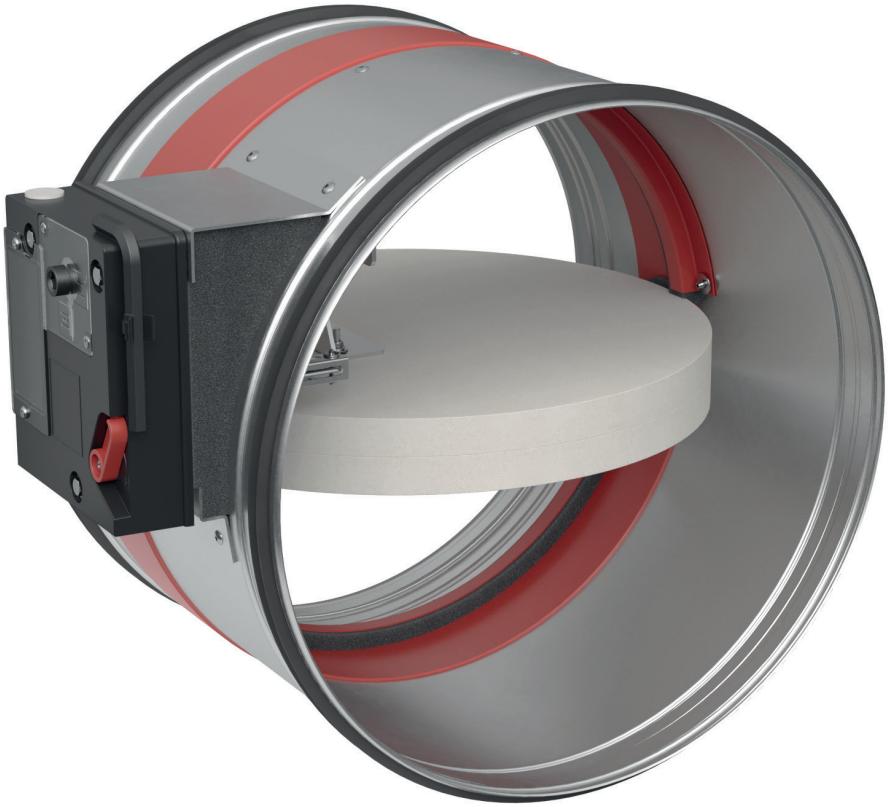
CR2

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]								
	200	250	315	355	400	450	500	560	630
45	363	674	1250	1710	2332	3159	4137	5523	7446
40	301	560	1038	1420	1936	2622	3434	4585	6182
35	250	465	861	1179	1607	2177	2851	3806	5132
30	208	386	715	978	1334	1807	2367	3160	4260
25	172	320	594	812	1107	1500	1965	2623	3536

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

A	26,860
B	-12,407
C	-19,399
D_h	Hydraulic diameter (see table at the back)
v	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	19,5	4,7	-1,3	-5,7	-9,9	-15,6	-17,0	-12,4
4	3,5	-0,6	-4,2	-2,3	-5,2	-12,1	-19,3	-24,0
6	-2,8	-2,0	-5,1	-4,7	-0,6	-9,6	-15,3	-22,4
8	-4,8	-3,4	-5,7	-6,4	-2,2	-8,8	-13,9	-20,8
10	-6,9	-4,8	-6,2	-6,8	-4,0	-6,6	-13,2	-19,5
12	-8,6	-6,2	-7,5	-7,8	-6,2	-5,8	-13,5	-19,6

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

Sound power (LwA) in the duct

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

[dB(A)]	Dn [mm]								
	200	250	315	355	400	450	500	560	630
45	281	543	1043	1451	2010	2764	3669	4966	6791
40	225	435	835	1162	1610	2214	2939	3978	5440
35	181	349	669	931	1290	1774	2354	3187	4358
30	145	279	536	746	1033	1421	1886	2553	3491
25	116	224	429	597	828	1138	1511	2045	2797

Net passage & hydraulic diameter

	Dn [mm]								
	200	250	315	355	400	450	500	560	630
Sn [m²]	0,013	0,025	0,047	0,064	0,086	0,114	0,146	0,189	0,247
Dh [m]	0,070	0,101	0,141	0,166	0,194	0,225	0,255	0,292	0,335