

Testing laboratory HVAC

Test report No.: HP-06525-e

Objective: **Sound measurements on an air distribution box and an air inlet**

Client: **RoomAir AG**
Thurstrasse 14
Postfach
8501 Frauenfeld

Date: **2006-06-02**

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1. Client

Client: RoomAir AG
Thurstrasse 14
Postfach
8501 Frauenfeld

Contact person: Mr. Remo Wolf

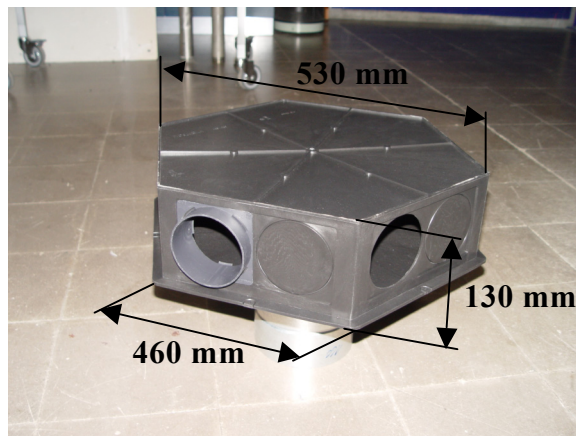
2. Terms of reference

Level reduction and flow noise of an air distribution box and of an air inlet are to be measured with a connecting pipe of DN 90 in diameter.

3. Unit to be tested, date received, date tested

Units to be tested: Air distribution box with main connecting pipe DN 160 and 2 x 6 distribution connective openings for ventilation pipes DN 75 or DN 90

Exterior dimensions



Air inlet with two connective options for ventilation pipes DN 75 or DN 90

Exterior dimensions h x b x d = 260 x 150 x 120 mm

Date received: 2006-04-11

Date tested: 2006-05-10 to 2006-05-11

4. Testing procedure

See chapter testing installation

5. Measured results

5.1. Air inlet

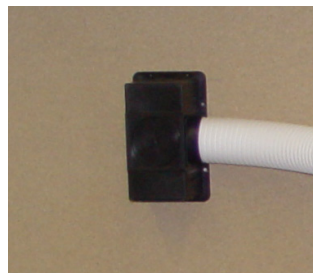
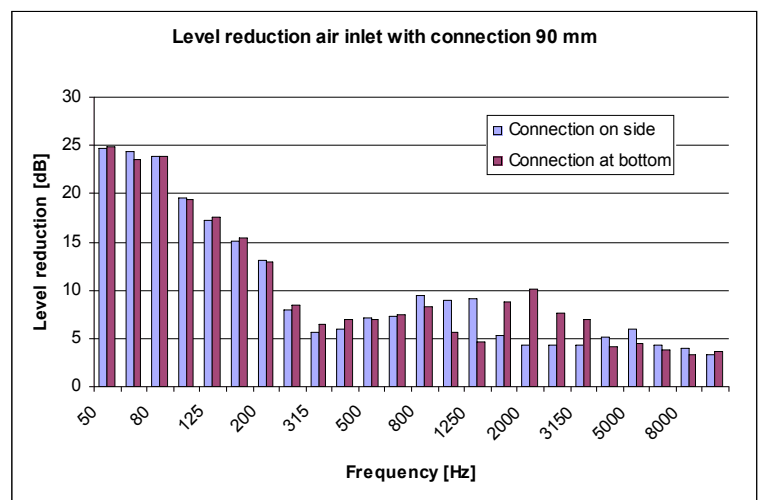
5.1.1. Level reduction air inlet with connection DN 90

Ambient conditions

Air temperature	16 °C
Air humidity	52 % r.H.
Atmospheric pressure	964 mbar

Level reduction air inlet in one-third octave band (insertion loss)

	Connection on side	Connection at bottom
f Hz	De dB	De dB
50*	24.8	24.9
63*	24.3	23.5
80*	23.9	23.9
100	19.6	19.3
125	17.2	17.5
160	15.0	15.3
200	13.1	12.9
250	7.9	8.5
315	5.6	6.5
400	6.0	7.0
500	7.1	6.9
630	7.3	7.5
800	9.4	8.2
1000	9.0	5.6
1250	9.2	4.7
1600	5.4	8.8
2000	4.3	10.1
2500	4.3	7.6
3150	4.3	7.0
4000	5.1	4.1
5000	6.0	4.4
6300	4.3	3.8
8000	3.9	3.2
10000	3.3	3.6

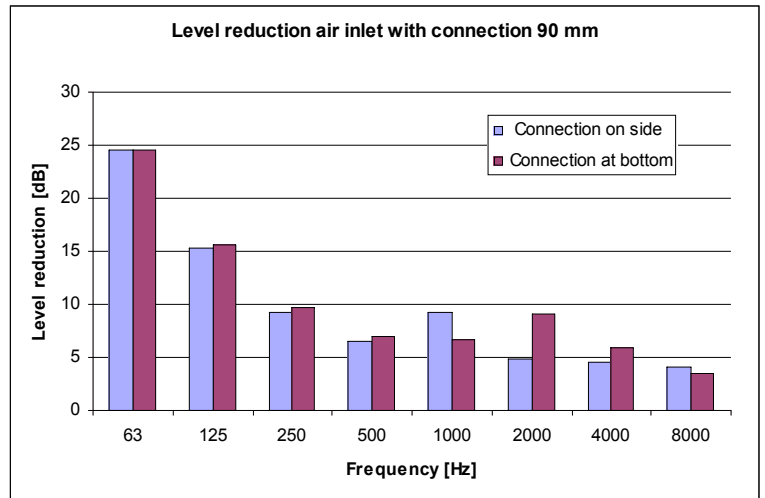


* The measurements at frequencies < 100 Hz are given only for information. The reverberation chamber is appropriate for frequencies from 100 Hz.

Level reduction air inlet in octave band (insertion loss)

	Connection on side	Connection at bottom
f Hz	De dB	De dB
63*	24.6	24.5
125	15.4	15.7
250	9.2	9.7
500	6.5	7.0
1000	9.3	6.7
2000	4.9	9.2
4000	4.6	5.9
8000	4.0	3.5

* See note at “Level reduction air inlet in one-third octave band”



5.1.2. Flow noise air inlet with connection DN 90

Ambient conditions

Air temperature 20 °C
Air humidity 52 % r.H.
Atmospheric pressure 965 mbar

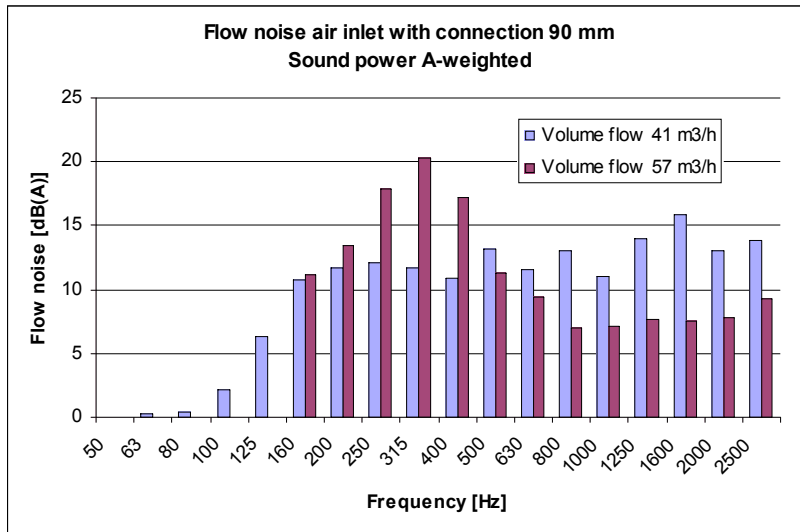
Flow noise air inlet in one-third octave band

Volume flow	Sound power level unweighted		Sound power level A-weighted	
	41 m ³ /h	57 m ³ /h	41 m ³ /h	57 m ³ /h
f Hz	Lw1 dB	Lw2 dB	Lw1(A) dB(A)	Lw2(A) dB(A)
50*	20.6	14.5	0	0
63*	26.4	12.6	0.3	0
80*	22.8	20.1	0.4	0
100	21.3	15.0	2.2	0
125	22.4	10.6	6.3	0
160	24.1	24.5	10.7	11.1
200	22.5	24.3	11.6	13.4
250	20.7	26.4	12.1	17.8
315	18.3	26.9	11.7	20.3
400	15.7	22.0	10.9	17.2
500	16.3	14.4	13.1	11.2
630	13.4	11.3	11.5	9.4
800	13.9	7.8	13.1	7.0
1000	11.0	7.1	11.0	7.1
1250	13.4	7.0	14.0	7.6
1600	14.9	6.5	15.9	7.5
2000	11.8	6.6	13.0	7.8
2500	12.5	7.9	13.8	9.2
Total	32.8	32.8	24.1	25.0

* The measurements at frequencies < 100 Hz are given only for information. The reverberation chamber is appropriate for frequencies from 100 Hz.

xy The marked values indicate the frequencies at which the difference between the tested sound source (test unit) and the background noise is < 10 dB. These values mark the upper limit of the sound power level of the sound source.

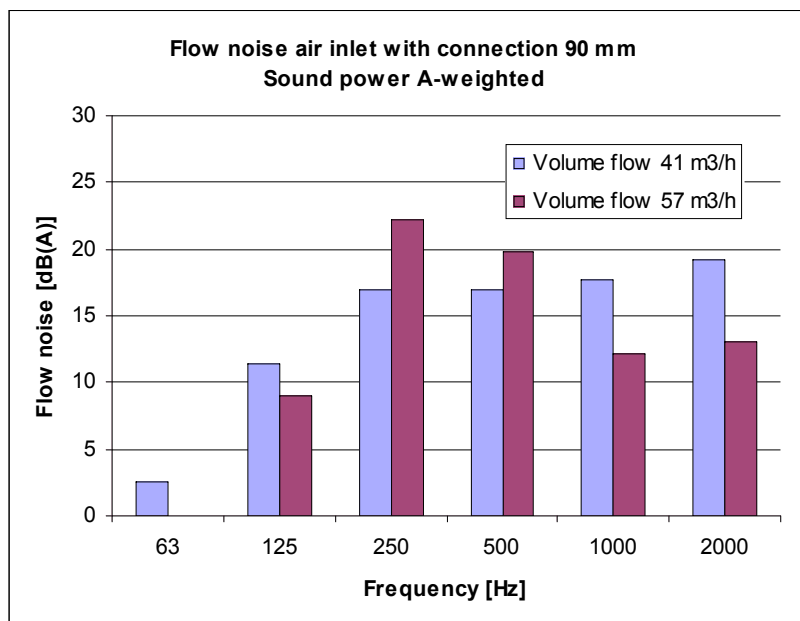
In the frequency bands > 2500 Hz the differences between the sound source and the background noise are < 4 dB and are not displayed.



Flow noise air inlet in octave band

Volume flow	Sound power level unweighted		Sound power level A-weighted	
	41 m ³ /h	57 m ³ /h	41 m ³ /h	57 m ³ /h
f Hz	Lw1 dB	Lw2 dB	Lw1(A) dB(A)	Lw2(A) dB(A)
63*	28.7	21.7	2.6	0.0
125	27.5	25.1	11.4	9.0
250	25.6	30.8	17.0	22.2
500	20.1	23.0	16.9	19.8
1000	17.7	12.1	17.7	12.1
2000	18.1	11.8	19.3	13.0
Total	32.8	32.8	24.1	24.9

* and **xy** see note at "Flow noise air inlet in one-third octave band"



5.2. Air distribution box

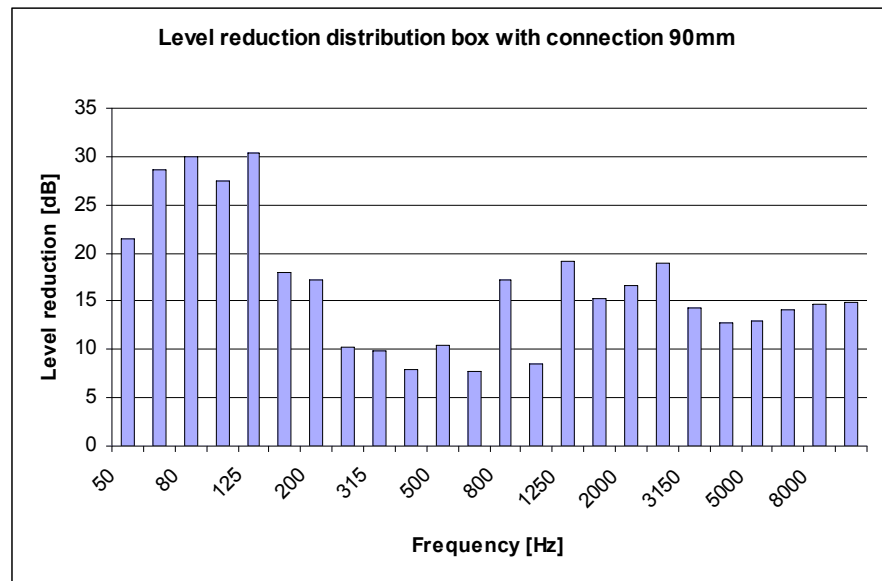
5.2.1. Level reduction with connection DN 90 (insertion loss)

Ambient conditions

Air temperature	19 °C
Air humidity	58 % r.H.
Atmospheric pressure	964 mbar

Level reduction air distribution box in one-third octave band

f Hz	De dB
50*	21.5
63*	28.6
80*	29.9
100	27.5
125	30.4
160	18.0
200	17.1
250	10.3
315	9.8
400	8.0
500	10.4
630	7.7
800	17.2
1000	8.5
1250	19.1
1600	15.2
2000	16.6
2500	19.0
3150	14.4
4000	12.7
5000	13.0
6300	14.0
8000	14.7
10000	14.9

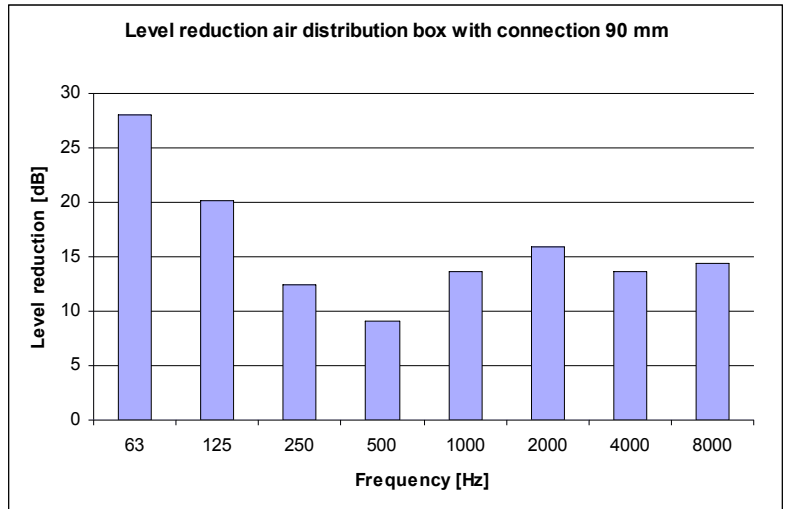


* The measurements at frequencies < 100 Hz are given only for information. The reverberation chamber is appropriate for frequencies from 100 Hz.

Level reduction air distribution box in octave band (insertion loss)

f Hz	De dB
63*	28.1
125	20.1
250	12.5
500	9.1
1000	13.7
2000	16.0
4000	13.6
8000	14.4

* see note at “Level reduction air distribution box in one-third octave band”



6. Concluding remark

For the air inlet at the air distribution box the flow noises at volume flows < 41 m³/h would have been interesting. But it is not possible to measure the sound power levels at these volume flows with the current measuring installation.

The measured results apply solely to the unit submitted for testing.

*Electronically recorded data will be stored for the duration of 3 years. The test report and any associated documents will be archived at the **testing laboratory HVAC** for the duration of 10 years.*

During this time the client may inspect these documents in situ. The costs of providing any copies that may be required will be charged to the client.

This test report was translated into English language on 2008-02-28.

Horw, 2006-06-02

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