

Ceiling Diffusers

- Type DLQ-AZ
- Combination diffuser for extract and supply air



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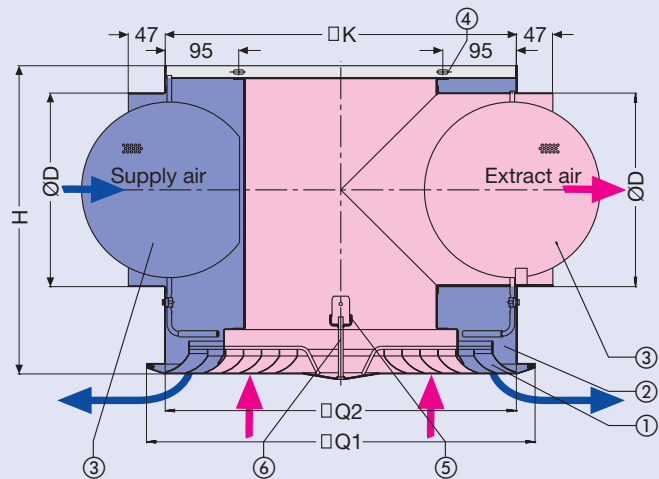
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Construction

Combination ceiling diffuser in square construction for flush installation in the ceiling, suitable for simultaneous extract and supply functions. The diffuser front face consists of a peripheral border and fixed air control blades. All corners are mitred to provide gap free junctions. A centre cone is complete with fixing screw. Type DLQ-AZ is available as a diffuser face complete with rear seal and plenum box with circular side connection spigots and optional volume control dampers.

The complete unit is suspended from the ceiling slab using the suspension holes provided. The diffuser face is simply fixed (or removed) using the centre screw which locates in the bridge channel in the plenum box. The screw head is covered with a decorative cap.



Description

The ceiling diffuser type DLQ-AZ provides a combined solution for extract and supply air. Supply air is evenly distributed through the outer sections of the diffuser face providing a horizontal discharge when flush mounted.

The extract air flows through the inner areas of the face section.

There is no danger of a short circuit between supply and extract air as long as the supply air volume flow rate is about 10 % higher than the extract air volume flow rate.

Volume control dampers in the spigots of supply and extract air are optional.

- ① Diffuser face
- ② Plenum box
- ③ Volume control damper
- ④ Suspension holes
- ⑤ Bridge channel
- ⑥ Centre fix screw with decorative cap

Dimensions					
	in mm				
Size	ØD	H	□K	Q ₁	Q ₂
500	248	396	474	498	448
600	313	452	574	598	548
625	313	452	600	623	573

Materials

The diffuser face is made of formed steel sheet. The surface is pre-treated and powder-coated pure white (RAL 9010).

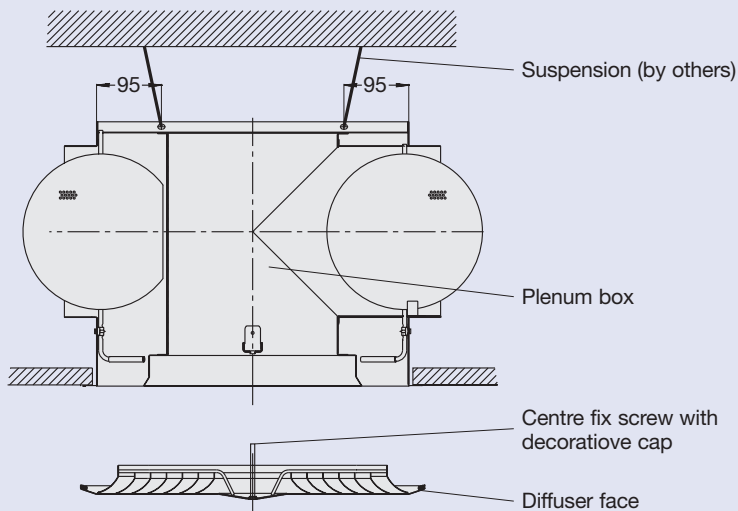
The plenum box is made of galvanised steel sheet.

Installation · Assembly

Ceiling diffusers type DLQ-AZ are suited for flush installation with the false ceiling.

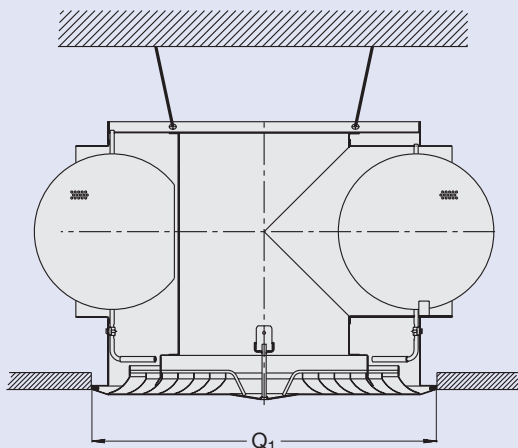
On site the plenum box is suspended from the ceiling slab with wire or slotted steel hangers using the holes provided in the plenum box.

The diffuser face is mounted to the plenum box using the centre fix screw and bridge channel as supplied.

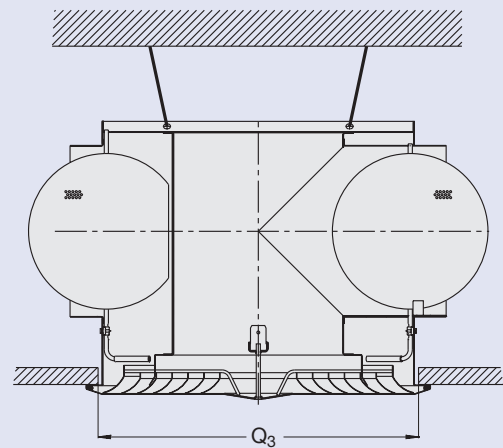


Size	in mm	
	Q ₁	Q ₃
500	498	480
600	598	580
625	623	605

Installation in grid ceilings



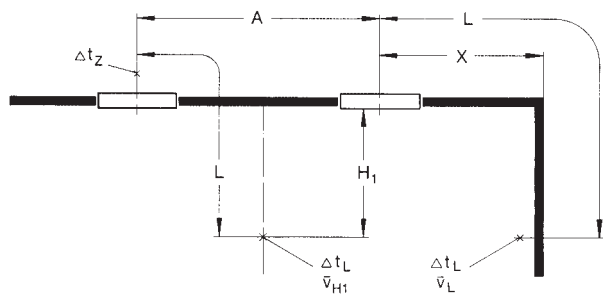
Installation in plain ceilings
(e.g. plaster board)



Nomenclature · Acoustic Data

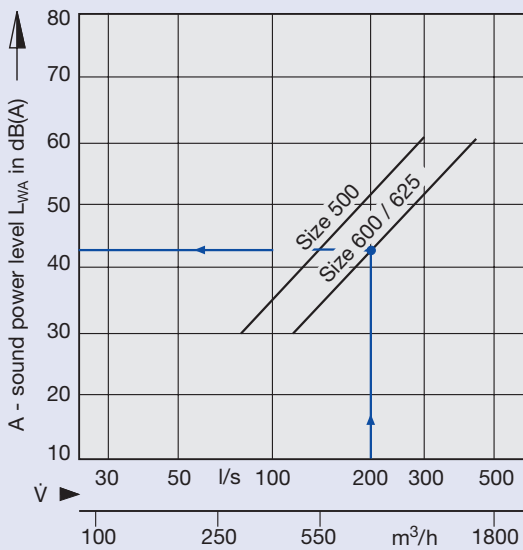
Nomenclature:

- \dot{V} in l/s: Volume flow rate per diffuser
- \dot{V} in m³/h: Volume flow rate per diffuser
- A in m: Spacing between two diffusers
- L in m: Horizontal plus vertical distance ($X + H_1$) discharge to the wall
- X in m: Spacing between centre of diffuser and the wall
- H_1 in m: Distance between ceiling and occupied zone
- A_{eff} in m²: Effective outlet area
- \bar{v}_L in m/s: Time average air velocity at the wall
- \bar{v}_{H_1} in m/s: Time average air velocity between two diffusers at distance H_1 from ceiling
- Δt_z in K: Temperature difference between supply air and room air
- Δt_L in K: Difference between room and core temperature at distance $L=A/2 + H_1$ or $L= X + H_1$
- Δp_t in Pa: Total pressure drop
- L_{WA} in dB(A): A-weighted sound power level

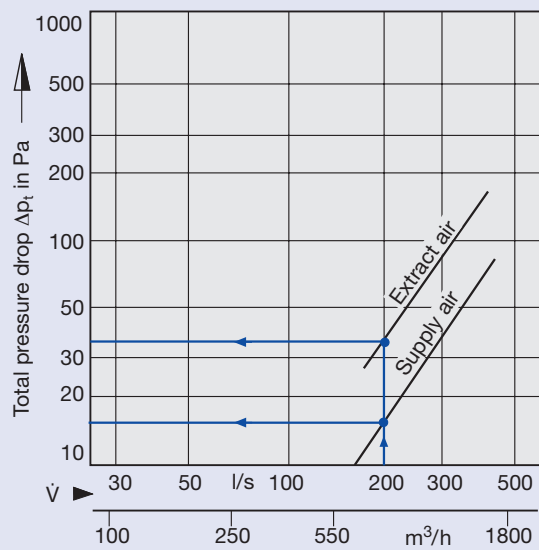


Effective outlet area A_{eff} :			
Size	500	600	625
A_{eff} in m ²	0.031	0.059	0.064

1 Sound power level



3 Pressure drop · Size 600 / 625



2 Pressure drop · Size 500

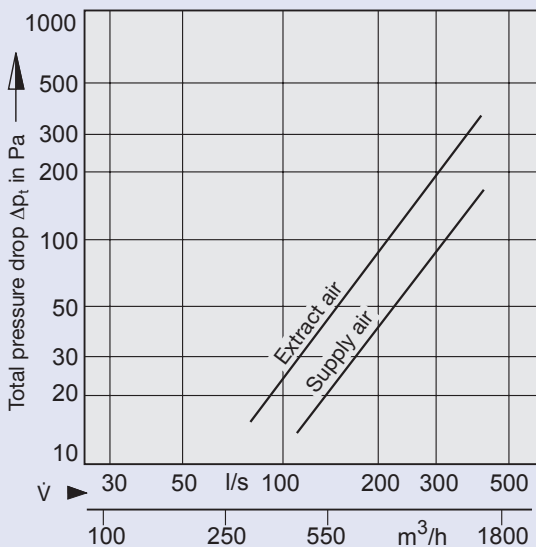


Diagram 1:

Correction for the volume control damper adjustment

Damper angle	0°	45°	90°
L_{WA}	-	+2	+5
$L_{WNC} = L_{WA} - 7 \text{ dB}$			

Diagram 2:

Correction for the volume control damper adjustment

Damper angle	0°	45°	90°
Δp_t	x 1.0	x 1.3	x 1.8

Diagram 3:

Correction for the volume control damper adjustment

Damper angle	0°	45°	90°
Δp_t	x 1.0	x 1.3	x 2.5

Example

Data given:

DLQ-AZ-M / 600

Volume flow rate per diffuser $\dot{V} = 200 \text{ l/s}$

Supply air temperature difference $\Delta t_z = -6 \text{ K}$

Spacing between two diffusers $A = 5.0 \text{ m}$

Distance between ceiling and occupied zone $H_1 = 1.2 \text{ m}$

Distance from diffuser centre line to the wall $X = 5.0 \text{ m}$

Horizontal plus vertical distance, discharge to the wall $L = 6.2 \text{ m}$

$\dot{V} = 200 \text{ l/s}$

$\Delta t_z = -6 \text{ K}$

$A = 5.0 \text{ m}$

$H_1 = 1.2 \text{ m}$

$X = 5.0 \text{ m}$

$L = 6.2 \text{ m}$

Diagram 4:

Between two diffusers

$L = A/2 + H_1 = 2.5 + 1.2 = 3.7 \text{ m}$

$\Delta t_L / \Delta t_z = 0.14$

$\Delta t_L = -6 \cdot 0.14 = -0.84 \text{ K}$

At the wall

$L = X + H_1 = 5 + 1.2 = 6.2 \text{ m}$

$\Delta t_L / \Delta t_z = 0.05$

$\Delta t_L = -6 \cdot 0.05 = -0.3 \text{ K}$

Temperature quotient

Diagram 1:

$L_{WA} = 41 \text{ dB(A)}$ ($L_{WNC} = 34 \text{ NC}$)

Diagram 3:

$\Delta p_i = 15 \text{ Pa}$ (Supply air)

$\Delta p_i = 35 \text{ Pa}$ (Extract air)

Sound power level

Pressure drop

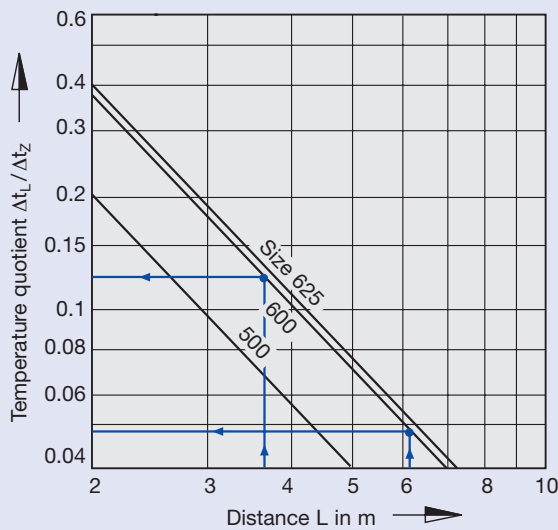
Diagram 6:

$\bar{v}_{H1} = 0.15 \text{ m/s}$

$\bar{v}_L = 0.17 \text{ m/s}$

Air flow velocity between the two diffusers and at the wall

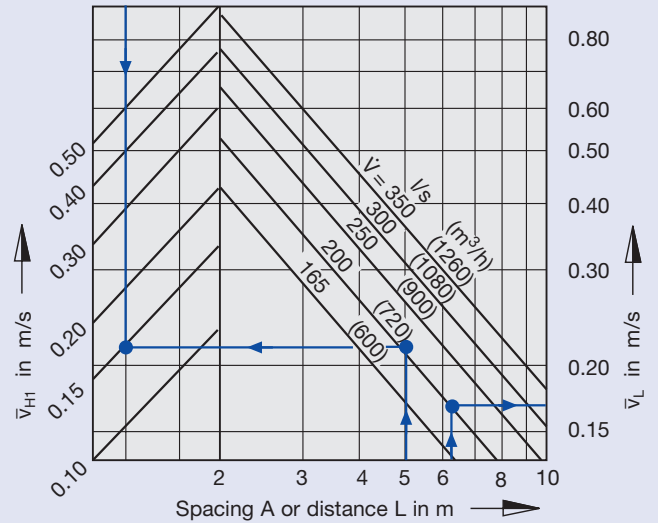
4 Temperature quotient



6 Air flow velocity

Size 600

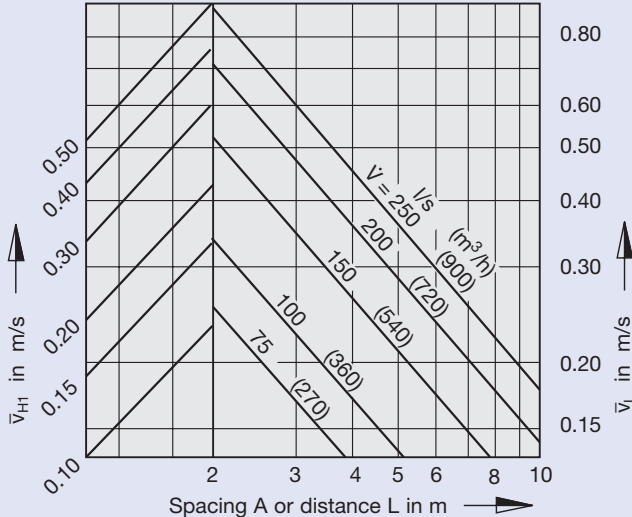
$H_1 = 1.2 \text{ m}$



5 Air flow velocity

Size 500

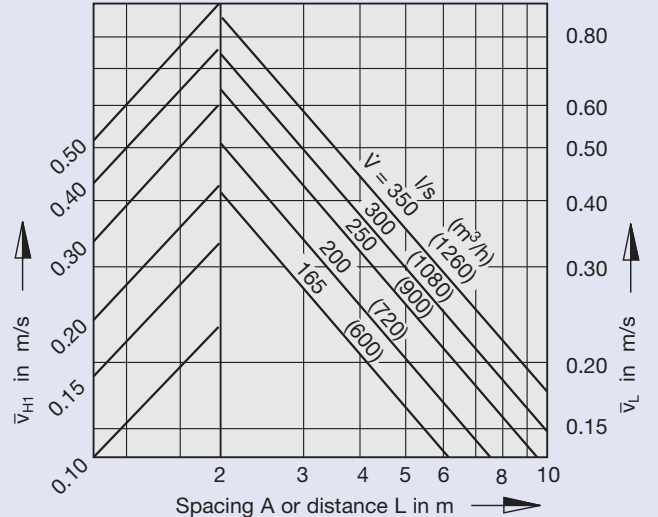
$H_1 = 1.2 \text{ m}$



7 Air flow velocity

Size 625

$H_1 = 1.2 \text{ m}$

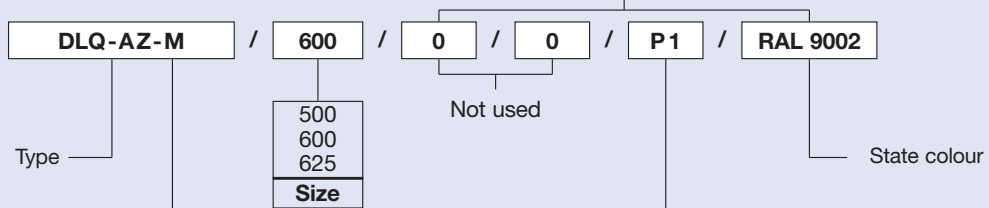


Order Details



Order Code

These codes do not need to be completed for standard products



Volume control damper M

¹⁾ GE = Gloss level

- 0 Standard finish powder-coated to RAL 9010 (GE 50%)¹⁾
- P1 Powder-coated to RAL 9006 (GE 30%)¹⁾ other colours to RAL.... (GE 70%)¹⁾

Specification Text

Combination ceiling air diffuser type DLQ-AZ in square construction for installation flush in the ceiling, suitable for simultaneous extract and supply functions. The diffuser front face consists of a peripheral border and fixed air control blades. All corners are mitred to provide gap free junctions. The diffuser face is complete with centre cone and fixing screw and a rear peripheral seal. The fixing screw head is covered with a decorative cap. Ceiling air diffuser type DLQ-AZ is supplied with a rear plenum box. The duct connections are made via side mounted spigots which can be optionally fitted with volume control dampers. The complete unit is suspended from the ceiling slab using the suspension holes provided. The diffuser face is easily fixed to the plenum box with a centre screw which locates in the plenum bridge channel.

Materials

The diffuser face is made of formed steel sheet. The surface is pre-treated and powder-coated pure white (RAL 9010), optionally it can be finished in another RAL colour. The plenum box is made of galvanised steel sheet.

Order Example

Make: TROX
 Type: DLQ-AZ-M/600/P1/RAL 9002