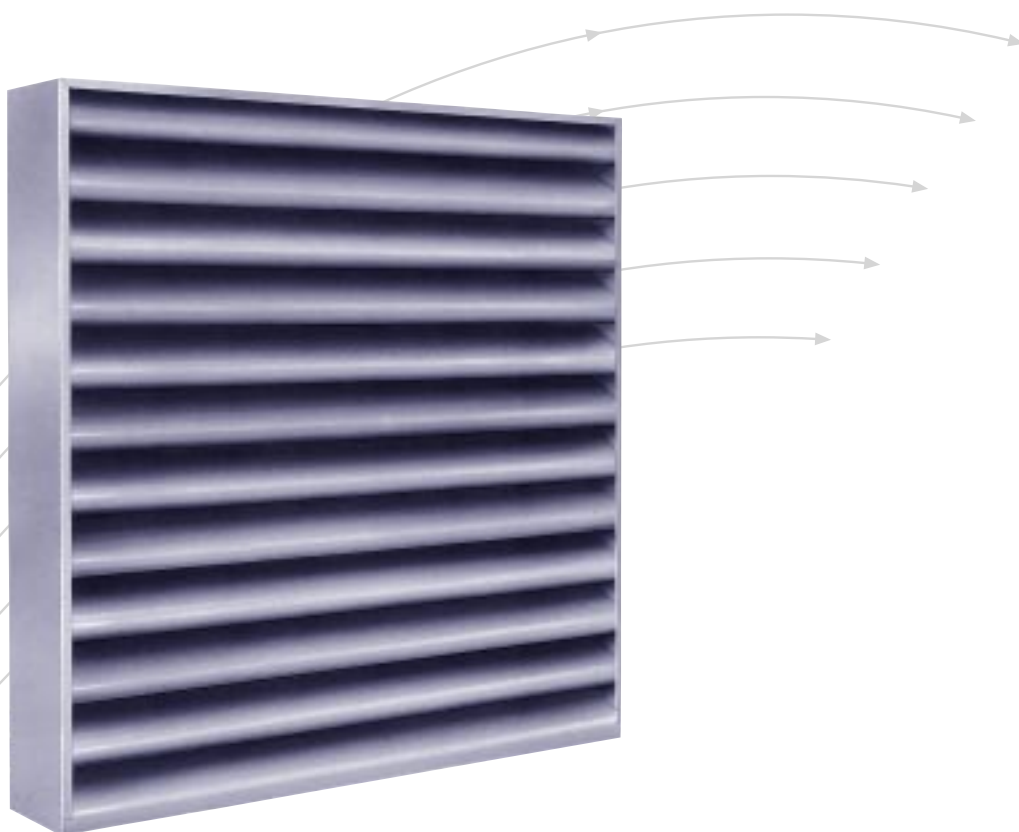


# Acoustic Louvre

Type NL



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Sound-attenuating external louvres Type NL are designed for use in air conditioning systems. They offer good protection against the ingress of rain and prevent birds and other small animals from entering into the system; however the louvre blades cannot offer a completely watertight barrier.

Acoustic louvres of the Type NL are employed primarily when weather and noise protection are required in conjunction with louvres of reduced depth. Available as a double louvres, Type NLH, for increased acoustic requirements, or as non active louvres, Type NLD, for visual uniformity. Available in steel or aluminium construction with numerous options see order code.

# Construction · Dimensions

## Type NL

Acoustic louvres Type NLS or NLA with aerodynamic section acoustically absorptive blades on a 150 mm pitch. Casing sides are pre-slotted for fixing into a builder's opening. Absorption material faced with glass cloth and perforated sheet metal. Rear side with bird screen using 12 x 12 x 1 mm galvanised wire mesh. Construction in single section (L = 300 mm plus bird mesh thickness). For acoustic performance see pages 6 and 7.

Available in galvanised sheet steel or aluminium.

## Type NLH

High performance acoustic louvre comprising two standard louvres mounted back to back. Delivery is in separate sections for assembly by others.

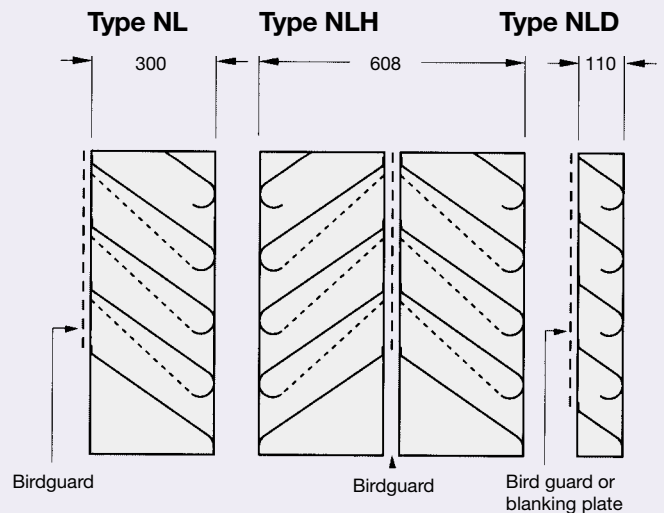
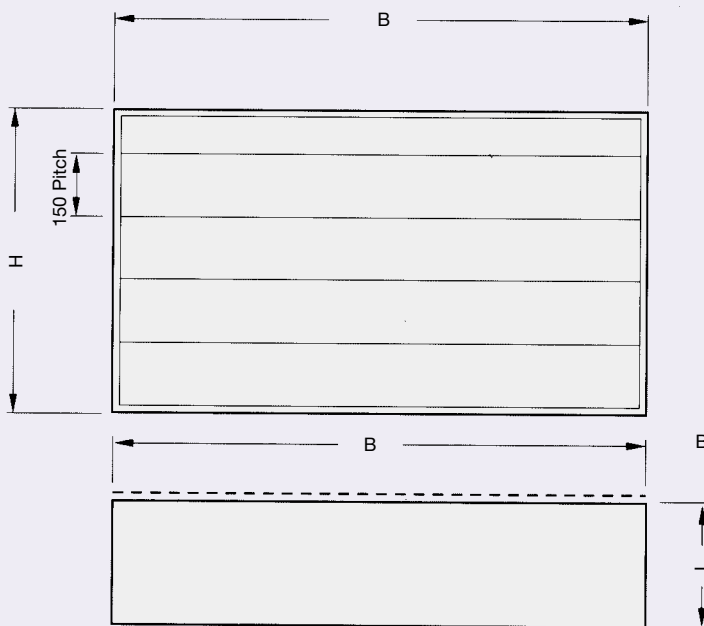
## Type NLD

Depth of louvre blade assembly is approx. 110 mm without acoustic lining; available with rear blanking plate.

## Special constructions

Due to the technical co-ordination necessary, special constructions are only available on request.

### Type NL · NLH · NLD



Weight in kg	
Type	Weight approx.
NLS	48 kg/m <sup>2</sup>
NLA	35 kg/m <sup>2</sup>
NLH	as NLS or NLA x 2
NLD	as NLS or NLA x 0.5

Standard sizes*)	
B	H
300–1800 mm in increments of 150 mm	450–2250 mm in increments of 150 mm

\*) In excess of these dimensions supplied in sections.

Free cross section in % per m width	
Height in mm	A <sub>free</sub> in %
450	11
600	17
750	20
900	22
1050	24
1200	25
1350	26
1500	27
1650	27
1800	28
1950	28
2100	29
2250	29

# Sectionalised Construction · Optional Features

## Sectionalised construction

Acoustic louvres are normally supplied in sections when either of the following dimensions is exceeded:

B = 1800 mm      H = 2250 mm

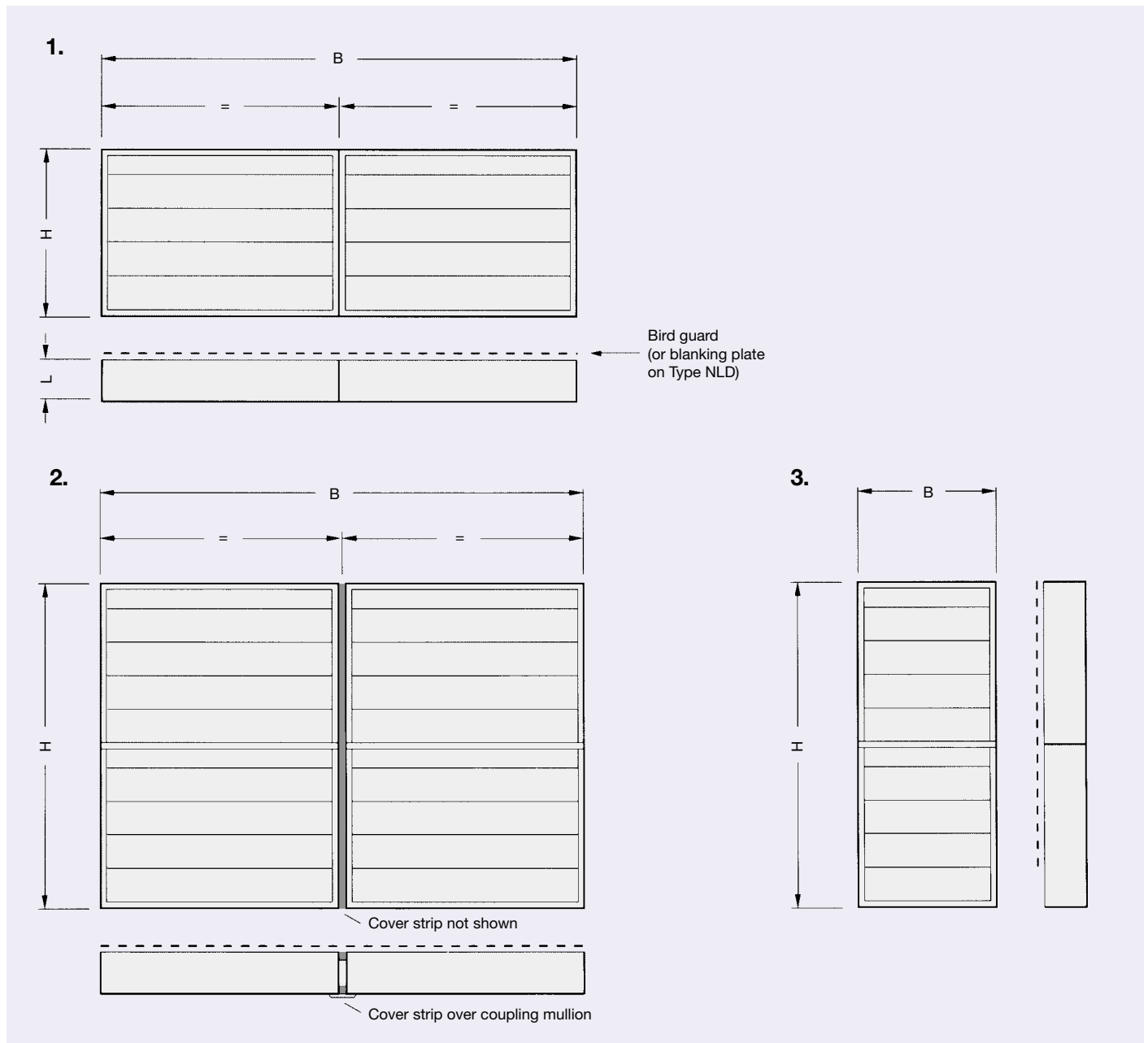
The assembly of sectionalised louvres is on site, by others.

Where louvres are in sections in both width and height, a 50 x 50 x 3 vertical box section frame is supplied to couple together adjacent sections, cover strips as well.

Coupling frames are concealed behind cover strips. Material and finish to complement the louvre.

The combinations illustrated below are available in louvre Types NL, NLH and NLD.

1. Split on width only
2. Split on width and height
3. Split on height only



## Installation

The vertical casing sides of the acoustic louvre are pre-slotted with 10 x 15 mm slots to facilitate fixing.

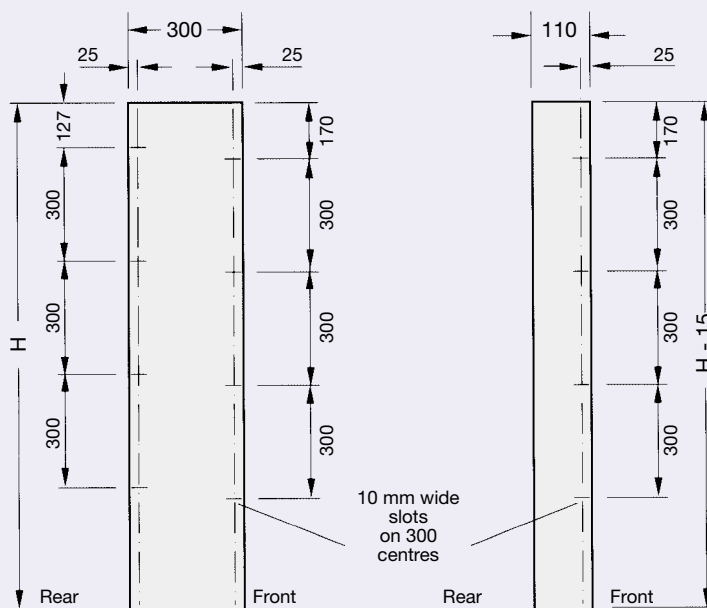
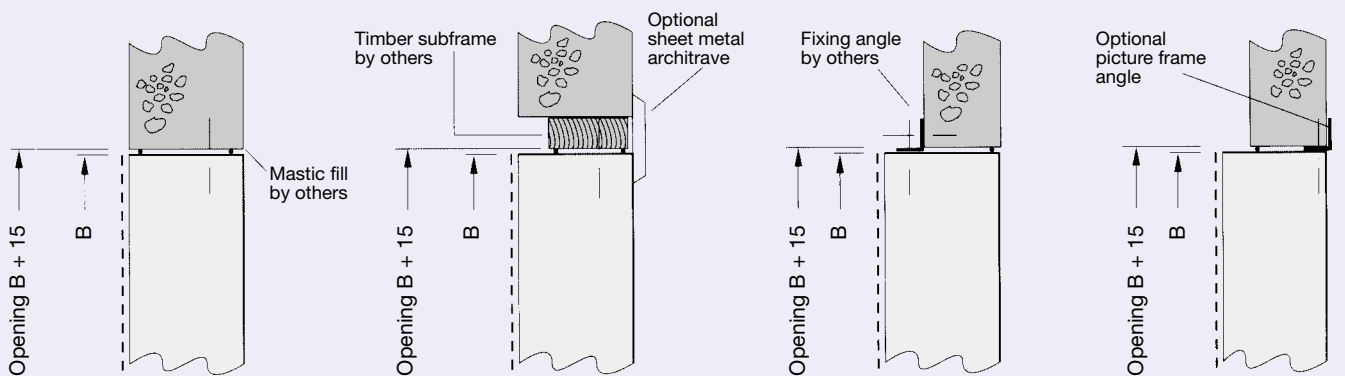
Where supplied, architraves and picture frames are supplied loose and undrilled.

On multisection units incorporating hollow section coupling frames, the frames are supplied drilled.

During fixing, the louvres should be set square and true in opening then wedged before fixing. Air gaps should be filled with mastic.

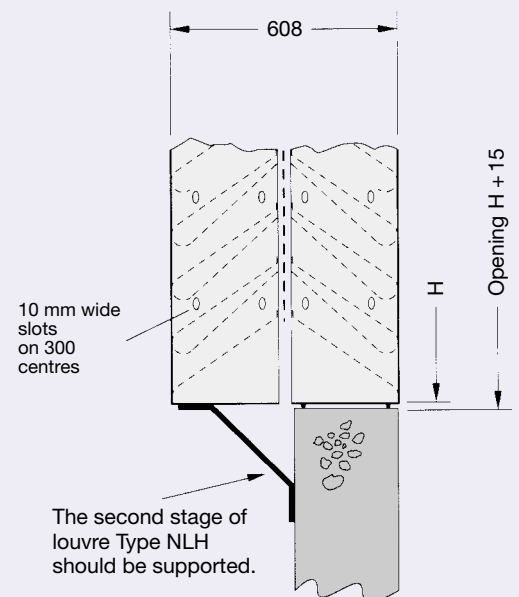
## Nomenclature

B	in mm:	Width
H	in mm:	Height
L	in mm:	Depth
$D_{e, \text{ oct.}}$	in dB:	Insertion loss per octave
$f_{m, \text{ oct.}}$	in Hz:	Octave band centre frequency
$L_{W, \text{ oct.}}$	in dB:	Sound power level per octave
$L_{W, A}$	in dB:	A-weighted sound pressure level of air-regenerated noise
$\Delta L_W$	in dB:	Correction of $L_W$ for different widths
$\Delta L_A$	in dB:	Correction of $L_W$ for operating mode
$\Delta L_{\text{rel.}}$	in dB:	Correction of $L_W$ for octave band level
$\Delta p$	in Pa:	Flow resistance (pressure drop)
$\Delta Pa$	in Pa:	Correction of $\Delta p_t$ for operating mode
$v_t$	in m/s:	Air velocity based on face area (B x H)



Type NL

Type NLD



Type NLH

# Type NL Technical Data

## Insertion loss - Air-regenerated noise - Pressure drop

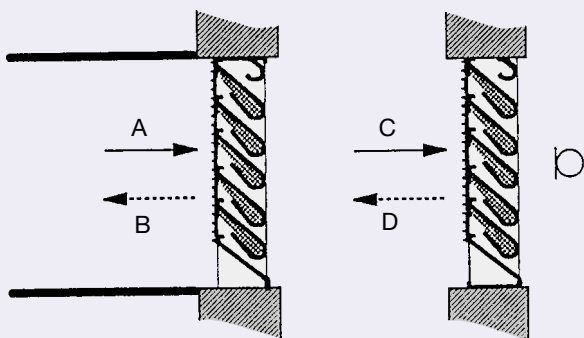
The test set up as described in DIN 45646/ISO 7235 with connecting ducts both ends is not really applicable for acoustic louvres. Therefore tests carried out in the TROX acoustic laboratories have been for the two most frequent occurring installations 'installation in walls with/without connecting duct, air inlet/air discharge', the measurement points being based on DIN 45646. Stated data for air-regenerated noise and pressure drop are valid for the modular heights listed. Data for intermediate heights cannot be interpolated as a lower non acoustic blade is introduced which influences the air velocity through the unit.

## Sound reduction index R and $R_w$

Measured according to DIN 52210-75. To determine the weighted sound reduction index  $R_w$  the measured curve is compared with the reference curve to DIN 52210. The ordinate value of the shifted reference curve at 500 Hz results in the weighted sound reduction index  $R_w$ .

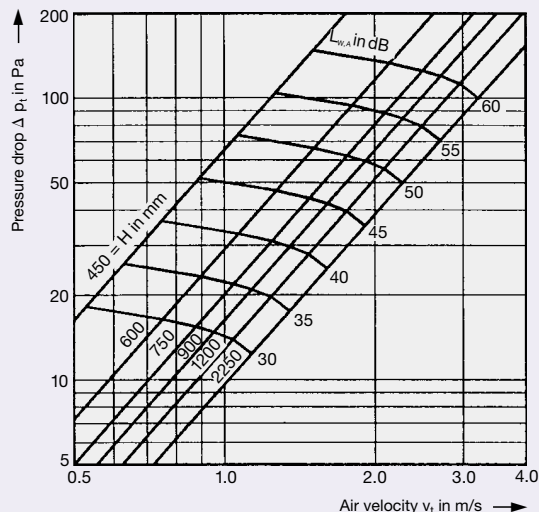
Insertion loss  $D_e$  and sound reduction index R were measured with noise direction inside to outside.

### Operating mode



### Air-regenerated noise $L_{W,A}$ ; Flow resistance $\Delta p$ (pressure drop)

Diagram valid for width = 1.00 m and operating mode "A"



### Insertion loss $D_e$ ; Sound reduction index R

$f_{m, oct.}$ in Hz	63	125	250	500	1 k	2 k	4 k	8 k	$R_w$ in dB
$D_{e, oct.}$ in dB	3	4	7	8	13	15	13	15	-
R in dB	-	6	6	9	13	14	-	-	12

$D_e$  to DIN 45646-88; R and  $R_w$  to DIN 52210-75

### Correction of air-regenerated noise and pressure drop for other sizes and operating modes

#### Correction for width unequal to 1.0 m

Width B in m	0.3	0.45	0.6	0.9	1	2	4	8	10	20
$\Delta L_w$	-5	-3	-2	0	0	3	6	9	10	13

#### Correction for operating modes

Operating mode	"A"	"B"	"C"	"D"
$\Delta Pa$	x 1.00	x 0.72	x 0.95	x 0.70
$\Delta L_A$	0	-4	-3	-5
$f_{m, oct.}$ in Hz	$\Delta L_{rel.}$	$\Delta L_{rel.}$	$\Delta L_{rel.}$	$\Delta L_{rel.}$
63	8	3	-1	-4
125	2	5	8	9
250	2	4	6	7
500	-4	-4	-3	-3
1 k	-7	-7	-7	-6
2 k	-10	-11	-11	-11
4 k	-12	-19	-26	-31
8 k	-21	-27	-32	-36

Pressure drop :  $\Delta p_{t, spec.} = \Delta p_t \times \Delta Pa$ ; in Pascal

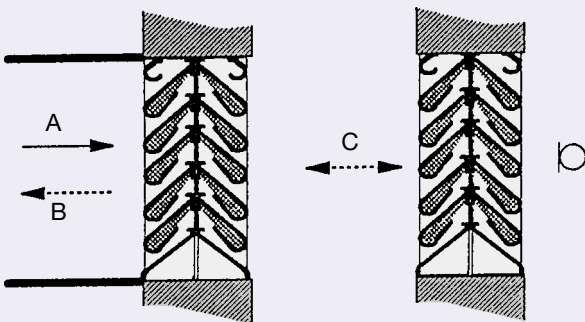
Sound power level of air-regenerated noise

: A-weighted sound power level

$L_{W, A spec.} = L_{W, A} + \Delta L_w + \Delta L_A$ ; in dB

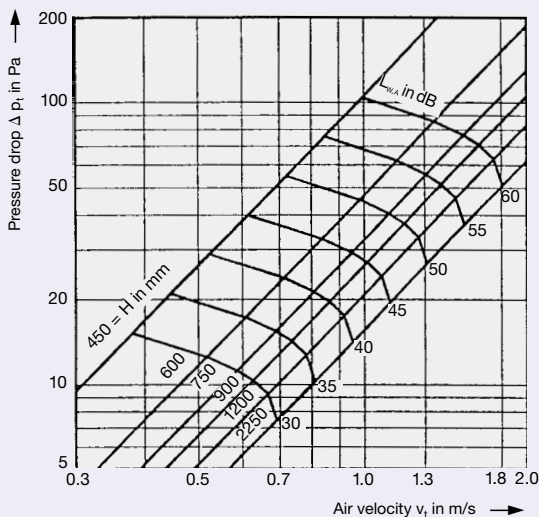
octave band level  $L_{W, oct. spec.} = L_{W, A spec.} + \Delta L_{rel.}$ ; in dB

## Operating mode



## Air-regenerated noise $L_{W,A}$ ; Flow resistance $\Delta p$ (pressure drop)

Diagram valid for width = 1.00 m and operating mode "A"



## Insertion loss $D_e$ ; Sound reduction index $R$

$f_{m, oct.}$ in Hz	63	125	250	500	1 k	2 k	4 k	8 k	$R_w$ in dB
$D_{e, oct.}$ in dB	3	6	9	16	21	24	24	30	-
$R$ in dB	-	7	9	16	25	27	-	-	21

$D_e$  to DIN 45646-88;  $R$  and  $R_w$  to DIN 52210-75

## Correction of air-regenerated noise and pressure drop for other sizes and operating modes

### Correction for width unequal to 1.0 m

Width B in m	0.3	0.45	0.6	0.9	1	2	4	8	10	20
$\Delta L_w$	-5	-3	-2	0	0	3	6	9	10	13

### Correction for operating modes

Operating mode	"A"	"B"	"C"
$\Delta Pa$	x 1.00	x 0.77	x 0.74
$\Delta L_A$	0	-7	-8
$f_{m, oct.}$ in Hz	$\Delta L_{rel.}$	$\Delta L_{rel.}$	$\Delta L_{rel.}$
63	3	1	1
125	1	7	11
250	-3	-1	1
500	-7	-6	-5
1 k	-8	-6	-4
2 k	-7	-8	-10
4 k	-11	-13	-13
8 k	-16	-21	-25

Pressure drop :  $\Delta p_{t, spec.} = \Delta p_t \times \Delta Pa$ ; in Pascal

Sound power level of air-regenerated noise

: A-weighted sound power level

$L_{W, A spec.} = L_{W, A} + \Delta L_w + \Delta L_A$ ; in dB

octave band level  $L_{W, oct. spec.} = L_{W, A spec.} + \Delta L_{rel.}$ ; in dB

# Order Details

## Specification text

Acoustic louvres Type NL are suitable for installation in openings for supply and exhaust air. Compact construction for noise reduction and protection against the ingress of rain. Sound absorbing blades. Absorption material protected by perforated sheet. Insertion loss tested according to DIN 45646.

Width in mm	
Height in mm	
Flow rate in l/s (in m <sup>3</sup> /h)	
Insertion loss (in dB)	
Sound reduction index (in dB)	
Max. permitted flow resistance in Pa (pressure differential)	
Construction	
Item	
Type	
Make	TROX

## Order code

