Acoustic and noise control

GERHMAN

Acoustic

APPLICATIONS FOR NOISE CONTROL

- Duct silencers
- Crosstalk silencers
- Acoustic panels
- Acoustic louvers
- Pressurized plenums

- Equipment casings
- Acoustic enclosers

At Gerhman we are driven by a strong desire to continuously generate improvements. We do that by developing products and systems that are easy to use and energy efficient, together with industry-leading knowledge, support, logistics and efficient availability.

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Duct Silencers

Hertz DLD

Rectangular Duct Silencer

Hertz Duct Silencers is a component of ventilation system used to **reduce noise** transmitted inside ventilation ductwork. Duct silencers are also referred to as sound attenuators, sound traps or mufflers. They control, reduce, or limit airborne noise in ducts and openings in buildings, enclosures, or equipment rooms.

Gerhman offers the design and engineering assistance to integrate our vast line of duct silencers / sound attenuators into a system solution. As a result, you may choose from a selection of “made-to-order”, engineered duct silencers that will satisfy the requirements of each application.

COMMON APPLICATIONS

- HVAC Duct Systems
- Fan Inlet & Discharge
- Air Handling Units
- Cooling Towers
- Generator / Mechanical Room Vents

Performance

Hertz DLD

THREE PERFORMANCE CHARACTERISTICS

- **Dynamic insertion loss** is the difference in sound levels at a given point before and after the installation of noise reduction equipment while under flow. It is essentially a measure of the amount of noise that the silencer or other equipment is moving.
- **Pressure drop** is the difference in total pressure between two points when measured upstream and downstream of a silencer.
- **Generated noise** is created when air flows through a silencer air passage, a function of air expansion and air turbulence.

Design

Hertz DLD

- Galvanized sheet casing
- Designed for low air resistance with baffle combinations that attenuate particularly low-frequency noise well.
- The type of insulation material has been developed to provide good noise properties, low weight and to be cleanable.
- Air tightness class C and pressure class 2 according to EN 1507:2006.

Performance

Hertz DLD

Description

DLD has a conventional design with dimensions that not exceed the corresponding connection dimensions. The attenuator can be manufactured in all standard duct sizes.

Design

DLD has an outer sheet casing of trapezoidal corrugated sheet metal for stability and reduced risk of natural oscillation.
DLD is designed for low air resistance with baffle combinations that attenuate particularly low-frequency noise well. The type of insulation material has been developed to provide good noise properties, low weight and to be cleanable. DLD meets the requirements of air tightness class C and pressure class 2 according to EN 1507:2006.
DLD is equipped with joining profile type RJFP or LS.

Tested according to ISO 7235 standard.

Order code

Product **DLD** **a** **b** **l** **d** **e**

DLD

Width (a), in mm

400 – 2400

Height (b), in mm

200 – 2400

Length (l), in mm

500 – 2500

Code (d)

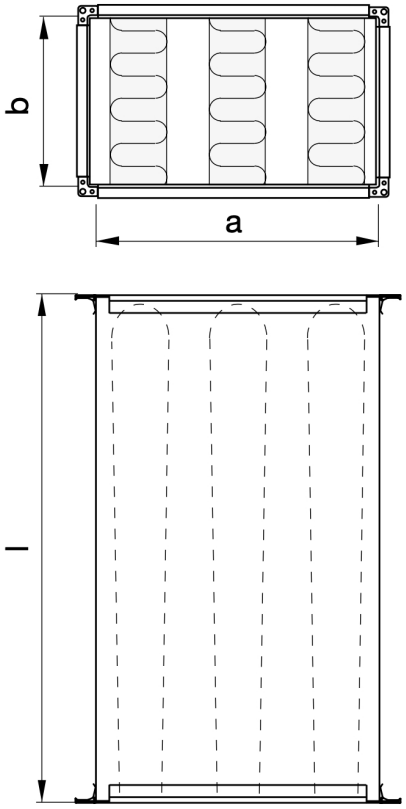
Accessories (e)

Specify your accessory type:

TRA, TRB*, TRC*, AIA, AIB, AIA+TRB, AIA+TRC

Example: DLD - 800 x 600 - 650 - 1012 - TRA

Dimensions



Material is galvanized steel.

Standard lengths (l) : 650, 1250, 1850, 2450 mm. Standard heights (b) : 300, 600, 900 , 1200, 1800 mm.

Special materials and sizes, please contact Lindab sales.

The attenuator is also available with the following accessories/ options:

TRA = Non-insulated inspection hatch.
TRB = Hatch intended for external insulation EI30*
TRC = Hatch intended for external insulation EI60*
AIA = 50 mm fire protection insulation.
Note! a and b dim. increase by 100 mm.
AIB = 100 mm fire protection insulation.
Note! a and b dim. increase by 200 mm.
AIA+TRB = 50 mm fire protection insulation and the appropriate cleaning cover.
Note! a and b dim. increase by 100 mm.
AIB+TRC = 100 mm fire protection insulation and the appropriate cleaning cover.
Note! a and b dim. increase by 200 mm.

The dimension of the hatches is adapted for cleaning and inspection of all baffle spacings.

** Specify insulation thickness when ordering.*

Manual designing for DLD and DLDR

Specify connection dimensions and flow-type location of the attenuator.

Width	800	mm
Heigh	1000	mm
Length	1250	mm
Location	Exhaust air	

DLD-800-1000-1250-1016

B Specify the sound power level before the attenuator.
Read the insertion attenuation from the tables on page 7 – 10.
Calculate the sound power level after the attenuator irrespective of the air flow (selv generated noise).

Insertion attenuation

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Resistance number	Self generated noise number inlet
Sound power level before attenuator	72	73	73	64	62	59	52	44		
Attenuation from table page 7 - 10	3	9	16	23	23	17	12	9	2,8	2,7
Sound power level after attenuator without self generated noise	69	64	57	41	39	42	40	35		

C Determine the pressure drop with help of the graph on page 4 and table on page 5.
In this case we have straight ducts before and after the attenuator.

Pressure drop

	Area	0,8 m²	Air flow	400 l/s
Graph on page 4, use resisstance number, area and air velocity	Air velocity	5 m/s	Pressure drop	42 Pa
Correction at disturbance according table on page 5	Factor	1	Pressure drop after correction	42 Pa

D Determine the self generated noise from the attenuator at present air flow.
Calculate the sound power level after the attenuator inclusive the self generated noise.

Self generated noise

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Graph on page 6, use resistance number and air velocity	59	55	54	51	48	45	41	35
Correction for gross cross sectrion area	-1	-1	-1	-1	-1	-1	-1	-1
Self generated noise	58	54	53	50	47	44	40	34
Sound power level after the attenuator	69	64	58	51	48	46	43	38
(Longarithmical addition of self generated noise and sound power level after the attenuator withhout self generated noise)								

The following table can be used for own manual
calculations in accordance with the example on the previous page.

Designing table for DLD and DLDR

Width		mm
Heigh		mm
Length		mm
Location		

Insertion attenuation

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Resistance number	Self generated noise number inlet
Sound power level before attenuator										
Attenuation from table page 7 - 10										
Sound power level after attenuator without self generated noise										

Pressure drop

	Area	**0,8 m²**	**Air flow**	**400 l/s**
Graph on page 4, use resisstance number, area and air velocity	Air velocity	m/s	Pressure drop	Pa
Correction at disturbance according table on page 5	Factor		Pressure drop after correction	Pa

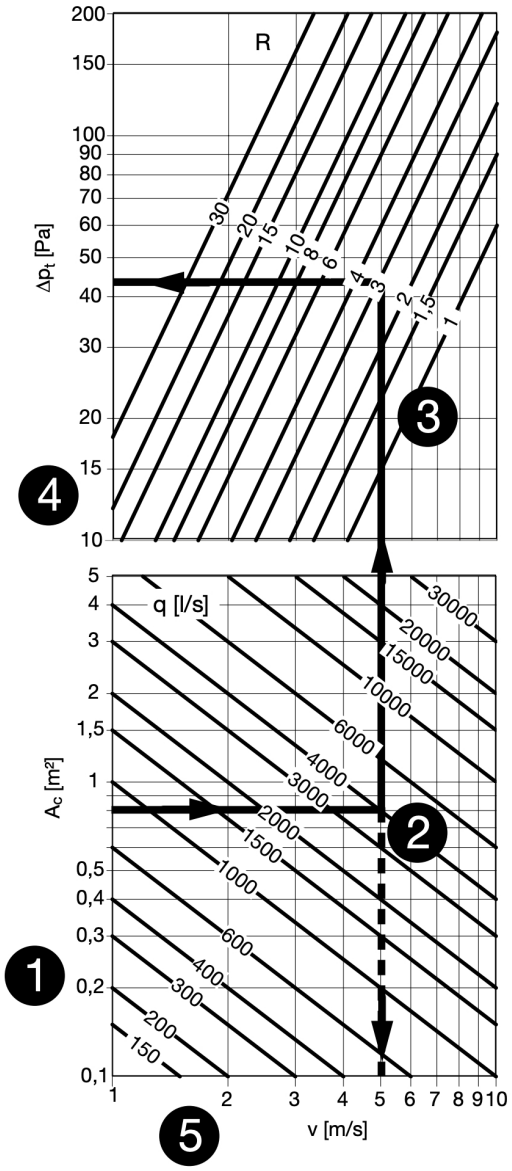
Self generated noise

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Graph on page 6, use resistance number and air velocity								
Correction for gross cross sectrion area								
Self generated noise								
Sound power level after the attenuator								
(Longarithmical addition of self generated noise and sound power level after the attenuator withhout self generated noise)								

Pressure drop

Follow the directions below and the adjoining graph.

1. Calculate the gross cross section area a × b in m².
2. Go horizontal in the graph to the present air flow, l/s.
3. Go up to the resistance number achieved from the tables on page 7 – 10.
4. Read the pressue drop over the attenuator, at straight duct connection before and after the attenuator, (factor 1,0). For other modes of connection see the table for correction on page 5.
5. Air flow velocity, which is used at the calculation of the self generated noise, can be read here.



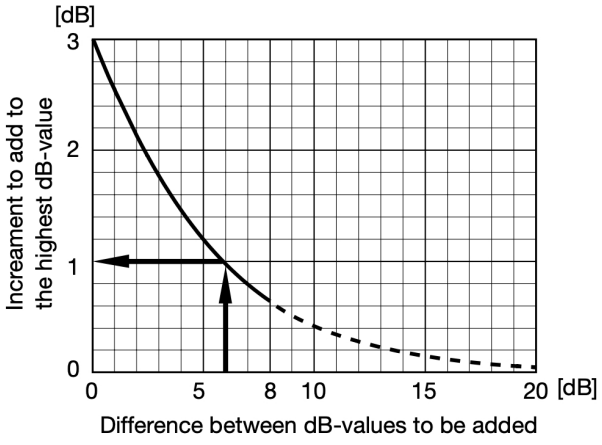
Pressure drop

Present pressure drop = Read pressure drop × below factor
D = The largest connection side (a or b) of the attenuator.

The table contains of a selection of the most common disturbance cases.

Before the attenuator				Attenuator	After the attenuator				Factor
Distance before the attenuator					Distance after the attenuator				
3xD	2xD	1xD	0xD		0xD	1xD	2xD	3xD	
			Duct	Attenuator	Duct				1,0
Bend				Attenuator	Duct				1,1
	Bend			Attenuator	Duct				1,2
		Bend		Attenuator	Duct				1,4
			Bend	Attenuator	Duct				1,5
			Duct	Attenuator		Bend			1,2
			Duct	Attenuator	Bend				1,3
Bend				Attenuator		Bend			1,3
Bend				Attenuator	Bend				1,4
	Bend			Attenuator		Bend			1,5
	Bend			Attenuator	Bend				1,6
		Bend		Attenuator		Bend			1,7
		Bend		Attenuator	Bend				1,8
			Bend	Attenuator		Bend			1,9
			Bend	Attenuator	Bend				2,0
			Chamber	Attenuator	Duct branch				2,0
			Duct	Attenuator	Chamber				3,0
			Chamber	Attenuator	Chamber				3,5

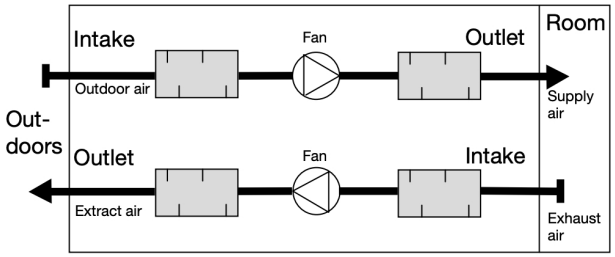
Logarithmic addition



Self generated noise per frequence band

Follow the directions below and the adjoining graph.

6 Decide from the location of the attenuator wheth er it is the supply or exhaust graph that shall be used. (Rule of memory - the side that leads away from the fan, i.e. at supply air the outlet graph is used and at exhaust air the in-take graph.)



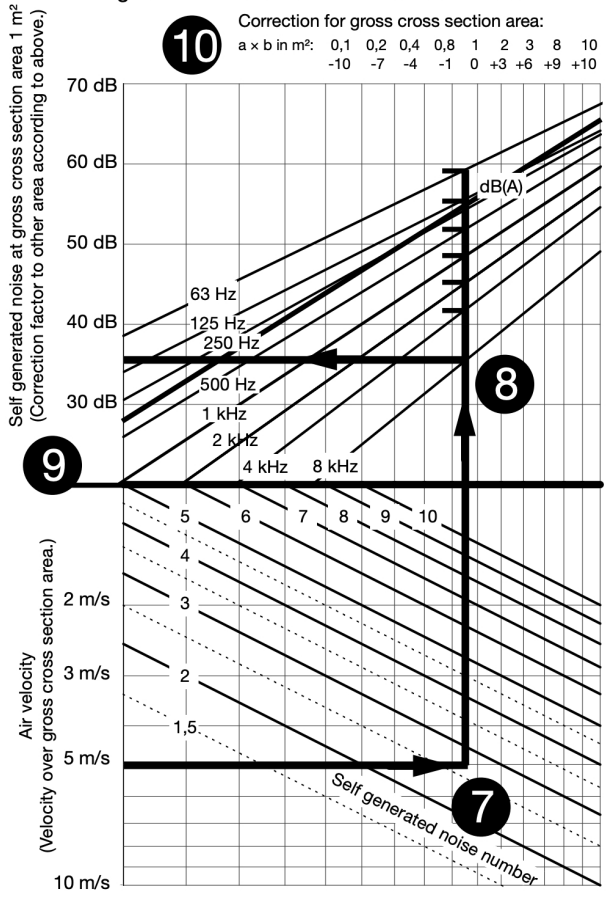
7 Go horizontally into the present graph, at present air velocity, to the self generated noise number.

8 Then go vertically up to the crossing of the differ ent frequency band lines.

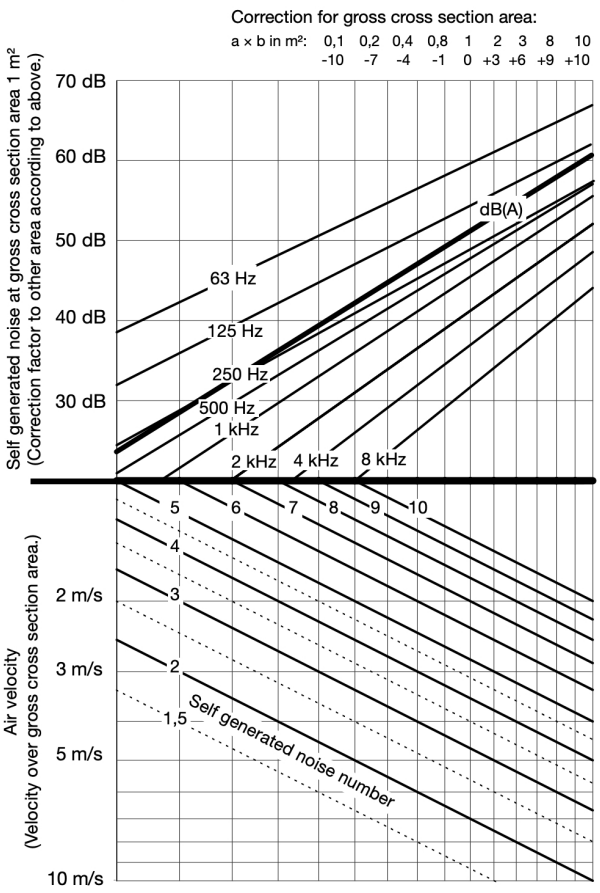
9 Read the self generated noise, at gross cross section area 1 m², for each frequency band straight out to the left. In the example only the 8000 Hz-reading is shown.

10 Add or subtract the correction for the present gross cross section area.

Self generated noise in intake DLD/DLDR/DLDY



Self generated noise in outlet DLD/DLDR/DLDY



Sound power level after the attenuator

The sound power level after the attenuatorcan be calcu-lated for all frequences by a logarithmical addition of:

”The self generated noise” and ”The sound power level before the attenuator”.

The shown example gives at 8000 Hz:

Self generated noise = 35 dB - 1 dB = 34 dB

Sound power level before the attenuator - the attenuation: 44 dB - 9 dB = 35 dB

Logarithmic addition of 34 and 35 = 36 dB

(See graph for logarithmical addition on page 5.)

Width a mm	Code	Insertion loss [dB] for centre frequency [Hz]										Resis tance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDY	63	125	250	500	1000	2000	4000	8000			
400	1009	650	750	2	4	7	11	10	9	7	5	1,0	2,0	1,6
400	1010	650	750	2	6	9	14	13	11	8	6	2,5	2,7	2,0
400	1011	650	750	3	8	12	19	19	14	11	9	6,9	4,0	2,7
400	1009	1250	1350	2	7	12	18	18	13	10	7	1,2	2,0	1,6
400	1010	1250	1350	3	9	16	23	23	17	12	9	2,8	2,7	2,0
400	1011	1250	1350	5	13	22	31	32	24	17	13	8,0	4,0	2,7
400	1009	1850	1950	2	10	18	25	26	18	13	9	1,3	2,0	1,6
400	1010	1850	1950	4	13	23	32	33	24	16	12	3,2	2,7	2,0
400	1011	1850	1950	6	18	32	43	46	34	23	17	9,1	4,0	2,7
500	1013	650	750	2	6	8	12	10	9	7	5	2,2	2,5	2,0
500	1014	650	750	3	7	10	15	13	11	8	6	4,7	3,3	2,5
500	1013	1250	1350	3	10	15	20	18	13	10	7	2,4	2,5	2,0
500	1014	1250	1350	5	12	19	25	23	17	12	9	5,3	3,3	2,5
500	1013	1850	1950	4	13	22	28	26	18	13	9	2,6	2,5	2,0
500	1014	1850	1950	6	17	28	35	33	24	16	12	5,9	3,3	2,5
600	1012	650	750	2	6	9	17	19	14	11	9	3,1	3,0	2,0
600	1014	650	750	4	9	14	23	29	23	18	14	15,3	6,0	3,0
600	1017	650	750	3	7	10	13	10	9	7	5	3,8	3,0	2,4
600	1012	1250	1350	3	9	17	28	32	24	17	13	3,8	3,0	2,0
600	1014	1250	1350	5	15	27	38	50	40	29	22	19,1	6,0	3,0
600	1017	1250	1350	5	12	18	21	18	13	10	7	4,1	3,0	2,4
600	1012	1850	1950	3	13	25	39	46	34	23	17	4,4	3,0	2,0
600	1014	1850	1950	7	21	39	53	60	57	39	29	22,9	6,0	3,0
600	1017	1850	1950	6	17	26	30	26	18	13	9	4,5	3,0	2,4
700	1012	650	750	2	5	8	13	13	11	8	6	1,6	2,3	1,8
700	1013	650	750	3	7	11	18	19	14	11	9	4,8	3,5	2,3
700	1012	1250	1350	2	8	14	22	23	17	12	9	1,9	2,3	1,8
700	1013	1250	1350	4	11	20	30	32	24	17	13	5,7	3,5	2,3
700	1012	1850	1950	3	11	21	30	33	24	16	12	2,2	2,3	1,8
700	1013	1850	1950	5	16	29	42	46	34	23	17	6,5	3,5	2,3
800	1014	650	750	2	4	7	11	10	9	7	5	1,0	2,0	1,6
800	1015	650	750	2	7	11	21	25	19	15	12	6,1	4,0	2,3
800	1016	650	750	2	6	9	14	13	11	8	6	2,5	2,7	2,0
800	1017	650	750	3	8	12	19	19	14	11	9	6,9	4,0	2,7
800	1014	1250	1350	2	7	12	18	18	13	10	7	1,2	2,0	1,6
800	1015	1250	1350	3	11	21	36	44	33	24	18	7,6	4,0	2,3
800	1016	1250	1350	3	9	16	23	23	17	12	9	2,8	2,7	2,0
800	1017	1250	1350	5	13	22	31	32	24	17	13	8,0	4,0	2,7
800	1014	1850	1950	2	10	18	25	26	18	13	9	1,3	2,0	1,6
800	1015	1850	1950	4	15	31	50	60	46	32	24	9,1	4,0	2,3
800	1016	1850	1950	4	13	23	32	33	24	16	12	3,2	2,7	2,0
800	1017	1850	1950	6	18	32	43	46	34	23	17	9,1	4,0	2,7
800	1014	2450	2550	3	12	23	32	33	23	15	11	1,5	2,0	1,6
800	1016	2450	2550	5	17	31	41	43	30	20	15	3,5	2,7	2,0
800	1017	2450	2550	8	23	42	56	60	43	29	22	10,3	4,0	2,7
900	1017	650	750	2	5	7	11	10	9	7	5	1,5	2,3	1,8
900	1018	650	750	4	9	14	23	29	23	18	14	15,3	6,0	3,0
900	1019	650	750	3	7	10	14	13	11	8	6	3,5	3,0	2,3
900	1020	650	750	4	9	13	19	19	14	11	9	9,4	4,5	3,0
900	1017	1250	1350	3	8	14	19	18	13	10	7	1,7	2,3	1,8
900	1018	1250	1350	5	15	27	38	50	40	29	22	19,1	6,0	3,0
900	1019	1250	1350	4	11	18	24	23	17	12	9	4,0	3,0	2,3
900	1020	1250	1350	6	15	24	32	32	24	17	13	10,8	4,5	3,0
900	1017	1850	1950	3	12	20	27	26	18	13	9	1,9	2,3	1,8
900	1018	1850	1950	7	21	39	53	60	57	39	29	22,9	6,0	3,0
900	1019	1850	1950	5	15	26	34	33	24	16	12	4,4	3,0	2,3
900	1020	1850	1950	8	20	35	45	46	34	23	17	12,2	4,5	3,0
900	1017	2450	2550	4	15	27	34	33	23	15	11	2,1	2,3	1,8
900	1018	2450	2550	9	26	51	60	60	60	50	37	26,7	6,0	3,0
900	1019	2450	2550	6	20	34	43	43	30	20	15	4,9	3,0	2,3
900	1020	2450	2550	10	26	45	58	60	43	29	22	13,6	4,5	3,0
1000	1019	650	750	3	7	12	20	21	16	13	10	6,5	4,0	2,5

Width a mm	Code	Insertion loss [dB] for centre frequency [Hz]										Resis tance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDY	63	125	250	500	1000	2000	4000	8000			
1000	1020	650	750	2	6	8	12	10	9	7	5	2,2	2,5	2,0
1000	1021	650	750	3	7	10	15	13	11	8	6	4,7	3,3	2,5
1000	1022	650	750	5	10	14	20	19	14	11	9	12,2	5,0	3,3
1000	1019	1250	1350	4	12	21	33	37	28	20	15	7,8	4,0	2,5
1000	1020	1250	1350	3	10	15	20	18	13	10	7	2,4	2,5	2,0
1000	1021	1250	1350	5	12	19	25	23	17	12	9	5,3	3,3	2,5
1000	1022	1250	1350	7	16	25	33	32	24	17	13	13,9	5,0	3,3
1000	1019	1850	1950	5	17	31	46	53	39	27	20	9,1	4,0	2,5
1000	1020	1850	1950	4	13	22	28	26	18	13	9	2,6	2,5	2,0
1000	1021	1850	1950	6	17	28	35	33	24	16	12	5,9	3,3	2,5
1000	1022	1850	1950	9	23	37	46	46	34	23	17	15,7	5,0	3,3
1000	1019	2450	2550	7	22	41	59	60	50	34	25	10,4	4,0	2,5
1000	1020	2450	2550	5	17	29	36	33	23	15	11	2,9	2,5	2,0
1000	1021	2450	2550	8	22	37	45	43	30	20	15	6,4	3,3	2,5
1000	1022	2450	2550	12	29	49	60	60	43	29	22	17,4	5,0	3,3
1100	1017	650	750	2	5	7	12	12	10	8	6	1,4	2,2	1,7
1100	1018	650	750	2	6	11	20	23	18	14	11	5,0	3,7	2,2
1100	1022	650	750	4	9	14	24	25	19	15	12	13,6	5,5	3,1
1100	1023	650	750	3	6	9	12	10	9	7	5	2,9	2,8	2,2
1100	1024	650	750	4	8	11	15	13	11	8	6	6,2	3,7	2,8
1100	1017	1250	1350	2	8	13	20	21	16	11	8	1,6	2,2	1,7
1100	1018	1250	1350	3	11	20	33	41	30	22	16	6,2	3,7	2,2
1100	1022	1250	1350	6	15	26	39	44	33	24	18	16,3	5,5	3,1
1100	1023	1250	1350	4	11	17	21	18	13	10	7	3,2	2,8	2,2
1100	1024	1250	1350	6	14	21	26	23	17	12	9	6,8	3,7	2,8
1100	1017	1850	1950	2	11	20	28	30	21	15	11	1,8	2,2	1,7
1100	1018	1850	1950	4	15	29	47	58	42	29	22	7,4	3,7	2,2
1100	1022	1850	1950	8	21	38	55	60	46	32	24	19,1	5,5	3,1
1100	1023	1850	1950	5	15	24	29	26	18	13	9	3,5	2,8	2,2
1100	1024	1850	1950	7	19	30	36	33	24	16	12	7,5	3,7	2,8
1100	1017	2450	2550	3	14	26	37	39	27	18	13	2,0	2,2	1,7
1100	1018	2450	2550	5	19	38	60	60	55	37	27	8,5	3,7	2,2
1100	1022	2450	2550	10	27	50	60	60	60	40	30	21,9	5,5	3,1
1100	1023	2450	2550	6	19	32	37	33	23	15	11	3,8	2,8	2,2
1100	1024	2450	2550	9	24	40	46	43	30	20	15	8,2	3,7	2,8
1200	1019	650	750	2	4	7	11	10	9	7	5	1,0	2,0	1,6
1200	1020	650	750	2	6	9	17	19	14	11	9	3,1	3,0	2,0
1200	1024	650	750	3	8	12	19	19	14	11	9	6,9	4,0	2,7
1200	1026	650	750	5	11	17	25	29	23	18	14	29,7	8,0	4,0
1200	1027	650	750	3	7	10	13	10	9	7	5	3,8	3,0	2,4
1200	1019	1250	1350	2	7	12	18	18	13	10	7	1,2	2,0	1,6
1200	1020	1250	1350	3	9	17	28	32	24	17	13	3,8	3,0	2,0
1200	1024	1250	1350	5	13	22	31	32	24	17	13	8,0	4,0	2,7
1200	1026	1250	1350	8	19	32	41	50	40	29	22	36,5	8,0	4,0
1200	1027	1250	1350	5	12	18	21	18	13	10	7	4,1	3,0	2,4
1200	1019	1850	1950	2	10	18	25	26	18	13	9	1,3	2,0	1,6
1200	1020	1850	1950	3	13	25	39	46	34	23	17	4,4	3,0	2,0
1200	1024	1850	1950	6	18	32	43	46	34	23	17	9,1	4,0	2,7
1200	1026	1850	1950	11	27	47	58	60	57	39	29	43,2	8,0	4,0
1200	1027	1850	1950	6	17	26	30	26	18	13	9	4,5	3,0	2,4
1200	1019	2450	2550	3	12	23	32	33	23	15	11	1,5	2,0	1,6
1200	1020	2450	2550	4	17	33	51	60	43	29	22	5,0	3,0	2,0
1200	1024	2450	2550	8	23	42	56	60	43	29	22	10,3	4,0	2,7
1200	1027	2450	2550	8	21	34	38	33	23	15	11	4,8	3,0	2,4
1300	1019	650		2	5	8	15	15	12	10	7	2,2	2,6	1,9
1300	1020	650		3	7	12	22	27	20	16	12	7,3	4,3	2,4
1300	1023	650		3	7	10	16	15	12	9	7	4,3	3,3	2,4
1300	1025	650		4	9	14	21	21	16	13	10	12,7	5,2	3,3
1300	1019	1250		2	9	16	24	27	20	14	11	2,6	2,6	1,9
1300	1020	1250		4	12	22	36	48	35	25	19	9,1	4,3	2,4
1300	1023	1250		4	11	19	26	26	19	14	10	4,9	3,3	2,4
1300	1025	1250		7	16	26	36	37	28	20	15	14,8	5,2	3,3

Width a mm	Code	Insertion loss [dB] for centre frequency [Hz]										Resis tance number	Self generated noise number Intake	Self generated noise number Outlet
		DLD	DLDY	63	125	250	500	1000	2000	4000	8000			
1300	1019	1850		3	12	23	34	39	28	19	14	3,0	2,6	1,9
1300	1020	1850		5	16	32	50	60	50	34	26	11,0	4,3	2,4
1300	1023	1850		5	16	28	36	37	26	18	13	5,4	3,3	2,4
1300	1025	1850		9	22	38	50	53	39	27	20	17,0	5,2	3,3
1300	1019	2450		4	15	30	44	50	36	24	18	3,4	2,6	1,9
1300	1020	2450		6	21	42	60	60	60	44	32	12,8	4,3	2,4
1300	1023	2450		7	21	36	47	48	34	23	17	6,0	3,3	2,4
1300	1025	2450		11	28	50	60	60	50	34	25	19,2	5,2	3,3
1400	1022	650		2	5	8	13	13	11	8	6	1,6	2,3	1,8
1400	1025	650		3	7	11	18	19	14	11	9	4,8	3,5	2,3
1400	1026	650		3	6	9	13	12	10	8	6	2,9	2,8	2,2
1400	1028	650		4	8	12	18	16	13	10	8	7,2	4,0	2,8
1400	1030	650		6	11	16	25	25	19	15	12	24,0	7,0	4,0
1400	1022	1250		2	8	14	22	23	17	12	9	1,9	2,3	1,8
1400	1025	1250		4	11	20	30	32	24	17	13	5,7	3,5	2,3
1400	1026	1250		4	10	17	22	21	16	11	8	3,3	2,8	2,2
1400	1028	1250		5	14	22	29	29	21	15	11	8,2	4,0	2,8
1400	1030	1250		9	19	31	42	44	33	24	18	28,5	7,0	4,0
1400	1022	1850		3	11	21	30	33	24	16	12	2,2	2,3	1,8
1400	1025	1850		5	16	29	42	46	34	23	17	6,5	3,5	2,3
1400	1026	1850		5	15	25	31	30	21	15	11	3,7	2,8	2,2
1400	1028	1850		7	19	32	41	41	30	20	15	9,2	4,0	2,8
1400	1030	1850		12	27	45	59	60	46	32	24	33,0	7,0	4,0
1400	1022	2450		3	14	27	39	43	30	20	15	2,4	2,3	1,8
1400	1025	2450		6	20	38	53	60	43	29	22	7,4	3,5	2,3
1400	1026	2450		6	19	32	40	39	27	18	13	4,0	2,8	2,2
1400	1028	2450		9	25	42	53	53	38	26	19	10,2	4,0	2,8
1500	1021	650		2	4	7	12	12	9	7	6	1,3	2,1	1,7
1500	1022	650		2	6	9	17	19	14	11	9	3,1	3,0	2,0
1500	1027	650		2	6	8	12	10	9	7	5	2,2	2,5	2,0
1500	1029	650		3	7	10	15	13	11	8	6	4,7	3,3	2,5
1500	1030	650		5	10	14	20	19	14	11	9	12,2	5,0	3,3
1500	1022	1250		3	9	17	28	32	24	17	13	3,8	3,0	2,0
1500	1027	1250		3	10	15	20	18	13	10	7	2,4	2,5	2,0
1500	1029	1250		5	12	19	25	23	17	12	9	5,3	3,3	2,5
1500	1030	1250		7	16	25	33	32	24	17	13	13,9	5,0	3,3
1500	1021	1850		2	10	19	28	29	21	14	10	1,7	2,1	1,7
1500	1022	1850		3	13	25	39	46	34	23	17	4,4	3,0	2,0
1500	1027	1850		4	13	22	28	26	18	13	9	2,6	2,5	2,0
1500	1029	1850		6	17	28	35	33	24	16	12	5,9	3,3	2,5
1500	1030	1850		9	23	37	46	46	34	23	17	15,7	5,0	3,3
1500	1021	2450		3	13	25	35	38	26	18	13	1,9	2,1	1,7
1500	1022	2450		4	17	33	51	60	43	29	22	5,0	3,0	2,0
1500	1027	2450		5	17	29	36	33	23	15	11	2,9	2,5	2,0
1500	1029	2450		8	22	37	45	43	30	20	15	6,4	3,3	2,5
1500	1030	2450		12	29	49	60	60	43	29	22	17,4	5,0	3,3
1600	1023	650		2	4	7	11	10	9	7	5	1,0	2,0	1,6
1600	1024	650		2	5	9	15	16	13	10	8	2,3	2,7	1,9
1600	1025	650		2	7	11	21	25	19	15	12	6,1	4,0	2,3
1600	1032	650		4	9	12	17	15	12	9	7	7,5	4,0	2,9
1600	1023	1250		2	7	12	18	18	13	10	7	1,2	2,0	1,6
1600	1024	1250		3	9	16	25	28	21	15	11	2,8	2,7	1,9
1600	1025	1250		3	11	21	36	44	33	24	18	7,6	4,0	2,3
1600	1032	1250		6	14	22	28	26	19	14	10	8,4	4,0	2,9
1600	1023	1850		2	10	18	25	26	18	13	9	1,3	2,0	1,6
1600	1024	1850		3	12	23	35	40	29	20	15	3,2	2,7	1,9
1600	1025	1850		4	15	31	50	60	46	32	24	9,1	4,0	2,3
1600	1032	1850		8	20	32	39	37	26	18	13	9,3	4,0	2,9
1600	1023	2450		3	12	23	32	33	23	15	11	1,5	2,0	1,6
1600	1024	2450		4	16	31	45	52	37	25	18	3,6	2,7	1,9
1600	1025	2450		5	20	40	60	60	60	40	30	10,6	4,0	2,3
1600	1032	2450		10	26	42	50	48	34	23	17	10,2	4,0	2,9

Width a mm	Code	DLD	DLDY	Insertion loss [dB] for centre frequency [Hz] 63	125	250	500	1000	2000	4000	8000	Resis tance number	Self generated noise number Intake	Self generated noise number Outlet
1800	1026	650		2	5	7	13	13	10	8	6	1,5	2,3	1,7
1800	1033	650		4	10	15	24	27	20	16	12	16,2	6,0	3,3
1800	1035	650		4	9	13	19	19	14	11	9	9,4	4,5	3,0
1800	1036	650		3	7	10	13	10	9	7	5	3,8	3,0	2,4
1800	1026	1250		2	8	14	21	22	16	12	9	1,7	2,3	1,7
1800	1033	1250		6	16	27	40	48	35	25	19	19,7	6,0	3,3
1800	1035	1250		6	15	24	32	32	24	17	13	10,8	4,5	3,0
1800	1036	1250		5	12	18	21	18	13	10	7	4,1	3,0	2,4
1800	1026	1850		3	11	20	29	31	22	15	11	1,9	2,3	1,7
1800	1033	1850		8	22	40	56	60	50	34	26	23,2	6,0	3,3
1800	1035	1850		8	20	35	45	46	34	23	17	12,2	4,5	3,0
1800	1036	1850		6	17	26	30	26	18	13	9	4,5	3,0	2,4
1800	1026	2450		3	14	26	38	41	28	19	14	2,2	2,3	1,7
1800	1033	2450		11	29	53	60	60	60	44	32	26,6	6,0	3,3
1800	1035	2450		10	26	45	58	60	43	29	22	13,6	4,5	3,0
1800	1036	2450		8	21	34	38	33	23	15	11	4,8	3,0	2,4
2000	1027	650		2	4	7	11	10	9	7	5	1,0	2,0	1,6
2000	1029	650		2	6	10	18	21	16	13	10	4,0	3,3	2,1
2000	1032	650		2	6	9	14	13	11	8	6	2,5	2,7	2,0
2000	1033	650		3	7	12	20	21	16	13	10	6,5	4,0	2,5
2000	1039	650		5	10	14	20	19	14	11	9	12,2	5,0	3,3
2000	1027	1250		2	7	12	18	18	13	10	7	1,2	2,0	1,6
2000	1029	1250		3	10	19	31	37	27	20	15	4,9	3,3	2,1
2000	1032	1250		3	9	16	23	23	17	12	9	2,8	2,7	2,0
2000	1033	1250		4	12	21	33	37	28	20	15	7,8	4,0	2,5
2000	1039	1250		7	16	25	33	32	24	17	13	13,9	5,0	3,3
2000	1027	1850		2	10	18	25	26	18	13	9	1,3	2,0	1,6
2000	1029	1850		4	14	27	43	52	38	26	20	5,8	3,3	2,1
2000	1032	1850		4	13	23	32	33	24	16	12	3,2	2,7	2,0
2000	1033	1850		5	17	31	46	53	39	27	20	9,1	4,0	2,5
2000	1039	1850		9	23	37	46	46	34	23	17	15,7	5,0	3,3
2000	1027	2450		3	12	23	32	33	23	15	11	1,5	2,0	1,6
2000	1029	2450		5	18	36	55	60	49	33	24	6,7	3,3	2,1
2000	1032	2450		5	17	31	41	43	30	20	15	3,5	2,7	2,0
2000	1033	2450		7	22	41	59	60	50	34	25	10,4	4,0	2,5
2000	1039	2450		12	29	49	60	60	43	29	22	17,4	5,0	3,3
2200	1031	650		2	5	7	12	12	10	8	6	1,4	2,2	1,7
2200	1033	650		2	6	11	20	23	18	14	11	5,0	3,7	2,2
2200	1036	650		3	8	13	23	26	19	16	12	10,1	4,9	2,8
2200	1038	650		3	7	10	15	14	11	9	7	3,9	3,1	2,3
2200	1040	650		3	6	9	12	10	9	7	5	2,9	2,8	2,2
2200	1042	650		4	8	11	15	13	11	8	6	6,2	3,7	2,8
2200	1031	1250		2	8	13	20	21	16	11	8	1,6	2,2	1,7
2200	1033	1250		3	11	20	33	41	30	22	16	6,2	3,7	2,2
2200	1036	1250		5	13	24	38	45	34	24	18	12,3	4,9	2,8
2200	1038	1250		4	11	18	25	25	18	13	10	4,5	3,1	2,3
2200	1040	1250		4	11	17	21	18	13	10	7	3,2	2,8	2,2
2200	1042	1250		6	14	21	26	23	17	12	9	6,8	3,7	2,8
2200	1031	1850		2	11	20	28	30	21	15	11	1,8	2,2	1,7
2200	1033	1850		4	15	29	47	58	42	29	22	7,4	3,7	2,2
2200	1036	1850		6	19	35	53	60	48	33	24	14,5	4,9	2,8
2200	1038	1850		5	16	27	35	35	25	17	13	5,0	3,1	2,3
2200	1040	1850		5	15	24	29	26	18	13	9	3,5	2,8	2,2
2200	1042	1850		7	19	30	36	33	24	16	12	7,5	3,7	2,8
2200	1031	2450		3	14	26	37	39	27	18	13	2,0	2,2	1,7
2200	1033	2450		5	19	38	60	60	55	37	27	8,5	3,7	2,2
2200	1036	2450		8	24	46	60	60	60	41	31	16,8	4,9	2,8
2200	1038	2450		6	20	35	45	46	32	22	16	5,5	3,1	2,3
2200	1040	2450		6	19	32	37	33	23	15	11	3,8	2,8	2,2
2200	1042	2450		9	24	40	46	43	30	20	15	8,2	3,7	2,8

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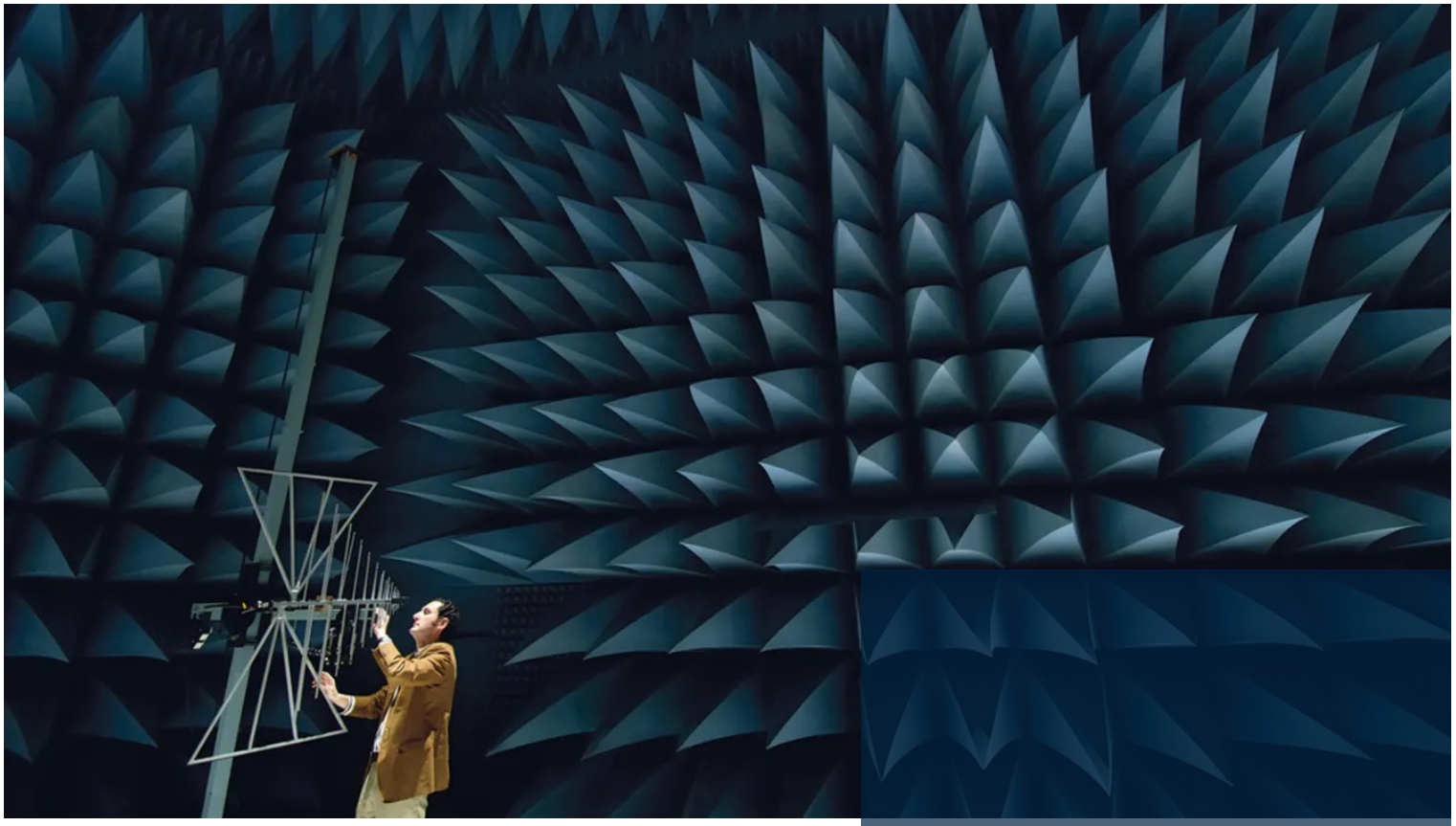

Application for noise control

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