CONTEST

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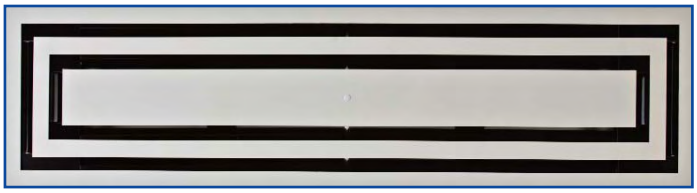
Linear Diffuser in plate DF-KR

Model DF-KR 1 slot



Model DF-KR 2 slots

Description

The DF-KR ceiling diffuser (1 or 2 slots), for variable or constant air volumen, is designed especially for large retail areas, taking full advantage of the panel dimensions i.e. (1200x300), to insert a linear rectangular slot diffuser of high air volume, with a particulary attractive, harmonious look that fits in perfectly with the style of several types of false ceilings.

Diffuser constructed with aluminium sections and sheet metal rack with enamel finish in RAL white or as specified. Directional fins in black. Special finishes available upon request. The central part of the diffuser can be replaced with a piece of the same material as the rest of the false ceiling, thus creating an elegant, mimicking effect. Manufacture for plasterboard ceilings is also possible.

The diffuser is fed from a plenum constructed of galvanized steel sheet, with or without thermal and/or sound insulation, that is attached to the diffuser with screws. The spigot of the plenum is equipped with a specially designed, flat volume control damper that is perforated for air distribution and regulation and also contains a static pressure sensor to read the flow rate; this connection may be made at the top or the side.

Aplication

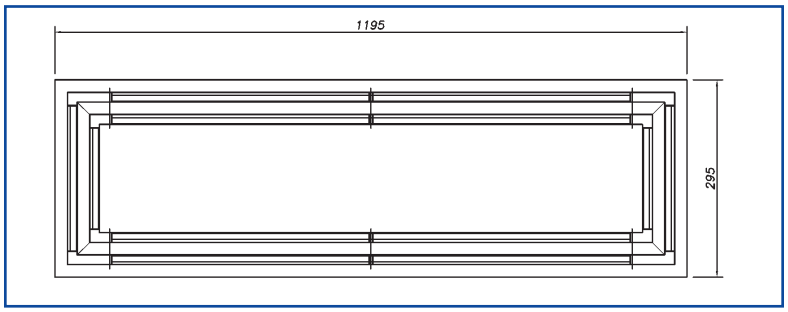
The DF-KR rectangular ceiling diffuser functions with both variable and constant air volumes. With a variable flow, it maintains the ceiling effect (Coanda effect) even with air flow rates reduced to 20% of nominal air flow. The directional blades are reversible mobile units. These blades are secured by using cardboard stays for shipping purposes and must be unlocked before the equipments is commissioned. The DF-KR diffuser is an ideal complement for KOOLAIR KS terminal units (boxes).

The following table indicate can be obtain in function sound level, the supply airflow (m^3/h) and the total pressure drop (Pa) of the diffuser:

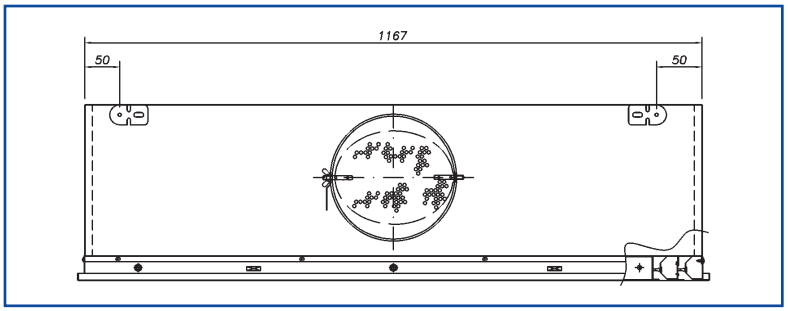
SOUND POWER - AIR FLOW - ΔP_t				
Model	**m^3/h**			
	30 dB(A)	**35 dB(A)**	**40 dB(A)**	**45 dB(A)**
DF-KR 1 1200x300	290 (8)	355 (11)	440 (18)	540 (26)
DF-KR 2 1200x300	435 (9)	530 (14)	640 (20)	770 (29)

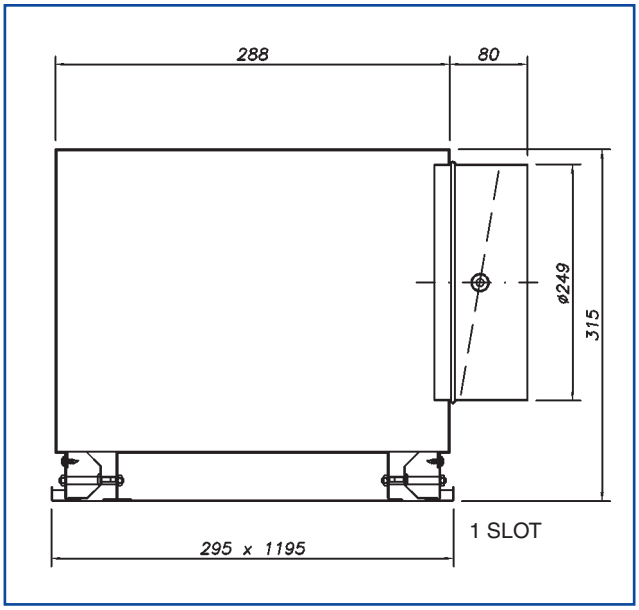
Models and dimensions

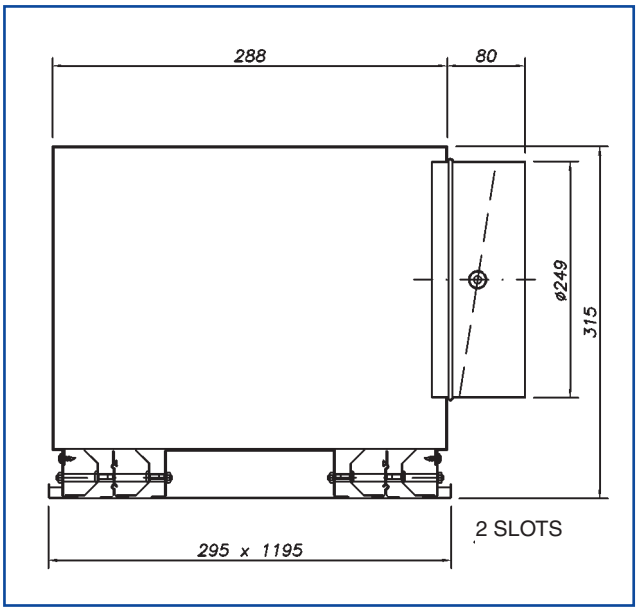
Rectangular Plates for false ceiling modular, type: DF-KR (1 and 2 slots)



Plenum side and top entry, for diffusers for modular false ceiling (1 and 2 slots)

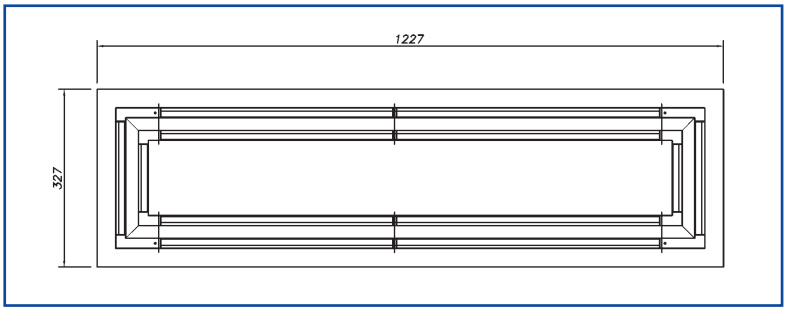




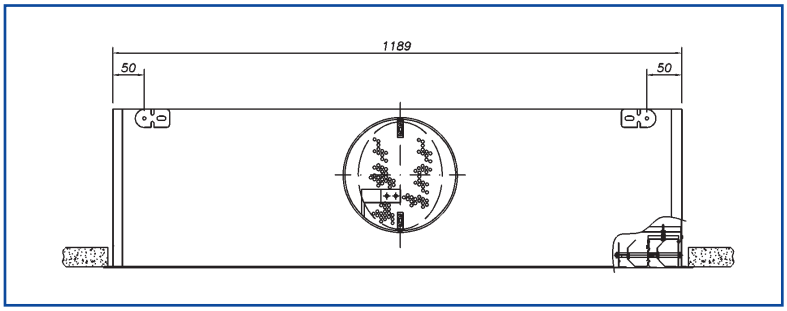


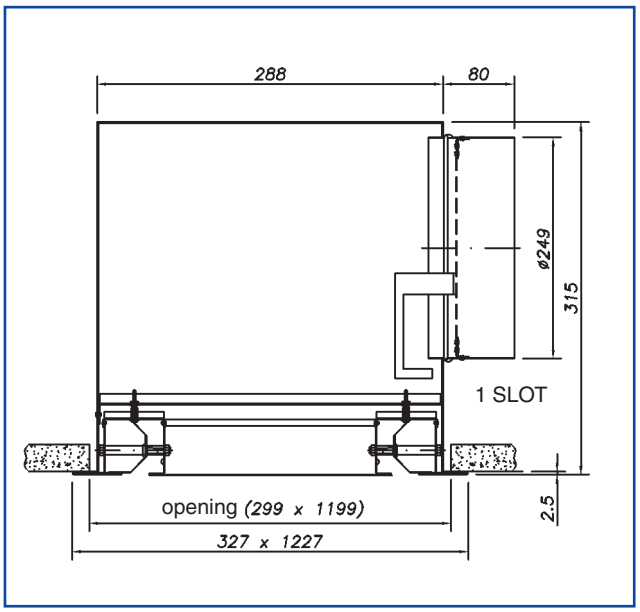
Models and dimensions

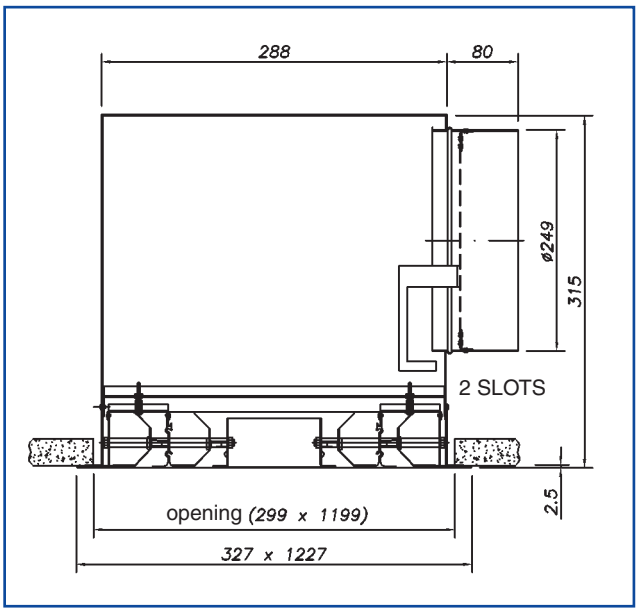
Rectangular plates for false plasticboard ceiling, type: DF-KR-E. (1 and 2 slots)



Plenum side and top entry, for diffusers for false plasticboard ceiling (1 and 2 slots)

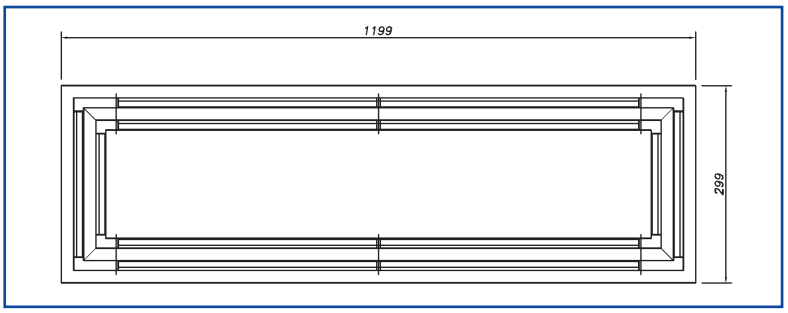




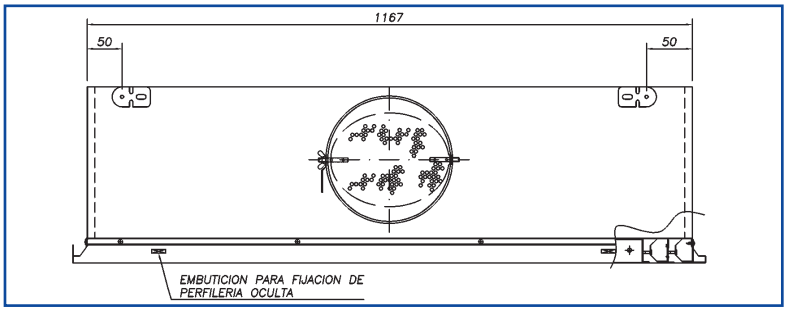


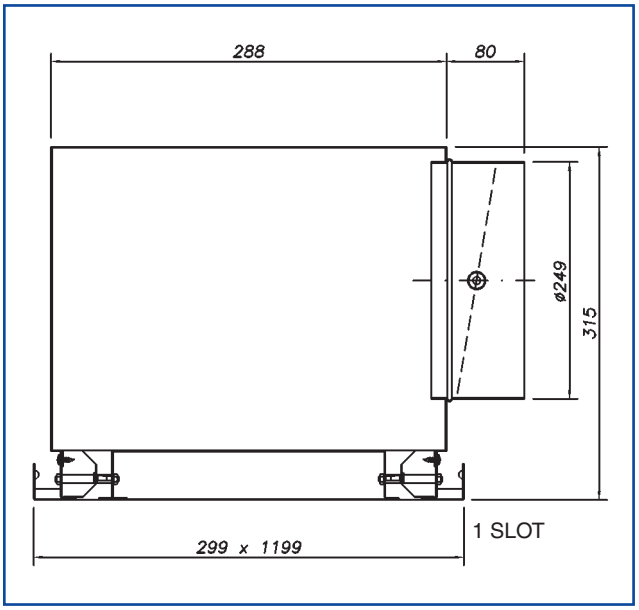
Models and dimensions

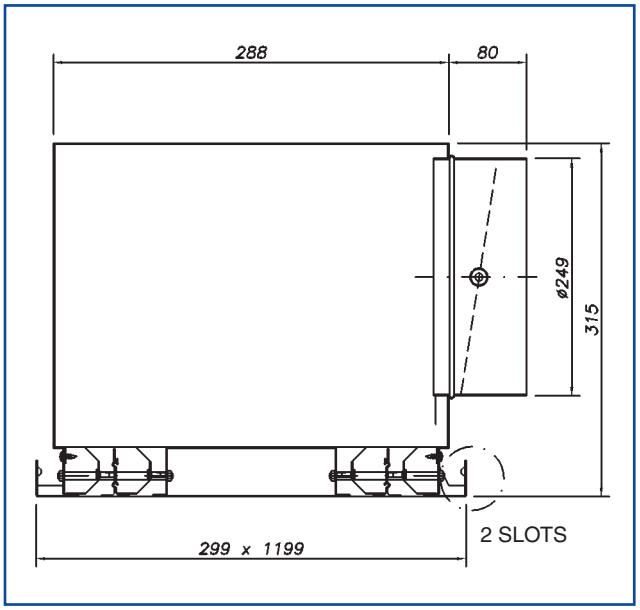
Rectangular plates for burgues clip ceiling, type: DF-KR-po. (1 and 2 slots)



Plenum side and top entry, for diffusers for burgues clip ceiling (1 and 2 slots)







Technical data. Selection tables

DIFFUSER DF-KR-1200x300-PL				
Q			nº of slots	
(m^3/h)	(l/s)		1	2
170	47,2	X (m)	1,4	
		ΔPt (Pa)	3	
		L_W - [dB(A)]	<20	
220	61,1	X (m)	1,8	
		ΔPt (Pa)	4	
		L_W- [dB(A)]	23	
270	75,0	X (m)	2,2	1,3
		ΔPt (Pa)	7	4
		L_W - [dB(A)]	28	<20
320	88,9	X (m)	2,6	1,6
		ΔPt (Pa)	9	5
		L_W - [dB(A)]	32	22
370	102,8	X (m)	3,0	1,8
		ΔPt (Pa)	12	7
		L_W - [dB(A)]	36	26
420	116,7	X (m)	3,4	2,1
		ΔPt (Pa)	16	9
		L_W - [dB(A)]	39	29
500	138,9	X (m)	4,0	2,4
		ΔPt (Pa)	23	12
		L_W - [dB(A)]	43	34
600	166,7	X (m)	4,8	2,9
		ΔPt (Pa)	33	18
		L_W - [dB(A)]	47	38
700	194,4	X (m)		3,4
		ΔPt (Pa)		24
		L_W - [dB(A)]		42
800	222,2	X (m)		3,9
		ΔPt (Pa)		31
		L_W - [dB(A)]		46
900	250,0	X (m)		4,4
		ΔPt (Pa)		40
		L_W - [dB(A)]		49

Model DF-KR 1

Model DF-KR 2

SYMBOLS

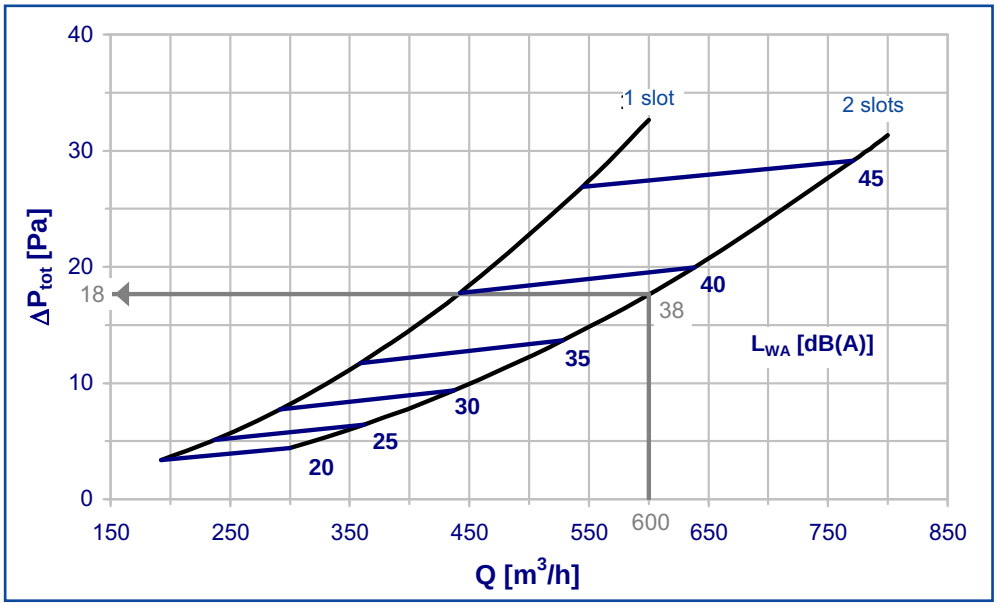
ΔP_t	Pressure drop in Pa.
L_{WA}-dB(A)	Sound power, in dB(A)
X	Air jet throw for a velocity in the occu pied zone of 0.25 m/s, in m.

General remarks

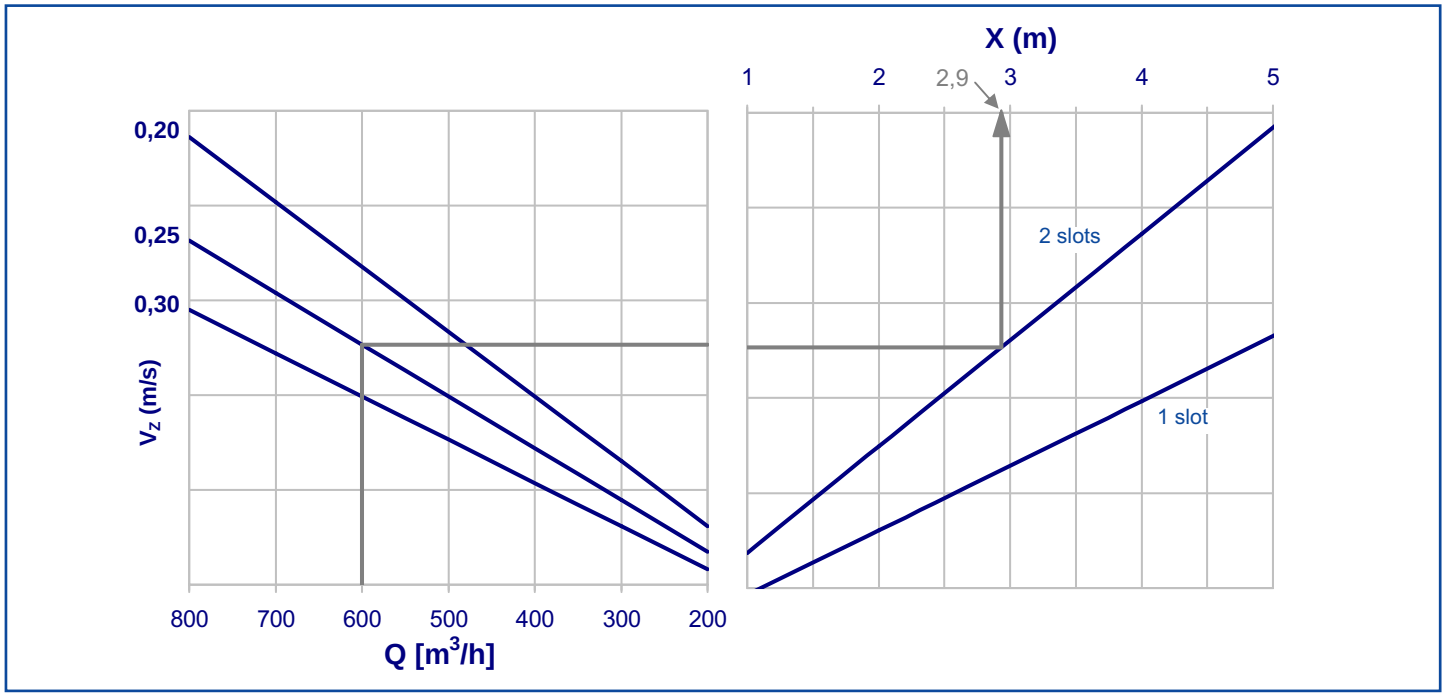
- This selection table is based on real laboratory tests performed in accordance with ISO 5135, UNE-EN-ISO 3741 and UNE-EN 12238.
- The air jet has coanda effect, the diffuser is mounted at ceiling level.
- The room height is 3 m.
- Side entry plenum box diffuser.
- The ΔT is equal to 0 ºC (difference between inlet temperature and ambient temperature).
- The throws correspond to a maximum air velocity in the occupied zone (V_Z) of 0,25 m/s.

Technical data. Selection graphs

Graph 1. VELOCITY AND THROW



Graph 2. SOUND POWER AND PRESSURE DROP

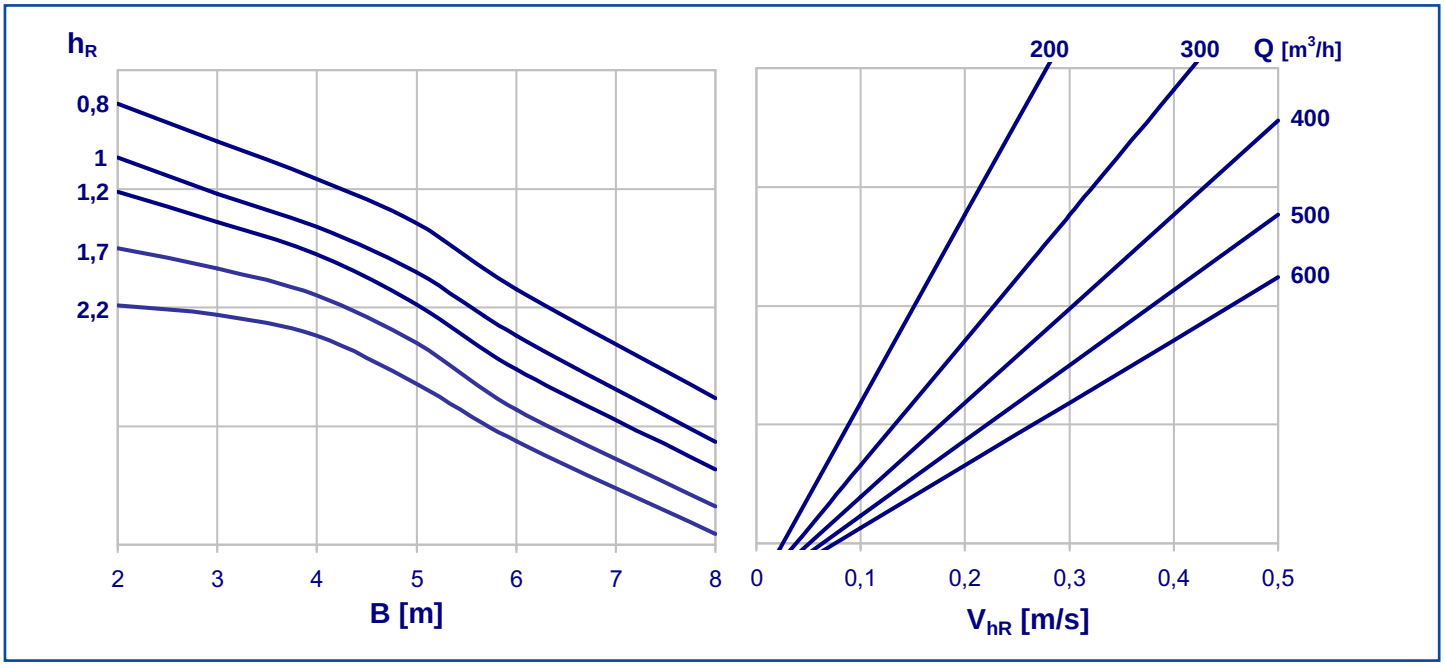


SYMBOLS

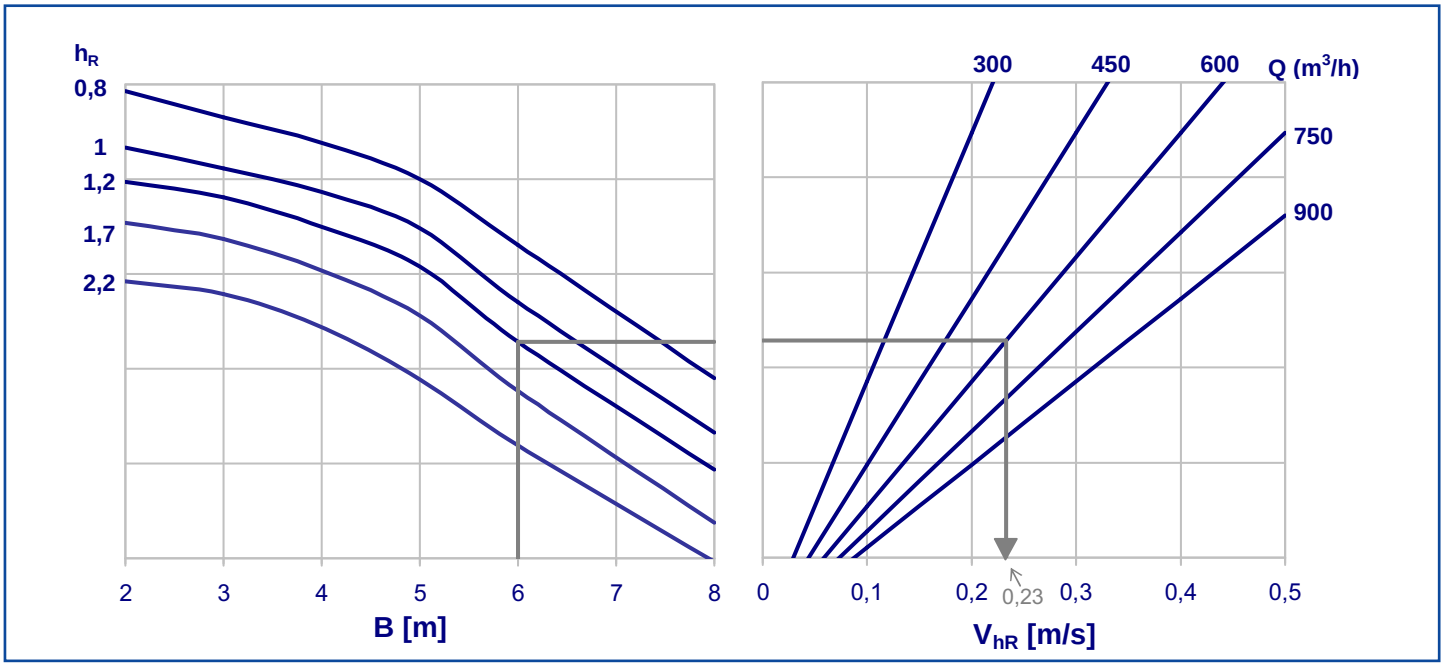
V_z	Maximum air velocity in the occupied area
X	Throw in m for air velocity of 0.25 m/s in the occupied zone
ΔP_t	Total pressure drop
L_{WA}-dB(A)	Sound power
Q	Air flow in m^3/h

Technical data. Selection graphs

Graph 3. AIR STREAM BETWEEN DIFFUSERS DF-KR 1



Graph 4. AIR STREAM BETWEEN DIFFUSERS DF-KR 2

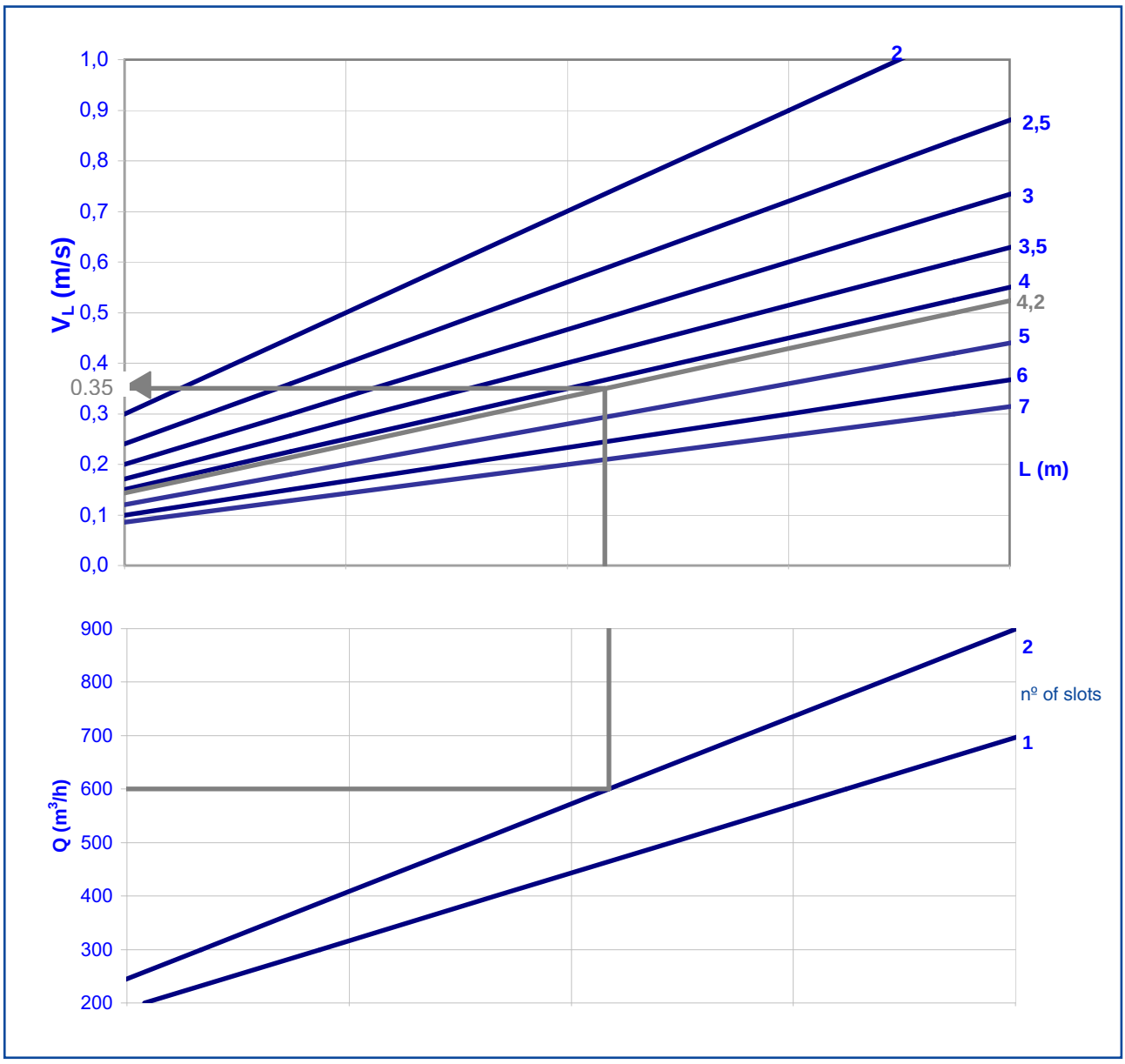


SYMBOLS

h_R	Height from ceiling to occupied area, in m
B	Distance between diffuser axes, in m
Q	Air flow, in m^3/h
V_{hR}	Velocity at a distance h_R from the ceiling below the point where air jets meet, in m/s

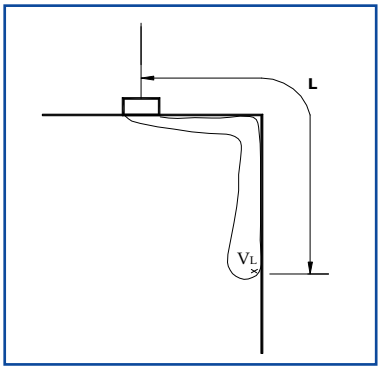
Technical data. Selection graphs

Graph 5. AIR STREAM TOWARD THE WALL



SIMBOLOGÍA

Q	Air flow, in m^3/h
L	Distance from diffuser to wall + h_R, in m
V_L	Velocity at the wall, at a distance h_R from the ceiling, in m/s.



Example of selection

The selection graphs contained in this catalogue for the different models allow you to use the supply air flow and a maximum velocity in the occupied area (V_Z) to calculate the following parameters:

- Throw achieved by the air vein for a maximum air velocity in the occupied zone (V_Z).
- Total pressure drop and sound power level generated in the plenum-diffuser assembly.
- Velocity (V_{hR}) at a distance h_R from the ceiling below the point where air jets meet.
- Velocity at the wall (V_L) at a distance h_R from the ceiling.

The methodology is explained below with an example:

Initial data

Diffuser model: **DF-KR-2**
Air flow: **600 m³/h**
Sound power level **< 40 dB(A)**
Maximum air velocity in the occupied area: **0,25 m/s**
Distance between the diffusers: **6 m**
Ceiling height: **3 m**
Distance from the diffuser to the wall: **3 m**

Results

Starting with Graph 1, with a flow rate of 600 m³/h, we see that the sound power is 38 dB(A) for a **DF-KR-2**, with a drop pressure of 18 Pa:

Throw for a maximum air velocity into occupied area of 0,25 m/s: **2,9 m**
Total pressure drop: **18 Pa**
Sound power: **38 dB(A)**

The distance from the ceiling to the occupied area will be:

$$h_R = 3 - 1{,}8 = 1{,}2 \text{ m}$$

The maximum velocity in a occupied area generated by the air collision between diffusers can be obtain in Graph 4. We arrive at a velocity of V_{hR}= 0.23 m/s.

In order to determinate the velocity in the wall area, we need to look at Graph 5 with an air flow rate of 600 m³/h, the length to be considerated will be:

$$L = 3 + 1{,}2 = 4{,}2 \text{ m}$$

Using these data, we obtain a velocity at this point of V_L: 0.35 m/s

Product codes. Example

Product codes provides a unique description of the model ordered by the customer:

DF-KR	Linear diffuser in plate of 1195x295 mm for false modular ceiling
DF-KR-E	Linear diffuser in plate of 1227x327 mm for false plasticboard ceiling
DF-KR-po	Linear diffuser in plate of 1199x299 mm for burguer clips ceiling

1 - 2	Number of slots in the diffuser

PL	Non-insulated side entry plenum box
PLA	Insulated side entry plenum box

RAL 9010	Standard finish in white RAL 9010
RAL...	Finish in some other RAL

Example:

DF-KR-1 PLA RAL 9010

Linear diffuser in plate of 1200x300 mm for false modular ceiling, DF-KR, 1 slot, with insulated side entry plenum box, painted in white