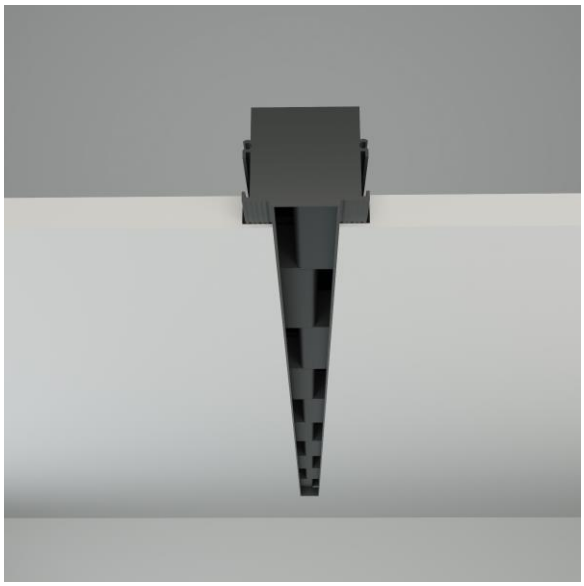
MADEL®

we shape the air



LAV-24 High air flow linear slot diffusers – Slot 24

LAV-24-FIN Hidden frame model

The high induction linear diffusers for high air flow rates of the **LAV-24** series have been designed to combine aesthetics with technical performance in HVAC systems.

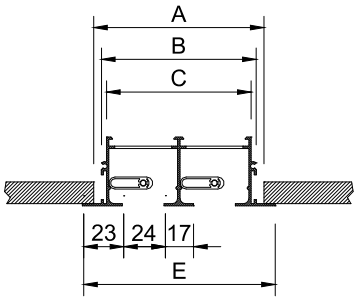
- 24mm slot. Adjustable vanes every 100 mm to modify the air direction without changing the air flow.
- Wall or false ceiling mounting.
- Optimum performance in CAV or VAV systems.
- Designed for installations between 2.6 and 4 m high, with a temperature differential of up to 12 Cº.
- Suitable for both, air supply and return.

Product advantages:

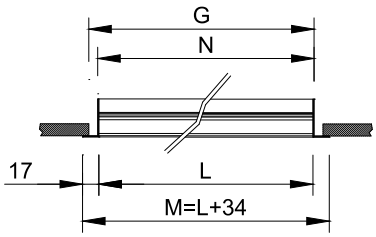
- High induction rate.
- High air flow rate with a low noise level.
- Allows the formation of continuous diffuser lines, with active and inactive zones, without breaking the aesthetic uniformity of the whole.
- FIN model for hidden frame mounting, for greater architectural integration.
- Low visual impact of flat design of the vanes.

- ❑ Offices
- ❑ Hotels
- ❑ All kinds of buildings.

LAV-24

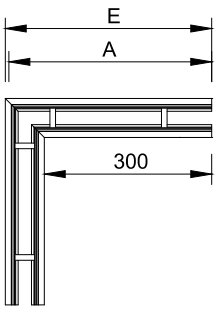


	E	A	B	C
1	70	57	48,2	42,2
2	111	98	89,2	83,2



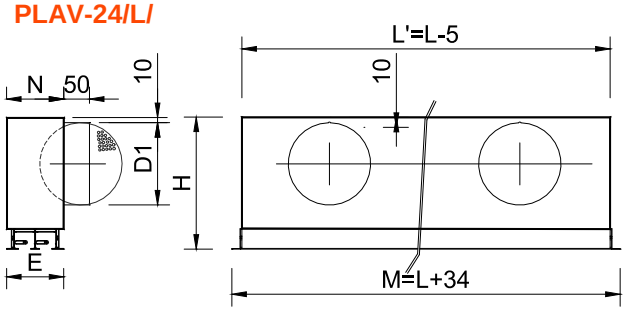
L	M	N	G
500	534	502,4	521
1000	1034	1002,4	1021
1200	1234	1202,4	1221
1500	1534	1502,4	1521
2000	2034	2002,4	2021

A90-LAV-24



	E	A
1	370	363,5
2	411	404,5

PLAV-24/L/



	L ≤ 0.5		L ≤ 1		L ≤ 1,2		L ≤ 1,6		L ≤ 2			
	H	D1	H	D1	H	D1	H	D1	H	D1	N	E
1	256	1/158	256	1/158	256	1/158	256	2/158	256	2/158	68.5	70
2	256	1/158	256	1/198	256	1/198	256	2/198	256	2/198	107.5	111

LAV-24

CLASSIFICATION

LAV-24 High air flow linear slot diffuser. 24 mm slot.

…-AR Diffuser with end borders included. Suitable for lengths ≤ 2 m.
…-INT Diffuser without end borders, required to form lines > 2 m. (In case of needing sections of equal length, it must be indicated)

MATERIAL

Diffuser constructed from aluminium and deflection vanes in black colour PVC.

ACCESSORIES

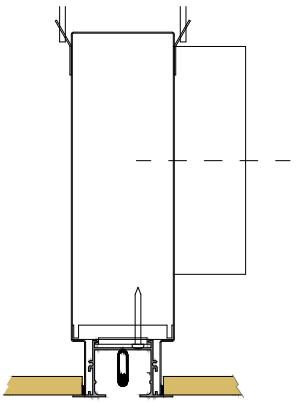
PLAV-24/L/ Plenum box with a lateral circular connection. It incorporates supports for ceiling suspension. Made in galvanised steel.

…-R Plenum box with an air flow damper in the spigot.
…/AIS/ Plenum box with thermal insulation inside. Foam density 25 kg / m3 ISO 845. Thermal conductivity 10º C_0,040 W / mºK EN 12667. Classified reaction to fire B-s1, d0 EN 13501-1.

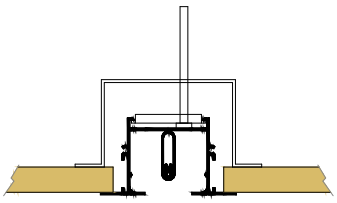
ARV-24 End borders.

A90/LAV-24 Inactive diffuser without end borders, forming a 90º angle.

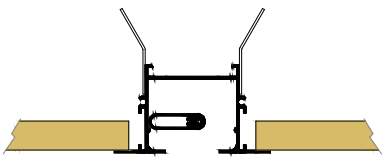
(PL)



(PM)



(D)



FIXING SYSTEMS

(PL) Diffuser to screw to plenum box and suspension of the assembly to the ceiling or wall.

(PM) Diffuser with crossbars to install in a false ceiling or wall. Fixing by screws.

(D) Diffuser with brackets for ceiling suspension using threaded rods.

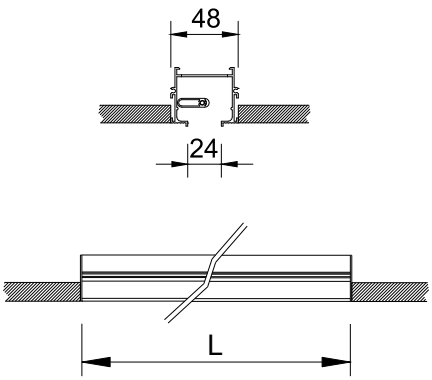
FINISHES

R9016S Painted white RAL 9016 (60-70% gloss)
R9010S Painted white RAL 9010 (60-70% gloss)
RAL... Painted other RAL.
…/AB/ Vanes in white colour.

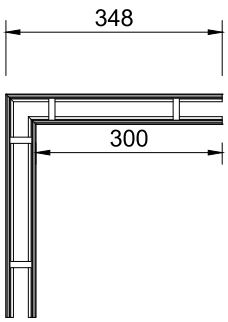
SPECIFICATION TEXT

Supply and mounting of high induction linear diffuser for high air flow rates, 24 mm slot, **LAV-24-AR+PLAV-24/L/-R R9016S 2x1000** series, made of aluminum and steel, painted white RAL 9016 (60-70% gloss) Plenum box with lateral circular connection, air flow damper in the spigot and necessary elements for assembly.
Brand **MADEL**.

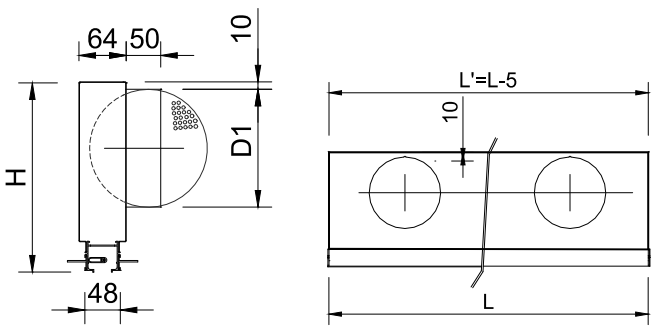
LAV-24-FIN



A90-LAV-24-FIN



PLAV-24-FIN/L/



	L ⩽ 0.5		L ⩽ 1		L ⩽ 1,2		L ⩽ 1,6		L ⩽ 2	
	H	D1	H	D1	H	D1	H	D1	H	D1
1	256	1/158	256	1/158	256	1/158	256	2/158	256	2/158

LAV-24-FIN

CLASSIFICATION

LAV-24-FIN Hidden high air flow linear slot diffuser. 24 mm slot.

…-AR Diffuser with end borders included. Suitable for lengths ≤ 2 m.
…-INT Diffuser without end borders, required to form lines > 2 m. (In case of needing sections of equal length, it must be indicated)

MATERIAL

Diffuser constructed from aluminium and deflection vanes in black colour PVC.

ACCESSORIES

PLAV-24-FIN/L/ Plenum box with lateral circular connection to be mounted behind the plasterboard. Fixing (L) required. It incorporates supports for ceiling suspension. Made in galvanised steel.

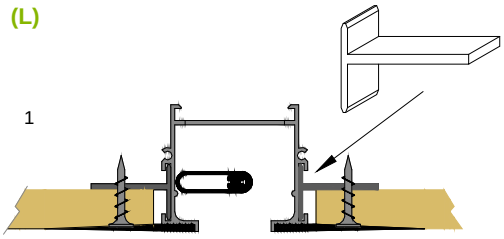
PLAV-24/L/ Plenum box with lateral circular connection to be mounted in front of the plasterboard or masonry wall. Fixing (T) required.

…-R Plenum box with an air flow damper in the spigot.
…/AIS/ Plenum box with thermal insulation inside. Foam density 25 kg / m3 ISO 845. Thermal conductivity 10º C_0,040 W / mºK EN 12667. Classified reaction to fire B-s1, d0 EN 13501-1.

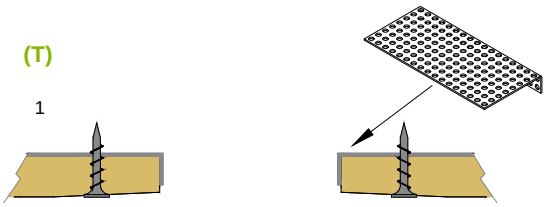
ARF-24 End borders.

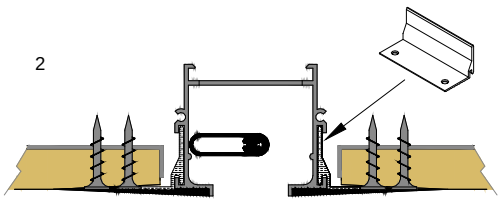
A90/LAV-24-FIN Inactive diffuser without end borders, forming a 90º angle.

(L)



(T)





FIXING SYSTEMS

(L) Brackets to hang from the ceiling the diffuser, with or without plenum box. Diffuser riveted to the plenum box.

1 - Screw the front corner to the rear corner. Protect with anti-crack tape and fill with plaster.

(T) Set of angles for front fixing of the diffuser, with or without plenum box, by means of hidden screws.

1 - Insert the perforated angle in the upper part of the false ceiling.

2 - Insert the diffuser through the bottom of the false ceiling. Align the front guides with the rear angle and screw. Protect with anti-crack tape and fill with plaster.

FINISHES

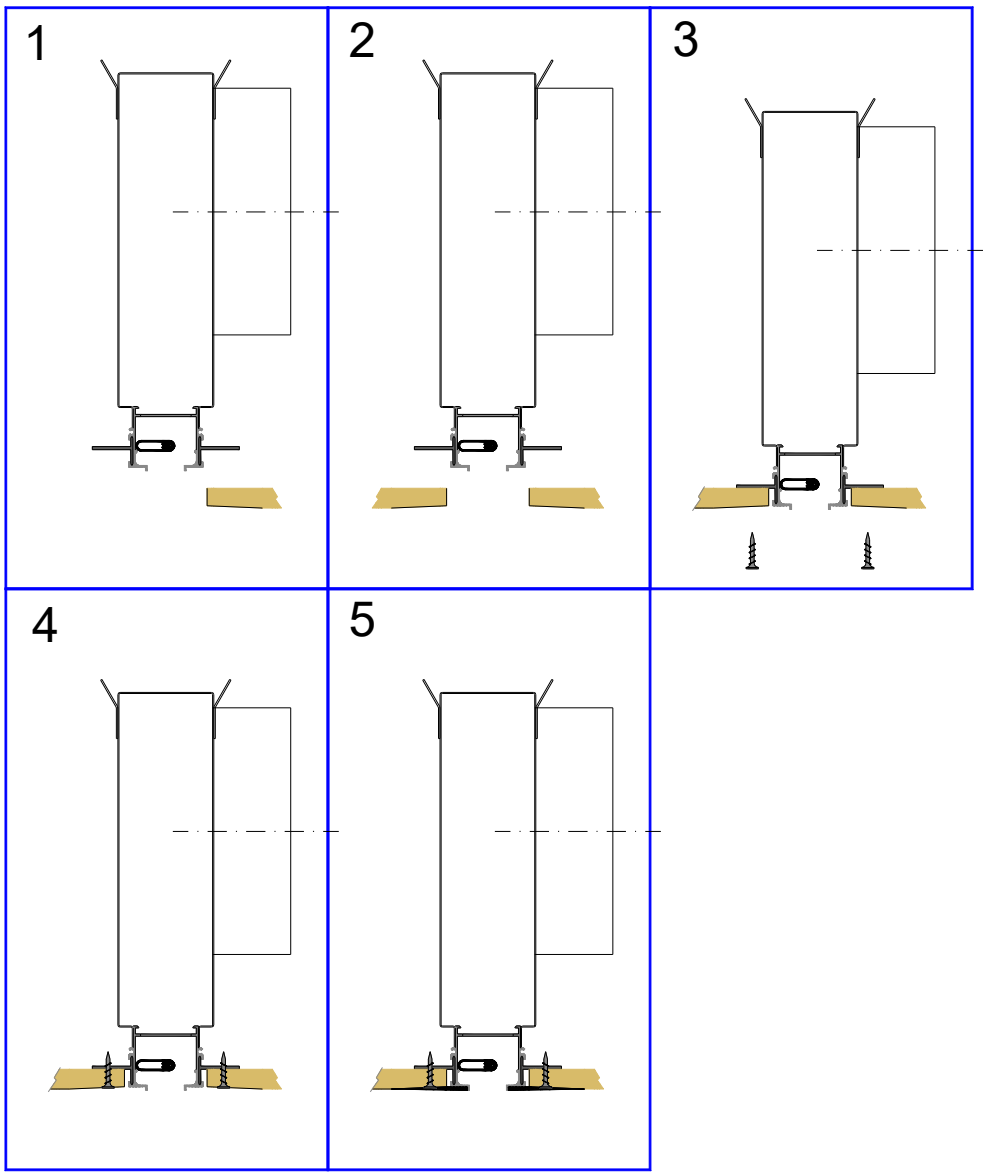
R9005M Painted black RAL 9005 (20-30% gloss)
R9016S Painted white RAL 9016 (60-70% gloss)
R9010S Painted white RAL 9010 (60-70% gloss)
RAL... Painted other RAL.
…/AB/ Vanes in white colour.

SPECIFICATION TEXT

Supply and mounting of hidden high induction linear diffuser for high air flow rates, 24 mm slot, **LAV-24-FIN-AR+PLAV-FIN-24/L/-R R9005M 2x1000** series, made of aluminum and steel, painted black RAL 9005 (20-30% gloss) Plenum box with lateral circular connection, air flow damper in the spigot and necessary elements for assembly. Brand **MADEL**.

ASSEMBLY INSTRUCTIONS LAV-24-FIN (L)

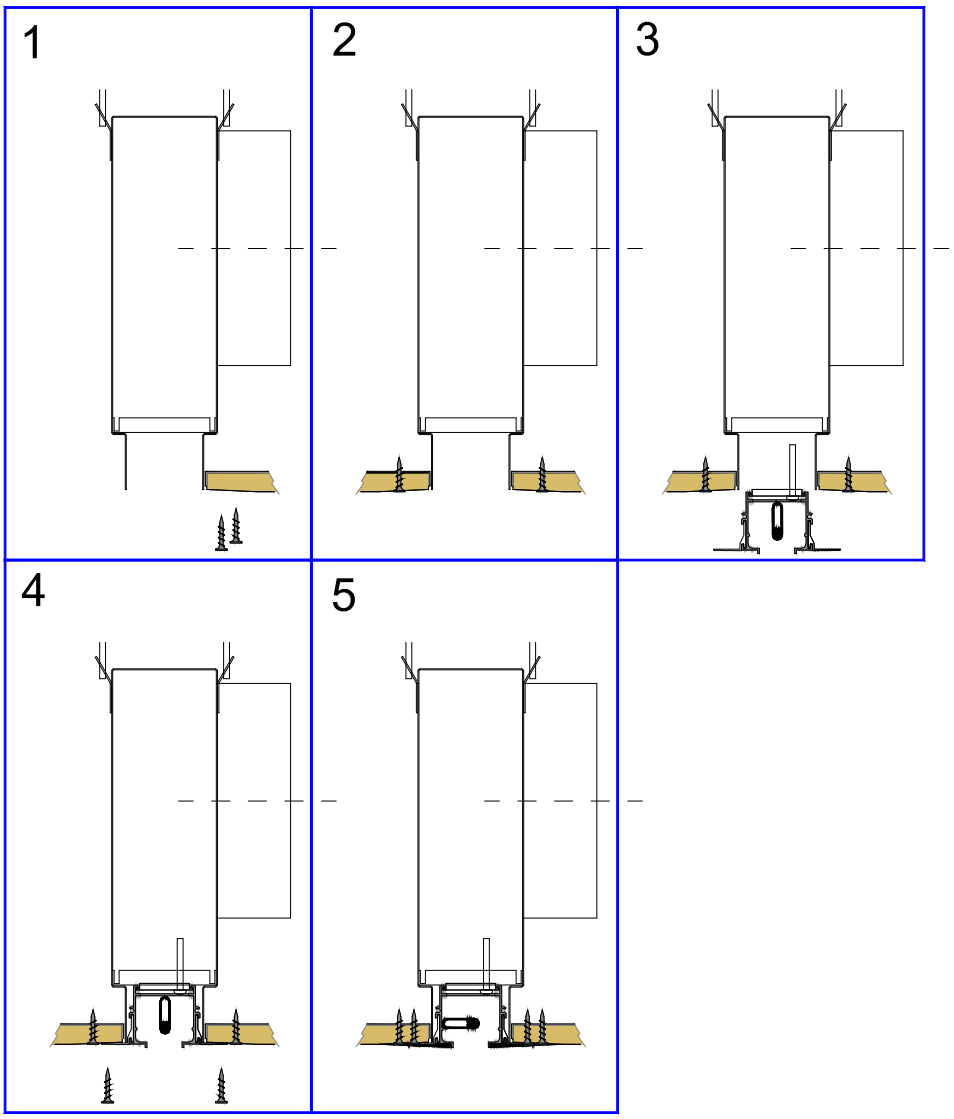
(L) Brackets to hang from the ceiling the diffuser, with or without plenum box. Diffuser riveted to the plenum box.



1. Support the “L” brackets.
2. Hang the diffuser with plenum box set.
3. Level the diffuser well and prepare the fixing screws.
4. Screw the "L" brackets through the laminated plasterboard.
5. Protect with anti-crack tape and fill with plaster.

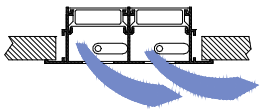
ASSEMBLY INSTRUCTIONS LAV-24-FIN (T)

(T) Set of angles for front fixing of the diffuser, with or without plenum box, by means of hidden screws..

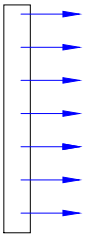


1. Insert the perforated angle and screw it to the laminated plasterboard.
2. Hang the plenum box and level it with the plasterboard.
3. Insert the diffuser into the plenum box.
4. Screw the diffuser through the front angle with the bracket.
5. Protect with anti-crack tape and fill with plaster.

LAV24 SERIES



RECOMMENDED VELOCITY.



SLOTS	Vmin (m/s)	Vmax (m/s)
1	2,5	4,5
2	2,5	4,5

V (m/s) x 3600 = Q (m^3/h) / A (m^2)

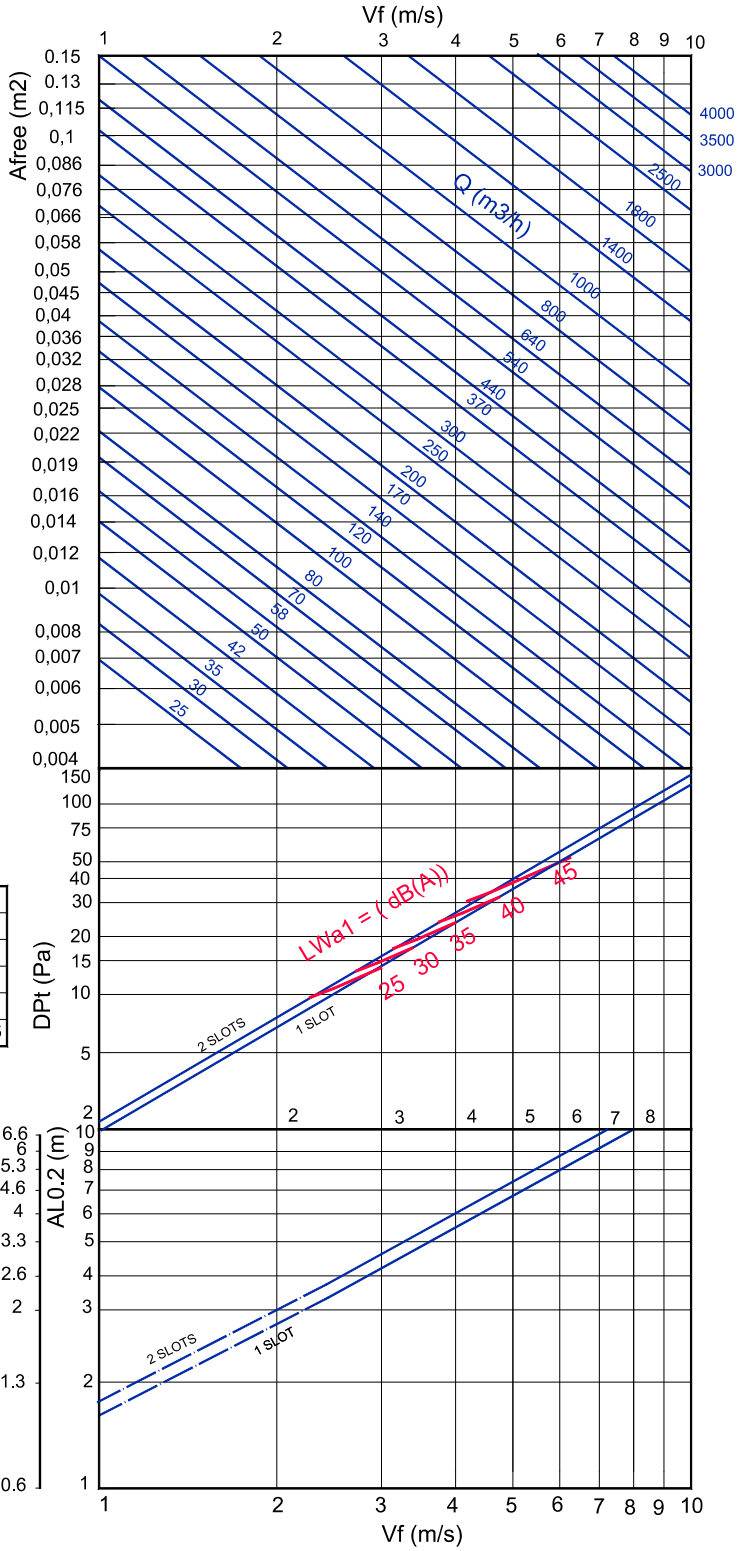
FREE FACE AREA (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.006	0.012	0.018	0.024
2	0.012	0.024	0.036	0.048

CORRECTON FACTOR FOR THROW KL

	0.5 m	1 m	1.5 m	2 m
1	0.71	1	1.07	1.14
2	0.73	1	1.09	1.15

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL, THROW WITH CEILING EFFECT: 1 DIRECTION.

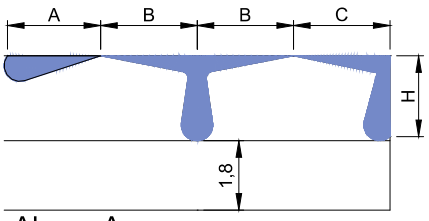


CORRECTION FACTOR FOR DPt AND Lwa1.

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	25%	100%	50%	25%	100%	50%	25%	100%	50%	25%
1	Dpt	0.95	2.35	3.15	1	1.4	2.2	1	1.4	2.2	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5
2	Dpt	0.98	2.48	3.25	1	1.4	2.2	1	1.4	2.2	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5

DPt1 = Kp x DPt Lwa1 = Lwa + Kf

AL`02 = Kl x AL02

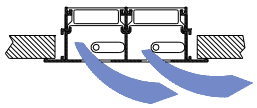


$AL_{0.2}$ = A

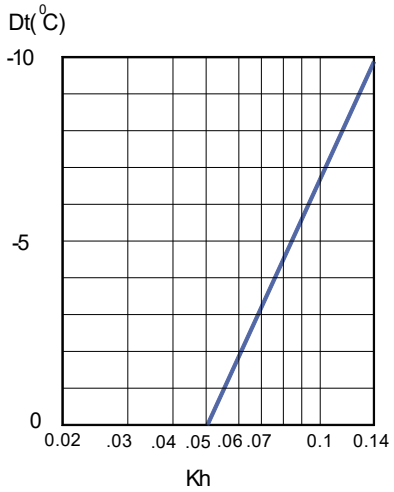
$AL_{0.2}$ = B+H

$AL_{0.2}$ = C+H

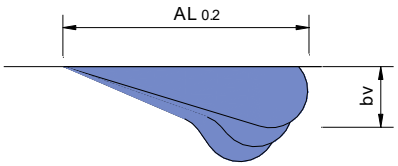
LAV24 SERIES



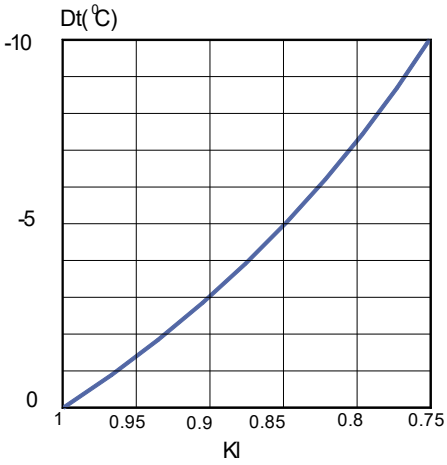
CORRECTION FACTOR FOR VERTICAL DIFFUSION (bV) FOR DT (-).



Kh = Correction factor for the vertical diffusion.



CORRECTON FACTOR FOR THROW (L0.2) DT (-).



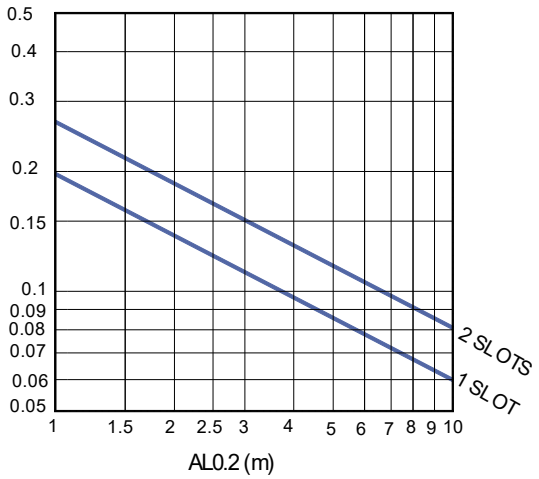
Kl = Correction factor for the throw.

$$bv = Kh \times Al_{0.2}$$

$$AL'_{0.2} (Dt < 0) = Kl \times AL_{0.2}$$

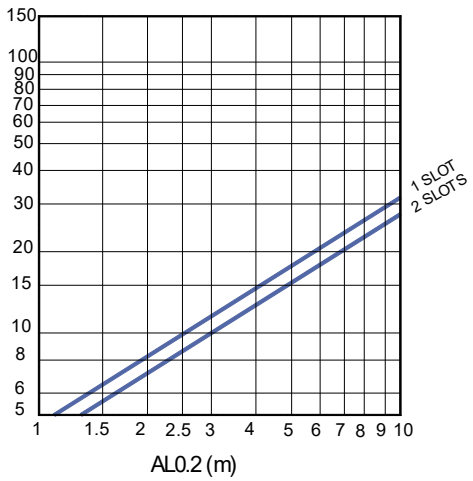
TEMPERATURE RATIO.

$$\frac{Dtl}{Dtz} = \frac{t\ room - t\ x}{t\ room - t\ supply}$$

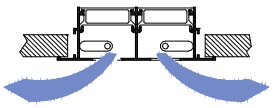


INDUCTION RATIO.

$$i = \frac{Qr}{Q_0} = \frac{Q\ total\ at\ x}{Q\ of\ supply}$$

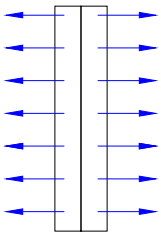


LAV24 SERIES



RECOMMENDED VELOCITY.

SLOTS	Vmin (m/s)	Vmax (m/s)
1	2,5	4,5

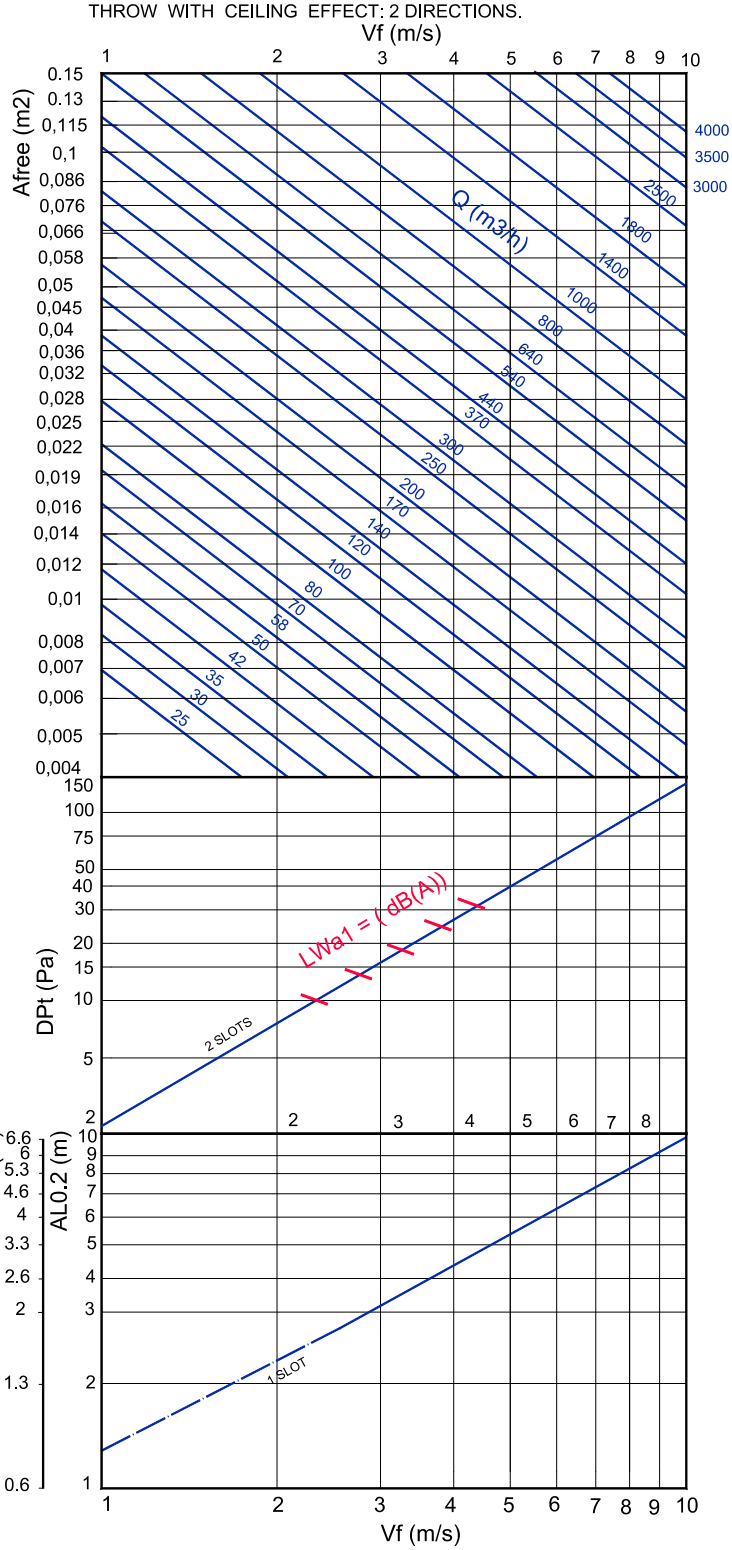


$V\ (m/s) \times 3600 = Q\ (m^3/h) / A\ (m^2)$

FREE FACE AREA (m2).

	0.5 m	1 m	1.5 m	2 m
2	0.012	0.024	0.036	0.048

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL, THROW WITH CEILING EFFECT: 2 DIRECTIONS.



CORRECTION FACTOR FOR DPt AND Lwa1.

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	25%	100%	50%	25%	100%	50%	25%	100%	50%	25%
2	Dpt	0.98	2.48	3.25	1	1.4	2.2	1	1.4	2.2	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,4	3,5	2,1	3,6	5,6	3	4,5	6,5

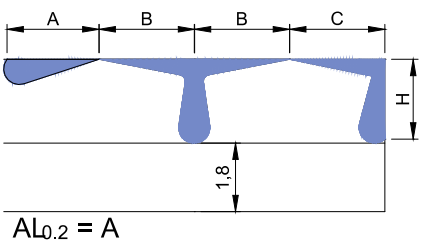
$DPt1 = Kp \times DPt$

$Lwa1 = Lwa + Kf$

CORRECTON FACTOR FOR THROW KL

	0.5 m	1 m	1.5 m	2 m
2	0,6	1	1.17	1.3

$AL`02 = Kl \times AL02$

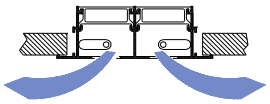


$AL_{0.2} = A$

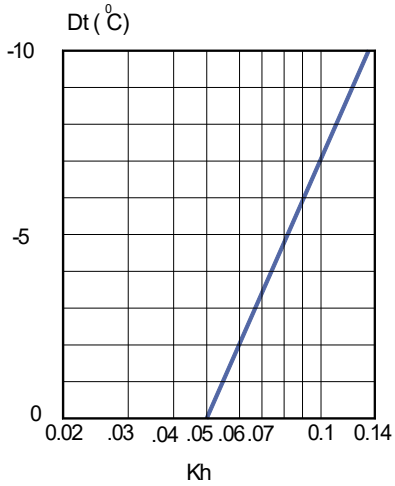
$AL_{0.2} = B+H$

$AL_{0.2} = C+H$

LAV24 SERIES

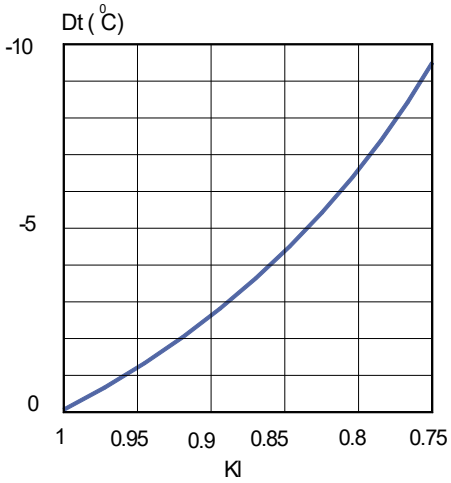


CORRECTION FACTOR FOR VERTICAL DIFFUSION (bV) FOR DT (-).

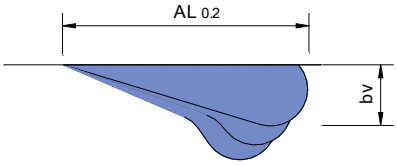


Kh = Correction factor for the vertical diffusion.

CORRECTON FACTOR FOR THROW (L0.2) DT (-).



Kl = Correction factor for the throw.

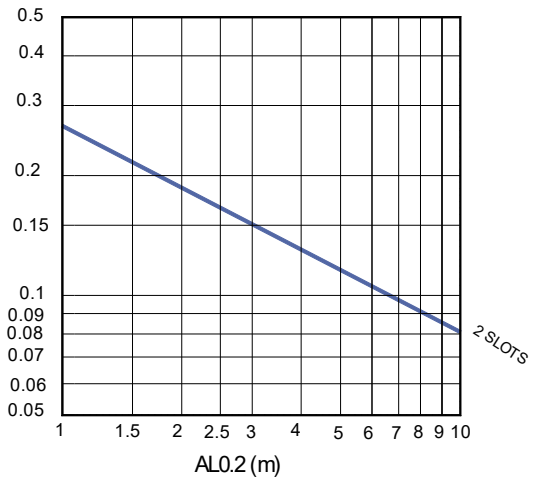


$$bv = Kh \times Al_{0.2}$$

$$AL'_{0.2}\,(Dt<0) = Kl \times AL_{0.2}$$

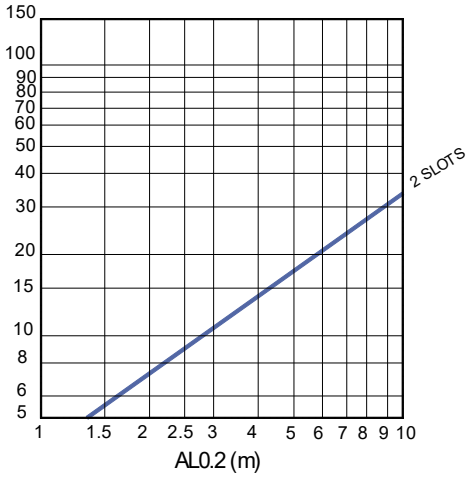
TEMPERATURE RATIO.

$$\frac{Dtl}{Dtz} = \frac{t\ room - t\ x}{t\ room - t\ supply}$$

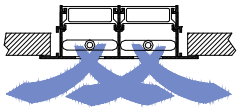


INDUCTION RATIO.

$$i = \frac{Qr}{Q_0} = \frac{Q\ total\ at\ x}{Q\ of\ supply}$$

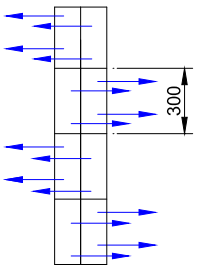


LAV24 SERIES



RECOMMENDED VELOCITY.

SLOTS	Vmin (m/s)	Vmax (m/s)
1	2,5	4,5
2	2,5	4,5

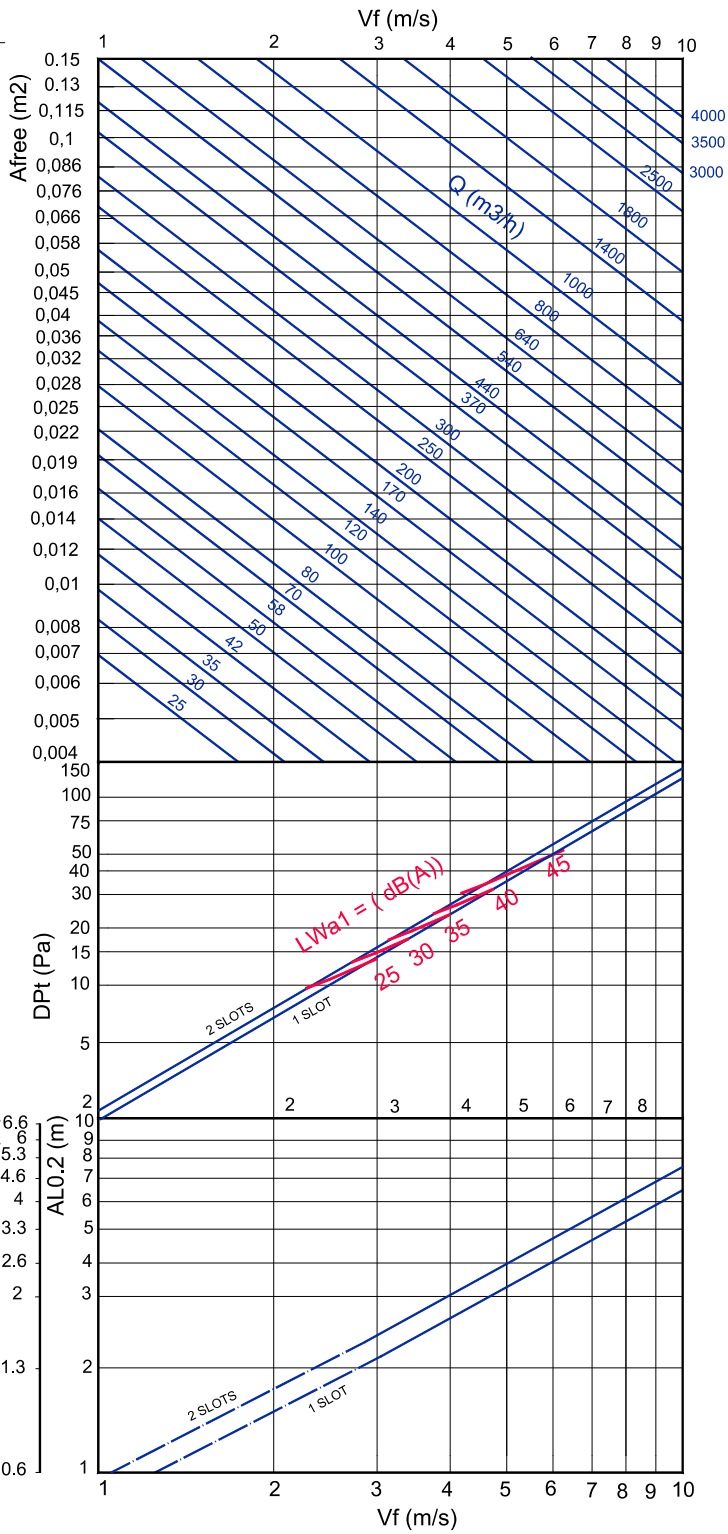


V (m/s) x 3600 = Q (m^3/h) / A (m^2)

FREE FACE AREA (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.006	0.012	0.018	0.024
2	0.012	0.024	0.036	0.048

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL, THROW WITH CEILING EFFECT: 2 DIRECTION.



CORRECTION FACTOR FOR DPt AND Lwa1.

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	25%	100%	50%	25%	100%	50%	25%	100%	50%	25%
1	Dpt	0.95	2.35	3.15	1	1.4	2.2	1	1.4	2.2	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5
2	Dpt	0.98	2.48	3.25	1	1.4	2.2	1	1.4	2.3	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5

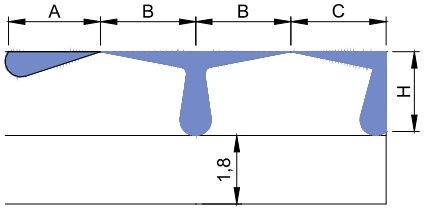
DPt1 = Kp x DPt

Lwa1 = Lwa + Kf

THROW KL

	0.5 m	1 m	1.5 m	2 m
1	0.82	1	1.2	1.43
2	0.73	1	1.27	1.34

AL`02 = KI x AL02

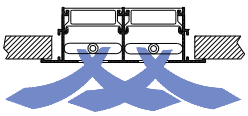


$AL_{0.2}$ = A

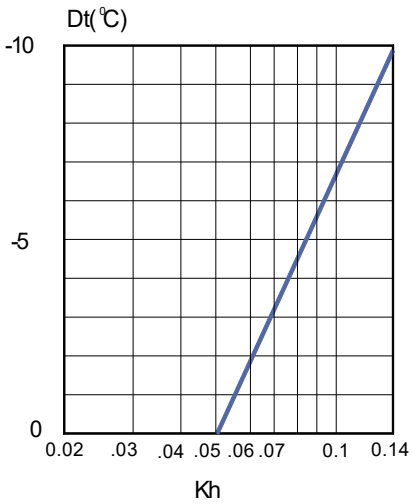
$AL_{0.2}$ = B+H

$AL_{0.2}$ = C+H

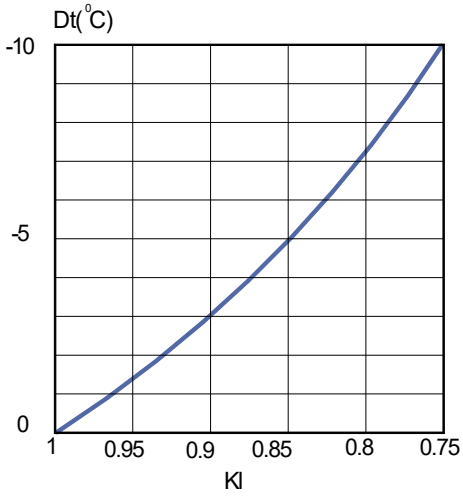
LAV24 SERIES



CORRECTION FACTOR FOR VERTICAL DIFFUSION (bV) FOR DT (-).

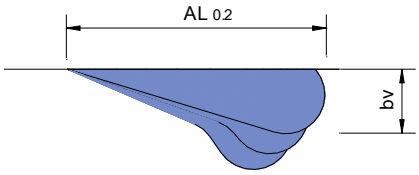


CORRECTON FACTOR FOR THROW (L0.2) DT (-).



Kh = Correction factor for the vertical diffusion.

Kl = Correction factor for the throw.



$$bv = Kh \times Al_{0.2}$$

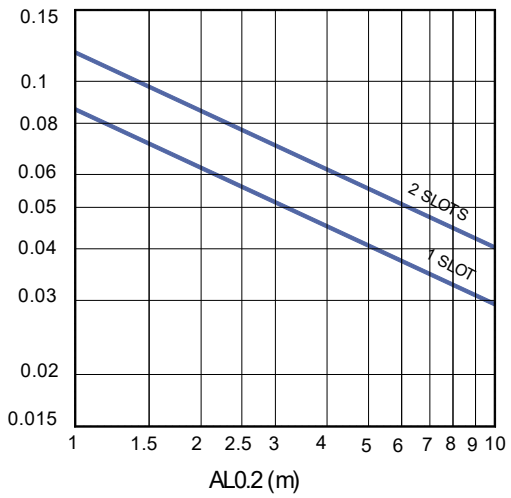
$$AL'_{0.2}\ (Dt < 0) = Kl \times AL_{0.2}$$

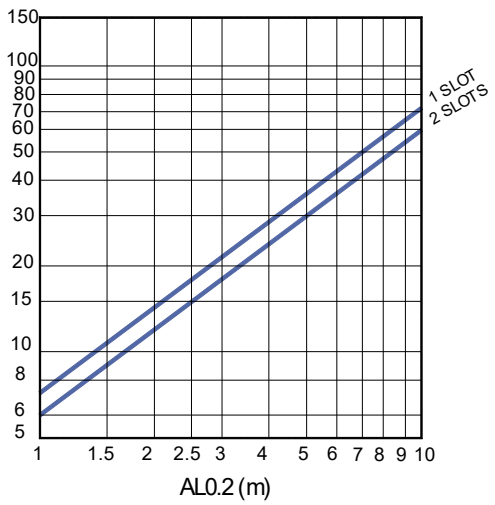
TEMPERATURE RATIO.

$$\frac{Dtl}{Dtz} = \frac{t\ room - t\ x}{t\ room - t\ supply}$$

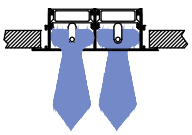
INDUCTION RATIO.

$$i = \frac{Qr}{Q_0} = \frac{Q\ total\ at\ x}{Q\ of\ supply}$$





LAV24 SERIES



RECOMMENDED VELOCITY.

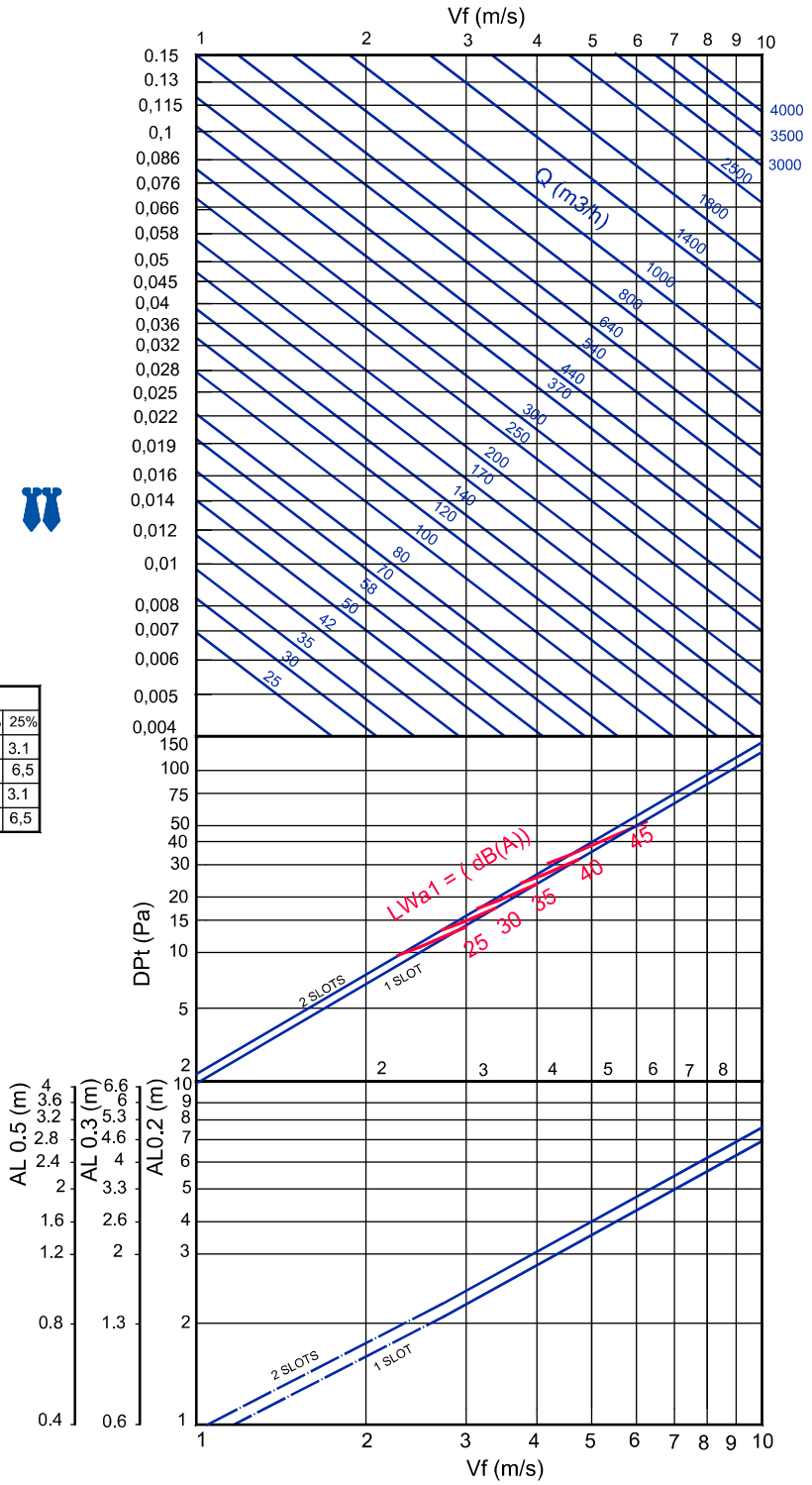
SLOTS	Vmin (m/s)	Vmax (m/s)
1	2,5	4,5
2	2,5	4,5

V (m/s) x 3600 = Q (m^3/h) / A (m^2)

FREE FACE AREA (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.012	0.024	0.036	0.048
2	0.024	0.048	0.072	0.096

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL, THROW WITH CEILING EFFECT: 1 DIRECTION.



CORRECTION FACTOR FOR DPt AND Lwa1.

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	25%	100%	50%	25%	100%	50%	25%	100%	50%	25%
1	Dpt	0.95	2.35	3.15	1	1.4	2.2	1	1.4	2.2	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5
2	Dpt	0.98	2.48	3.25	1	1.4	2.2	1	1.4	2.3	1.1	2.1	3.1
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5

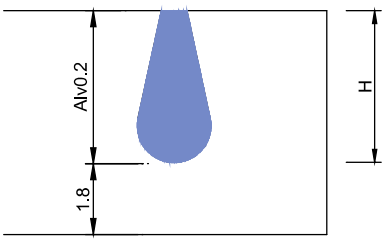
DPt1 = Kp x DPt

Lwa1 = Lwa + Kf

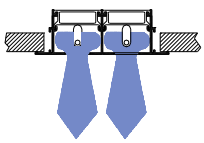
CORRECTON FACTOR FOR THROW KL

	0.5 m	1 m	1.5 m	2 m
1	0.7	1	1.1	1.2
2	0.72	1	1.15	1.25

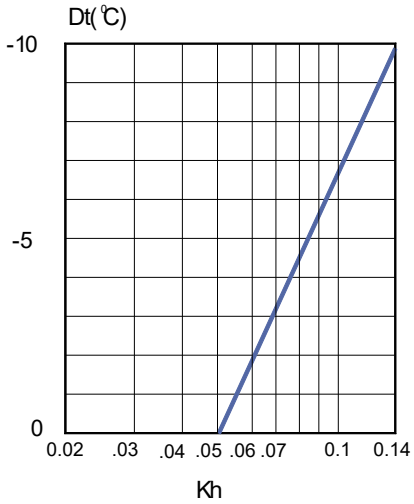
AL`02 = Kl x AL02



LAV24 SERIES

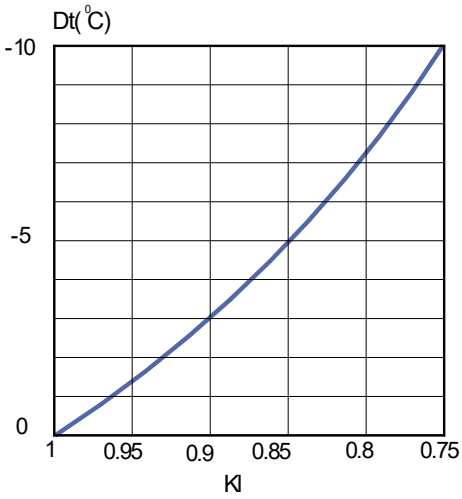


CORRECTION FACTOR FOR VERTICAL DIFFUSION (bV) FOR DT (-).

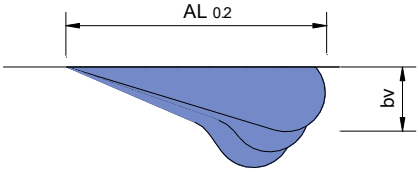


Kh = Correction factor for the vertical diffusion.

CORRECTON FACTOR FOR THROW (L0.2) DT (-).



Kl = Correction factor for the throw.



$$bv = Kh \times Al_{0.2}$$

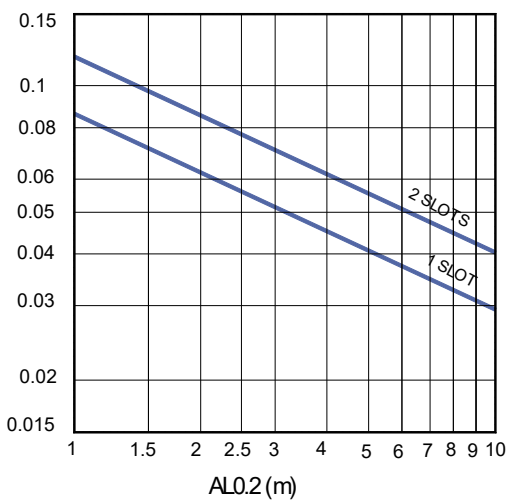
$$AL'_{0.2}(Dt<0) = Kl \times AL_{0.2}$$

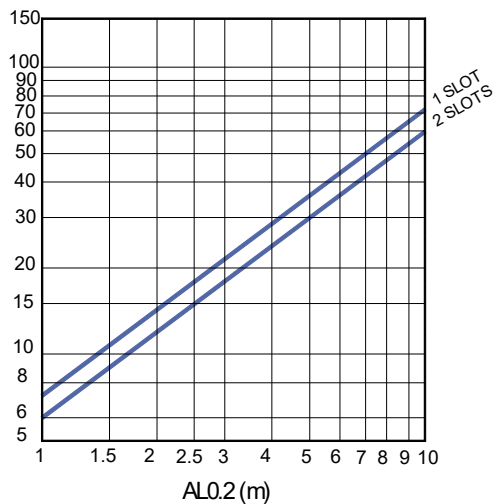
TEMPERATURE RATIO.

$$\frac{Dtl}{Dtz} = \frac{t\ room - t\ x}{t\ room - t\ supply}$$

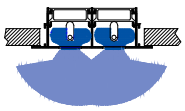
INDUCTION RATIO.

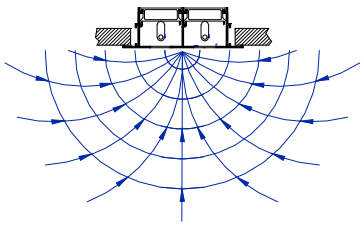
$$i = \frac{Qr}{Q_0} = \frac{Q\ total\ at\ x}{Q\ of\ supply}$$



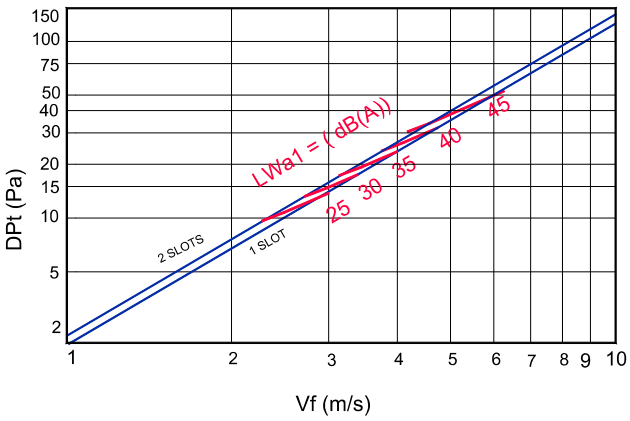


LAV24 SERIES





FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL.



RECOMMENDED VELOCITY.

SLOTS	Vmin (m/s)	Vmax (m/s)
1	2,5	4,5
2	2,5	4,5

FREE FACE AREA (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.012	0.024	0.036	0.048
2	0.024	0.048	0.072	0.096

CORRECTON FACTOR FOR THROW KL

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	25%	100%	50%	25%	100%	50%	25%	100%	50%	25%
1	Dpt	0.88	2.28	3	1	1.4	2.2	1.3	2.7	3.5	1.5	2.9	3.7
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5
2	Dpt	0.85	2.35	3.15	1	1.5	2.3	1.4	2.9	3.7	1.66	3.16	3.96
	Lwa1	-	1,5	3,5	-	1,5	3,5	2,1	3,6	5,6	3	4,5	6,5

DPt1 = Kp x DPt

Lwa1 = Lwa + Kf