Acoustic Louvres – PHZE

Louvers provide effective protection for air intake and exhaust openings in technical installations. They are suitable for various applications, including commercial and industrial construction, infrastructure, offshore projects, and the shipbuilding industry.

Product Application

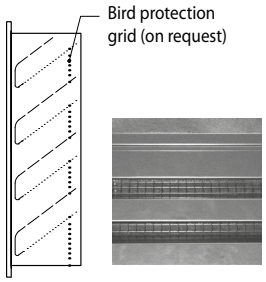
- Louvers for high-, medium- and low voltage areas
- Transformer- and switching stations
- Transformer substations for gas
- Gas storage spaces
- Engine rooms and rooms for compressors
- Emergency power supply aggregate (NSA) rooms
- Parking garages
- Prefab enclosures
- Special louvers for offshore applications

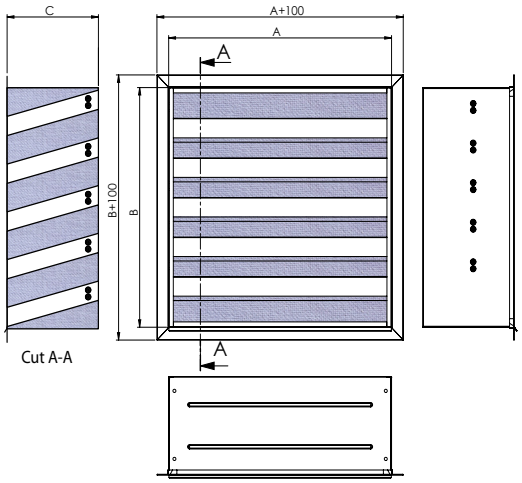
Description and use:

Acoustic louvres "PHZE" are made of plain galvanized steel or powder coated RAL (stainless steel or AlMg3 available upon reques). The louvres are filled with sound absorbing material covered with perforated metal plate for increased effectivity. There are 4 different depths available according to desired attenuation. The air inlets can be equipped with bird protection grids on request.
Construction angle of the sound absorbing blades allows also the installation as an end piece of an air duct (direct installation or with a frame).

Acoustic louvres are used for reduction of the noise comming out from various openings such as from engine rooms or noisy industrial areas.

bird protection grid in detail:





Dimensions (standard delivery):

„A" [width] [mm]:
200; 300; 400; 500; 630; 800; 1000; 1250; 1400; 1600; 1800; 2000; 2250; 2500

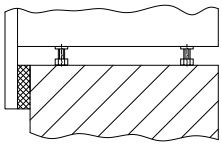
„B" [height] [mm]:
350; 400; 500; 630; 800; 1000; 1250; 1400; 1600; 1800; 2000; 2250; 2500

„C" [depth] [mm]:
200; 300; 400; 600

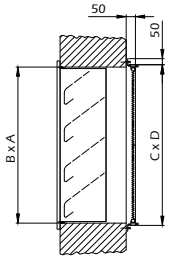
Other dimensions available on demand.

Dimension indicated as "A" and "B" are actually about 30mm smaller than the opening due to easy installation.
(Example: For the duct of 1000x800mm acoustic louvres of the following dimensions will be delivered: "A" actual = 970mm, "B" actual = 770mm)

LEVELING SCREW DETAIL (+FRAME)

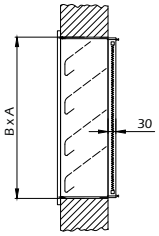


FILTER ADAPTER (WALL MOUNTED) EU3



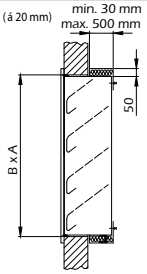
PHZE - NFN - C x D

FILTER ADAPTER EU3



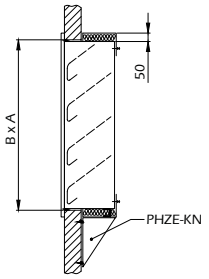
PHZE - NF - A x B

INSULATION ADAPTER



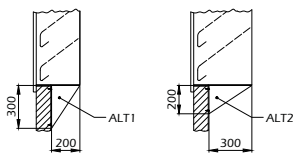
PHZE - NI - A x B / xx

INSULATION ADAPTER + WALL BRACKET



PHZE - NI - A x B / xx + KN

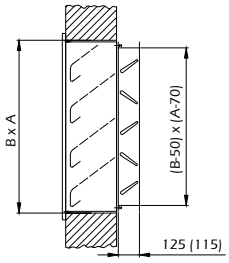
WALL BRACKET



Number of brackets:
do 1000 mm – 2 pcs
od 1000 mm – do 2000 mm – 3 pcs.
od 2000 mm – do 3000 mm – 4 pcs.

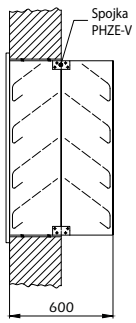
PHZE - KN

CONTROL DAMPER



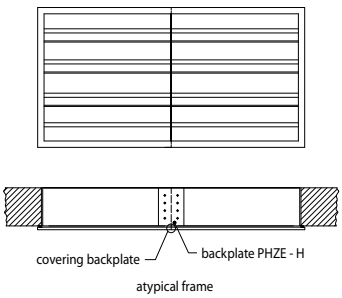
PHZE - RK - A x B

BACK-TO-BACK MOUNTING



PHZE - SPV

LOUVRE COUPLING SIDE-BY--SIDE WITH FRAMES

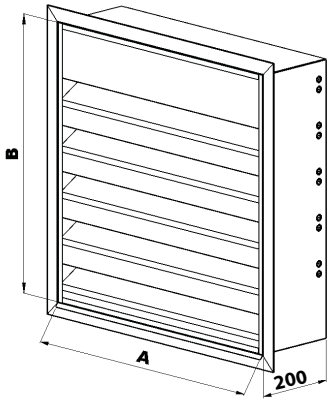


PHZ - SPH

Louvre weight [kg] and free cross section [%]			
PHZE 200	Weight per 1 m²	Free cross section*	Characteristic
Louvre Height [mm]	kg	%	
350	46	19	A
400	46	19	A
500	40	32	B
630	37	38	C
800	37	38	C
1000	37	38	C
1250	33	41	D
1400	33	41	D
1600	33	41	D
1800	33	41	D
2000	33	41	D
2250	33	41	D
2500	33	41	D

* valid for the whole connection dimension (AxB)

DEPTH „200“ mm



Calculation: $L_v = 10\log\left(10^{Lp_v/10} + 10^{Lp_{ž}/10}\right) + dL$

$$Lp_V = Lw_1 + 10\log\frac{Q}{(4x\,\pi\,xR^2)} \qquad Lp_{ž} = Lw_{ž}(A) + 10\log\frac{Q}{(4x\,\pi\,xR^2)}$$

$$Lw_1 = Lw_A - D_t - D$$

$$Lw_{ž}(A) = Lw\ (\text{diagram}) + \Delta Lw + Lw_a + Lw_{a\ oct}$$
(for the relevant frequency)

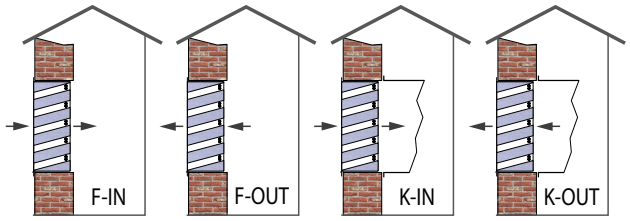
Lv = desired accoustic pressure at defined point
Lp_V = noise dispersion in the air duct reduced by the attenuation "D" of the acoustic louvre and routing
$Lp_{ž}$ = self noise of the louvre
dL = correction of reverberation noise in the outside (constant = 3)

Lw_1 = sound power lever of the system "dB(A)"
Lw_A = sound power of the noise source "dB(A)"
Dt = attenuation of the transmission
D = louvre attenuation

$Lw_{ž}(A)$ = level of the louvre acoustic output at air speed given just before the louvre
R = distance of the point from the core of the louvre "m"
Q = directional coefficient (determined by the designer - most common value is 2)

Louvre attenuation D [dB]								
PHZE 200	frekvence [Hz]							
	63	125	250	500	1000	2000	4000	8000
attenuation [dB]	4	6	7	12	12	13	14	14

Correction of the louvre self-noise according to its surface Δ Lw [dB]										
PHZE 200	surface of the louvre m²									
	0,3	0,5	0,7	0,8	1	1,5	2	4	6	10
correction [dB]	-5,2	-3	-1,5	-1	0	1,8	3	6	7,8	10



Correction of the louvre self-noise according to the way of air flow and type of connection $Lw_{a\ oct}$ - frequencies								
	63	125	250	500	1000	2000	4000	8000
F-IN	-3	5	7	-2	-5	-12	-22	-29
F-OUT	-2	3	3	-4	-5	-10	-19	-24
K-IN	4	5	5	-3	-5	-7	-14	-20
K-OUT	6	1	3	-2	-5	-9	-12	-19

Diagram of the pressure loss [Pa]

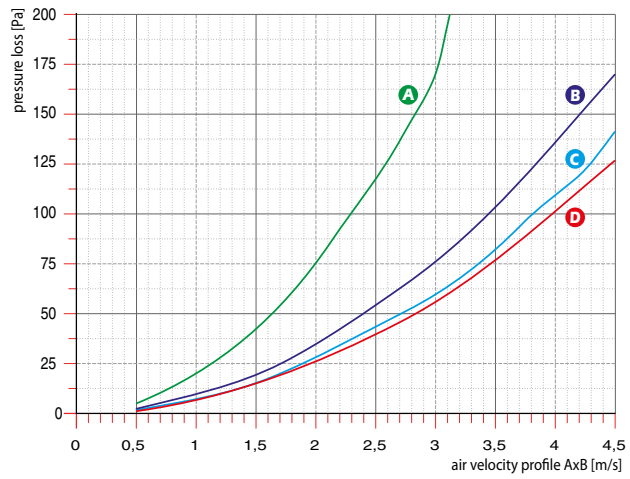
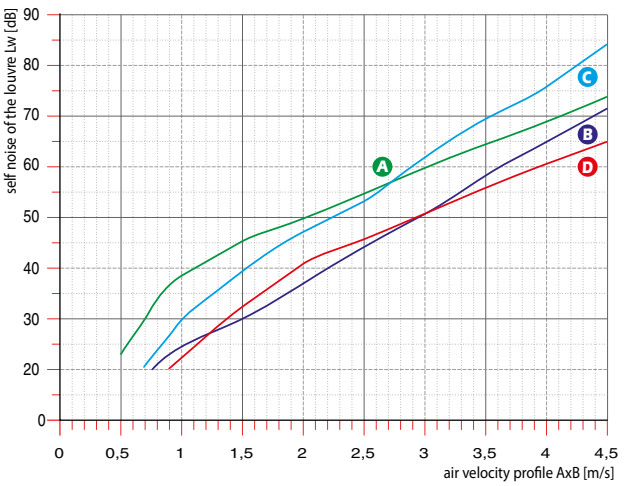


Diagram of the self noise lw due to the air flow [dB]



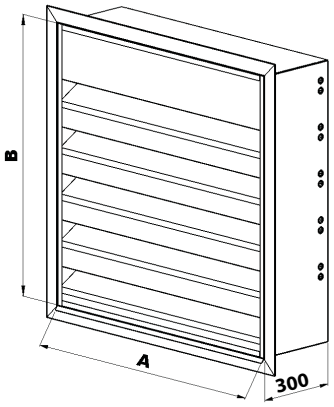
Correction of the pressure loss by the way of air flow and type of connection				
type of louvre	F-IN	F-OUT	K-IN	K-OUT
200	0,9	0,98	0,9	1

Correction according to the way of air flow and type of connection Lw_a				
type of louvre	F-IN	F-OUT	K-IN	K-OUT
200	-4	-3	-3	0

Louvre weight [kg] and free cross section [%]			
PHZE 300	Weight per 1 m^2	Free cross section*	Characteristic
Louvre Height [mm]	kg	%	
350	58	19	A
400	58	19	A
500	55	32	B
600	47	38	C
800	47	38	C
1000	47	38	C
1250	43	41	D
1400	43	41	D
1600	43	41	D
1800	43	41	D
2000	43	41	D
2250	43	41	D
2500	43	41	D

*** valid for the whole connection dimension (AxB)**

DEPTH „300“ mm



Calculation: $L_v = 10\log(10^{Lp_v/10} + 10^{Lp_{\check{z}}/10}) + dL$

$$Lp_V = Lw_1 + 10\log\frac{Q}{(4x\,\pi\,xR^2)} \qquad Lp_{\check{z}} = Lw_{\check{z}}(A) + 10\log\frac{Q}{(4x\,\pi\,xR^2)}$$

$$Lw_1 = Lw_A - D_t - D$$

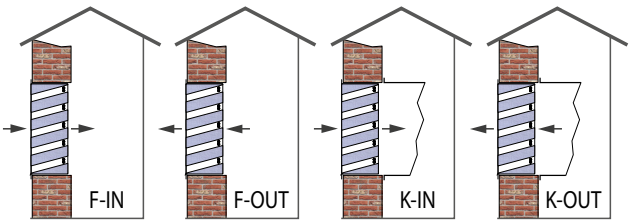
$$Lw_{\check{z}}(A) = Lw\ (\text{diagram}) + \Delta Lw + Lw_a + Lw_{a\ oct}$$
(for the relevant frequency)

Lv = desired accoustic pressure at defined point
Lp_V = noise dispersion in the air duct reduced by the attenuation "D" of the acoustic louvre and routing
$Lp_{\check{z}}$ = self noise of the louvre
dL = correction of reverberation noise in the outside (constant = 3)

Lw_1 = sound power lever of the system "dB(A)"
Lw_A = sound power of the noise source "dB(A)"
Dt = attenuation of the transmission
D = louvre attenuation

$Lw_{\check{z}}(A)$ = level of the louvre acoustic output at air speed given just before the louvre
R = distance of the point from the core of the louvre "m"
Q = directional coefficient (determined by the designer - most common value is 2)

Louvre attenuation D [dB]								
PHZE 300	frekvence [Hz]							
	63	125	250	500	1000	2000	4000	8000
attenuation [dB]	7	8	8	17	18	19	18	19



Correction of the louvre self-noise according to its surface Δ Lw [dB]										
PHZE 300	surface of the louvre m^2									
	0,3	0,5	0,7	0,8	1	1,5	2	4	6	10
correction [dB]	-5,2	-3	-1,5	-1	0	1,8	3	6	7,8	10

Correction of the louvre self-noise according to the way of air flow and type of connection $Lw_{a\ oct}$ - frequencies								
	63	125	250	500	1000	2000	4000	8000
F-IN	-3	5	7	-2	-5	-12	-22	-29
F-OUT	-2	3	3	-4	-5	-10	-19	-24
K-IN	4	5	5	-3	-5	-7	-14	-20
K-OUT	6	1	3	-2	-5	-9	-12	-19

Diagram of the pressure loss [Pa]

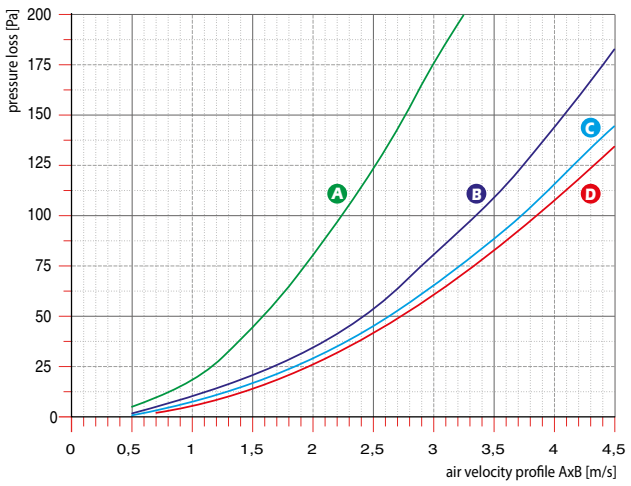
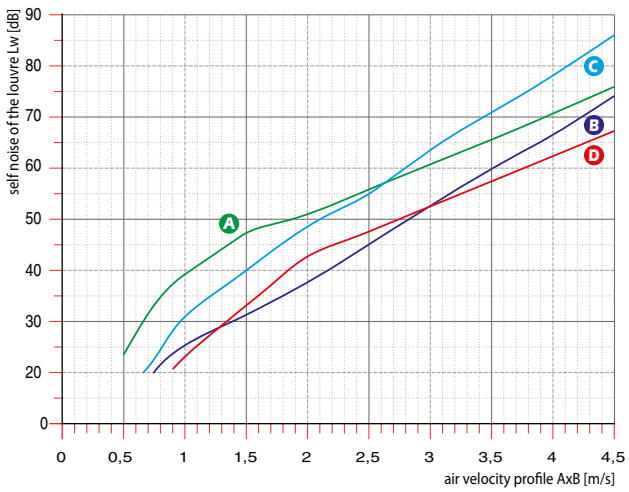


Diagram of the self noise lw due to the air flow [dB]



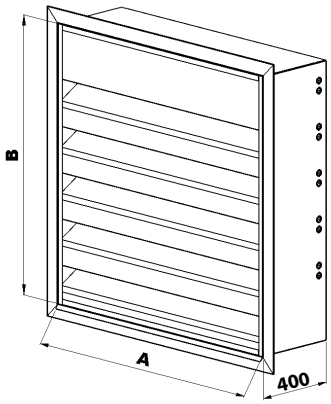
Correction of the pressure loss by the way of air flow and type of connection				
type of louvre	F-IN	F-OUT	K-IN	K-OUT
300	0,9	0,98	0,9	1

Correction according to the way of air flow and type of connection Lw_a				
type of louvre	F-IN	F-OUT	K-IN	K-OUT
300	-4	-3	-3	0

Louvre weight [kg] and free cross section [%]			
PHZE 400	Weight per 1 m²	Free cross section*	Characteristic
Louvre Height [mm]	kg	%	
350	90	25	A
400	90	25	A
500	90	25	A
630	83	36	B
800	83	36	B
1000	83	36	B
1250	78	41	C
1400	78	41	C
1600	78	41	C
1800	78	41	C
2000	78	41	C
2250	78	41	C
2500	78	41	C

*** valid for the whole connection dimension (AxB)**

DEPTH „400“ mm



Calculation: $L_v = 10\log\left(10^{Lp_v/10} + 10^{Lp_ž/10}\right) + dL$

$$Lp_V = Lw_1 + 10\log\frac{Q}{(4x\,\pi\,xR^2)} \qquad Lp_ž = Lw_ž(A) + 10\log\frac{Q}{(4x\,\pi\,xR^2)}$$

$$Lw_1 = Lw_A - D_t - D$$

$$Lw_ž(A) = Lw\ (\text{diagram}) + \Delta Lw + Lw_a + Lw_{a\ oct}$$
(for the relevant frequency)

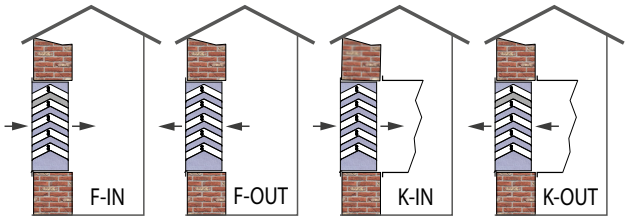
Lv = desired accoustic pressure at defined point
Lp_V = noise dispersion in the air duct reduced by the attenuation "D" of the acoustic louvre and routing
$Lp_ž$ = self noise of the louvre
dL = correction of reverberation noise in the outside (constant = 3)

Lw_1 = sound power lever of the system "dB(A)"
Lw_A = sound power of the noise source "dB(A)"
Dt = attenuation of the transmission
D = louvre attenuation

$Lw_ž(A)$ = level of the louvre acoustic output at air speed given just before the louvre
R = distance of the point from the core of the louvre "m"
Q = directional coefficient (determined by the designer - most common value is 2)

Louvre attenuation D [dB]								
PHZE 400	frekvence [Hz]							
	63	125	250	500	1000	2000	4000	8000
attenuation [dB]	15	10	12	22	23	23	23	24

Correction of the louvre self-noise according to its surface Δ Lw [dB]										
PHZE 400	surface of the louvre m²									
	0,3	0,5	0,7	0,8	1	1,5	2	4	6	10
correction [dB]	-5,2	-3	-1,5	-1	0	1,8	3	6	7,8	10



Correction of the louvre self-noise according to the way of air flow and type of connection $Lw_{a\ oct}$ - frequencies								
	63	125	250	500	1000	2000	4000	8000
F-IN	0	9	6	-1	-2	-6	-9	-20
F-OUT	0	9	6	-1	-2	-6	-9	-20
K-IN	2	3	-1	-5	-5	-7	-11	-17
K-OUT	2	2	-2	-5	-8	-8	-9	-14

Diagram of the pressure loss [Pa]

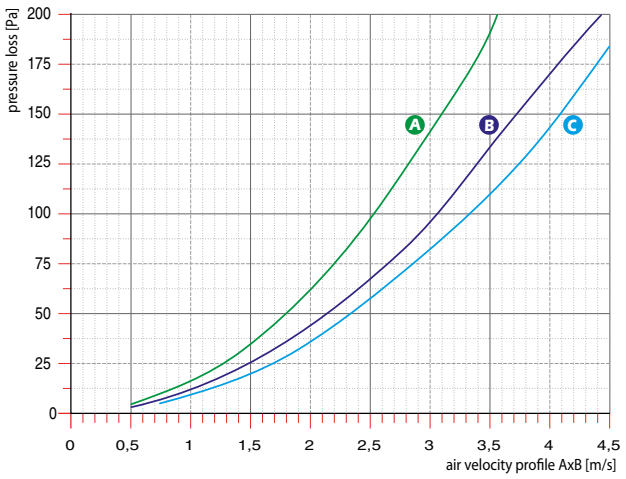
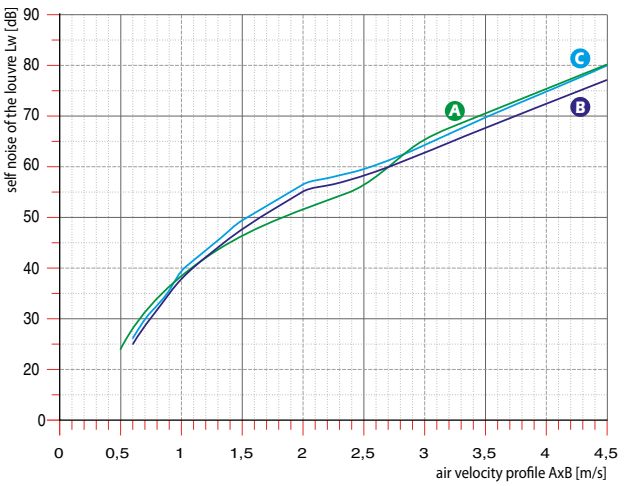


Diagram of the self noise lw due to the air flow [dB]



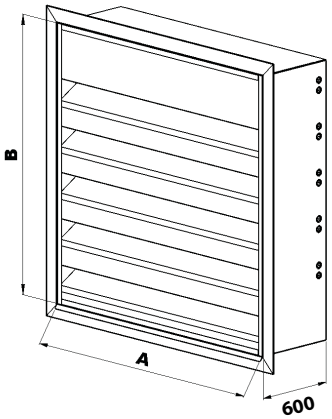
Correction of the pressure loss by the way of air flow and type of connection				
type of louvre	F-IN	F-OUT	K-IN	K-OUT
400	0,92	0,92	0,9	1

Correction according to the way of air flow and type of connection Lw_a				
type of louvre	F-IN	F-OUT	K-IN	K-OUT
400	0	-3	-3	-4

Louvre weight [kg] and free cross section [%]			
PHZE 600	Weight per 1 m²	Free cross section*	Characteristic
Louvre Height [mm]	kg	%	
350	116	19	A
400	116	19	A
500	110	32	B
630	94	38	C
800	94	38	C
1000	94	38	C
1250	86	41	D
1400	86	41	D
1600	86	41	D
1800	86	41	D
2000	86	41	D
2250	86	41	D
2500	86	41	D

*** valid for the whole connection dimension (AxB)**

DEPTH „600“ mm



Calculation: $L_v = 10\log\left(10^{Lp_v/10} + 10^{Lp_{\check{z}}/10}\right) + dL$

$$Lp_V = Lw_1 + 10\log\frac{Q}{(4x\,\pi\,xR^2)} \qquad Lp_{\check{z}} = Lw_{\check{z}}(A) + 10\log\frac{Q}{(4x\,\pi\,xR^2)}$$

$$Lw_1 = Lw_A - D_t - D$$

$$Lw_{\check{z}}(A) = Lw\ (\text{diagram}) + \Delta Lw + Lw_a + Lw_{a\ oct}$$
(for the relevant frequency)

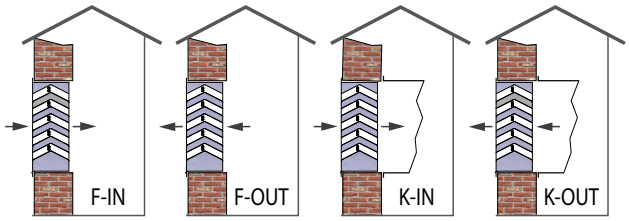
Lv = desired accoustic pressure at defined point
Lp_V = noise dispersion in the air duct reduced by the attenuation "D" of the acoustic louvre and routing
$Lp_{\check{z}}$ = self noise of the louvre
dL = correction of reverberation noise in the outside (constant = 3)

Lw_1 = sound power lever of the system "dB(A)"
Lw_A = sound power of the noise source "dB(A)"
Dt = attenuation of the transmission
D = louvre attenuation

$Lw_{\check{z}}(A)$ = level of the louvre acoustic output at air speed given just before the louvre
R = distance of the point from the core of the louvre "m"
Q = directional coefficient (determined by the designer - most common value is 2)

Louvre attenuation D [dB]								
PHZE 600	frekvence [Hz]							
	63	125	250	500	1000	2000	4000	8000
attenuation [dB]	7	9	12	26	27	25	27	29

Correction of the louvre self-noise according to its surface Δ Lw [dB]										
PHZE 600	surface of the louvre m²									
	0,3	0,5	0,7	0,8	1	1,5	2	4	6	10
correction [dB]	-5,2	-3	-1,5	-1	0	1,8	3	6	7,8	10



Correction of the louvre self-noise according to the way of air flow and type of connection $Lw_{a\ oct}$ - frequencies								
	63	125	250	500	1000	2000	4000	8000
F-IN	0	9	6	-1	-2	-6	-9	-20
F-OUT	0	9	6	-1	-2	-6	-9	-20
K-IN	2	3	-1	-5	-5	-7	-11	-17
K-OUT	2	2	-2	-5	-8	-8	-9	-14

Diagram of the pressure loss [Pa]

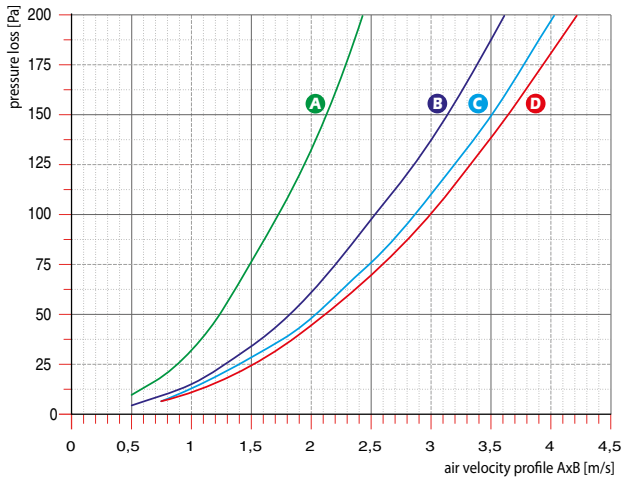
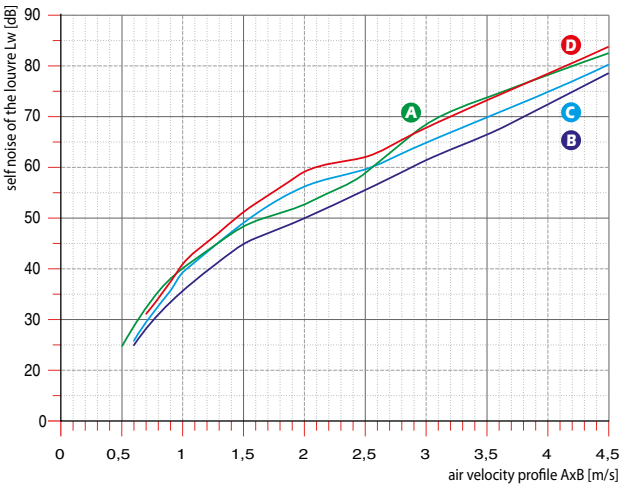


Diagram of the self noise lw due to the air flow [dB]



Correction of the pressure loss by the way of air flow and type of connection				
type of louvre	F-IN	F-OUT	F-IN	F-OUT
600	0,92	0,92	0,9	1

Correction according to the way of air flow and type of connection Lw_a				
type of louvre	K-OUT	K-IN	F-OUT	F-IN
600	0	-3	-3	-4

VIBRATEC

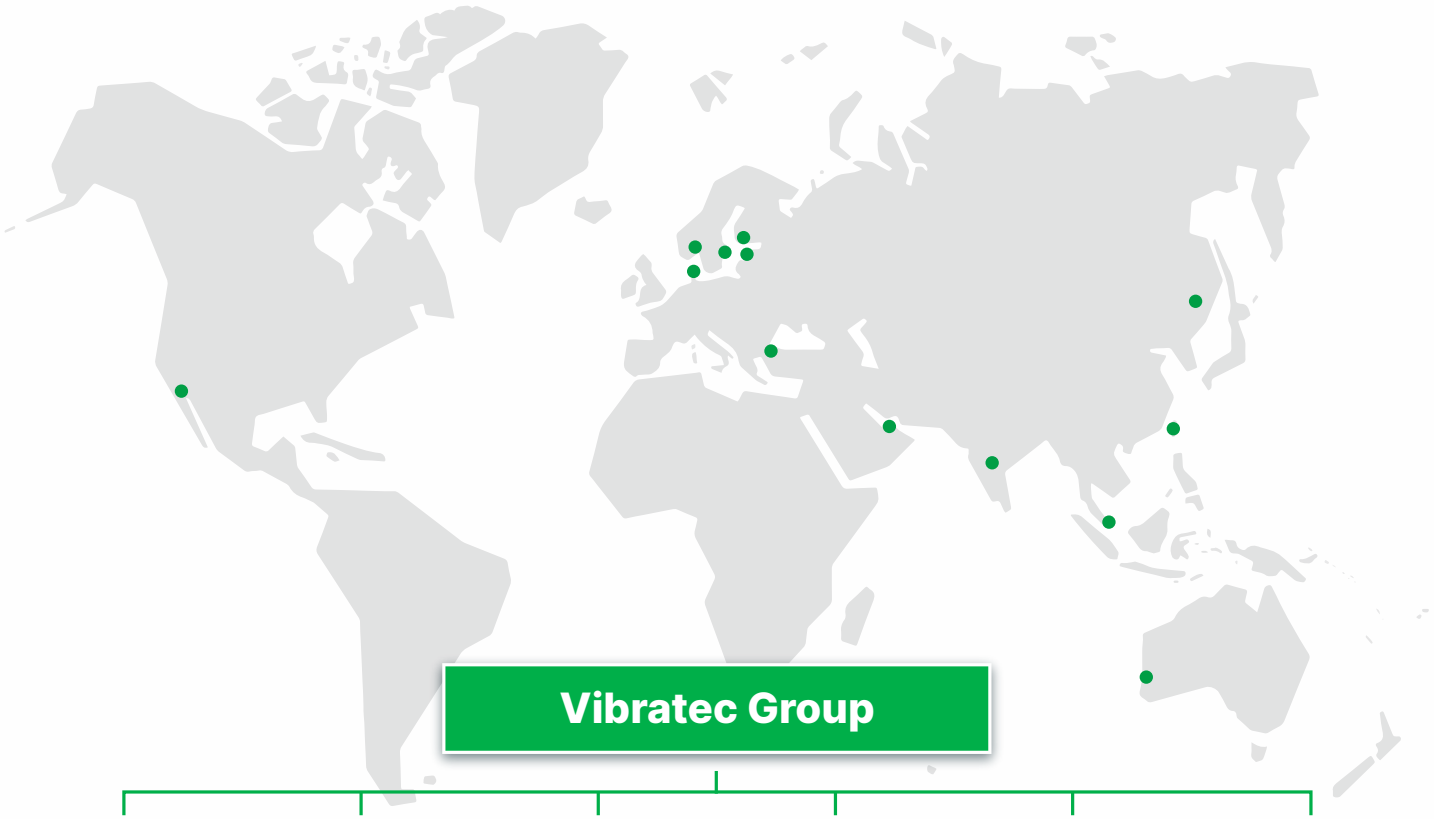
Quiety Improving Your Environment

Engineering, Production and installation

Vibratec has extensive experience, combined with the use of modern tools, when we design and manufacture tailor made solutions in all areas of vibration and noise reduction. Vibratec performs test to evaluate mechanical, physical and long term behaviour on materials as well as complete solutions.

Construction, Defence, Industrial, Marine, Offshore and Railway

Vibratec Akustikprodukter is one of Scandinavia's leading suppliers of noise and vibration solutions Vibratec´s ambition is to become the preferred choice for customers who need solutions to noise, vibration and shock problems. Vibratec produce and store many products for damping / isolation of vibration, shock and noise over a wide range of applications.



Vibratec Group

Sweden 1988	Norway 2000	Estonia 2007	Denmark 2008	Finland 2018	India 2020
Sales Engineering R & D Production	Sales Engineering R & D	Sales Engineering Production	Sales Engineering R & D	Sales	Sales Production

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