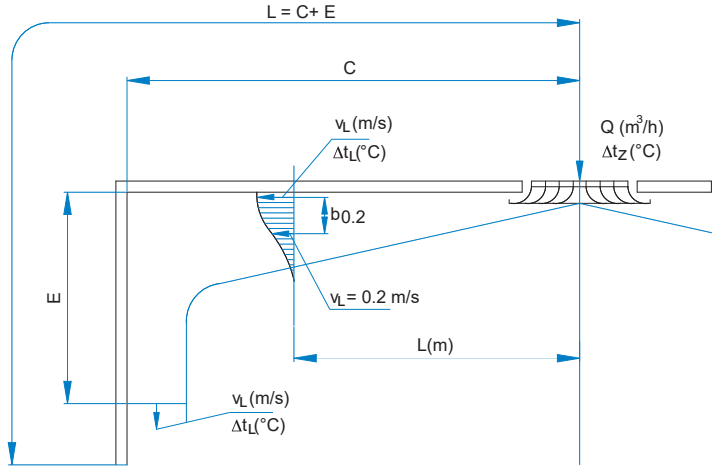


Diagram for determining the size, induction and temperature of the air jet flow of the square diffuser KD-1A-N



Definition of symbols

Q (m³/h)	Air flow
L (m)	Throw distance
V_{ef} (m/s)	Effective discharge air velocity
V_L (m/s)	Max. air velocity at the throw distance L
V_h (m/s)	Vertical velocity at distance h from ceiling by combining two counterdirectional air jets
Δt_z (K)	Temperature difference between supply and room air
Δt_L (K)	Temperature difference between air jet and room temperature
i	Induction ratio = total airstream volume flow/ volume flow at diffuser discharge
$b_{0.2}$ (m)	Width of the air jet is measured at a distance from ceiling where air flow velocity is 0.2 m/s



Example

Given:

Air flow volume:	Q = 790 m³/h, L = 4 m
Temperature difference:	Δt_z = 5 °C

Solution:

From the diagram select the diffuser KD-1 size 4.

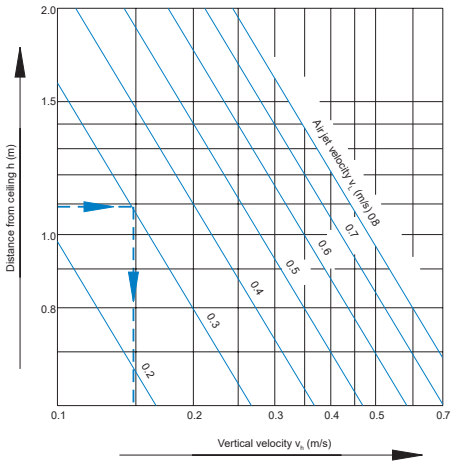
Air jet velocity:	V_L = 0.31 m/s
effective outlet velocity	v_{ef} = 5 m/s
temperatue quotient	$\Delta t_L / \Delta tZ$ = 0.080
temperature difference	Δt_L = 0.080 x 5 = 0.4 °C
induction	i = 18
width of the air jet	$b_{0.2}$ = 0.33 m

Example

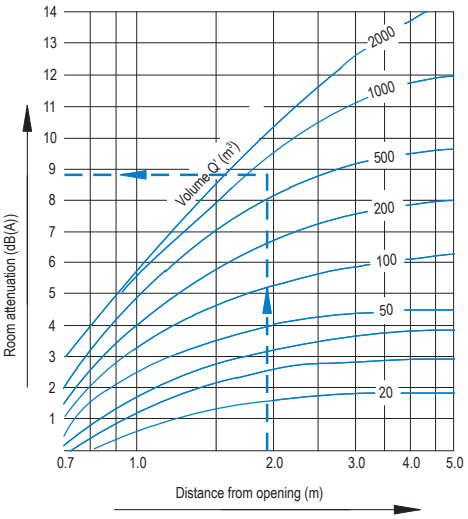
Max temperature quotient $\Delta t_h/\Delta t_z$ determined using the diagram 1 for temperature quotient:

$L_{diagram} = L + h$

Diagram for determination of vertical velocity



Room attenuation diagram



Q' (m³) calculated volume, depending on room reflectance
Q (m³) actual room volume

The following data are necessary to calculate the volume Q'.

1. Normal rooms Q' = Q
2. Rooms with highly reflective walls Q' = 0.5Q
3. Rooms with absorption walls Q' = 2Q

Definition of symbols

Δp_t (Pa)	Pressure drop
L_{WA} (dB(A))	Sound power level
N_R	Max. value according to ISO

Pressure drop and room attenuation diagram – directly connected to the duct (valid for the F1 register)