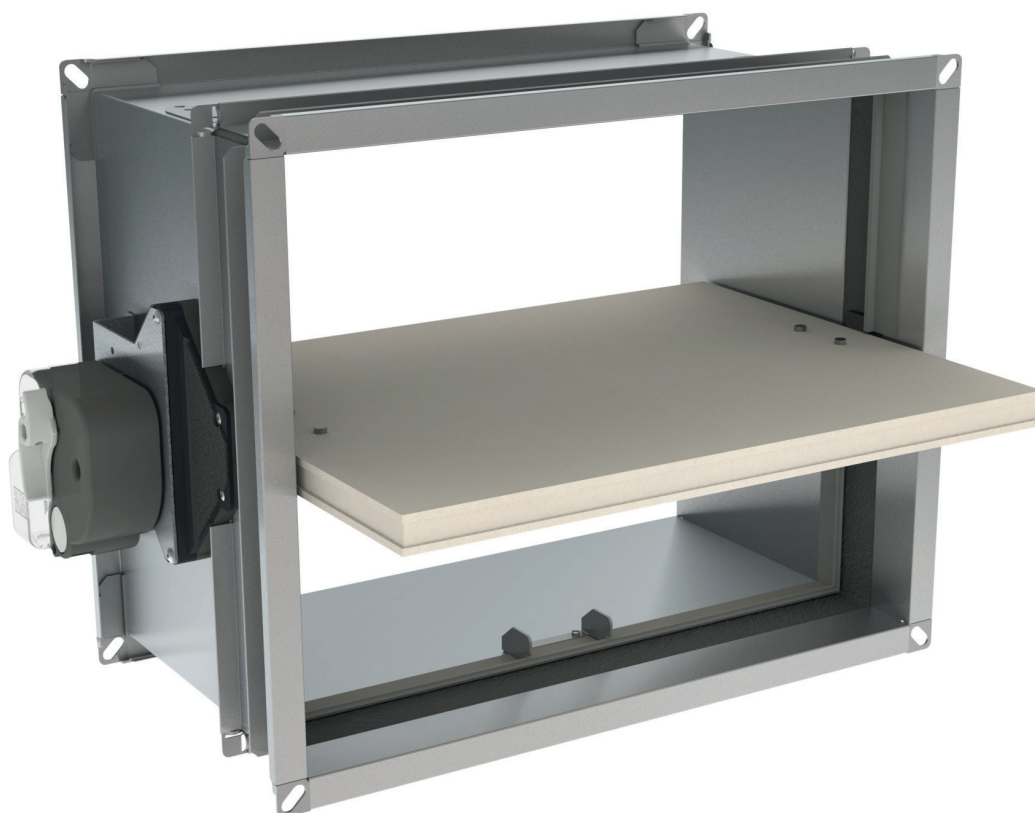




CU-LT

Acoustic Data Sheet



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 m³/h, for each dimension, at a specified sound power level expressed in dB(A).

Hn (mm)		Bn (mm)													LwA (dB(A))
		200	250	300	350	400	450	500	550	600	650	700	750	800	
100	Q [m ³ /h]	617	768	920	1072	1224	1376	1528	1679	1831	1983	2135	2287	2439	45
		501	624	748	871	995	1118	1242	1365	1489	1612	1735	1859	1982	40
		407	508	608	708	809	909	1009	1110	1210	1310	1411	1511	1611	35
		331	413	494	576	657	739	820	902	983	1065	1147	1228	1310	30
		269	335	402	468	534	600	667	733	799	866	932	998	1064	25
150	Q [m ³ /h]	875	1089	1302	1515	1728	1941	2155	2368	2581	2794	3007	3221	3434	45
		712	885	1058	1231	1405	1578	1751	1925	2098	2271	2444	2618	2791	40
		578	719	860	1001	1142	1283	1423	1564	1705	1846	1987	2128	2269	35
		470	585	699	814	928	1043	1157	1271	1386	1500	1615	1729	1844	30
		382	475	568	661	754	847	940	1033	1126	1220	1313	1406	1499	25
200	Q [m ³ /h]	1133	1407	1680	1954	2227	2500	2773	3046	3320	3593	3866	4139	4412	45
		921	1143	1366	1588	1810	2032	2254	2476	2698	2920	3142	3364	3586	40
		749	929	1110	1291	1471	1652	1832	2013	2193	2373	2554	2734	2915	35
		609	755	902	1049	1196	1342	1489	1636	1782	1929	2076	2223	2369	30
		495	614	733	853	972	1091	1210	1330	1449	1568	1687	1806	1926	25

Hn [mm]		Bn [mm]													LWA [dB(A)]
		200	250	300	350	400	450	500	550	600	650	700	750	800	
250	Q [m³/h]	1390	1722	2055	2387	2719	3051	3383	3715	4047	4379	4711	5043	5375	45
		1130	1400	1670	1940	2210	2480	2750	3020	3290	3559	3829	4099	4369	40
		918	1138	1358	1577	1797	2016	2235	2455	2674	2893	3112	3332	3551	35
		746	925	1103	1282	1460	1639	1817	1995	2173	2352	2530	2708	2886	30
		607	752	897	1042	1187	1332	1477	1622	1766	1911	2056	2201	2346	25
300	Q [m³/h]	1533	1954	2377	2802	3227	3653	4080	4507	4934	5361	5788	6216	6644	45
		1267	1616	1966	2317	2668	3020	3373	3726	4079	4432	4786	5139	5493	40
		1048	1336	1625	1915	2206	2497	2789	3080	3372	3664	3956	4249	4541	35
		866	1104	1343	1583	1824	2065	2305	2547	2788	3029	3271	3513	3754	30
		716	913	1111	1309	1508	1707	1906	2105	2305	2505	2704	2904	3104	25
350	Q [m³/h]	1826	2334	2844	3356	3870	4384	4900	5416	5932	6449	6966	7484	8001	45
		1510	1929	2351	2775	3199	3625	4051	4478	4905	5332	5759	6187	6615	40
		1248	1595	1944	2294	2645	2997	3349	3702	4055	4408	4762	5115	5469	35
		1032	1319	1607	1897	2187	2478	2769	3061	3352	3644	3937	4229	4521	30
		853	1090	1329	1568	1808	2048	2289	2530	2772	3013	3255	3496	3738	25
400	Q [m³/h]	2122	2717	3316	3918	4522	5127	5734	6341	6950	7558	8168	8777	9387	45
		1754	2246	2741	3239	3738	4239	4740	5243	5746	6249	6753	7256	7761	40
		1450	1857	2266	2678	3091	3505	3919	4334	4750	5166	5583	5999	6416	35
		1199	1535	1874	2214	2555	2897	3240	3583	3927	4271	4615	4960	5305	30
		991	1269	1549	1830	2113	2395	2679	2963	3247	3531	3816	4101	4386	25
450	Q [m³/h]	2420	3103	3792	4485	5181	5880	6579	7280	7982	8685	9389	10093	10797	45
		2000	2565	3135	3708	4284	4861	5439	6019	6599	7180	7762	8344	8926	40
		1654	2121	2592	3066	3542	4019	4497	4976	5456	5936	6417	6898	7380	35
		1367	1753	2143	2535	2928	3322	3718	4114	4511	4908	5305	5703	6101	30
		1130	1450	1772	2095	2421	2747	3074	3401	3729	4058	4386	4715	5044	25
500	Q [m³/h]	2718	3491	4272	5058	5847	6640	7434	8231	9028	9827	10627	11427	12228	45
		2247	2886	3532	4181	4834	5489	6146	6805	7464	8124	8786	9447	10109	40
		1858	2386	2920	3457	3997	4538	5082	5626	6171	6717	7263	7811	8358	35
		1536	1973	2414	2858	3304	3752	4201	4651	5102	5553	6005	6457	6910	30
		1270	1631	1996	2363	2732	3102	3473	3845	4218	4591	4965	5339	5713	25
550	Q [m³/h]	3018	3882	4755	5634	6519	7407	8298	9191	10086	10982	11879	12778	13677	45
		2495	3209	3931	4658	5389	6123	6860	7598	8338	9079	9821	10564	11307	40
		2063	2653	3250	3851	4456	5063	5672	6282	6894	7506	8120	8734	9348	35
		1706	2194	2687	3184	3684	4186	4689	5194	5699	6206	6713	7221	7729	30
		1410	1813	2221	2632	3045	3460	3877	4294	4712	5131	5550	5970	6390	25
600	Q [m³/h]	3319	4274	5240	6214	7194	8179	9168	10159	11153	12148	13145	14143	15142	45
		2744	3533	4332	5137	5948	6762	7580	8399	9220	10043	10867	11693	12519	40
		2269	2921	3581	4247	4918	5591	6266	6944	7623	8303	8985	9667	10350	35
		1876	2415	2961	3512	4066	4622	5181	5741	6302	6865	7428	7992	8557	30
		1551	1997	2448	2903	3361	3821	4283	4746	5210	5675	6141	6607	7074	25

Formula: $LWA_{room} = A \cdot \ln(v) + B \cdot \ln(D_h) + C$

A	26,281
B	-5,497
C	-16,952
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	21,6	5,8	0,2	13,5	18,7	12,8	1,9	10,4
3	14,9	5,3	0,1	7,5	14,4	15,6	10,9	0,9
4	10,6	4,7	0,1	4,2	10,8	16,2	17,2	9,4
6	4,0	4,1	0,3	3,5	7,0	11,2	18,5	19,1
8	2,4	3,6	0,7	3,2	5,8	8,6	14,5	20,7
10	1,9	2,7	1,0	3,0	5,0	6,9	11,6	18,3
12	1,1	1,5	1,1	3,2	5,0	6,5	10,4	16,4

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).

Hn [mm]		Bn [mm]													LWA [dB(A)]
		200	250	300	350	400	450	500	550	600	650	700	750	800	
100	Q [m³/h]	331	417	503	590	676	762	848	934	1020	1106	1192	1278	1364	45
		269	339	409	478	548	618	688	758	828	898	967	1037	1107	40
		218	275	332	388	445	502	558	615	672	728	785	842	898	35
		177	223	269	315	361	407	453	499	545	591	637	683	729	30
		144	181	218	256	293	330	368	405	442	480	517	554	592	25
150	Q [m³/h]	574	728	881	1035	1189	1343	1497	1650	1804	1958	2112	2266	2420	45
		466	591	715	840	965	1090	1214	1339	1464	1589	1714	1839	1964	40
		378	479	580	682	783	884	985	1087	1188	1289	1391	1492	1593	35
		307	389	471	553	635	717	800	882	964	1046	1129	1211	1293	30
		249	316	382	449	516	582	649	716	782	849	916	983	1049	25
200	Q [m³/h]	828	1054	1281	1508	1736	1963	2191	2419	2647	2874	3102	3330	3558	45
		672	856	1040	1224	1408	1593	1778	1963	2148	2332	2517	2702	2887	40
		545	694	844	993	1143	1293	1443	1593	1743	1893	2043	2193	2343	35
		442	563	685	806	927	1049	1171	1292	1414	1536	1658	1780	1901	30
		359	457	556	654	753	851	950	1049	1148	1246	1345	1444	1543	25
250	Q [m³/h]	1089	1392	1696	2002	2307	2614	2920	3227	3533	3840	4147	4455	4762	45
		884	1130	1377	1624	1872	2121	2369	2618	2867	3116	3366	3615	3864	40
		717	917	1117	1318	1519	1721	1923	2125	2327	2529	2731	2933	3136	35
		582	744	906	1070	1233	1397	1560	1724	1888	2052	2216	2380	2544	30
		472	604	736	868	1000	1133	1266	1399	1532	1665	1798	1932	2065	25
300	Q [m³/h]	1355	1738	2123	2510	2898	3287	3676	4066	4456	4846	5236	5627	6018	45
		1100	1410	1723	2037	2352	2667	2983	3299	3616	3932	4249	4566	4883	40
		892	1145	1398	1653	1908	2164	2421	2677	2934	3191	3448	3705	3963	35
		724	929	1135	1341	1549	1756	1964	2172	2381	2589	2798	3007	3216	30
		588	754	921	1088	1257	1425	1594	1763	1932	2101	2271	2440	2609	25
350	Q [m³/h]	1625	2090	2559	3031	3504	3978	4454	4930	5406	5883	6361	6839	7317	45
		1319	1696	2077	2459	2843	3228	3614	4000	4387	4774	5162	5549	5937	40
		1070	1376	1685	1996	2307	2620	2933	3246	3560	3874	4189	4503	4818	35
		868	1117	1367	1619	1872	2126	2380	2634	2889	3144	3399	3654	3910	30
		705	906	1110	1314	1519	1725	1931	2138	2344	2551	2758	2965	3173	25
400	Q [m³/h]	1898	2447	3002	3560	4121	4684	5249	5814	6381	6948	7515	8084	8652	45
		1540	1986	2436	2889	3344	3801	4259	4718	5178	5638	6099	6560	7021	40
		1250	1611	1977	2344	2714	3085	3456	3829	4202	4575	4949	5323	5697	35
		1014	1308	1604	1902	2202	2503	2805	3107	3409	3712	4016	4319	4623	30
		823	1061	1302	1544	1787	2031	2276	2521	2767	3013	3259	3505	3752	25

Hn [mm]		Bn [mm]													LWA [dB(A)]
		200	250	300	350	400	450	500	550	600	650	700	750	800	
450	Q [m³/h]	2173	2807	3450	4097	4749	5403	6058	6716	7375	8035	8695	9356	10018	45
		1763	2278	2800	3325	3853	4384	4916	5450	5984	6520	7056	7592	8130	40
		1431	1849	2272	2698	3127	3557	3989	4422	4856	5291	5726	6161	6597	35
		1161	1500	1843	2189	2537	2887	3237	3589	3941	4293	4646	5000	5353	30
		942	1217	1496	1777	2059	2343	2627	2912	3198	3484	3770	4057	4344	25
500	Q [m³/h]	2449	3171	3903	4641	5384	6131	6881	7632	8386	9141	9897	10654	11411	45
		1987	2573	3167	3766	4369	4975	5583	6193	6805	7417	8031	8645	9260	40
		1613	2088	2570	3056	3545	4037	4531	5026	5522	6019	6517	7015	7514	35
		1309	1694	2085	2480	2877	3276	3677	4078	4481	4884	5288	5693	6098	30
		1062	1375	1692	2012	2335	2658	2983	3309	3636	3963	4291	4619	4948	25
550	Q [m³/h]	2727	3537	4359	5190	6026	6868	7713	8561	9411	10263	11117	11972	12828	45
		2213	2870	3537	4211	4890	5573	6259	6947	7637	8328	9021	9715	10409	40
		1796	2329	2870	3417	3968	4522	5079	5637	6197	6758	7320	7883	8447	35
		1457	1890	2329	2773	3220	3670	4121	4575	5029	5484	5940	6397	6854	30
		1182	1534	1890	2250	2613	2978	3344	3712	4081	4450	4820	5191	5562	25
600	Q [m³/h]	3006	3905	4818	5743	6675	7612	8555	9501	10449	11401	12354	13308	14265	45
		2439	3169	3910	4660	5416	6177	6942	7709	8479	9251	10025	10799	11575	40
		1979	2571	3173	3781	4395	5013	5633	6256	6881	7507	8135	8763	9393	35
		1606	2086	2575	3069	3566	4068	4571	5077	5584	6092	6601	7111	7622	30
		1303	1693	2089	2490	2894	3301	3709	4119	4531	4943	5357	5771	6185	25

Net passage & hydraulic diameter

Net passage, expressed in m².

Hn [mm]	Bn [mm]												
	200	250	300	350	400	450	500	550	600	650	700	750	800
100	0,010	0,013	0,015	0,018	0,021	0,024	0,026	0,029	0,032	0,035	0,037	0,040	0,043
150	0,019	0,024	0,029	0,035	0,040	0,045	0,050	0,056	0,061	0,066	0,071	0,077	0,082
200	0,028	0,036	0,043	0,051	0,059	0,067	0,074	0,082	0,090	0,098	0,105	0,113	0,121
250	0,037	0,047	0,057	0,068	0,078	0,088	0,098	0,109	0,119	0,129	0,139	0,150	0,160
300	0,046	0,059	0,071	0,084	0,097	0,110	0,122	0,135	0,148	0,161	0,173	0,186	0,199
350	0,055	0,070	0,085	0,101	0,116	0,131	0,146	0,162	0,177	0,192	0,207	0,223	0,238
400	0,064	0,082	0,099	0,117	0,135	0,153	0,170	0,188	0,206	0,224	0,241	0,259	0,277
450	0,073	0,093	0,113	0,134	0,154	0,174	0,194	0,215	0,235	0,255	0,275	0,296	0,316
500	0,082	0,105	0,127	0,150	0,173	0,196	0,218	0,241	0,264	0,287	0,309	0,332	0,355
550	0,091	0,116	0,141	0,167	0,192	0,217	0,242	0,268	0,293	0,318	0,343	0,369	0,394
600	0,100	0,128	0,155	0,183	0,211	0,239	0,266	0,294	0,322	0,350	0,377	0,405	0,433

Hydraulic diameter, expressed in m.

Hn [mm]	Bn [mm]												
	200	250	300	350	400	450	500	550	600	650	700	750	800
100	0,048	0,049	0,050	0,051	0,051	0,052	0,052	0,052	0,053	0,053	0,053	0,053	0,053
150	0,081	0,085	0,088	0,091	0,092	0,094	0,095	0,096	0,096	0,097	0,097	0,098	0,098
200	0,108	0,116	0,121	0,126	0,129	0,131	0,133	0,135	0,137	0,138	0,139	0,140	0,141
250	0,131	0,142	0,150	0,156	0,161	0,166	0,169	0,172	0,174	0,176	0,178	0,180	0,181
300	0,149	0,164	0,175	0,184	0,191	0,197	0,201	0,206	0,209	0,212	0,215	0,217	0,219
350	0,165	0,183	0,197	0,209	0,218	0,225	0,231	0,237	0,242	0,246	0,249	0,252	0,255
400	0,179	0,200	0,217	0,231	0,242	0,251	0,259	0,266	0,272	0,277	0,282	0,286	0,289
450	0,191	0,215	0,235	0,251	0,264	0,275	0,285	0,293	0,300	0,306	0,312	0,317	0,322
500	0,201	0,229	0,251	0,269	0,285	0,298	0,309	0,318	0,327	0,334	0,341	0,347	0,352
550	0,210	0,241	0,266	0,286	0,303	0,318	0,331	0,342	0,352	0,361	0,368	0,375	0,382
600	0,218	0,252	0,279	0,301	0,321	0,337	0,352	0,364	0,375	0,385	0,394	0,402	0,409