CRS60

Acoustic Data Sheet

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Sound power in the room, sound power per octave band, sound power in the duct, net flow rate.

General

The acoustic values presented in this document have been determined on the basis of tests carried out in accredited acoustic laboratories. The measurements were carried out in accordance with standard EN ISO 5135: Acoustics – Determination of sound power levels of noise from air-terminal devices, air-terminal units, dampers and valves by measurement in a reverberation test room.

The sound power level values are corrected using the A-weighting factor, whereby certain frequency components are attenuated or amplified in accordance with the sensitivity of the human ear. The resulting LwA values are expressed in dB(A).

Sound levels in the room vs in the ventilation duct

The sound measurement is carried out in a reverberation chamber. The LwA values are calculated on the basis of sound measurements taken in the room. The sound emitted into the ventilation duct by a source such as a fan is not always fully transmitted into the test chamber. Part of the sound energy is reflected back towards the source. The difference at the opening in the reverberation chamber is called the end reflection. The sound power level in the duct is equal to the sum of the sound power level in the room and the end reflection. For fire dampers, the LwA values in the room are usually used. For other components, manufacturers sometimes specify the duct values. To enable accurate calculations, we also publish the sound power levels in the duct.

Calculations per octave band

For more detailed sound calculations, it is sometimes necessary to break down the sound power by frequency. The different frequencies are grouped into octave bands. The table below shows the correction factors for calculating sound power per octave band, expressed in dB. The correction factor must be added to the LwA value of the fire damper to determine the sound power per octave band, at a specific air velocity in the ventilation duct.

Tables

Sound power (LwA) in the room

The table below shows the flow rate, expressed in m^3/h, for each dimension, at a specified sound power level expressed in dB(A)

[dB(A)]	Dn [mm]								
	100	125	160	200	250	315	400	500	630
45	311	457	701	1032	1522	2278	3152	3865	4790
40	213	313	481	708	1044	1563	2210	2711	3359
35	146	215	330	486	716	1072	1550	1901	2355
30	100	148	226	333	491	736	1087	1333	1652
25	69	101	155	229	337	505	762	935	1158

Formula: $LwA_{room} = A*\ln(v)+B*\ln(Dh)+C$

	height from 100 to 315mm	height from 400 to 630mm
A	13,268	14,089
B	3,209	14,399
C	22,661	38,919
D_h	Hydraulic diameter (see table at the back)	Hydraulic diameter (see table at the back)
v	Air velocity, expressed in m/s	Air velocity, expressed in m/s

LwA values in the room can be calculated in our BIM library (bim.rft.eu). Register or log in, then select a calculation method (based on a given air velocity or flow rate). LwA and pressure drops are shown for each dimension.

Correction factor per octave band

v [m/s]	Correction factor per octave band (dB)							
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
2	12,8	6,0	6,0	-1,7	-9,7	-12,3	-10,2	-8,1
4	5,3	0,3	4,6	-4,9	-13,3	-20,8	-18,2	-17,0
6	5,3	-1,4	3,3	-4,9	-12,5	-20,9	-21,9	-21,9
8	2,5	-2,7	2,6	-2,9	-7,9	-14,1	-19,3	-23,4
10	2,1	-2,0	3,7	-2,0	-5,8	-10,6	-16,9	-24,5
12	0,4	-1,6	2,5	-0,7	-3,4	-6,5	-12,1	-23,3

Formula: $Lw_{oct} = \Delta L + LwA$

Sound power (LwA) in the duct

The table below shows the flow rate, expressed in m³/h, for each damper, at a specified sound power expressed in dB(A).

[dB(A)]	Dn [mm]								
	100	125	160	200	250	315	400	500	630
45	124	210	374	630	1061	1817	2688	3410	4374
40	82	139	247	417	702	1202	1837	2330	2988
35	54	92	164	276	464	795	1255	1592	2041
30	36	61	108	182	307	526	857	1087	1395
25	24	40	72	121	203	348	586	743	953

Net passage & hydraulic diameter

	D [mm]								
	100	125	160	200	250	315	400	500	630
Sn [m²]	0,006	0,010	0,017	0,028	0,044	0,072	0,114	0,181	0,292
Dh [m]	0,052	0,067	0,089	0,113	0,143	0,183	0,228	0,289	0,369