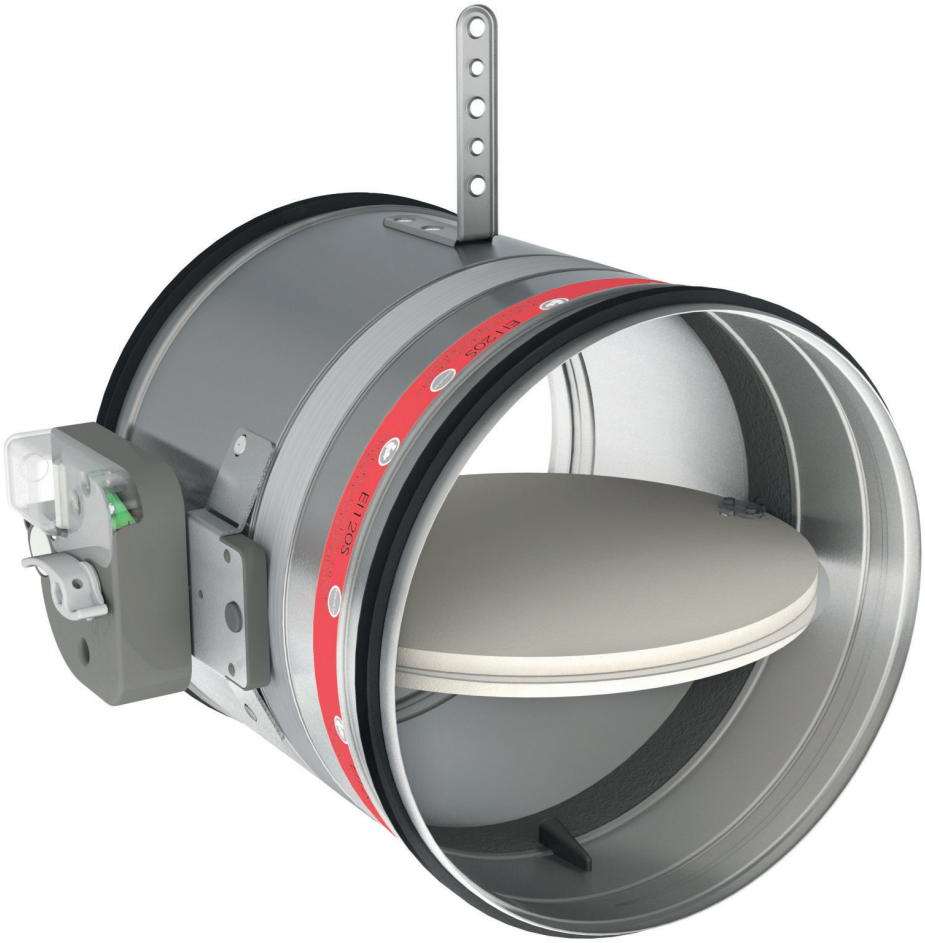
CR120

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	150	160	180	200	250	300	315
45	234	356	503	568	711	868	1327	1878	2060
40	180	275	388	438	548	670	1024	1448	1589
35	139	212	299	338	423	517	790	1117	1226
30	107	164	231	261	326	398	609	862	946
25	83	126	178	201	252	307	470	665	729

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

A	19,262
B	1,666
C	9,489
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	18,8	2,9	-5,7	-11,8	-17,2	-14,3	-8,1	1,7
4	8,9	3,5	-2,9	-6,7	-9,7	-17,3	-20,6	-14,7
6	5,7	2,0	-2,5	-5,1	-6,5	-10,3	-17,7	-18,6
8	3,6	0,8	-3,4	-3,9	-4,0	-6,3	-12,0	-17,1
10	-2,7	-3,6	-5,4	-4,6	-4,0	-6,0	-9,9	-15,9
12	-3,5	-4,0	-4,6	-4,1	-3,4	-5,0	-8,0	-12,8

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]								
	100	125	150	160	180	200	250	300	315
45	138	225	335	386	498	626	1015	1506	1673
40	98	159	237	273	352	443	718	1065	1183
35	69	113	168	193	249	313	508	754	837
30	49	80	119	137	176	222	360	533	592
25	35	56	84	97	125	157	254	377	419

Net passage & hydraulic diameter

	Dn [mm]								
	100	125	150	160	180	200	250	300	315
Sn [m²]	0,005	0,008	0,013	0,015	0,019	0,025	0,041	0,061	0,067
Dh [m]	0,044	0,060	0,075	0,081	0,093	0,105	0,136	0,167	0,176