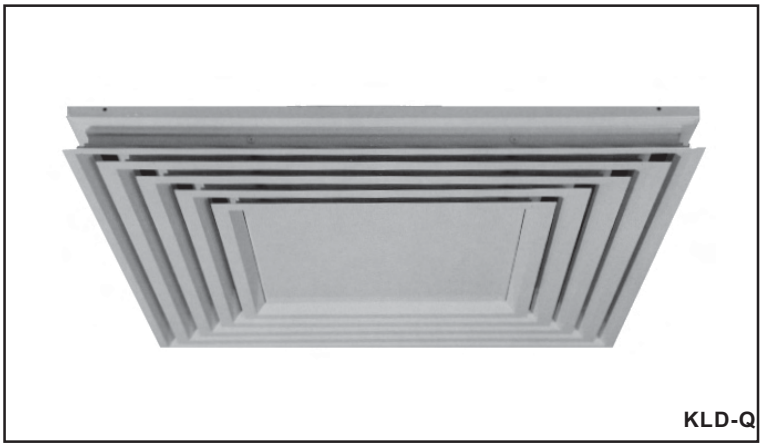
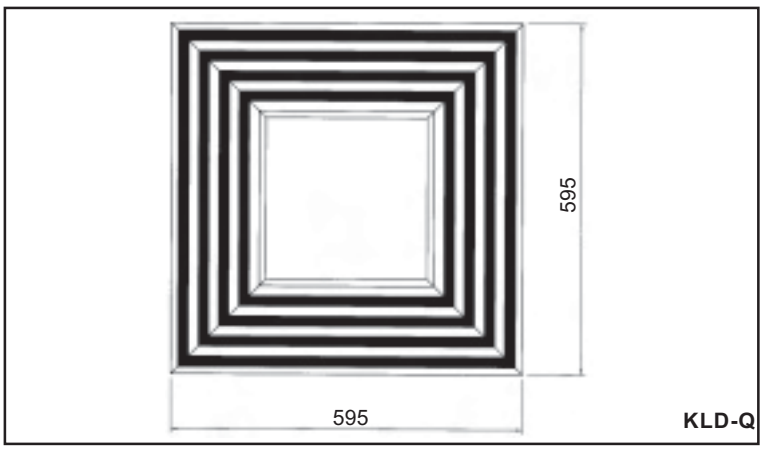
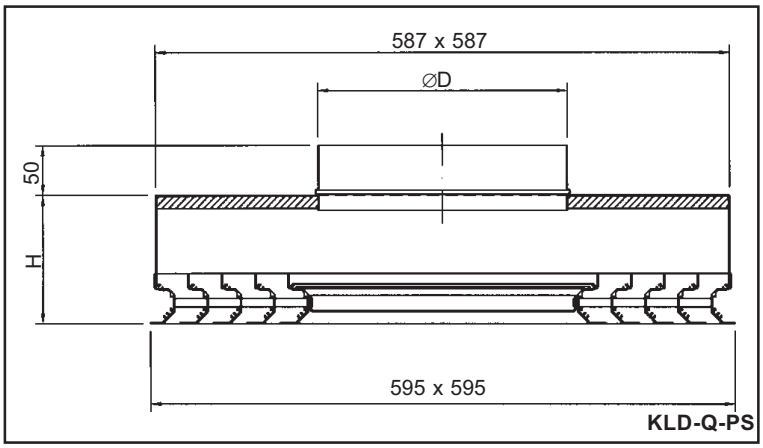
KLD-Q square diffusers for variable and constant air flow


KLD-Q



KLD-Q



KLD-Q-PS

KLD-Q	*Diffuser model.*
1 2 3 4	*No. of slots.*
PL PS -	*With plenum, lateral inflow.* *With plenum, top inflow.* *Without plenum box*
PANEL	*Prepared for panelling*
L x L	*Nominal or opening measurement in mm.*

Description

KLD-Q model, square diffuser for variable and constant air flow especially designed to maintain the ceiling effect (Coanda effect) even when primary air flows are reduced to 20% of the nominal flow. Fixed blades with air outflow in four directions.

Finishes

Extruded aluminium profiles, pre-lacquered in RAL-9010 white. In the KLD-Q "PANEL" version, the central core of the diffuser can be panelled with the same decoration as the ceiling or the suspended ceiling. In this way, it becomes integrated into the general aesthetics and its appearance is more discreet. (See page 19).

Use

Ceiling installation. Especially suited to variable air flow although its design also enables it to work perfectly with a constant air flow. Ideal accessory for KOOLAIR, KS model variable flow terminal units (boxes) .

Dimensions and plenum box

As regards length, the nominal dimension of the diffuser is the size of the opening. The KLD-Q version corresponds to a diffuser with a feed plenum in two versions, with lateral or top air inlet (see identification). Standard models with 1, 2, 3 and 4 slots are for ceilings with 600x600 mm modulation.
On request, they can be manufactured in any other size, or adapted to any other ceiling type by means of a suitable mounting frame, as for example, continuous plaster ceilings. See general dimensions on page 18.

Identification

It is necessary to determine the model, no. of slots, the plenum box and, when necessary, preparation for panelling.
Example:

KLD - Q - 2 - PL - 595 - PANEL

- Model
- No. of slots
- Plenum, lateral in flowl
- Suitable for panelling
- Dimensions

KLD-Q diffuser selection table (Table 3)

TLD - Q (595 x 595)						
Q		No.slots	1	2	3	4
[m³/h]	[l/s]	Ak [m²]	0,02083	0,0397	0,05503	0,06551
180	50,0	Vk [m/s]	2,4	1,3		
		X [m]	1,1	0,8		
		Pt [Pa]	5,1	1,4		
		NR	20	<20		
200	55,6	Vk [m/s]	2,7	1,4		
		X [m]	1,3	0,9		
		Pt [Pa]	6,3	1,7		
		NR	23	<20		
250	69,4	Vk [m/s]	3,3	1,7	1,3	
		X [m]	1,6	1,1	1,0	
		Pt [Pa]	9,9	2,7	1,4	
		NR	28	<20	<20	
300	83,3	Vk [m/s]	4,0	2,1	1,5	1,3
		X [m]	1,9	1,4	1,2	1,1
		Pt [Pa]	14,2	3,9	2,0	1,4
		NR	32	22	<20	<20
350	97,2	Vk [m/s]	4,7	2,4	1,8	1,5
		X [m]	2,2	1,6	1,3	1,2
		Pt [Pa]	19,4	5,3	2,8	2,0
		NR	36	25	20	<20
400	111,1	Vk [m/s]	5,3	2,8	2,0	1,7
		X [m]	2,5	1,8	1,5	1,4
		Pt [Pa]	25,3	7,0	3,6	2,6
		NR	39	28	23	20
450	125,0	Vk [m/s]	6,0	3,1	2,3	1,9
		X [m]	2,8	2,0	1,7	1,6
		Pt [Pa]	32,1	8,8	4,6	3,2
		NR	42	31	26	23
500	138,9	Vk [m/s]	6,7	3,5	2,5	2,1
		X [m]	3,1	2,3	1,9	1,8
		Pt [Pa]	39,6	10,9	5,7	4,0
		NR	44	34	28	25
600	166,7	Vk [m/s]	8,0	4,2	3,0	2,5
		X [m]	3,8	2,7	2,3	2,1
		Pt [Pa]	57,0	15,7	8,2	5,8
		NR	49	38	33	30
700	194,4	Vk [m/s]	9,3	4,9	3,5	3,0
		X [m]	4,4	3,2	2,7	2,5
		Pt [Pa]	77,6	21,4	11,1	7,8
		NR	52	42	36	33
800	222,2	Vk [m/s]		5,6	4,0	3,4
		X [m]		3,6	3,1	2,8
		Pt [Pa]		27,9	14,5	10,2
		NR		45	39	37
900	250,0	Vk [m/s]		6,3	4,5	3,8
		X [m]		4,1	3,5	3,2
		Pt [Pa]		35,3	18,4	13,0
		NR		48	42	39
1000	277,8	Vk [m/s]		7,0	5,0	4,2
		X [m]		4,5	3,8	3,5
		Pt [Pa]		43,6	22,7	16,0
		NR		50	45	42
1200	333,3	Vk [m/s]			6,1	5,1
		X [m]			4,6	4,2
		Pt [Pa]			32,7	23,0
		NR			49	46

Symbols:

V_k = *Effective velocity in m/s*
X = *Throw in m*
P_t = *Total pressure in Pa*
NR = *Noise rating in dB*
A_k = *Effective area in m²*

Selection

For a specific air flow, selection must take the noise level and the throw for the desired terminal velocity into consideration. The throws which are shown in the table correspond to an occupied zone velocity of 0.25 m/s.

Example:

Required specifications:

Air flow rate: _____ 600 m³/h
Required throw: _____ 3 m
Required noise level (maximum): _____ 40 NR
Required pressure loss (lower than): _____ 20 Pa

Solution

In table 3, and for the air flow requested, we can select diffuser model TDL-Q-595x595-2, which has the following specifications:

Air flow: _____ 600 m³/h
Throw (X): _____ 2,7 m
Noise level: _____ 38 NR
Pressure loss: _____ 15,7 Pa
No. of slots: _____ 2

Induction coefficient

Use the same graph as for the KLD diffuser on page 13

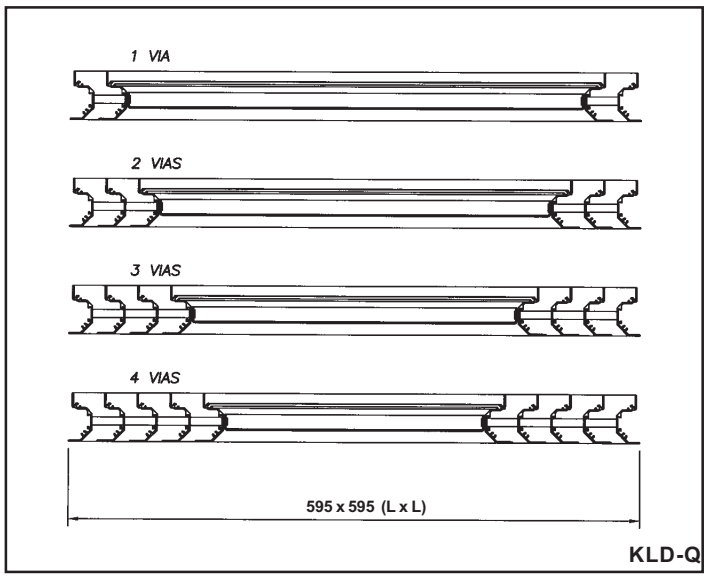
Tests

This selection table is based on real laboratory tests in accordance with ISO 5219 (UNE100.710) and ISO 5135 and 3741 standards. The noise ratings (NR) have been obtained in a reverberating chamber in accordance with ISO 5135 and 5220 standards.
The Δt is equal to 10°C (the difference between the supply and room air temperatures. The latter is the highest).
The maximum velocity in an occupied zone is 0.25 m/s. The height of the room is 3 ± 0.5 m.
As the diffuser has been tested in the centre of a square room and aligned with the ceiling there are no correction factors for throw (X).

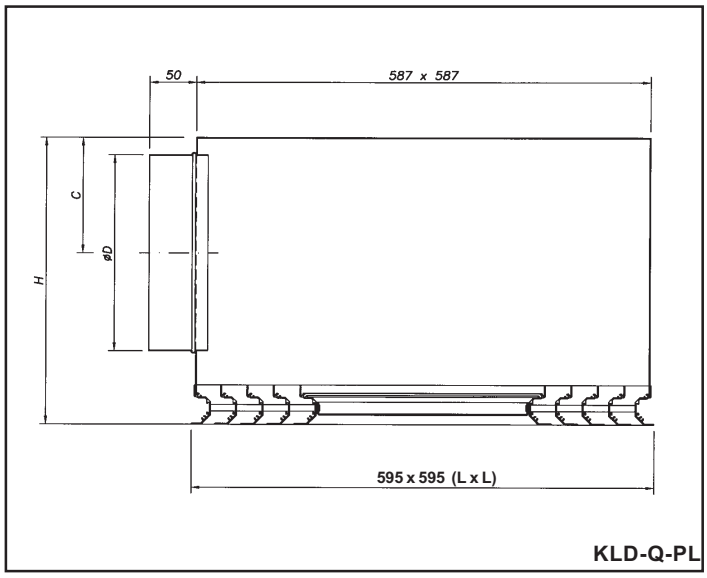
Air flow measurement

See page 19.

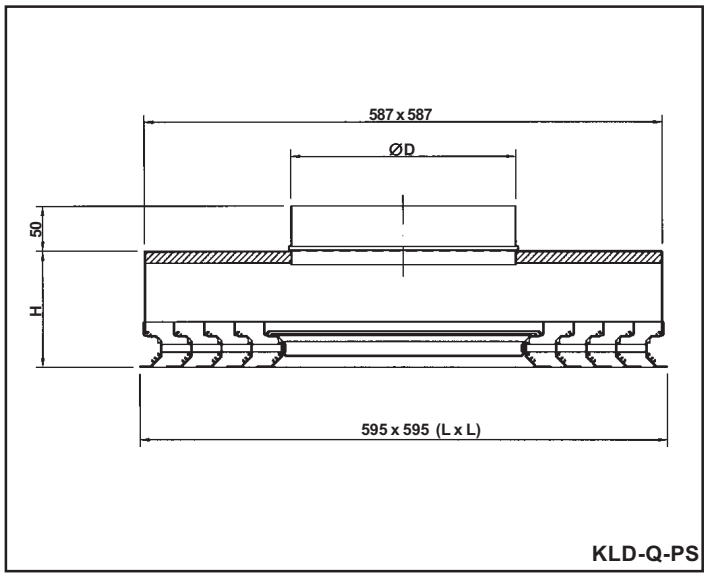
Dimensions



KLD-Q



KLD-Q-PL



KLD-Q-PS

KLD-Q dimensions and no. of slots

Standard 1, 2, 3 and 4 slot diffusers are adapted to an opening measurement of 600 x 600 mm, which can be perfectly adapted to modular falses.
A mounting frame can be supplied for continuous plaster ceilings. They can be adapted to other sizes or ceiling modulations on request.

Plenum boxes and duct inlets

Diffusers can be supplied with the plenum screwed on. The diameters of the duct inlets are standard size in accordance with ISO standars, and can be located on the side of the plenum box (PL) or on the top (PS). A manually regulaty can be fixed to the duct inlet on request so that the diffuser can be used with a constant air flow.

General KLD-Q dimensions

MODEL	L x L	No OF SLOTS	C	ØD	H
KLD - Q - PL	595 x 595	1	122	199	270
		2	147	249	320
		3			
		4			
KLD - Q - PS		1		199	130
		2		249	
		3			
		4			

KLD-Q "PANEL" diffuser

KLD-Q-PANEL

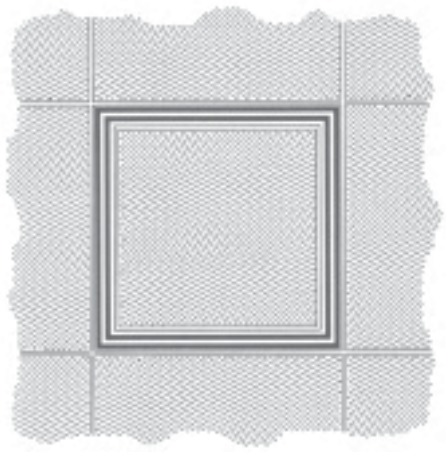
Description

A panel of the same decorating material as that used in the ceiling or the suspended ceiling can be placed in the central core of the KLD-Q "PANEL" diffuser regardless of whether the ceiling is plaster or fibre.

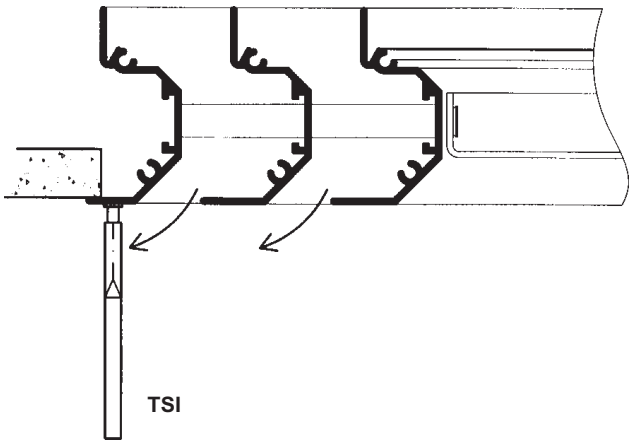
In this way, the diffuser becomes integrated into the décor and is less noticeable in those cases in which the aim of the ceilings is to be more uniform in appearance without the elements installed on them standing out.

The only thing that has to be done is to cut out a panel of the same size as the central core opening and place it on the support that the diffuser has for this purpose. It is advisable to fix it with adhesive and place a piece of insulating material of the same size over it which should also be fixed with adhesive

The sizes, performances and data are the same as for the KLD-Q.



KLD-Q-PANEL



KLD-Q

Air flow measurement

The air flow q_v shall be obtained by multiplying the effective area of the diffuser (A_k) in m^2, by the velocity at outflow (V_k), measured with a TSI- VELOCICALC hot-wire anemometer located on the exterior profile.

Different measurements must be taken along the perimeter of the diffuser to obtain an average value. The greater the number of measurements, the more accurate the measurement obtained will be.