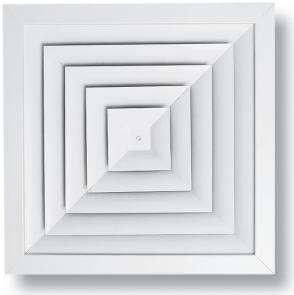
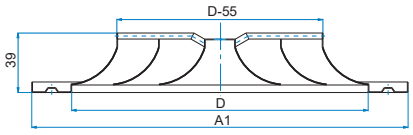
Square diffusers

Square diffusers KD-1A, AKD-1N

KD-1A

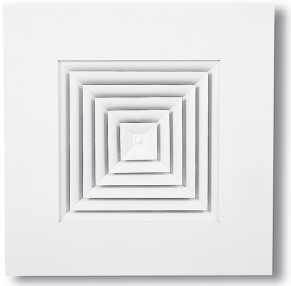
- Fixed diffuser rings
- Central screw installation or fixing with peripheral screws
- Peripheral foamy sealing strip
- Registers F1

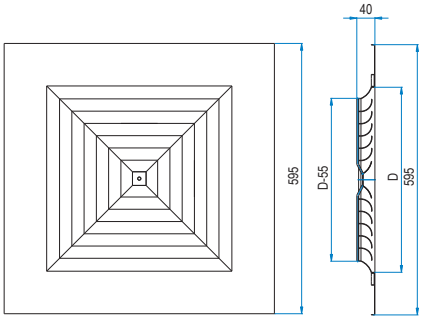




KD-1A in the plate

- KD-1A in the plate 595x595
- Sizes from 1 to 6 are available
- Installation with cross-bar or installation on the register fastened in the duct is possible
- Plenum boxes are equal to those for standard KD-1A corresponding nominal sizes
- Three mask types, depending to the air supply direction;two-, three- or four-way air supply



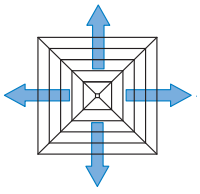


Dimensions table for KD-1A

Size	D (mm)	A (mm)	H (mm)	KD-1 A_{ef} (m^2)
1	186	240	40	0.0104
2	244	298	50	0.0185
3	299	353	50	0.0279
4	354	408	80	0.0440
5	410	464	80	0.0628
6	439	493	120	0.0728
7	539	593	120	0.1175
8	565	619	120	0.1280

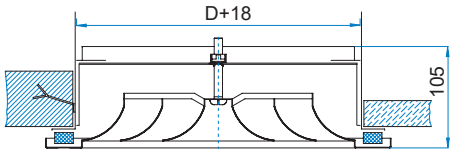
Types of diffuser faces

KD-1A



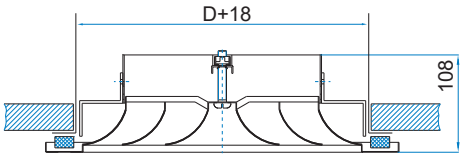
Installation of circular diffusers KD-1A

Installation 7
- Installation with crossbar
  Designation: **KD-1A/7**



Built-in duct

Installation 8
- Installation on register fastened in the duct
  Designation: **KD-1A/8-F1**



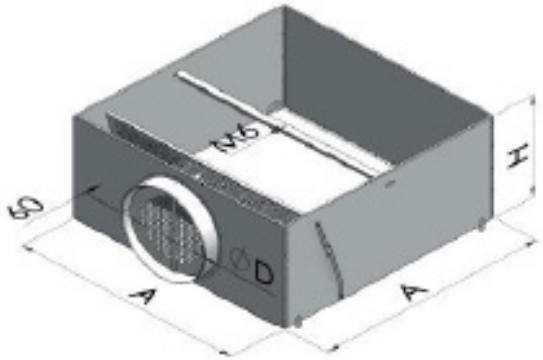
Duct through the panel ceiling

Rectangular plenum box K/Z/S/M

Application
Rectangular plenum box K is designed to be fitted on OC IMP Klima diffusers type KD-1A and AKD-1N.

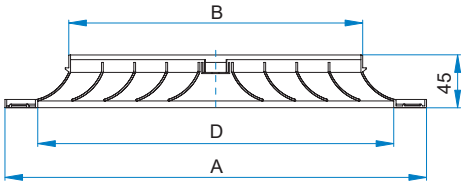
Description
Rectangular plenum box features a side spigot and is fitted with a volume control damper and dispersing mesh for better supply. The plenum box is made from galvanised sheet steel. On request the plenum boxes can be fitted with 6 mm thick thermal insulation or 10 mm thick sound and thermal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

Construction and dimensions
A Width / Length [mm]
H Height [mm]
ØD Spigot diameter [mm]



AKD-1N

- They are made of aluminium sections
- Fixed diffuser rings
- Central screw installation or fixing with peripheral screws
- Peripheral foamy sealing strip
- Registers F1



Size	D (mm)	A (mm)	B (mm)	AKD-1N A_{ef} (m^2)
1	188	244	135	0.010
2	244	300	191	0.015
3	300	356	247	0.025
4	356	412	303	0.042
5	412	468	359	0.060
6	442	498	389	0.070
7	542	598	489	0.115
8	567	623	514	0.125

Ordering key

KD-1A / - / 8 - F1 Size 4 / 600

1 2 3 4 5

1 Diffuser type

KD-1A	Square diffuser with four-way inlet
AKD-1N	Aluminum square diffuser with four-way inlet

2 Plenum box

Z	Plenum box for air supply (only dimensions:2, 4, 6, 7, 8)
-	

3 Installation (without plenum box)

7	With cross-bar
8	On volume control damper fastened in the duct
V1	Boreholes in the middle of each side + central borehole
V1X	Boreholes in the middle of each side without central borehole
V2	Two boreholes on two sides + central borehole
V2X	Two boreholes on two sides without central borehole

4 Register

F1	Without plenum box

5 Dimensions

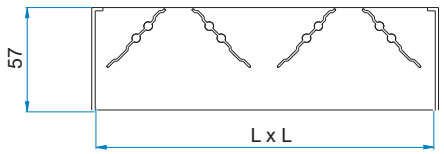
Size 1	Also available in a plate 595x595 (with plate version only installations 7,8)
Size 2	Also available in a plate 595x595 (with plate version only installations 7,8)
Size 3	Also available in a plate 595x595 (with plate version only installations 7,8)
Size 4	Also available in a plate 595x595 (with plate version only installations 7,8)
Size 5	Also available in a plate 595x595 (with plate version only installations 7,8)
Size 6	Also available in a plate 595x595 (with plate version only installations 7,8)
Size 7	
Size 8	

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.

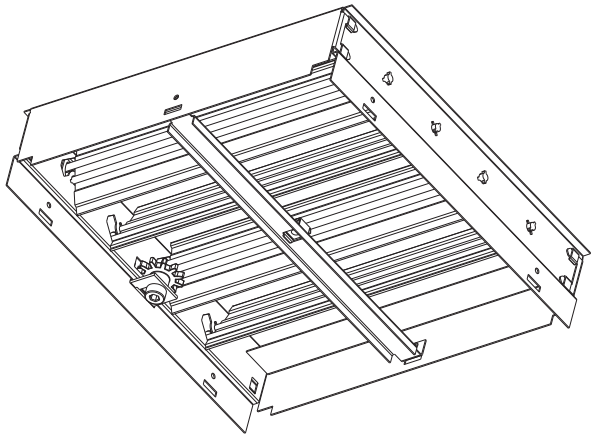
F1

Register F1 is equipped with wide counter-directional blades, which can be moved by the screwdriver via the cogwheel. It is designed to control the air flow volume. The blades are made of PVC – black colour.



Dimensions table for registers to fit KD-1A

Size	L (mm)
1	140
2	196
3	252
4	308
5	364
6	394
7	494
8	519



Fast selection diagram for square diffuser KD-1A

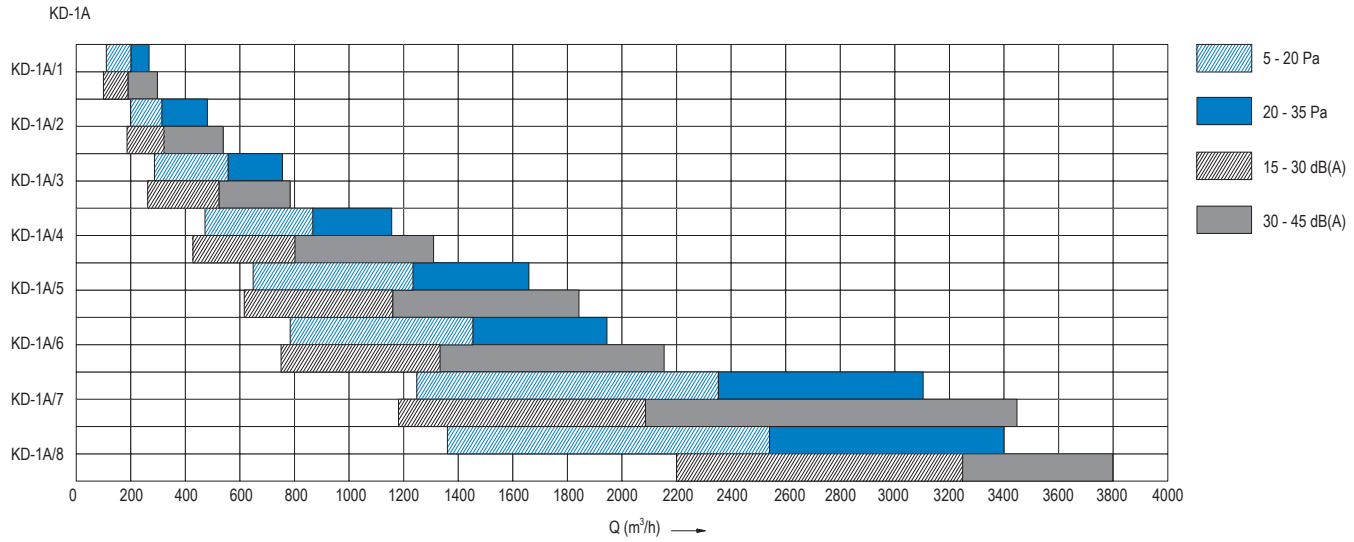
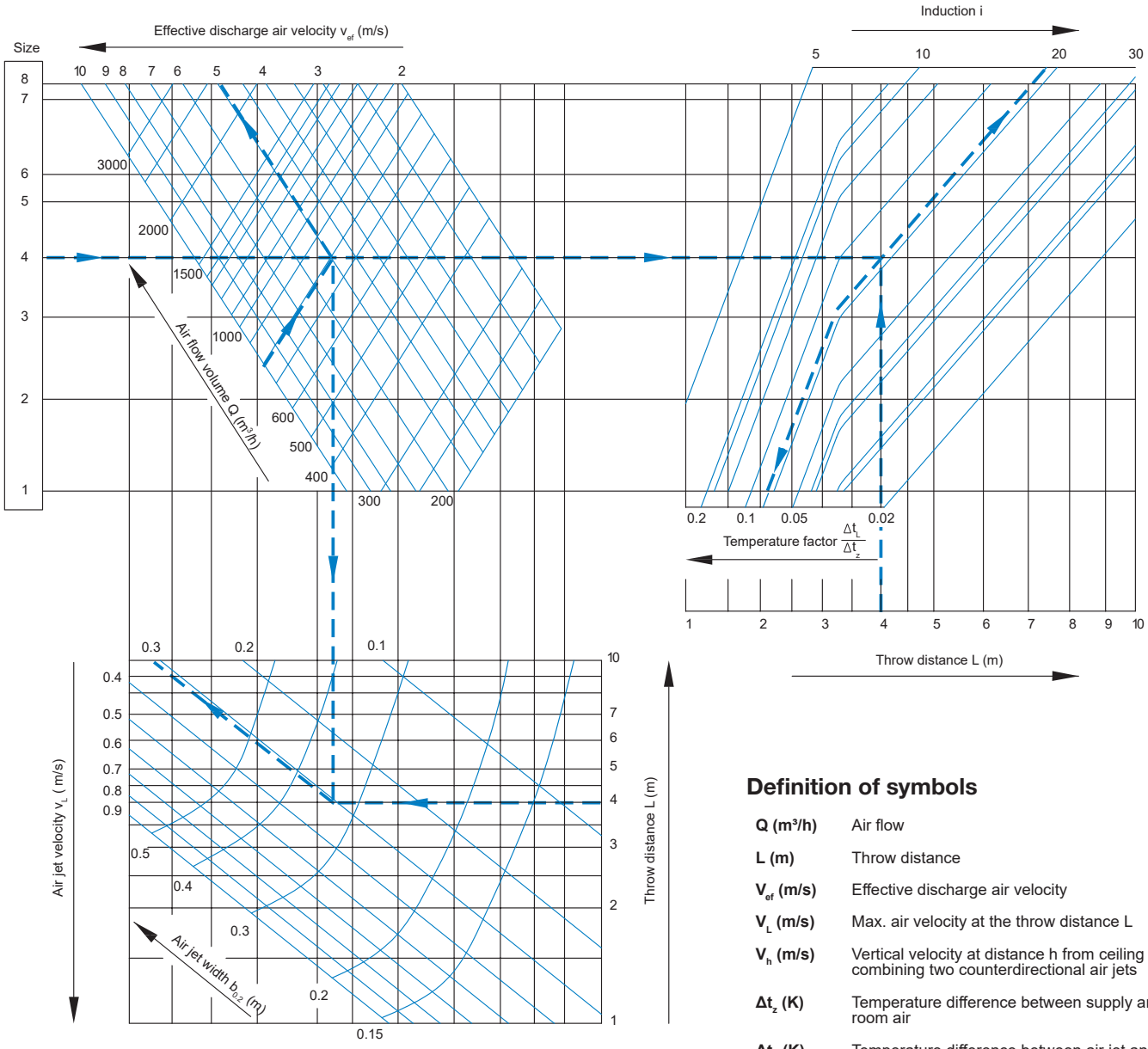
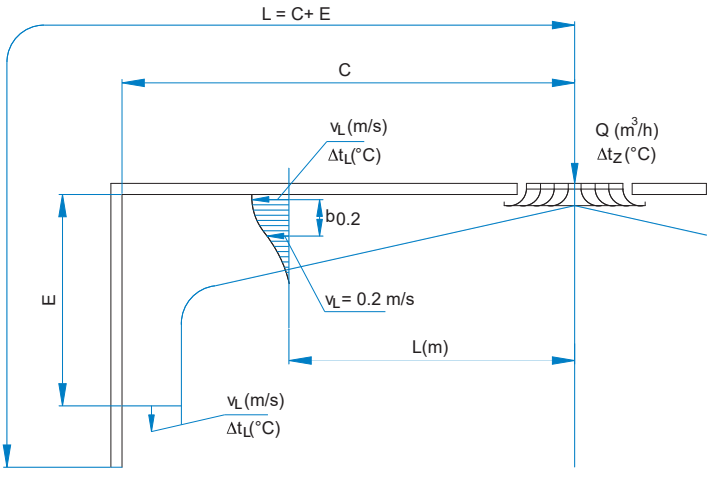


Diagram for determining the size, induction and temperature of the air jet flow of the square diffuser KD-1A



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.

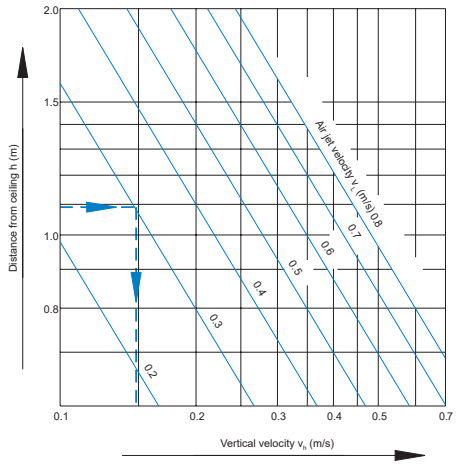
Air jet velocity:	V_L = 0.31 m/s
effective outlet velocity	v_{ef} = 5 m/s
temperatue quotient	$\Delta t_L / \Delta tZ$ = 0.080
temperature difference	Δt_L = 0.080 x 5 = 0.4 °C
induction	i = 18
width of the air jet	$b_{0.2}$ = 0.33 m

Example

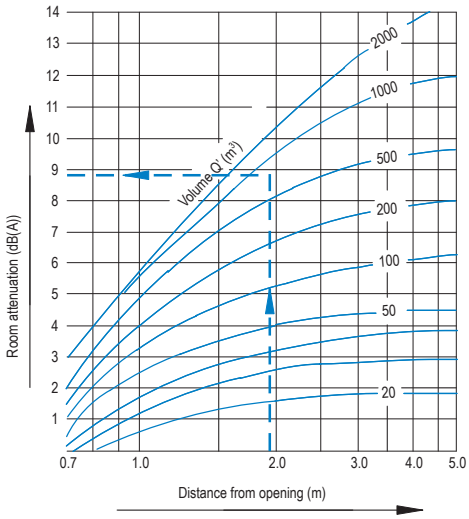
Max temperature quotient $\Delta t_h/\Delta t_z$ determined using the diagram 1 for temperature quotient:

$L_{diagram} = L + h$

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)