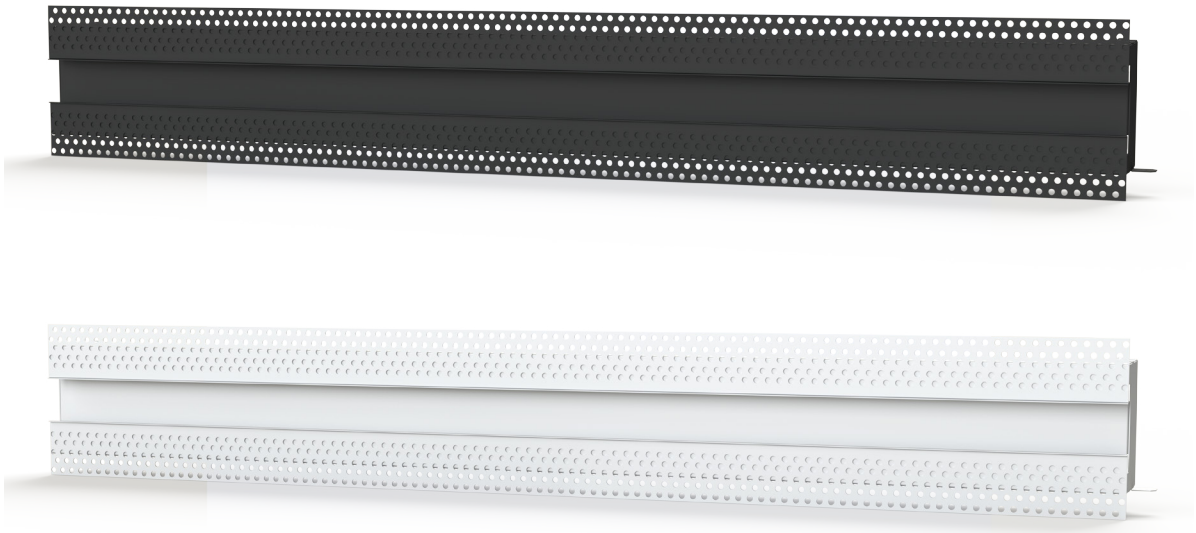
OFFICINE VOLTA
L'INNOVAZIONE È NELL'ARIA

SINGLE SLOT LINEAR DIFFUSERS

DL.LM



CONSTRUCTION FEATURES

The single-slot linear diffusers of DL.LM series with concealed perimeter frame are generally installed in confined spaces with a height between 2.7 and 4.5 m, with ventilation systems operating within ± 10 K temperature differential between internal air and supplied air. The type of installation most frequently used is flush with the ceiling, so they can take advantage of the Coanda effect. They can also be installed on the wall and in this case, if the distance between the upper edge of the diffuser and the ceiling is less than 200 mm, a Coanda effect is still obtained; otherwise, a free throw is achieved. By setting opposite launch directions for each slot, the so-called "opposite launch" is obtained.

The retractable perimeter frame, designed to facilitate the application of the plaster, makes the DL.LM series highly appreciated by architects and stylists who find in it not only plant functionality but also furnishing motifs. They can be used for both supply and return and in systems with variable flow rates in the range 50…100%. In a special execution, they can be mounted one after the other to form continuous strips, so as to follow the ideal perimeter line of the room. Inside the diffuser there is a deflection element that can be manually adjusted from the front, which allows for a variable throw direction from horizontal to vertical.

Versions:

- DL.LM.30: with 30 mm slot
- DL.LM.40: with 40 mm slot
- DL.LM.50: with 50 mm slot
- DL.LM.60: with 60 mm slot

FIXING

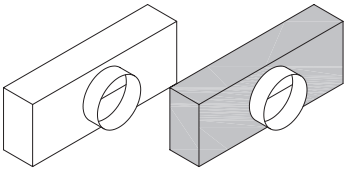
Concealed fixing on plasterboard thanks to the special perforated frame.

MATERIALS

The DL.LM diffuser consists of a suitably shaped casing inside which an adjustable deflector is positioned.

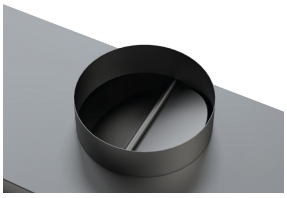
- Outer casing in galvanized steel sheet painted in RAL 9005 (or 9016).
- Internal deflector in galvanized steel sheet painted in RAL 9005 (or 9016).

ACCESSORIES



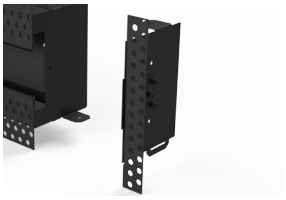
PL. and PL.ISO

Plenum box, with or without external insulation, with lateral or rear circular inlet, connected in the factory to the diffuser.



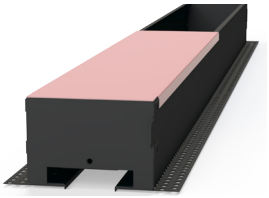
SER.

Regulation damper on circular connection, which can be operated from the front of the diffuser



TES.DL.LM

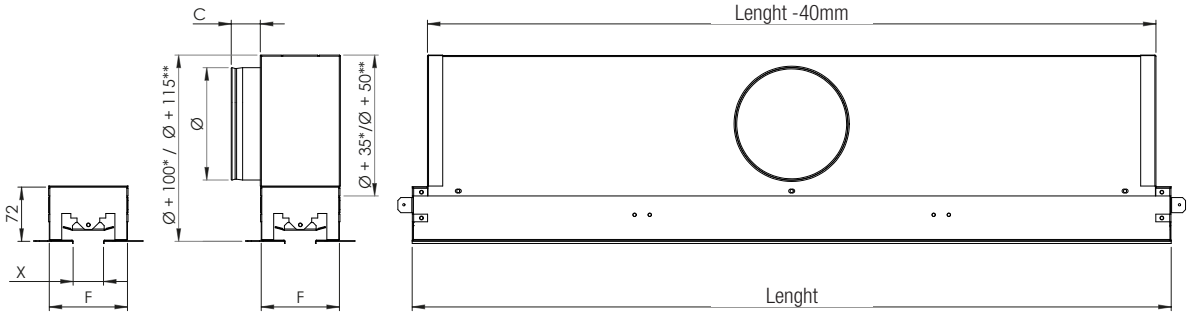
End cap for DL.LM linear diffuser
(required in single diffusers or in the beginning and in the end of continous diffusers lines)



TEG.DL.LM

Closing plate for the air passage, suitable for making part of the diffuser inactive.

DIMENSIONS



* plenum with standard inlet

**plenum with inlet with built-in damper

	Lenght	X	F	C	Ø
	mm	*mm*	*mm*	*mm*	*mm*
DL.LM.20	500	20	67	50	125
	750				
	1000				
	1250				

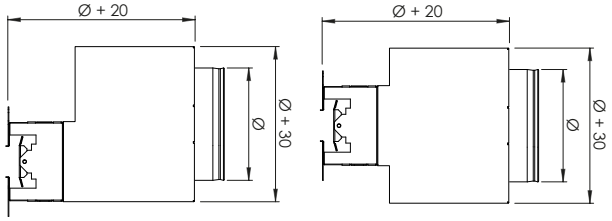
	Lenght	X	F	C	Ø
	mm	*mm*	*mm*	*mm*	*mm*
DL.LM.30	500	30	85	50	150
	750				
	1000				
	1250				

	Lenght	X	F	C	Ø
	mm	*mm*	*mm*	*mm*	*mm*
DL.LM.40	500	40	103	50	150
	750				
	1000				
	1250				

	Lenght	X	F	C	Ø
	mm	*mm*	*mm*	*mm*	*mm*
DL.LM.50	500	50	125	50	200
	750				
	1000				
	1250				

POSSIBLE SHAPES FOR PLENUM WITH REAR INLET

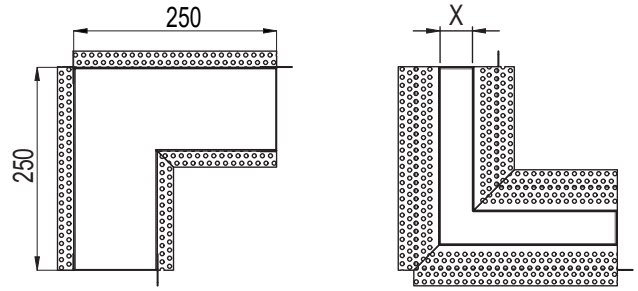
A-shaped B-shaped



C = 15 mm.

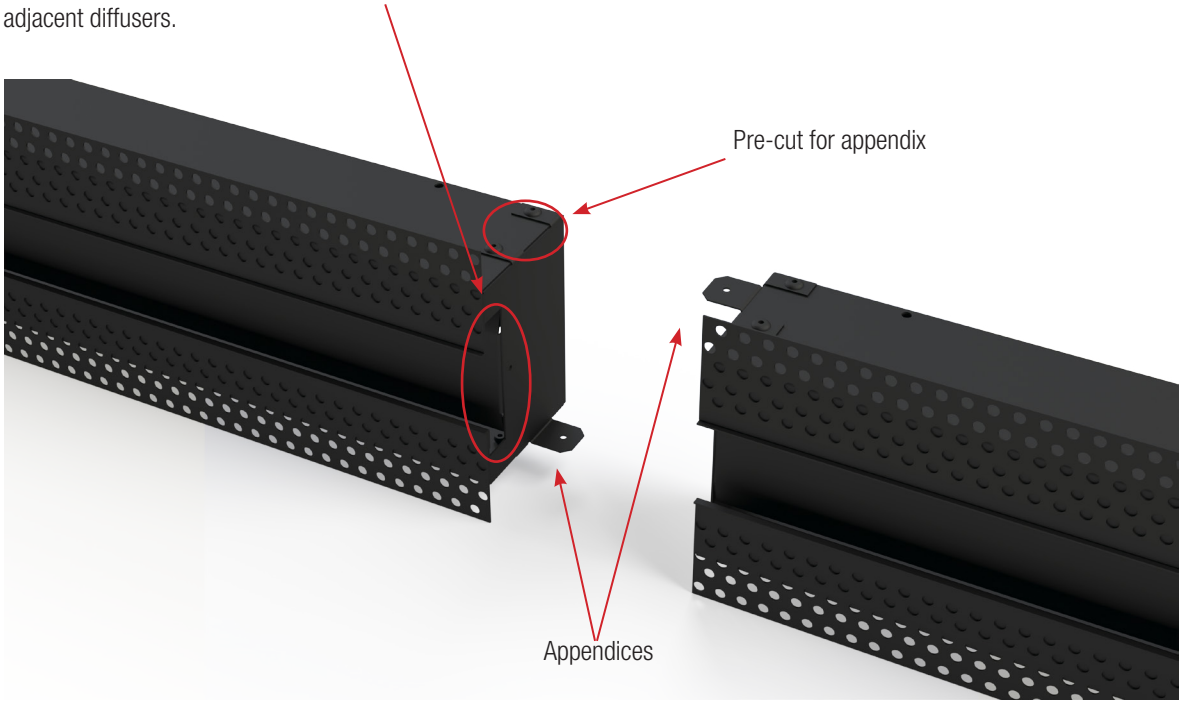
P = Inlet Ø + 20 mm (150 mm minimum depth)

AESTHETIC ANGLE (90°)



ALIGNMENT BETWEEN ADJACENT DIFFUSERS

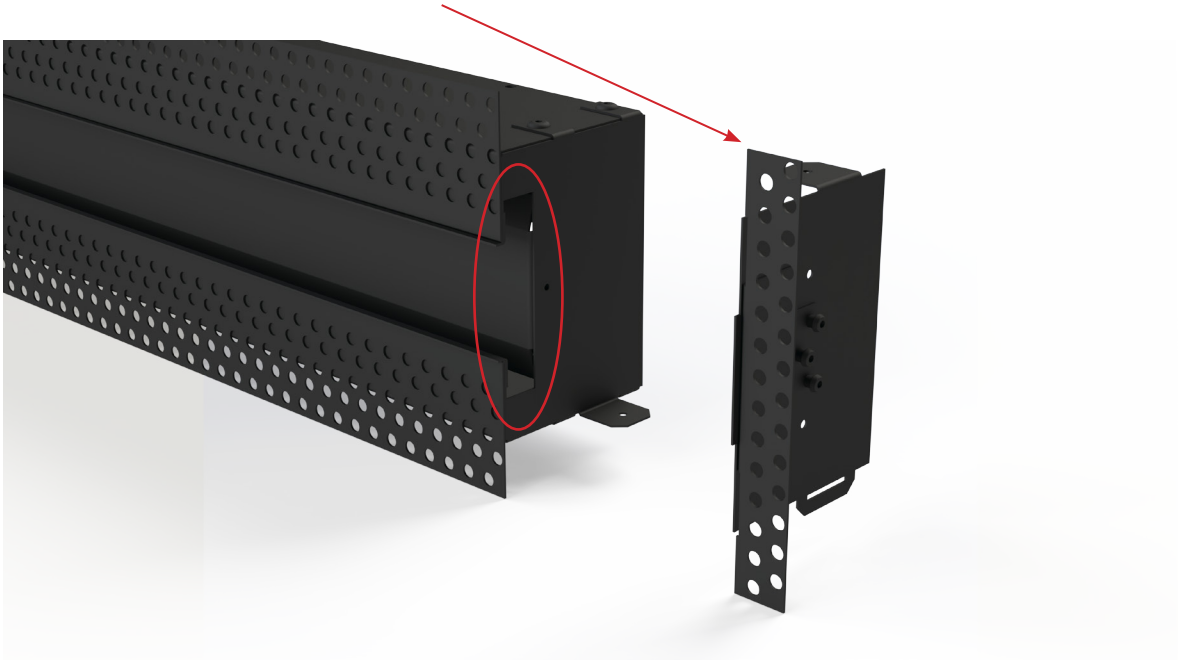
The heads of the diffuser have a pre-cut which, once installation is complete, guarantees aesthetic continuity between the adjacent diffusers.



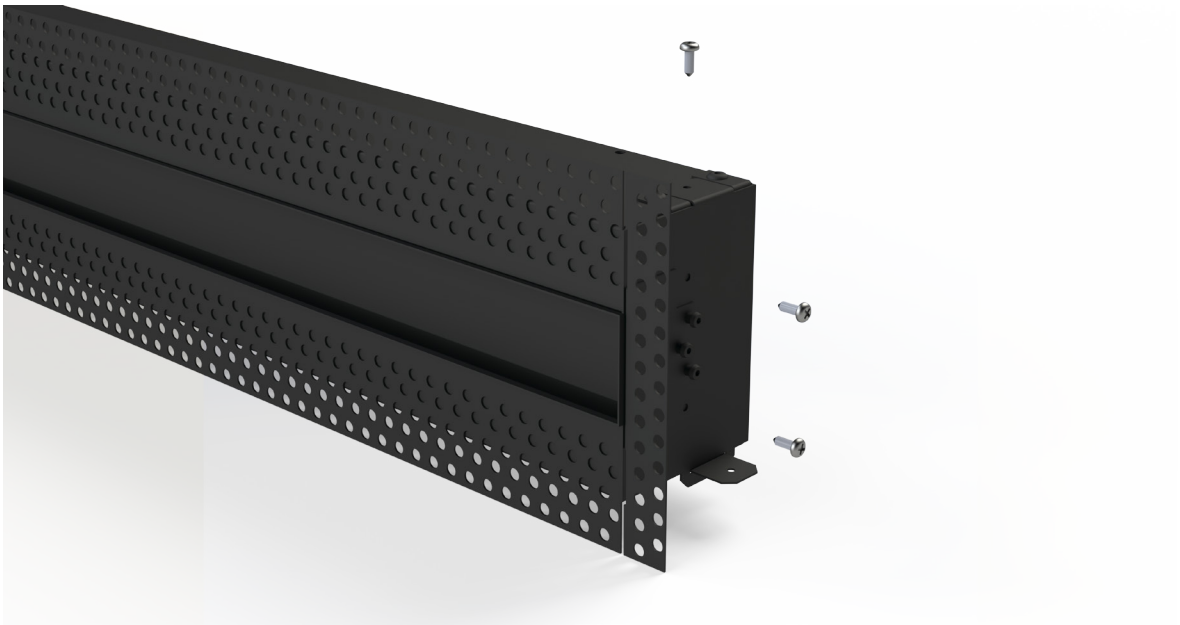
The particular construction of the heads allows a quick and precise alignment between two contiguous diffusers, thanks to the presence of special appendices and relative pre-cuts, guaranteeing the possibility of creating continuous lines able to follow the perimeter of the room.

ACCESSORY FOR HEADS

To use the diffuser as the initial and/or final element of a continuous row or as a single element, it will be necessary to use an accessory that allows the closure of the pre-cut, guaranteeing the aeraulic seal and facilitating smoothing the plasterboard on the "short sides": the end cap.

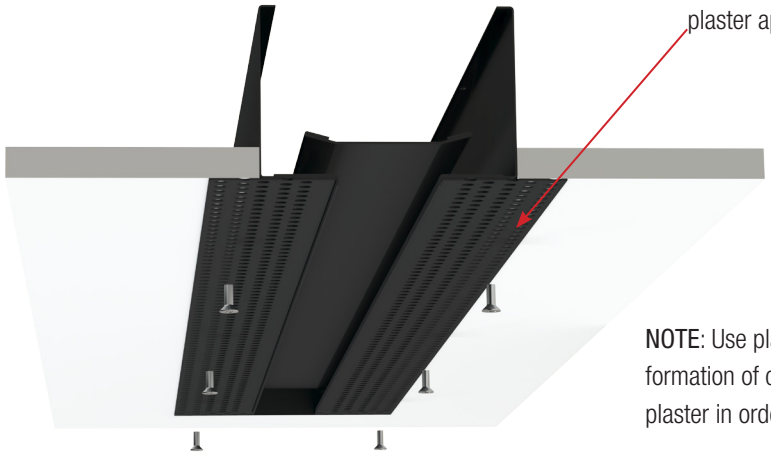


The end cap is installed using self-drilling screws (not included in the supply).



FIXING

Positioning on plasterboard



Perforated surface to facilitate plaster application.

NOTE: Use plaster net to avoid the formation of cracks and finish with plaster in order to cover the frame.

Final result - Black

Final result - White

TECHNICAL DATA

Quick selection table

Model	L	Qmin		Qmax		L_{WA}min	L_{WA}max	Δpmin	Δpmax
	mm	l/s	m^3/h	l/s	m3/h	dB(A)	dB(A)	Pa	Pa
DL.LM.20	1000	13,9	50	69,4	250	<20	46	<10	65
DL.LM.30	1000	27,8	100	97,2	350	<20	46	<10	65
DL.LM.40	1000	41,7	150	125	450	<20	47	<10	70
DL.LM.50	1000	55,6	200	152,8	550	<20	47	<10	70

Q air flow rate per diffuser per linear metre

L_{WA} A-weighted power sound level, correction in compliance with UNI EN ISO 3741

Δp static pressure drop

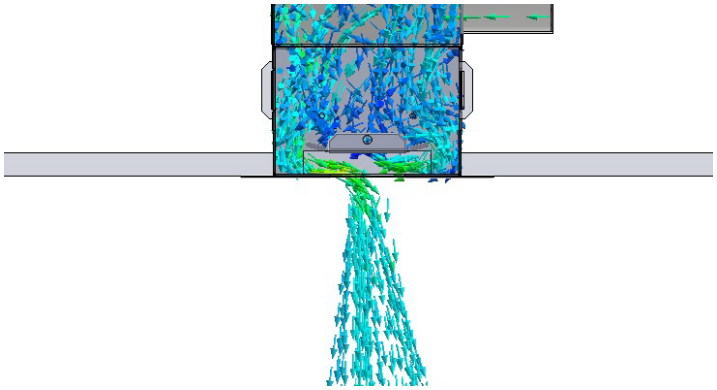
Free passage area

A_{eff} in m^2 per L = 1000mm

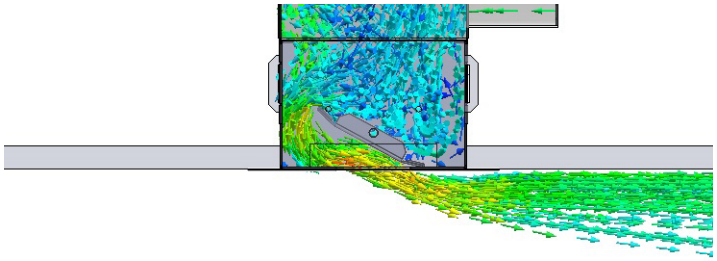
Model	Throw (ceiling installation)	
	horizontal	vertical
DL.LM.20	0,009	0,011
DL.LM.30	0,015	0,02
DL.LM.40	0,020	0,025
DL.LM.50	0,028	0,032

Throw direction

Vertical flow

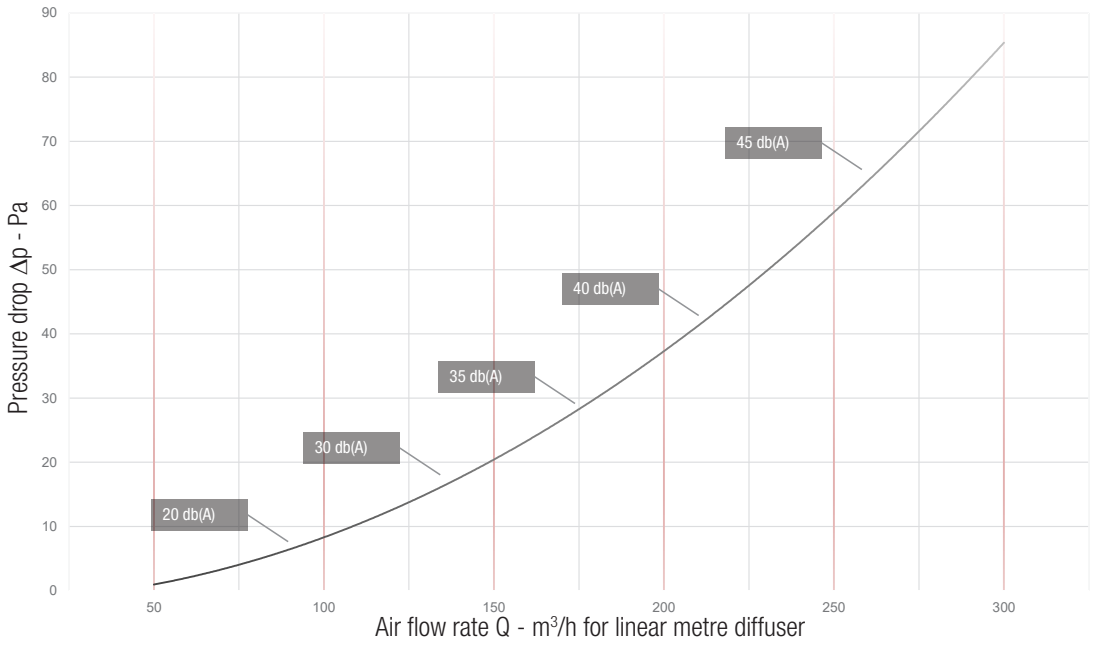


Horizontal flow

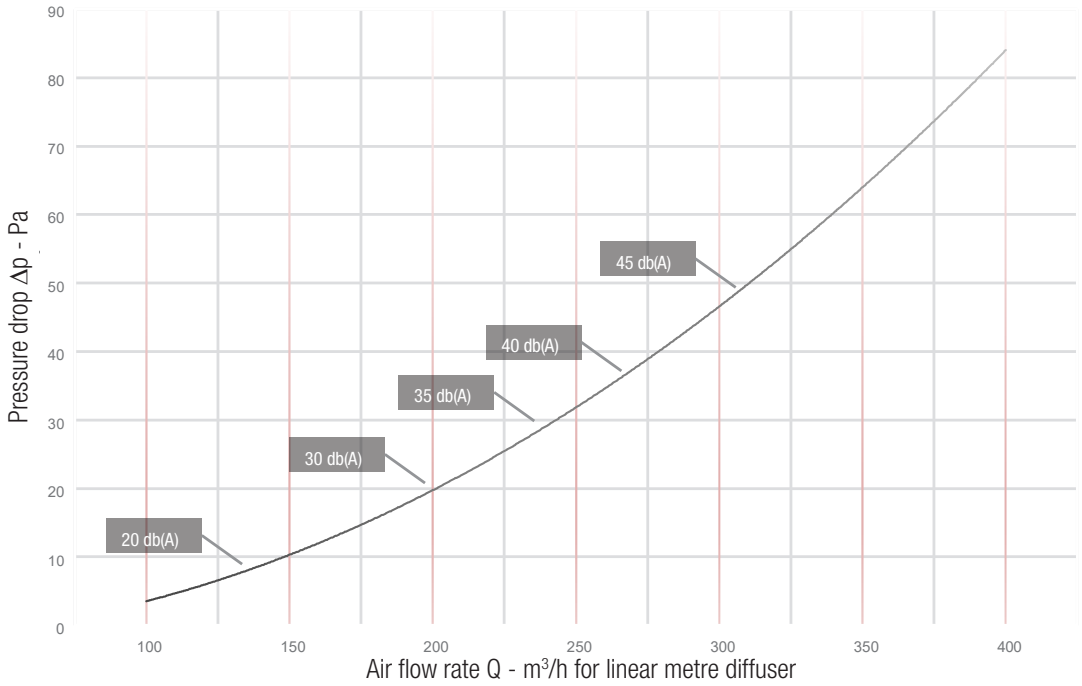


AERAULIC DATA

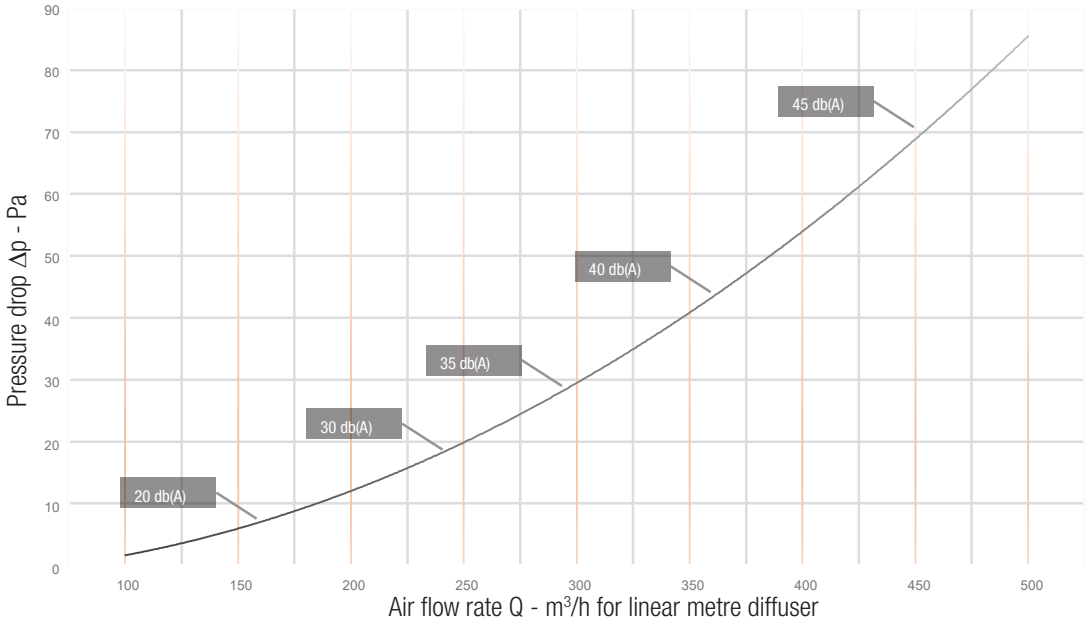
DL.LM.20 Pressure drop - Power sound level



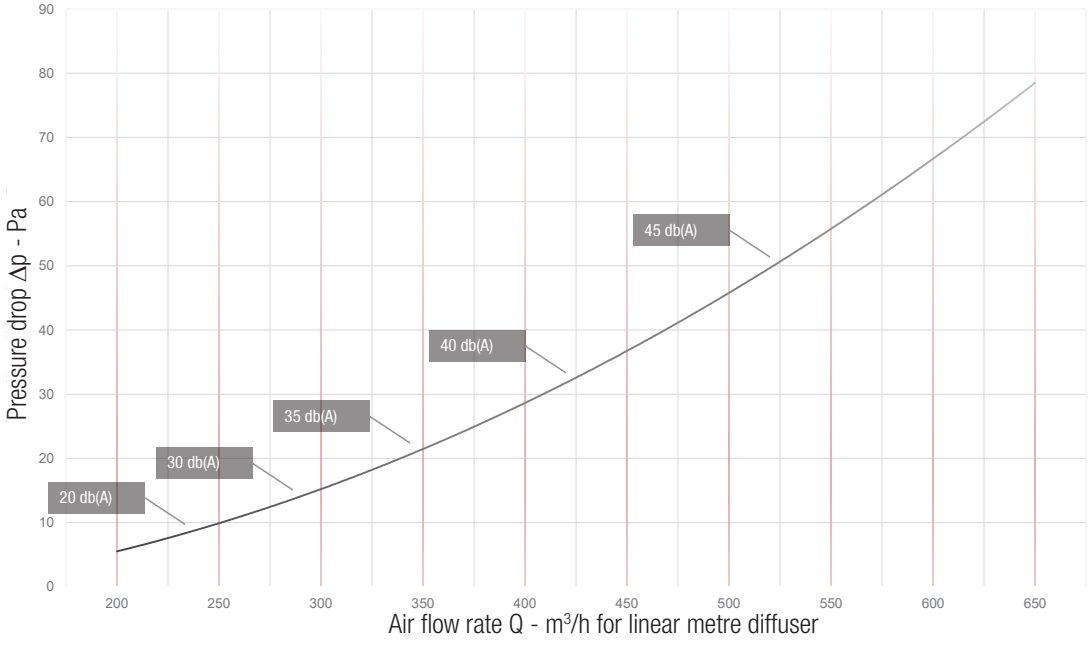
DL.LM.30 Pressure drop - Power sound level



DL.LM.40 Pressure drop - Power sound level

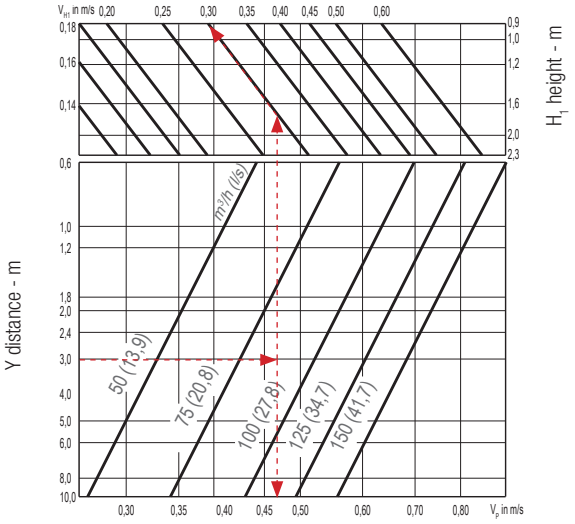


DL.LM.50 Pressure drop - Power sound level

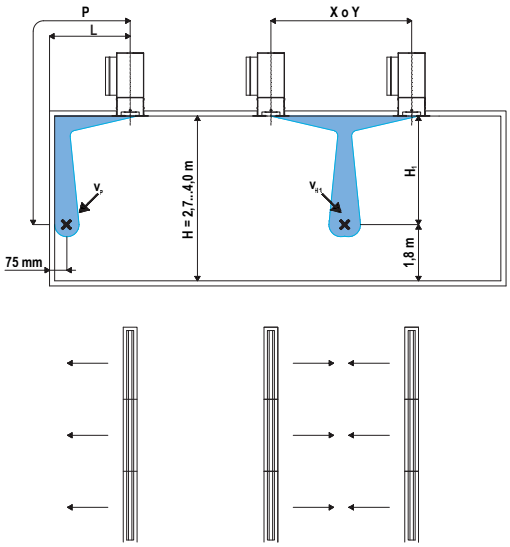


AERAULIC DATA - Horizontal throw from the ceiling on one or two sides - Cooling (ΔT= - 10 K)

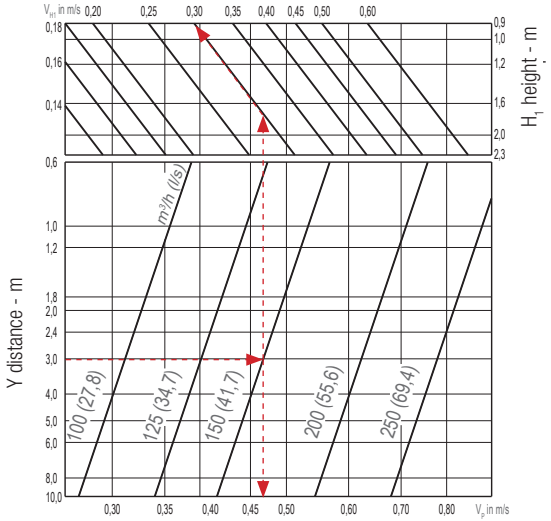
DL.LM.20



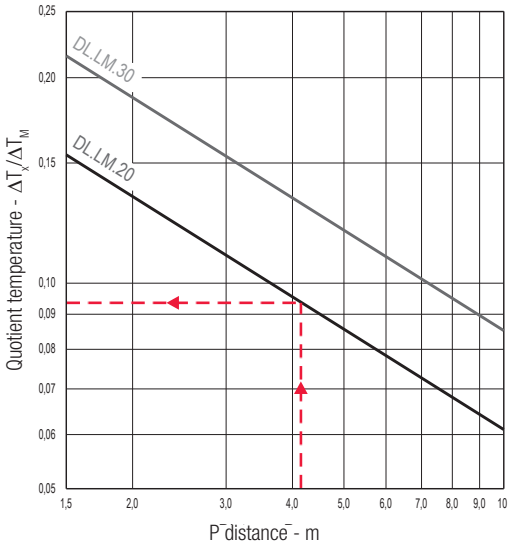
Throw type



DL.LM.30



Temperature quotient

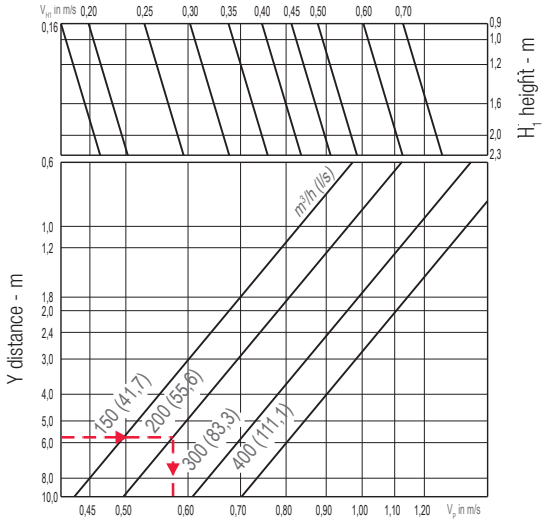


How to use selection graphs

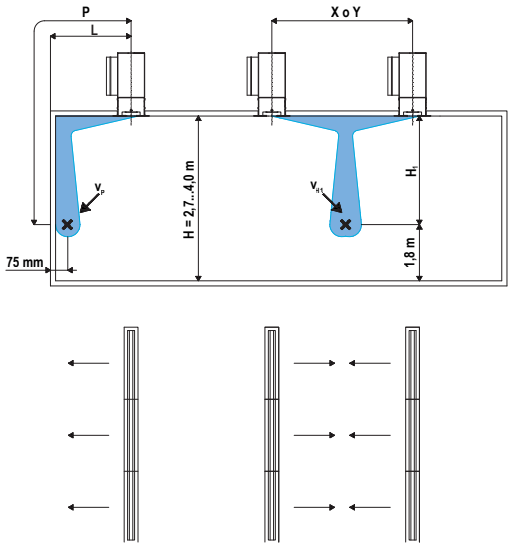
- Calculate the flow rate per linear metre.
- H1 = Room height - 1,8 m
- P = L + H1
- v_p : To find v_p, calculate P and locate it on the vertical axis called "Y Distance - m". In this way a horizontal line is drawn until it meets the inclined straight line relating to the flow rate of the case study. The corresponding v_p value is found on the lower horizontal axis.
- v_{H1} : To find v_{H1}, calculate Y and locate it on the vertical axis called "Y Distance - m". In this way a horizontal line is drawn until it meets the inclined straight line related to the flow rate of the case study. From this point we proceed vertically until we meet the horizontal line corresponding to the H1 value (value on the right of the upper part of the graph). The corresponding v_{H1} value is found by following the relative inclined straight line.
- $\Delta t_x / \Delta t_M$: The temperature quotient can be found through the relative graph. Given the value Δt_M (temperature difference between supply air and ambient air) we obtain Δt_x (temperature difference between supply air at point x and ambient air).

AERAULIC DATA - Horizontal throw from the ceiling on one or two sides - Cooling (ΔT= - 10 K)

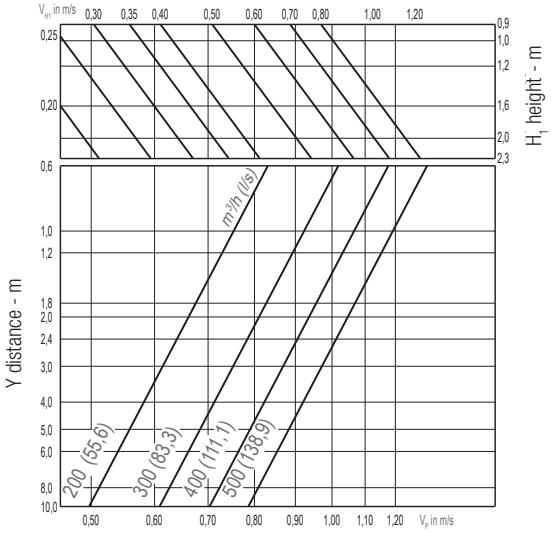
DL.LM.40



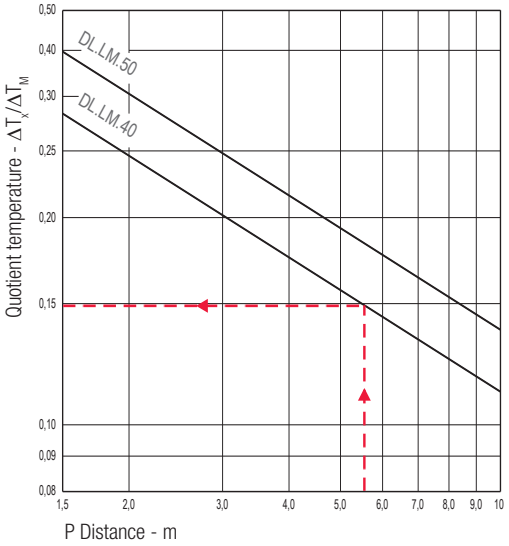
Throw type



DL.LM.50

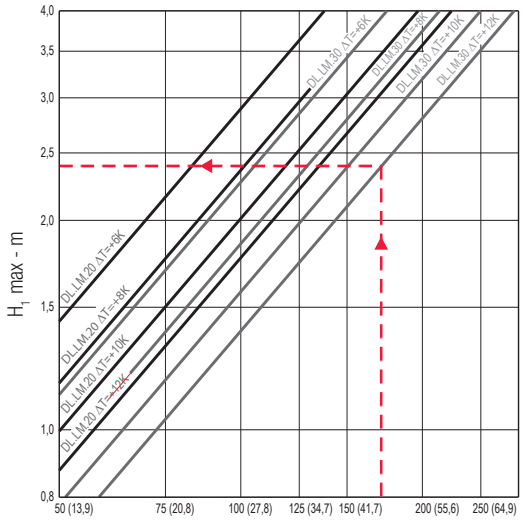


Temperature quotient



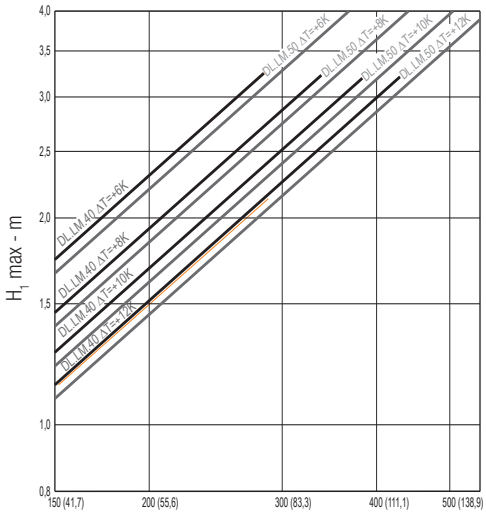
AERAULIC DATA - Vertical throw - Heating

DL.LM.20 - DL.LM.30



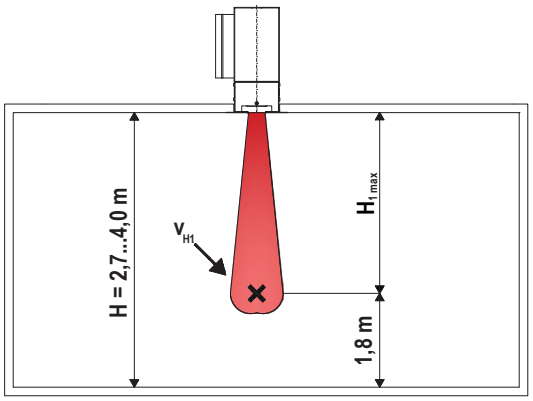
Air flow rate Q - m³/h for linear metre diffuser

DL.LM.40 - DL.LM.50



Air flow rate Q - m³/h for linear metre diffuser

Throw type



Example

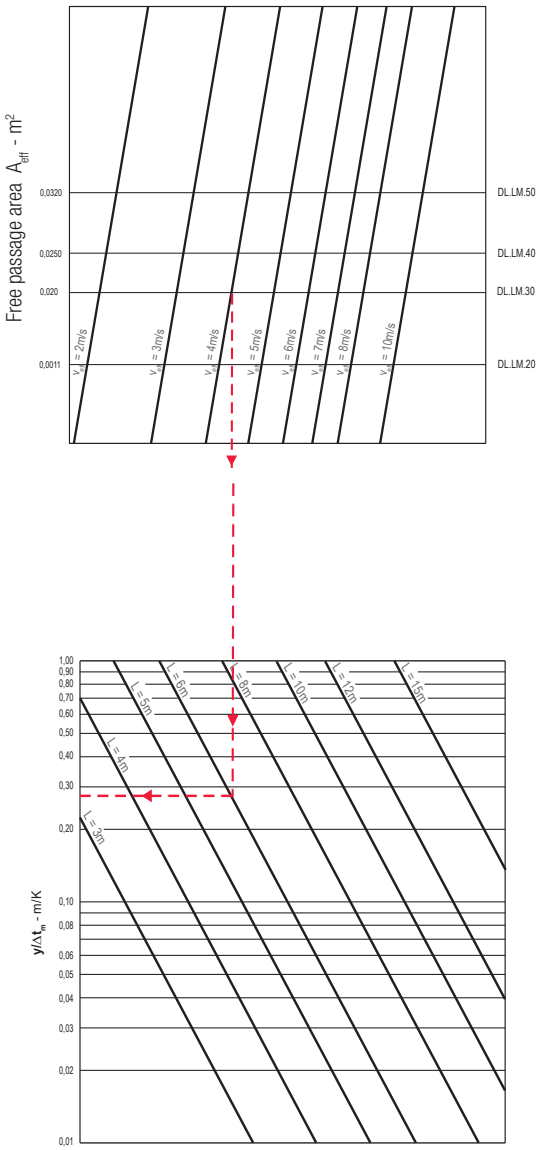
Data:
- DL.LM.30, flow rate 200m³/h
- lenght 1250mm
- ΔT = +12 K

Find the maximum penetration depth

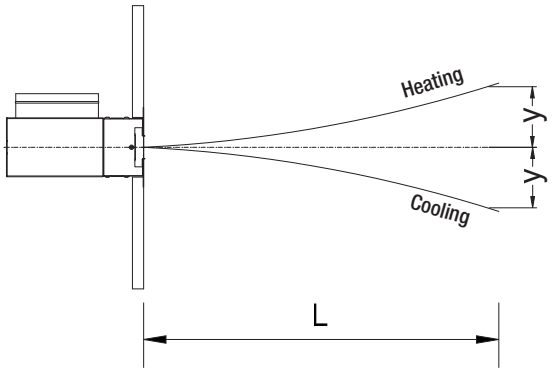
Solution:
- flow rate for linear metre
  200/1,25 = **160 m³/h**
- maximum penetration depth **2,4m**

AERAULIC DATA- Wall throw - Throw deviation

Throw deviation depending on ΔT



Throw type



Example

DATA:

- DL.LM.30, flow rate 216 m^3/h
- lenght 750 mm
- ΔT= - 8 K

Find throw deviation at distance L = 6 m

Solution

- flow rate per linear metre
  216/0,75 = **288 m^3/h**
- $v_{eff} = Q/A_{eff}$ =
  = 288/(0,02 x 3600) = **4 m/s**
- y/Δtm = 0,285
  y = 0,285 x 8 = **2,12 m**