Airflow AC Middle East FZE-LLC

ACOUSTIC LOUVRE

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AIRFLOW AC

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Acoustic Louvre

Description and use:

The Acoustic Louvres delivered in galvanized, RAL color, powder-coated (on customer request they can also be delivered in the ALMg3, or stainless-type). The sound insulating vents are filled with acoustic mineral wool and contained within perforated sheet for maximal sound insulation. The louvers can be optionally provided with a bird protection screen. The angle of the vents are so constructed that the vents can also be mounted as a connecting element in opening are as (inherent noise of the vents, pressure loss). The vent can be utilized in frames within walls or directly in an air conduit. The Acoustic louvre serve to reduce noises which are emitted through the vent openings in noise effected rooms into open areas. They are usually utilized in Plant room, Generator room, and noisy-intensive production areas.

Dimensions *(standard dimensions):* ***Colour:***

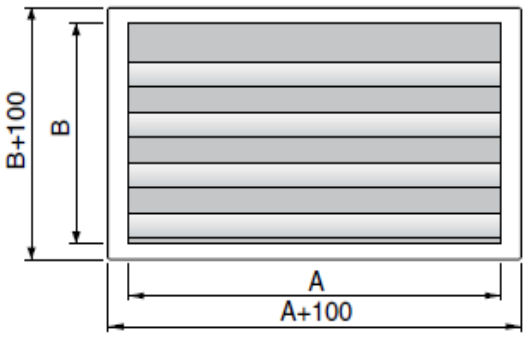
"A" (width) [mm]: 400; 500; 630; 800; 1000; 1250; 1400; 1600; 1800; 2000; 2250; 2500

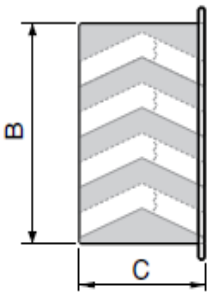
"B" (height) [mm]: 500; 630; 800; 1000; 1250; 1400; 1600; 1800; 2000; 2250; 2500

"C" (depth) [mm]: 400

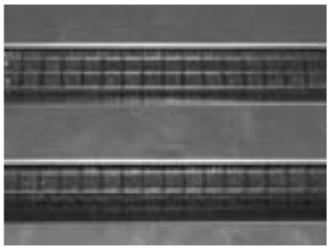
Other dimensions on demand.

The dimensions indicated as „A" and „B" are in reality about 30mm smaller than the actual assembly aperture (due to easy installation).
Example:
Install a vent in an air conduit from 1000x800 mm - „A" is 970 mm; „B" is 770 mm.)





Bird protection grid in detail.



ACOUSTIC PARAMETERS

The damping capacity of a Acoustic louvre blades can be calculated by means of the ,,Methods for the Dimensioning of a Sound Insulating Vent", page 3. When planning a louvre, please pay attention that the air volume flow in a free cross section in front of the vent [dimension AxB] the desired damping [sound pressure value in defined point] and the source noise [sound capacity Lw (A)] are noted.

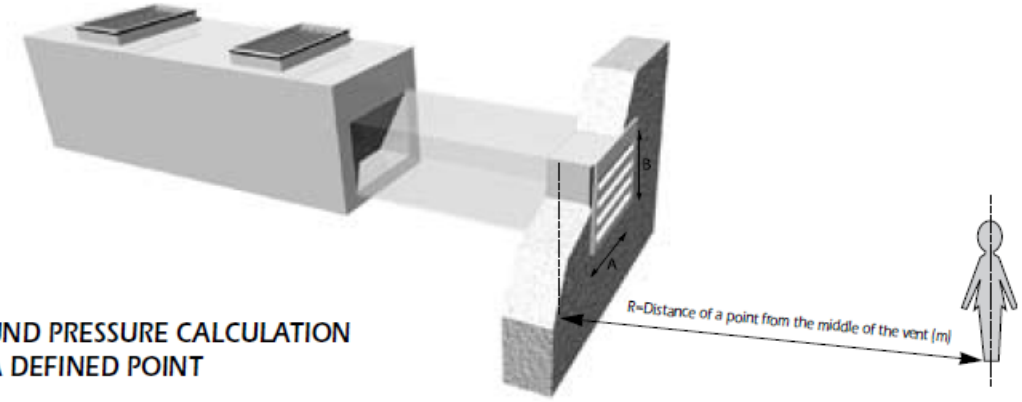
PRESSURE LOSSES FOR ACOUSTIC LOUVRE

Air velocity in m/s in Profile AxB →

For heights of	0,5	0,7	0,9	1,1	1,3	1,5	1,7	2,0	2,3	2,6	2,9	3,2	3,5	3,8	4,1	4,4	4,6	5,0
500 mm	3	5	6	14	22	29	35	44	68	90	117	143	170	221	270	287	298	320
600 mm	2	4,5	6	13	20	26	32	40	56	72	88	104	120	175	230	263	285	300
800 mm	2	4,5	6	13	20	25	29	35	47	60	73	87	100	155	210	227	239	260
1000 mm	2	4,5	6	13	20	25	29	35	47	60	73	87	100	155	210	227	239	260
1250 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220
1400 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220
1600 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220
1800 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220
2000 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220
2250 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220
2500 mm	1,5	4	5,5	9	14	18	22	28	40	50	63	88	90	130	160	180	194	220

Pressure loss in Pa →

METHODS FOR THE DIMENSIONING OF A SOUND INSULATING VENT



SOUND PRESSURE CALCULATION IN A DEFINED POINT

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

Lv = desired sound pressure level in a defined point
Lp_v = the noise expanding in an air conduit is reduced by the damping („D") of the sound insulating vent and the line [interval distance]
$Lp_{ž}$ = the vent´s own noise due to air circulation
dL = sound presure reflection coeficient in open area (constant = 3)

$$Lp_v = Lw_1 + 10 \log \frac{Q}{(4 \times \pi \times R^2)}$$

$$Lp_{ž} = Lw_{ž} + 10 \log \frac{Q}{(4 \times \pi \times R^2)}$$

$$Lw_1 = Lw_A - D_t - D_{ž}$$

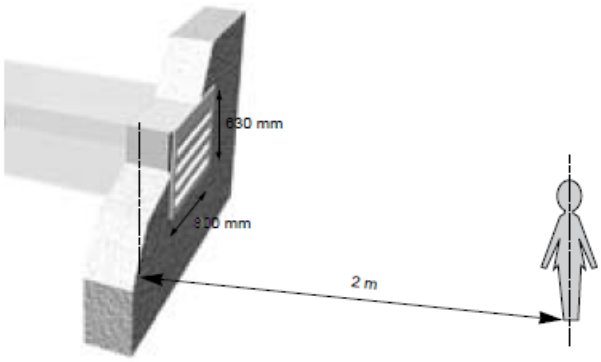
Lw_1 = sound power level of the system „dB(A)"
Lw_A = sound power of the noise source „dB(A)"
D_t = transmission loss - reduction in sound level between two designated locations in a sound transmission system [distance]
$D_{ž}$ = insertion loss

$Lw_{ž}$ = sound power level of the vent by defined speed of air circulation immediately in front of the vent
R = distance of a point from the middle of the vent in „m"
Q = directional factor (defined by the planner - usually = 2)

EXAMPLE OF A CALCULATION

Performance target

dimension A of the vent	800	mm
dimension B of the vent	630	mm
air-flow	2700	m³/h
Distance of a point from the middle of the vent	2	m



	63	125	250	500	1000	2000	4000	8000
SOUND POWER CAPACITY OF THE SOURCE (FAN, AIR CONDITIONING UNIT) $L_W(A)$	64	78	78	72,5	62,5	60,5	57	49
TRANSMISSION LOSS OF THE LINE (LINES, SILENCER) D_t	8	8	7	5	5	4	4	4

Calculation:

	63	125	250	500	1000	2000	4000	8000
The expanded noise in an air conduit is reduced by the damping „D" Lp_V	27	46	45	35,5	16,5	13,5	13	8
Vent self-noise = the part of vent background noise caused by vent $Lp_Ž$	10	13	10	5	0	0	0	0
SOUND PRESSURE LEVEL IN DEFINED POINT L_V	**30**	**49**	**48**	**39**	**22**	**20**	**18**	**13**

width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400 mm	12	27	37	48	55	63	67	72
500 mm	15	30	39	51	58	65	69	75
630 mm	18	31	41	52	59	67	71	76
800 mm	18	33	43	54	61	69	73	78
1000 mm	20	35	45	56	63	71	75	80
1250 mm	22	37	47	58	65	73	77	82
1400 mm	23	38	48	59	66	74	78	83
1600 mm	25	40	49	61	68	75	79	84
1800 mm	25	40	50	61	68	76	80	85
2000 mm	26	41	51	62	69	77	81	86
2250 mm	on demand							
2500 mm								

TABLE OF SOUND POWER LEVEL „Lw_2" (dB) WITH A HEIGHT OF 500mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-14	-11	-14	-16	-17	-19	-22	-26

TABLE OF SOUND POWER LEVEL „D_2" (dB) WITH A HEIGHT 500mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

TABLE OF VENT SELF-NOISE „Lw_2" (dB) WITH A HEIGHT OF 630mm

Velocity in Profile AxB in front of the vent with a height of 630mm (m/s)								
width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400 mm	8	23	33	44	51	59	63	68
500mm	10	26	35	46	53	61	65	70
630 mm	12	27	37	48	55	62	67	72
800 mm	14	29	39	50	57	65	69	74
1000 mm	16	31	41	52	59	66	71	76
1250 mm	18	33	43	54	61	68	73	78
1400 mm	19	34	44	55	62	69	74	79
1600 mm	20	36	45	56	63	71	75	80
1800 mm	21	36	46	57	64	72	76	81
2000 mm	22	37	47	58	65	72	77	82
2250 mm	on demand							
2500 mm								

TABLE OF VENT SELF-NOISE „Lw_2" (dB) WITH A HEIGHT OF 630mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-13	-10	-13	-14	-12	-13	-17	-24

TABLE OF SOUND POWER LEVEL „D_2" (dB) WITH A HEIGHT 630mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400 mm	6	22	31	43	49	57	61	66
500 mm	9	24	34	45	52	60	64	69
630 mm	10	26	35	47	53	61	65	70
800 mm	12	28	37	49	55	63	67	72
1000 mm	14	30	39	51	57	65	69	74
1250 mm	16	32	41	53	59	67	71	76
1400 mm	17	33	42	54	60	68	72	77
1600 mm	19	34	44	55	62	70	74	78
1800 mm	19	35	44	56	62	70	74	79
2000 mm	20	36	45	57	63	71	75	80
2250 mm	on demand							
2500 mm								

TABLE OF VENT SELF-NOISE „Lw_2" (dB) WITH A HEIGHT OF 800mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-13	-10	-13	-14	-12	-13	-17	-24

TABLE OF SOUND POWER LEVEL „Lw_2" (dB) OWITH A HEIGHT 800mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

TABLE OF VENT SELF-NOISE „Lw_2" (dB) WITH A HEIGHT OF 1000mm

Velocity in Profile AxB in front of the vent with a height of 1000mm (m/s)								
width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400 mm	7	23	32	44	50	58	62	67
500 mm	10	25	35	46	53	61	65	70
630 mm	11	27	36	48	54	62	66	71
800 mm	13	29	38	50	56	64	68	73
1000 mm	15	31	40	52	58	66	70	75
1250 mm	17	33	42	54	60	68	72	77
1400 mm	18	34	43	54	61	69	73	78
1600 mm	20	35	45	56	63	71	75	79
1800 mm	20	36	45	57	63	71	75	80
2000 mm	21	37	46	58	64	72	76	81
2250 mm	on demand							
2500 mm								

TABLE OF VENT SELF-NOISE „Lw_2" (dB) WITH A HEIGHT OF 1000mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-13	-10	-13	-14	-12	-13	-17	-24

TABLE OF SOUND POWER LEVEL „D_2" (dB) WITH A HEIGHT 1000mm
ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

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TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1250mm

Velocity in Profile AxB in front of the vent with a height of 1250mm (m/s)								
width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400mm	0	15	24	35	43	50	54	59
500mm	2	17	27	38	46	53	57	62
630mm	3	19	28	39	47	54	58	63
800mm	5	21	30	42	49	56	60	65
1000mm	7	23	32	43	51	58	62	67
1250mm	9	25	34	45	53	60	64	69
1400mm	10	26	35	46	54	61	65	70
1600mm	12	27	37	48	56	63	67	71
1800mm	12	28	37	49	56	63	67	72
2000mm	13	29	38	49	57	64	68	73
2250mm	on demand							
2500mm								

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1250mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-18	-9	-11	-9	-5	-6	-10	-17

TABLE OF SOUND POWER LEVEL „$D_{\frac{1}{2}}$" (dB) WITH A HEIGHT 1250mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1400mm

Velocity in Profile AxB in front of the vent with a height of 1400mm (m/s)								
width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400mm	0	12	22	33	43	48	52	57
500mm	0	15	24	36	45	50	54	59
630mm	1	16	26	37	47	52	56	61
800mm	3	18	28	39	49	54	58	63
1000mm	5	20	30	41	51	56	60	65
1250mm	7	22	32	43	53	58	62	67
1400mm	8	23	33	44	54	59	63	68
1600mm	9	25	34	46	55	60	64	69
1800mm	10	25	35	46	56	61	65	70
2000mm	11	26	36	47	57	62	66	71
2250mm	on demand							
2500mm								

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1400mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-18	-9	-11	-9	-5	-6	-10	-17

TABLE OF SOUND POWER LEVEL „$D_{\frac{1}{2}}$" (dB) WITH A HEIGHT 1400mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1600mm

Velocity in Profile AxB in front of the vent with a height of 1600mm (m/s)								
width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400mm	1	17	26	38	44	52	56	61
500mm	4	19	29	40	47	55	59	64
630mm	5	21	30	42	48	56	60	65
800mm	7	23	32	44	50	58	62	67
1000mm	9	25	34	46	52	60	64	69
1250mm	11	27	36	48	54	62	66	71
1400mm	12	28	37	49	55	63	67	72
1600mm	14	29	39	50	57	65	69	73
1800mm	14	30	39	51	57	65	69	74
2000mm	15	31	40	52	58	66	70	75
2250mm	on demand							
2500mm								

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1600mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-18	-9	-11	-9	-5	-6	-10	-17

TABLE OF SOUND POWER LEVEL „$D_{\frac{1}{2}}$" (dB) WITH A HEIGHT 1600mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1800mm

Velocity in Profile AxB in front of the vent with a height of 1800mm (m/s)								
width	0,5	0,9	1,3	2	2,6	3,5	4,1	5
400mm	8	18	27	39	45	53	57	62
500mm	5	20	30	41	48	56	60	65
630mm	6	22	31	43	49	57	61	66
800mm	8	24	33	45	51	59	63	68
1000mm	10	26	35	47	53	61	65	70
1250mm	12	28	37	48	55	63	67	72
1400mm	13	29	38	49	56	64	68	73
1600mm	14	30	39	51	57	65	69	74
1800mm	15	31	40	52	58	66	70	75
2000mm	16	32	41	53	59	67	71	76
2250mm	on demand							
2500mm								

TABLE OF VENT SELF-NOISE „$Lw_{\frac{1}{2}}$" (dB) WITH A HEIGHT OF 1800mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	-18	-9	-11	-9	-5	-6	-10	-17

TABLE OF SOUND POWER LEVEL „$D_{\frac{1}{2}}$" (dB) WITH A HEIGHT 1800mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for all vent widths and velocities up to 5 m/s in cross section AxB

TABLE OF VENT SELF NOISE „$Lw_{\check{z}}$" (dB) WITH A HEIGHT OF 2000mm

Velocity in profile AxB in front of the vent with a height of 2000mm (m/s)								
width	**0,5**	**0,9**	**1,3**	**2**	**2,6**	**3,5**	**4,1**	**5**
400 mm	3	18	27	39	45	53	57	62
500 mm	5	20	30	41	48	56	60	65
630 mm	6	22	31	43	49	57	61	66
800 mm	8	24	33	45	51	59	63	68
1000 mm	10	26	35	47	53	61	65	70
1250 mm	12	28	37	48	55	63	67	72
1400 mm	13	29	38	49	56	64	68	73
1600 mm	14	30	39	51	57	65	69	74
1800 mm	15	31	40	52	58	66	70	75
2000 mm	16	32	41	53	59	67	71	76
2250 mm	on demand							
2500 mm								

TABLE OF VENT SELF NOISE „$Lw_{\check{z}}$" (dB) WITH A HEIGHT OF 2000mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss	-18	-9	-11	-9	-5	-6	-10	-17

TABLE OF SOUND POWER LEVEL „$D_{\check{z}}$" (dB) WITH A HEIGHT OF 2000mm ACCORDING TO FREQUENCY RANGES

	fm okt (Hz)							
	63	125	250	500	1000	2000	4000	8000
loss*	15	10	12	18	27	29	26	23

* - valid for vent widths and velocities up to 5 m/s in cross section AxB

WEIGHTS OF THE SOUND INSULATING VENT (kg)

A mm / B mm	500	630	800	1000	1250	1400	1600	1800	2000	2250	2500
400	28,5	34,9	42,7	51,8	64,0	71,1	79,9	88,7	97,6	102,0	113,0
500	34,0	41,7	50,9	61,4	76,3	84,7	95,2	105,7	116,2	120,0	134,0
630	41,2	50,5	61,6	74,2	92,3	102,5	115,1	127,7	140,3	145,0	161,0
800	50,6	62,0	75,7	91,0	113,2	125,7	114,1	156,5	171,9	177,0	197,0
1000	61,7	75,5	92,1	110,8	137,8	153,0	171,7	190,4	209,0	215,0	240,0
1250	75,5	92,5	112,7	135,5	168,6	187,2	209,9	232,7	255,5	263,0	292,0
1400	79,8	102,6	125,1	150,3	187,0	207,7	232,9	258,1	283,3	291,0	324,0
1600	94,9	116,2	141,6	170,1	211,7	235,0	263,5	292,0	320,5	330,0	367,0
1800	106,0	129,7	158,1	189,8	236,3	262,3	294,1	325,8	357,6	367,0	409,0
2000	117,0	143,3	174,6	209,6	260,9	289,7	324,7	359,7	394,8	405,0	451,0
2250	121,0	148,0	180,0	215,0	266,0	295,0	330,0	366,0	402,0	453,0	504,0
2500	134,0	163,0	198,0	237,0	294,0	326,0	365,0	404,0	444,0	500,0	557,0

FREE SURFACE OF THE SOUND INSULATING VENT KLASIK

height (B) (mm)	**free surface (%)**	**width „A" (mm) / free surface v (m^2)**					
500	32%	500	0,080	630	0,101	800	0,128
630	38%	500	0,120	630	0,151	800	0,192
800	40%	500	0,160	630	0,202	800	0,256
1000	40%	500	0,200	630	0,252	800	0,320
1250	45%	500	0,280	630	0,353	800	0,448
1400	46%	500	0,320	630	0,403	800	0,512
1600	45%	500	0,360	630	0,454	800	0,576
1800	44%	500	0,400	630	0,504	800	0,640
2000	44%	500	0,440	630	0,554	800	0,704
2250	44%	500	0,495	630	0,624	800	0,792
2500	44%	500	0,550	630	0,693	800	0,880
500	32%	1000	0,160	1250	0,200	1400	0,224
630	38%	1000	0,240	1250	0,300	1400	0,336
800	40%	1000	0,320	1250	0,400	1400	0,448
1000	40%	1000	0,400	1250	0,500	1400	0,560
1250	45%	1000	0,560	1250	0,700	1400	0,784
1400	46%	1000	0,640	1250	0,800	1400	0,896
1600	45%	1000	0,720	1250	0,900	1400	1,008
1800	44%	1000	0,800	1250	1,000	1400	1,120
2000	44%	1000	0,880	1250	1,100	1400	1,232
2250	44%	1000	0,990	1250	1,238	1400	1,386
2500	44%	1000	1,100	1250	1,375	1400	1,540

FREE SURFACE OF THE SOUND INSULATING VENT KLASIK

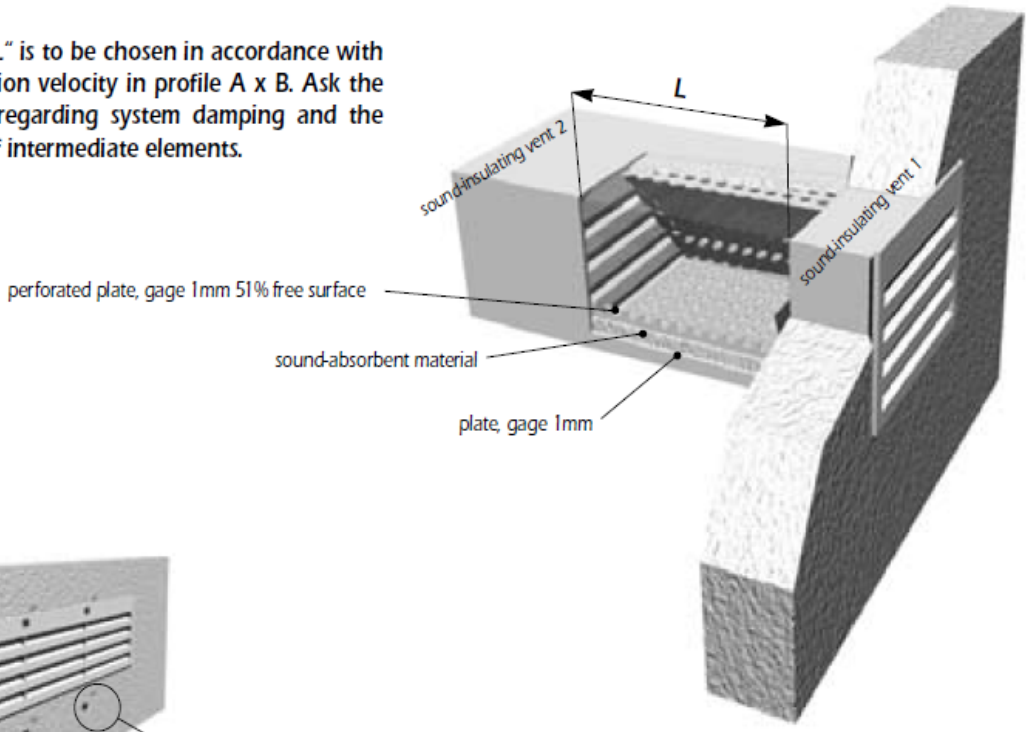
height (B) (mm)	free surface (%)	width „A" (mm) / free surface v (m^2)					
500	32%	1600	0,256	1800	0,288	2000	0,320
630	38%	1600	0,384	1800	0,432	2000	0,480
800	40%	1600	0,512	1800	0,576	2000	0,640
1000	40%	1600	0,640	1800	0,720	2000	0,800
1250	45%	1600	0,896	1800	1,008	2000	0,120
1400	46%	1600	1,024	1800	1,152	2000	0,280
1600	45%	1600	1,152	1800	1,296	2000	1,440
1800	44%	1600	1,280	1800	1,440	2000	1,600
2000	44%	1600	1,408	1800	1,584	2000	1,760
2250	44%	1600	1,584	1800	1,782	2000	1,980
2500	44%	1600	1,760	1800	1,980	2000	2,200

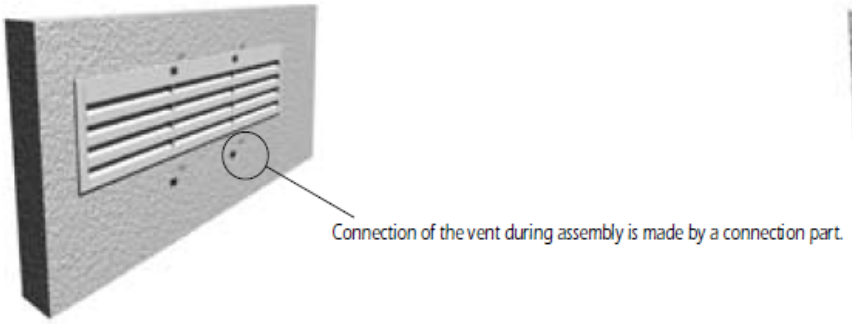
500	32%	2250	0,360	2500	0,400
630	38%	2250	0,539	2500	0,599
800	40%	2250	0,720	2500	0,800
1000	40%	2250	0,900	2500	1,000
1250	45%	2250	1,266	2500	1,406
1400	46%	2250	1,449	2500	1,610
1600	45%	2250	1,620	2500	1,800
1800	44%	2250	1,782	2500	1,980
2000	44%	2250	1,980	2500	2,200
2250	44%	2250	2,228	2500	2,475
2500	44%	2250	2,475	2500	2,750

Installation:

ALIGNMENT OF THE SOUND INSULATING VENT BEHIND ONE ANOTHER

The distance „L" is to be chosen in accordance with the air circulation velocity in profile A x B. Ask the manufacturer regarding system damping and the construction of intermediate elements.





Alignment of the sound insulating vent beside one another