



## LNG linear slot diffusers



MAD E L<sup>®</sup>

The **LNG** series linear diffusers are designed to combine the aesthetics with the technical performance.

They can be mounted in false ceilings or suspended from the ceiling.

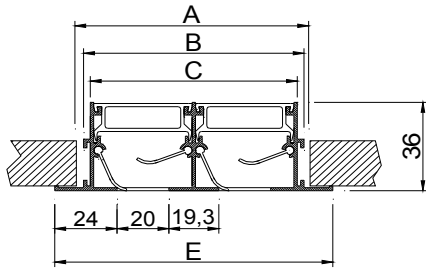
They allow the formation of diffuser continuous lines, with active and inactive areas, without breaking the uniformity of the whole.

They are suitable both for supply and return. By adjusting their blades it is possible to obtain a horizontal distribution of the air in one or the other direction or its vertical projection without change the volume of air.

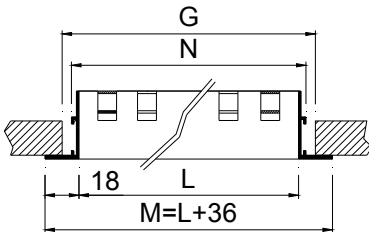
The **LNG** diffusers admit a flow variation of 60 % keeping the air stream stable.

These diffusers can be used from 2.6 up to 4 meters high and at a temperature differential up to 12° C.

**LNG-AR**



N°VIAS	E	A	B	C
1	68	55	47	40
2	107	95	86	80
3	147	134	125	119
4	186	173	165	159



L	M	N	G
500	536	507	516
1000	1036	1007	1016
1200	1236	1207	1216
1500	1536	1507	1516
2000	2036	2007	2016

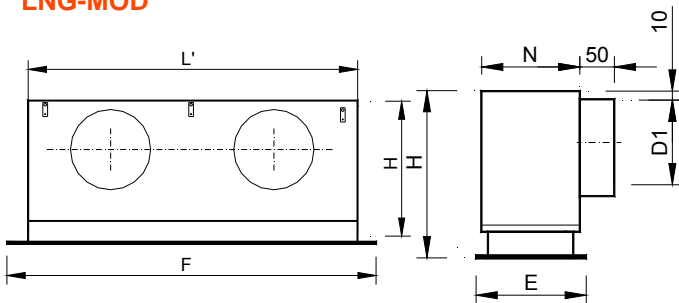
**CLASSIFICATION**

- LNG-AR** Diffuser with end borders included. Suitable for lengths  $\leq 2$  m.
- ...-ARI** Diffuser with an end border on the left side, required to form lines  $>2$  m.
- ...-ARD** Diffuser with an end border on the right side, required to form lines  $>2$  m.
- ...-INT** Diffuser without end borders, required to form lines  $> 4$  m.

**MATERIAL**

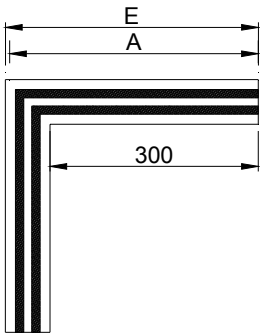
Diffuser constructed from aluminium and deflection vanes from aluminium in black colour.

**LNG-MOD**



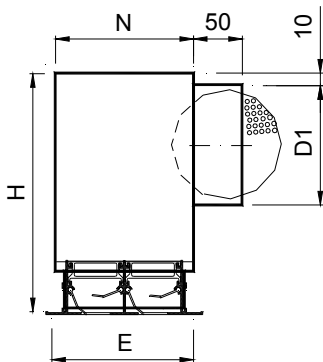
Dim.	F	E	L'	H	D1	N
1-1200x300	1195	295	1145	256	1/158	69
2-1200x300	1195	295	1145	256	1/158	108
3-1200x300	1195	295	1145	296	2/198	147
4-1200x300	1195	295	1145	296	2/198	186
1-1200x600	1195	595	1145	256	1/158	69
2-1200x600	1195	595	1145	256	1/158	108
3-1200x600	1195	595	1145	296	2/198	147
4-1200x600	1195	595	1145	296	2/198	186
1-1350x335	1345	330	1345	256	1/158	69
2-1350x335	1345	330	1345	256	1/158	108
3-1350x335	1345	330	1345	296	2/198	147
4-1350x335	1345	330	1345	296	2/198	186
1-1350x675	1345	670	1345	256	1/158	69
2-1350x675	1345	670	1345	256	1/158	108
3-1350x675	1345	670	1345	296	2/198	147
4-1350x675	1345	670	1345	296	2/198	186

**A90/LNG**

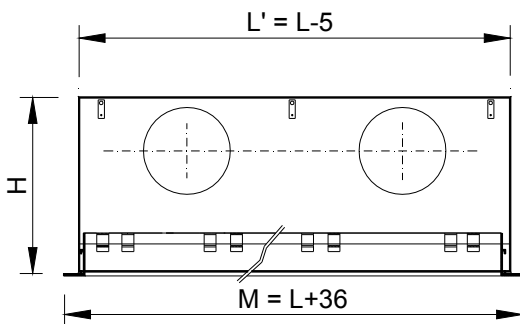


NºVIAS	E	A
1	368	358
2	407	397
3	447	437
4	486	476

**LNG-AR + PLSD...-R**



	N	E
1	69	68
2	108	107
3	147	147
4	186	186



	L ≤ 0,5		L ≤ 1		L ≤ 1,2		L ≤ 1,5		L ≤ 2	
	H	D1	H	D1	H	D1	H	D1	H	D1
1	256	1/158	256	1/158	256	1/158	256	1/158	256	2/158
2	256	1/158	256	1/158	256	1/158	256	2/158	256	2/158
3	296	1/198	296	1/198	296	2/198	296	2/198	296	2/198
4	296	1/198	296	1/198	296	2/198	296	2/198	296	2/198

**ADDITIONAL ACCESSORIES**

**A90/LNG** Inactive diffuser without end borders, making a 90° angle.

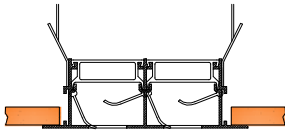
**PLSD** Plenum box with lateral circular connection. It includes supports to hang from the ceiling. Made in galvanised steel.

**...-R** Plenum box with a flow damper in the spigot.

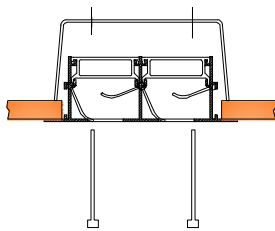
**.../AIS/** Plenum box thermo acoustically insulated by a foam with a coefficient of thermal conductivity of 0,04 w/mk. This foam complies with the fire reaction specifications:

UNE 23-727 M2  
NFP 92-501 M2  
DIN 4102 M2

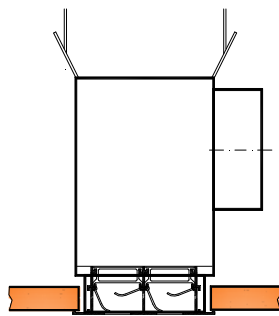
**D**



**PM**



**PLSD**



### FIXING SYSTEMS

**(D)** Support brackets to hang LNG or LNG+PLSD from the ceiling.

**(PL)** Connection into PLSD+PML plenum box by screws, to hang from the ceiling. This system simplifies and facilitates the assembly and disassembling of the diffuser into the plenum box.

**(PM)** Set of crossbars for installation of the diffuser without plenum in false ceiling.

### FINISHES

**AA** Matt silver anodised.

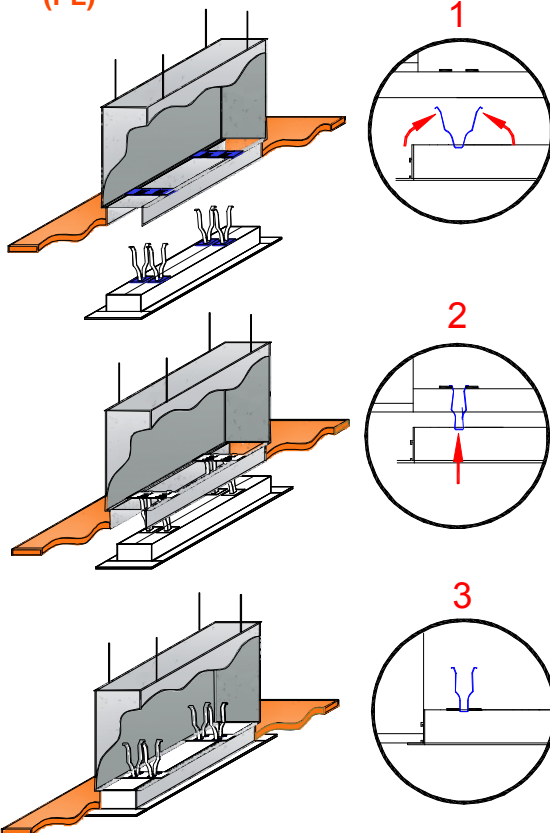
**M9016** Painted in white similar to RAL 9016.

**R9010** Painted in white RAL 9010.

**RAL...** Painted in other RAL colours.

**.../AB/** Vanes in white colour.

**(PL)**



### SPECIFICATION TEXT

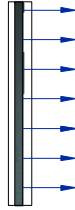
Supply and mounting of linear slot diffuser with directional vanes series

**LNG-AR+PLSD-R AA 1x558** constructed from aluminium and anodised in matt silver **AA**. With lateral circular connection plenum box and air flow damper in the spigot **PLSD-R**.  
Manufacturer **MADEL**.

**LNG**

VELOCIDAD RECOMENDADAS.

	Vmin (m/s)	Vmax (m/s)
1	2.5	4.5
2	2.5	4.5
3	2.5	4
4	2.5	4



VELOCIDAD LIBRE, PERDIDA DE CARGA Y POTENCIA SONORA, ALCANCE CON EFECTO TECHO: 1 DIRECCIÓN.

SECCION LIBRE DE SALIDA DEL AIRE (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.0043	0.0087	0.013	0.0174
2	0.0087	0.0174	0.0261	0.0348
3	0.013	0.0261	0.0391	0.0522
4	0.0172	0.0348	0.052	0.0696

VALORES DE CORRECCION PARA Dpt Y Lwa1.

LNG-AR + PLSD-R

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	0%	100%	50%	0%	100%	50%	0%	100%	50%	0%
1	Dpt	0.95	2.35	3.15	1	1.4	2.2	1	1.4	2.2	1.1	2.5	3.3
	Lwa1	-6	-3	-3.6	0	0.8	0.4	+1.2	+1.9	+1.4	-2	-	-1.6
2	Dpt	0.98	2.48	3.25	1	1.5	2.3	1	1.5	2.3	1.2	2.7	3.5
	Lwa1	-4	-3.6	-3.1	0	+0.6	+0.6	+2.3	+3.2	+3.1	0	+1	+1.2
3	Dpt	0.96	2.26	3.36	1	1.3	2.4	1	1.3	2.4	1.3	2.4	3.5
	Lwa1	-7	-6	-6	0	+0.9	+0.5	-2.7	-2.6	-2.7	-1.4	-1.1	-1.1
4	Dpt	0.95	2.35	3.05	1	1.4	2.1	1	1.4	2.1	1.1	2.5	3.2
	Lwa1	-3.4	-1.4	-2.5	0	+1.5	+1.2	-1.8	-1.1	-1.2	-1.7	-1	-1.1

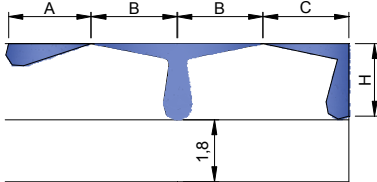
$Dpt1 = Kp \times Dpt$

$Lwa1 = Lwa + Kf$

FACTOR DE CORRECCION DEL ALCANCE 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
3	0.74	1	1.11	1.2
4	0.75	1	1.25	1.25

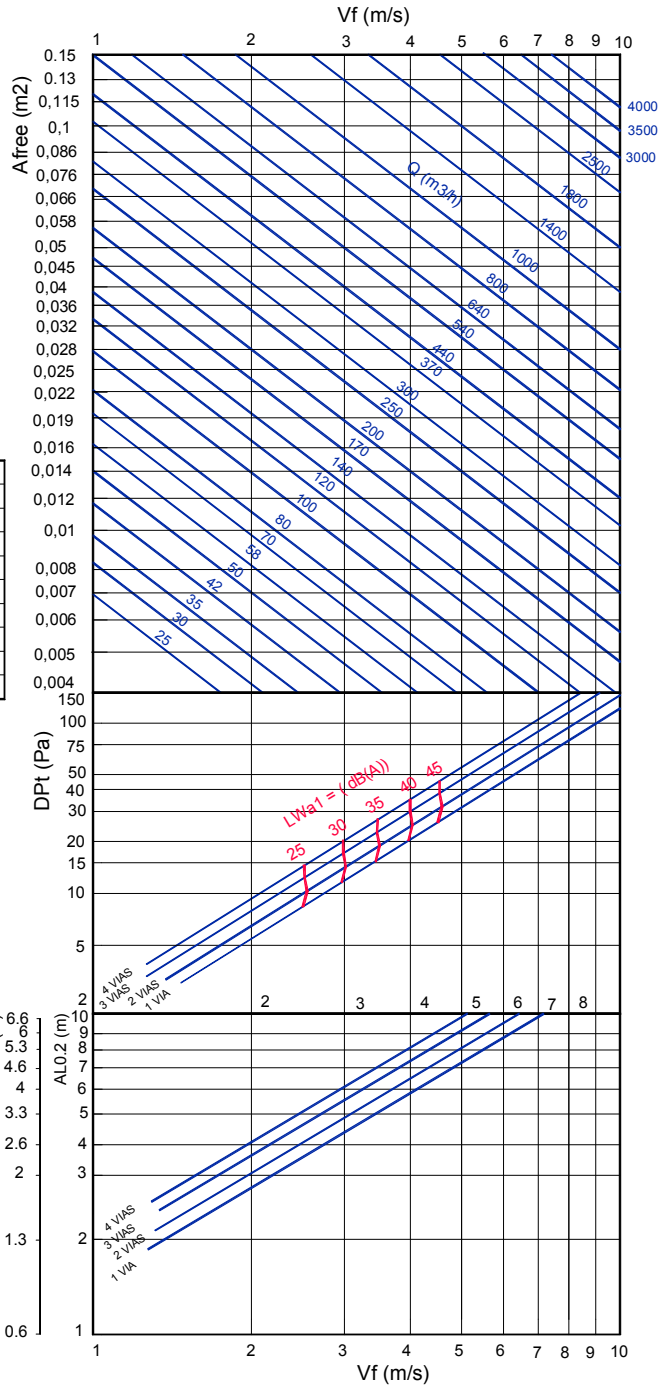
$AL'02 = Kl \times AL02$



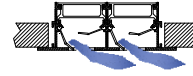
$AL_{0.2} = A$

$AL_{0.2} = B + H$

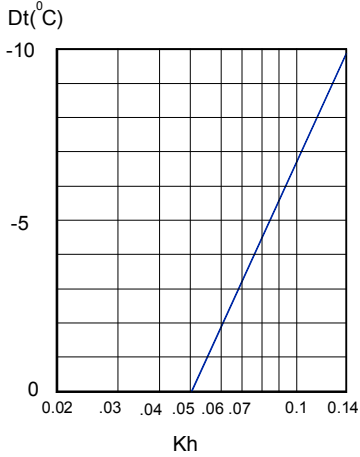
$AL_{0.2} = C + H$



LNG

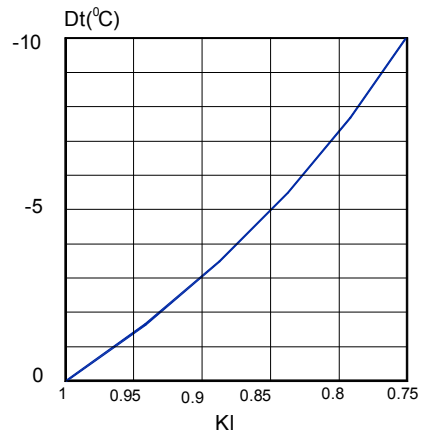


FACTOR DE CORRECCION DE LA DIFUSIÓN VERTICAL (bv) PARA DT (-).

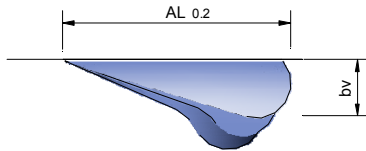


Kh = Factor de corrección de la difusión vertical.

FACTOR DE CORRECCION DEL ALCANCE (L0.2) DT (-).



Kl = Factor de corrección del alcance.

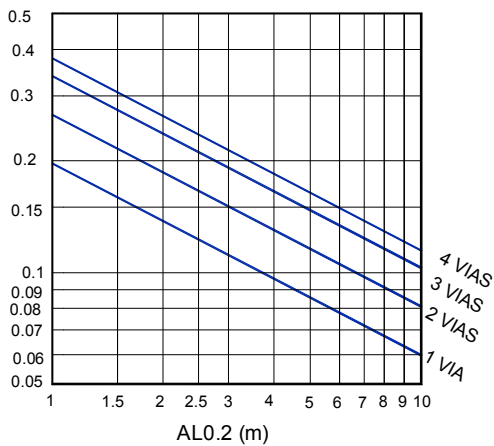


$$bv = Kh \times Al_{0.2}$$

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

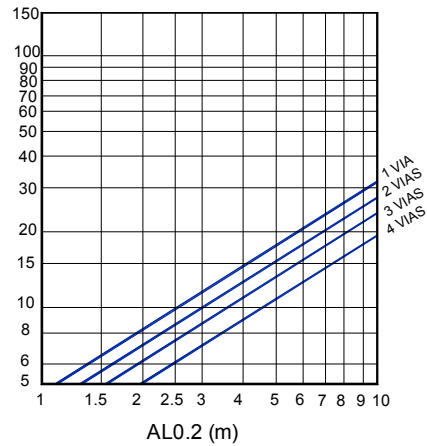
RELACION DE TEMPERATURAS.

$$\frac{Dtl}{Dtz} = \frac{t_{local} - t_x}{t_{local} - t_{imp}}$$

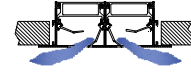


RELACION DE INDUCCION.

$$i = \frac{Q_r}{Q_0} = \frac{Q_{total\ en\ x}}{Q_{de\ impulsión}}$$

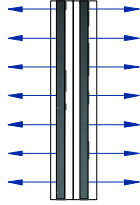


**LNG**



VELOCIDAD RECOMENDADAS.

	Vmin (m/s)	Vmax (m/s)
2	2.5	4.5
4	2.5	4



SECCION LIBRE DE SALIDA DEL AIRE (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.0043	0.0087	0.013	0.0174
2	0.0087	0.0174	0.0261	0.0348
3	0.013	0.0261	0.0391	0.0522
4	0.0172	0.0348	0.052	0.0696

VALORES DE CORRECCION PARA Dpt Y Lwa1.

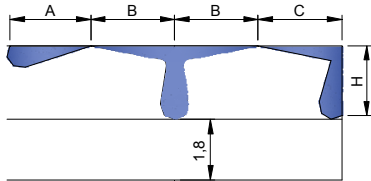
	0.5 m			1 m			1.5 m			2 m			
	100%	50%	0%	100%	50%	0%	100%	50%	0%	100%	50%	0%	
2	Dpt	0.98	2.48	3.25	1	1.5	2.3	1	1.5	2.3	1.2	2.7	3.5
	Lwa1	-3.9	-3.5	-3	0	+0.6	+0.6	+2.3	+3.2	+3.1	-0.3	+0.9	+1.1
4	Dpt	0.95	2.35	3.05	1	1.4	2.1	1	1.4	2.1	1.1	2.5	3.2
	Lwa1	-3.6	-1.5	-2.5	0	+1.5	+1.1	-1.5	-1.3	-1.4	-1.8	-1.2	-1.3

$DPT1 = Kp \times DPT$   
 $Lwa1 = Lwa + Ff$

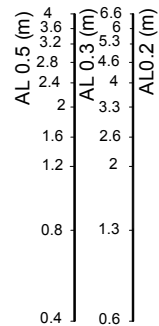
FACTOR DE CORRECCION DEL ALCANCE KL

	0.5 m	1 m	1.5 m	2 m
2	0.6	1	1.17	1.3
4	0.767	1	1.2	1.17

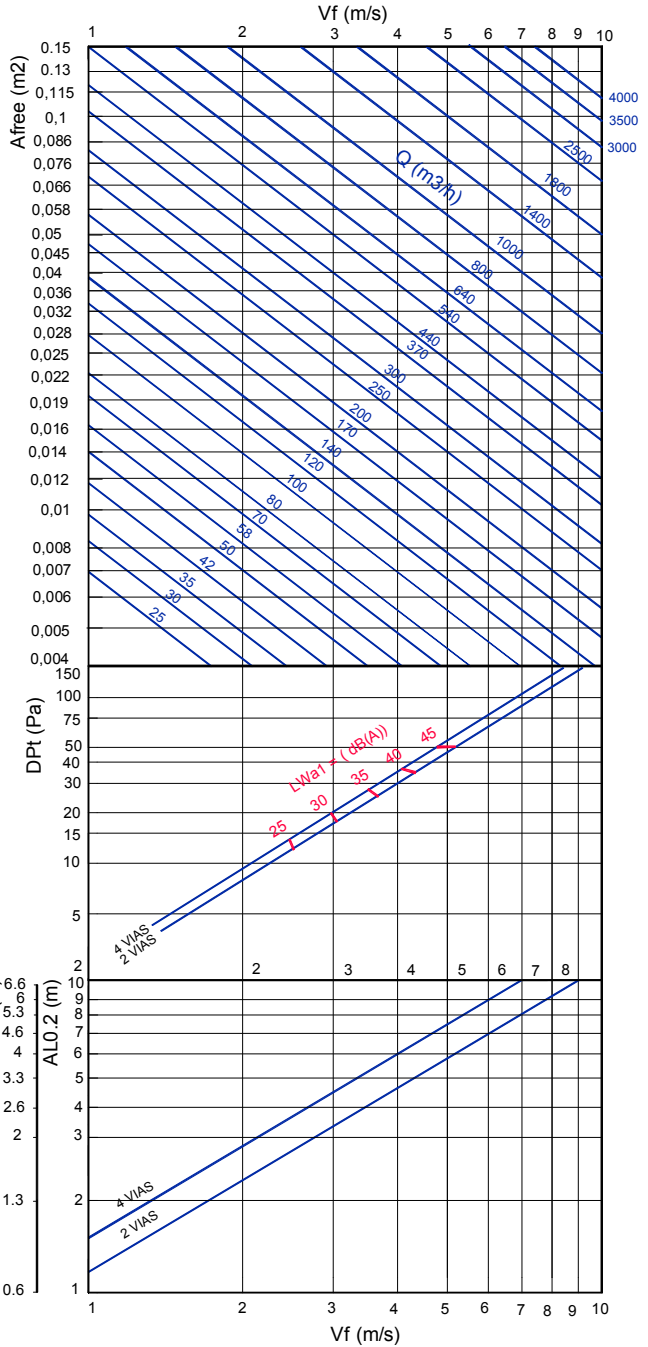
$AL'02 = KI \times AL02$



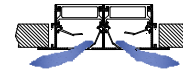
$AL_{0.2} = A$   
 $AL_{0.2} = B+H$   
 $AL_{0.2} = C+H$



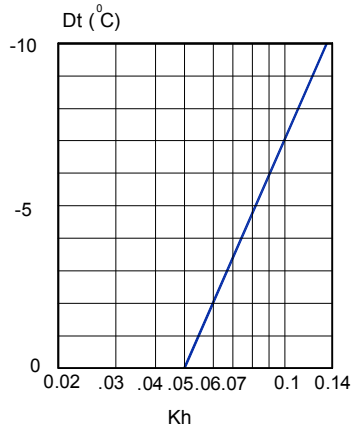
VELOCIDAD LIBRE, PERDIDA DE CARGA Y POTENCIA SONORA, ALCANCE CON EFECTO TECHO: 2 DIRECCIONES.



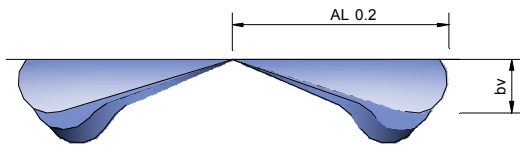
LNG



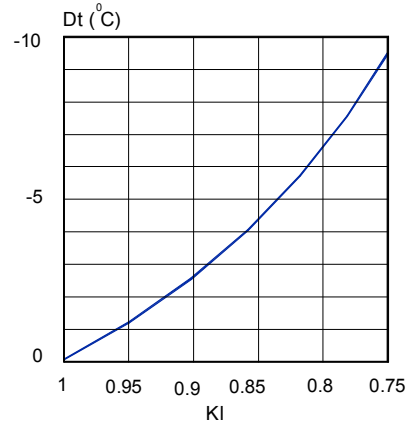
FACTOR DE CORRECCION DE LA DIFUSION VERTICAL (bv) PARA DT (-).



Kh = Factor de corrección de la difusión vertical.



FACTOR DE CORRECCION DEL ALCANCE (L0.2) DT (-).



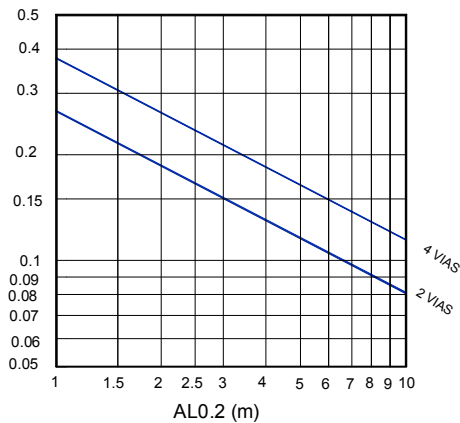
kl = Factor de corrección del alcance.

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

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

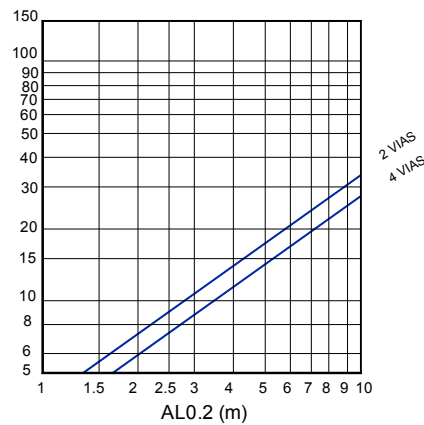
RELACION DE TEMPERATURAS.

$$\frac{Dtl}{Dtz} = \frac{t_{local} - t_x}{t_{local} - t_{imp}}$$



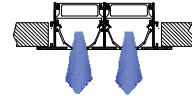
RELACION DE INDUCCION.

$$i = \frac{Q_r}{Q_0} = \frac{Q_{total\ en\ x}}{Q_{de\ impulsión}}$$





**LNG**



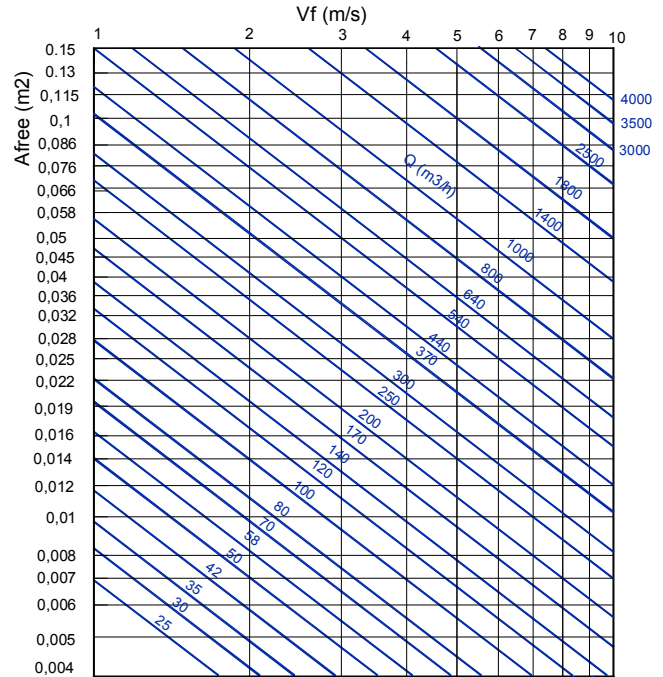
VELOCIDAD RECOMENDADAS.

	Vmin (m/s)	Vmax (m/s)
1	2.5	4.5
2	2.5	4.5
3	2.5	4
4	2.5	4

VELOCIDAD LIBRE, PERDIDA DE CARGA Y POTENCIA SONORA:  
IMPULSION VERTICAL.

SECCION LIBRE DE SALIDA DEL AIRE (m2).

	0.5 m	1 m	1.5 m	2 m
1	0.0043	0.0087	0.013	0.0174
2	0.0087	0.0174	0.0261	0.0348
3	0.013	0.0261	0.0391	0.0522
4	0.0172	0.0348	0.052	0.0696



VALORES DE CORRECCION PARA Dpt Y Lwa1.

	0.5 m			1 m			1.5 m			2 m			
	100%	50%	0%	100%	50%	0%	100%	50%	0%	100%	50%	0%	
1	Dpt	0.95	2.35	3.15	1	1.4	2.2	1	1.4	2.2	1.1	2.5	3.3
	Lwa1	-6.1	-3.1	-3.6	0	+0.8	+0.4	+0.9	+1.6	+1	-2.1	-0.5	-1.9
2	Dpt	0.98	2.48	3.25	1	1.5	2.3	1	1.5	2.3	1.2	2.7	3.5
	Lwa1	-3.8	-3.4	-2.9	0	+0.6	+0.6	+2.4	+3.3	+3.2	-0.3	+0.9	+1.1
3	Dpt	0.96	2.26	3.36	1	1.3	2.4	1	1.3	2.4	1.3	2.4	3.5
	Lwa1	-7	-6.3	-6	0	+0.9	+0.5	-2.8	-2.8	-2.9	-1.5	-1.2	-1.3
4	Dpt	0.95	2.35	3.05	1	1.4	2.1	1	1.4	2.1	1.1	2.5	3.2
	Lwa1	-3.4	-1.5	-2.5	0	+1.6	+1.2	-1.9	-1.3	-1.4	-1.9	-1.2	-1.3

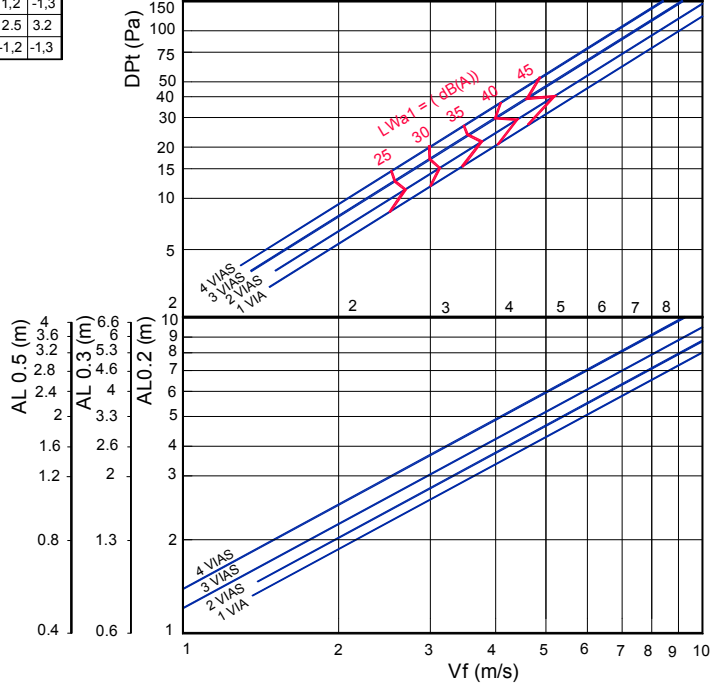
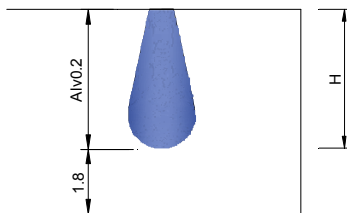
$$DPT1 = Kp \times DPT$$

$$Lwa1 = Lwa + Kf$$

FACTOR DE CORRECCION DEL  
ALCANCE KL

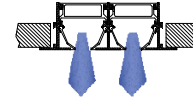
	0.5 m	1 m	1.5 m	2 m
1	0.7	1	1.1	1.2
2	0.72	1	1.15	1.25
3	0.72	1	1.12	1.2
4	0.74	1	1.25	1.25

$$ALv' 0.2 = KI \times ALv 02$$



Nota: En MadelMedia Espectro por banda de octava en Hz.

**LNG**



FACTOR DE CORRECCION DEL ALCANCE VERTICAL (Alv 0,2) DT(+).

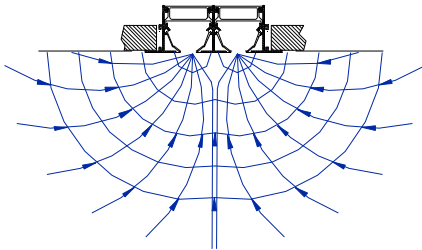
	D T(+5)	DT(+10)
1 VIA	0.75	0.64
2 VIAS	0.76	0.65
3 VIAS	0.77	0.66
4 VIAS	0.8	0.64

DT = T impulsión - T ocal.

Alv 0,2 (DT +) = Kv x Al 02

EJEMPLO:

LNG 2VIAS x 2m  
 Afree = 0.0348 m<sup>2</sup>.  
 Vf = 3.1 m/s.  
 ALv 0,2 = 2.9 m.  
 ALv'02 = 1.1 x 2.9 = 3.19 m.  
 DT(+5) = 0.76 x 3.19 = 2.42 m.  
 DT (+10) = 0.65 x 3.19 = 2.07m.



VELOCIDAD RECOMENDADAS.

	Vmin (m/s)	Vmax (m/s)
1	2	3.5
2	2	3.5
3	2	3
4	2	3

SECCION LIBRE DE SALIDA DELAIRE (m<sup>2</sup>).

	0.5 m	1 m	1.5 m	2 m
1	0.0043	0.0087	0.013	0.0174
2	0.0087	0.0174	0.0261	0.0348
3	0.013	0.0261	0.0391	0.0522
4	0.0172	0.0348	0.052	0.0696

VALORES DE CORRECCION PARA Dpt Y Lwa1.

		0.5 m			1 m			1.5 m			2 m		
		100%	50%	0%	100%	50%	0%	100%	50%	0%	100%	50%	0%
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	-	3	5	-	4	7	-	3	5	-	3	7
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	-	3	5	-	4	7	-	4	7	-	3	8
3	Dpt	0.8	2.1	3.2	1	1.3	2.4	1.2	2.5	3.6	1.4	2.7	3.8
	Lwa1	-	4	5	-	5	8	-	5	8	-	4	8
4	Dpt	0.7	2.1	2.8	1	1.4	2.1	1.3	2.7	3.4	1.5	2.9	3.6
	Lwa1	-	4	5	-	4	8	-	5	8	-	4	8

Dpt1 = Kp x Dpt

Lwa1 = Lwa + Kf

VELOCIDAD LIBRE, PERDIDA DE CARGA Y POTENCIA SONORA.

