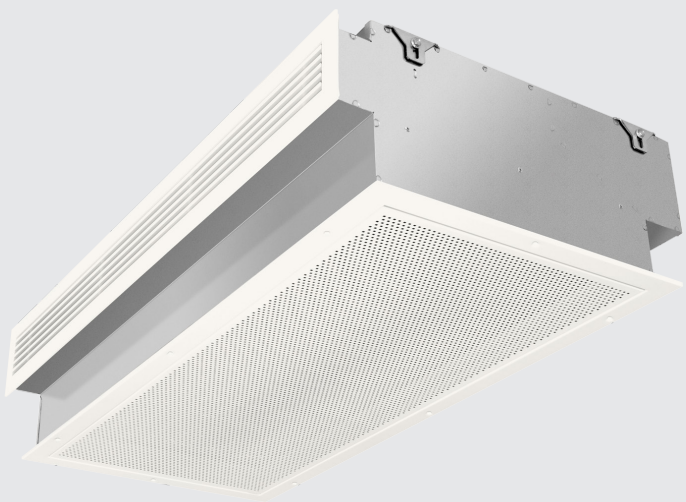
Active chilled beam for ventilation, cooling and/or heating of hotel rooms

HotelAir



Description

The HotelAir active chilled beam is a one-way induction type air-conditioning unit developed specially for hotel applications. HotelAir is primarily designed to ventilate, cool and/or heat buildings, where a comfortable climate and individual room control is needed. HotelAir is designed to fit most type of suspended ceiling framework on the market with a standard width of 600 mm.

Air duct connection: From 125 mm to 160 mm, depending on the air volume.

Application

HotelAir induction type active chilled beam installed into false ceiling is suitable for ventilation, cooling and also heating. HotelAir beams are usually used for ventilating and air conditioning hotel rooms, but can be mounted in any rooms where the ceiling is suitable for installation.

Main features

- Specifically developed for hotels room applications
- Energy efficient high performance operation
- Elegant, integrated exterior design
- Available with adjustable (DH) supply air grille options
- Silent operation
- Easy accessible front panel
- Available with ControlAir automatic demand-control operation (optional)

T.1. Quick selection

Size (mm)	Airflow l/s [m³/h]	Cooling capacity*) (W), 50-150 (Pa)		
		Air	Water	Total
600	6-25 [22-90]	72-300	352-532	424-832
800	8-33 [29-119]	84-396	486-723	570-1119
1000	10-42 [36-151]	108-504	624-924	732-1428
1200	12-50 [43-180]	132-600	761-1129	893-1729
1500	14-55 [50-198]	168-660	973-1441	1141-2101
1800	14-68 [50-245]	168-816	1135-1719	1303-2535

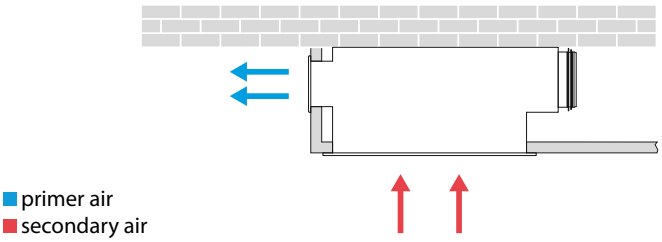
* at ΔT = 10 °K

Function

The primary air from the supply air system, connected to the plenum box, and distributed through specially shaped nozzles. As the air is discharged through the nozzles, the high velocity air jets above the coil create a low-pressure zone. This low - pressure zone draws ambient room air through the coil, and as it passes the coil fins it is conditioned (cooling - heating), according to the water temperature flowing through the coil. The conditioned air then mixes with the air jets (ventilation air, humidity control) before it is discharged back into the occupied space. The conditioned/mixed air discharged along the ceiling provides an optimal Coanda effect that is always the objective when the occupied zone requires low air velocities.

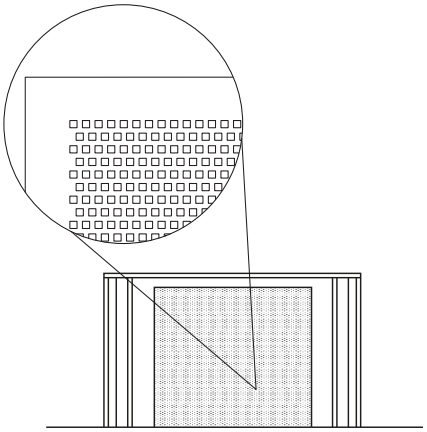
Maintenance

The perforated front panel of HotelAir can be folded down allowing easy access for maintenance. The plenum box and the heat exchanger have to be cleaned by carefully using a vacuum cleaner so that the aluminium fins and the copper tubes are not damaged. The parts that are out of reach for the vacuum cleaner have to be wiped off with a soft cloth. If required, mild preferably neutral cleaning detergent could be used. The electrical parts have to be maintained in accordance with the relevant prescriptions. The points of connection/ shock protection and the functional ability of the components must be checked. The maintenance operation has to be carried out at least twice a year.



Materials

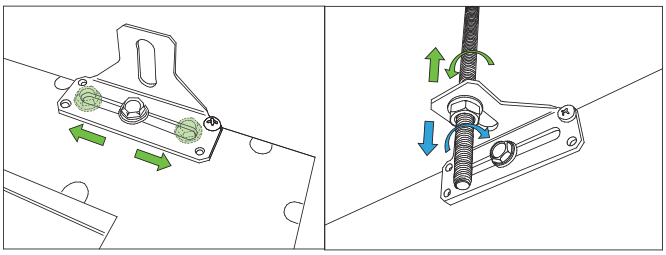
The connection and plenum air box are made of galvanized steel. The visible perforated front plate and frame is powder coated aluminium and sheet steel painted in standard white RAL 9003 colour. The coil has copper tubes and aluminium fins. Square or circular pattern as standard perforation options. AG or DH aluminum grille powder coated in RAL 9003. The fronts are produced with square perforation as standard.



Square perforation

Mounting instructions

HotelAir is delivered with four factory mounted suspension elements (one in every corner), which can be adjusted separately in four directions. The primary air connection is supplied separately in 125 or 160 mm sizes. The connections are mounted directly on the plenum box and is locked with a screw.



Technical data

Sound power level / octave band L_W dB
Sound Pressure Level L_{PA} dB (A) (read from the power tables)
Corr: K_0 dB from Table 3 $_{LW} = L_{PA} + K_0$
Natural attenuation as shown in Table 4 apply to don incl. orifice damping.
The measurements have been performed in accordance with ISO 9614-2 and ISO 11691: 1995.

Sound pressure level L_{PA}

Room volume capacity (m^3)	Room type	Correction (dB)
25	hard	+ 2
25	attenuated	- 2
150	hard	- 3
150	normal	- 5
150	attenuated	- 7

The sound pressure level L_{PA} dB(A) applies to an equivalent surface of 10 m2, which corresponds to an attenuation of 4 dB in a 25 m3 room with normal atteunation.
Please see the chart to the right for correction examples of different room types.

T.3. Correction K_0 dB

Size (mm)	Medium frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
600	+13	0	+1	0	-2	-2	-7	-13
800	+12	+5	+9	+3	-3	-10	-17	-23
1000	+8	+5	+6	+2	-1	-7	-11	-18
1200	+9	+4	+7	+3	-3	-10	-17	-27
1500	-	-	-	-	-	-	-	-
1800	-	-	-	-	-	-	-	-

Tolerance ± 3 dB

T.4. Sound attenuation dB

Size (mm)	Medium frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
600	18	10	7	7	13	14	17	20
800	20	10	7	12	9	11	12	14
1000	21	6	7	12	10	13	12	16
1200	20	9	8	13	10	11	12	15
1500	-	-	-	-	-	-	-	-
1800	-	-	-	-	-	-	-	-

Tolerance ± 3 dB

Selection guide

Example for HotelAir heating

An office has dimensions of 3.5 x 4.5 x 2.7 (m^3).
There is a heat requirement of 30 W / m^2 (30 x 3.5 x 4.5 = 473 W)

Preconditions:
Dimensioned room temperature: 22.0 °C
Available duct pressure: 100 Pa.
Supply air temperature: 18 °C.
Airflow: 20 l/s.
Heating water flow and return: 45.0 / 39.0 °C. (Δt = 6.0 °C). Δt.

Attention!
Because the supply air temperature is lower than the design room temperature gives an adverse effect on the heat demand. We therefore need to compensate for this.

(20.0 x 4.0 x 1.2 = 96 W).
The total heat demand is therefore 473 + 96 = 569 W.

We choose a WallAir 800, according to the chart on page 6.
Δt water room: 20.0 °C. Heat output: 635 W.

The water flow is calculated from the formula:
P = qv x CPV x + δv Δtv. (CPV x δv ≈ 4200).

qv = (635 / (6 x 4200)) -> qv = 0.025 l/s.

The water flow of 0.025 l/s gives a correction of 0.97 according to the chart first.

The final heat output is therefore: 635 x 0.97 = 616 W, which can handle the heat requirement of 596 W.

Example for HotelAir cooling

An office has dimensions of 3.5 x 4.5 x 2.7 (m^3).
There is a cooling load of 40 W / m^2 (40 x 3.5 x 4.5 = 630 W)

Preconditions:
Dimensioned room temperature: 24.0 °C
Available duct pressure: 100 Pa.
Supply air temperature: 16 °C
(Δt: the room, supply air temperature: 8.0 ° C).
Airflow: 20 l/s.
Cooling water supply and return: 14.0 / 17.0 °C. (Δt =3.0°C).
Δt. Room-water average temperature: 8.5 ° C.

Attention!
Because the supply air temperature is lower than the design room temperature, this provides a beneficial effect on the cooling load. Therefore, we can compensate for this.

(20.0 x 8.0 x 1.2 = 192 W)
The total cooling load of the water is therefore 630-192 = 438 W, then the cold air supply 192 W.

We choose a WallAir 1000 according to the chart on page 5.
Δt water-rooms: 8.5 °C. Cooling power: 546 W.

The water flow is calculated from the formula:
P = qv x CPV x + δv Δtv. (CPV x δv ≈ 4200).

qv = (546 / (3 x 4200)) -> qv = 0.043 l/s.

The water flow at 0,043 l/s gives a correction of 0.96 according to the first chart.

The final cooling effect will be: 546 x 0.96 = 554 W, we then add air at 192 W, the total cooling capacity 716 W and we can handle the cooling load of 630 W.

T.5. Selection chart

Cooling capacity

Size (mm)	Primary airflow		Cooling capacity* - water (W) for pressure 50 Pa at given ΔT (°C)					Cooling capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
	l/s	[m³/h]	6	7	8	9	10	6	7	8	9	10	
600	6	[22]	211	246	282	317	352	43	50	58	65	72	-
	8	[29]	216	252	288	324	360	50	59	67	76	84	
	9	[32]	218	255	291	328	364	58	67	77	86	96	
	11	[40]	224	261	298	336	373	72	84	96	108	120	
	13	[47]	229	267	305	343	381	79	92	106	119	132	
	14	[50]	231	270	308	347	385	86	101	115	130	144	
800	8	[29]	292	340	389	437	486	50	59	67	76	84	< 20
	11	[40]	304	354	405	455	506	65	76	86	97	108	
	13	[47]	310	362	414	465	517	79	92	106	119	132	
	15	[54]	316	368	421	473	526	94	109	125	140	156	
	17	[61]	321	375	428	482	535	108	126	144	162	180	
	19	[68]	325	379	434	488	542	115	134	154	173	192	
1000	10	[36]	374	437	499	562	624	65	76	86	97	108	< 20
	13	[47]	386	451	515	580	644	79	92	106	119	132	
	16	[58]	397	463	529	595	661	94	109	125	140	156	
	19	[68]	405	473	540	608	675	115	134	154	173	192	
	21	[76]	410	478	546	615	683	130	151	173	194	216	
	24	[86]	417	487	556	626	695	319	372	425	478	531	
1200	12	[43]	457	533	609	685	761	79	92	106	119	132	< 20
	16	[58]	473	552	631	710	789	94	109	125	140	156	
	19	[68]	484	564	645	725	806	115	134	154	173	192	
	22	[79]	493	575	657	739	821	137	160	182	205	228	
	26	[94]	503	587	670	754	838	158	185	211	238	264	
	29	[104]	509	594	679	764	849	187	218	250	281	312	
1500	14	[50]	584	681	778	876	973	101	118	134	151	168	-
	17	[61]	592	691	790	888	987	122	143	163	184	204	
	21	[76]	603	704	804	905	1005	151	176	202	227	252	
	25	[90]	614	716	818	921	1023	180	210	240	270	300	
	28	[101]	622	725	829	932	1036	202	235	269	302	336	
	32	[115]	633	739	844	950	1055	230	269	307	346	384	
1800	14	[50]	681	795	908	1022	1135	101	118	134	151	168	-
	19	[68]	708	826	944	1062	1180	137	160	182	205	228	
	24	[86]	729	851	972	1094	1215	173	202	230	259	288	
	29	[104]	746	871	995	1120	1244	209	244	278	313	348	
	34	[122]	761	888	1015	1142	1269	245	286	326	367	408	
	39	[140]	775	904	1033	1162	1291	281	328	374	421	468	

*Cooling capacity: Valid at water flow 0.066 l/s.

T.6. Selection chart

Cooling capacity

Size (mm)	Primary airflow		Cooling capacity* - water (W) for pressure 75 Pa at given ΔT (°C)					Cooling capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
	l/s	[m³/h]	6	7	8	9	10	6	7	8	9	10	
600	8	[29]	231	270	308	347	385	58	67	77	86	96	-
	10	[36]	236	276	315	355	394	72	84	96	108	120	
	11	[40]	239	279	318	358	398	79	92	106	119	132	
	14	[50]	247	288	329	370	411	101	118	134	151	168	
	16	[58]	251	293	335	377	419	115	134	154	173	192	
	17	[61]	254	297	339	382	424	122	143	163	184	204	
800	10	[36]	320	374	427	481	534	72	84	96	108	120	< 20
	13	[47]	331	386	442	497	552	94	109	125	140	156	
	16	[58]	340	397	454	510	567	115	134	154	173	192	
	18	[65]	346	403	461	518	576	130	151	173	194	216	
	21	[76]	352	411	470	528	587	151	176	202	227	252	
	24	[86]	358	418	478	537	597	167	195	223	251	279	
1000	12	[43]	409	477	546	614	682	86	101	115	130	144	< 20
	16	[58]	424	495	566	636	707	115	134	154	173	192	
	19	[68]	433	505	578	650	722	137	160	182	205	228	
	23	[83]	443	517	590	664	738	166	193	221	248	276	
	26	[94]	450	525	600	675	750	187	218	250	281	312	
	30	[108]	458	535	611	688	764	216	252	288	324	360	
1200	15	[54]	502	585	669	752	836	108	126	144	162	180	< 20
	19	[68]	517	603	689	775	861	137	160	182	205	228	
	24	[86]	532	620	709	797	886	166	193	221	248	276	
	27	[97]	540	630	720	810	900	194	227	259	292	324	
	31	[112]	549	641	732	824	915	223	260	298	335	372	
	36	[130]	560	653	746	840	933	259	302	346	389	432	22
1500	17	[61]	632	738	843	949	1054	122	143	163	184	204	-
	21	[76]	644	752	859	967	1074	151	176	202	227	252	
	26	[94]	659	769	878	988	1098	187	218	250	281	312	
	30	[108]	671	783	894	1006	1118	216	252	288	324	360	
	35	[126]	685	799	914	1028	1142	252	294	336	378	420	
	39	[140]	697	813	930	1046	1162	281	328	374	421	468	
1800	17	[61]	746	870	994	1119	1243	122	143	163	184	204	-
	23	[83]	775	904	1034	1163	1292	166	193	221	248	276	
	30	[108]	801	935	1068	1202	1335	216	252	288	324	360	
	36	[130]	820	956	1093	1229	1366	259	302	346	389	432	
	42	[151]	836	975	1114	1254	1393	302	353	403	454	504	
	48	[173]	850	992	1134	1275	1417	346	403	461	518	576	

*Cooling capacity: Valid at water flow 0.066 l/s.

T.7. Selection chart

Cooling capacity

Size (mm)	Primary airflow		Cooling capacity* - water (W) for pressure 100 Pa at given ΔT (°C)					Cooling capacity*) air (W) at given ΔT (°C)					Sound-level, dB(A)
	l/s	[m³/h]	6	7	8	9	10	6	7	8	9	10	
600	9	[32]	251	293	335	377	419	65	76	86	97	108	-
	11	[40]	257	300	342	385	428	79	92	106	119	132	
	13	[47]	262	306	350	393	437	94	109	125	140	156	
	16	[58]	271	316	361	406	451	115	134	154	173	192	
	18	[65]	277	323	369	415	461	130	151	173	194	216	
	20	[72]	282	329	376	423	470	144	168	192	216	240	
800	11	[40]	349	407	465	523	581	79	92	106	119	132	< 20
	15	[54]	363	424	484	545	605	108	126	144	162	180	
	18	[65]	371	433	495	557	619	130	151	173	194	216	
	21	[76]	379	442	505	568	631	151	176	202	227	252	
	24	[86]	385	449	514	578	642	173	202	230	259	288	
	27	[97]	391	456	522	587	652	194	227	259	292	324	
1000	14	[50]	448	523	598	672	747	101	118	134	151	168	< 20
	18	[65]	463	540	617	694	771	130	151	173	194	216	
	22	[79]	474	553	632	711	790	158	185	211	238	264	
	26	[94]	484	564	645	725	806	187	218	250	281	312	
	30	[108]	493	575	657	739	821	216	252	288	324	360	
	34	[122]	500	584	667	751	834	245	286	326	367	408	
1200	17	[61]	548	639	730	822	913	122	143	163	184	204	< 20
	22	[79]	566	660	754	849	943	158	185	211	238	264	
	27	[97]	581	678	774	871	968	194	227	259	292	324	
	31	[112]	590	689	787	886	984	223	260	298	335	372	
	36	[130]	602	702	802	903	1003	259	302	346	389	432	
	41	[148]	611	713	815	917	1019	295	344	394	443	492	22
1500	20	[72]	689	804	919	1034	1149	144	168	192	216	240	-
	25	[90]	706	823	941	1058	1176	180	210	240	270	300	
	30	[108]	721	841	962	1082	1202	216	252	288	324	360	
	35	[126]	737	860	982	1105	1228	252	294	336	378	420	
	40	[144]	753	879	1004	1130	1255	288	336	384	432	480	
	45	[162]	769	897	1025	1153	1281	324	378	432	486	540	
1800	20	[72]	819	956	1092	1229	1365	144	168	192	216	240	-
	27	[97]	850	992	1134	1275	1417	194	227	259	292	324	
	34	[122]	875	1021	1167	1313	1459	245	286	326	367	408	
	41	[148]	896	1046	1195	1345	1494	295	344	394	443	492	
	48	[173]	914	1067	1219	1372	1524	346	403	461	518	576	
	55	[198]	930	1085	1240	1395	1550	396	462	528	594	660	

*Cooling capacity: Valid at water flow 0.066 l/s.

T.8. Selection chart

Cooling capacity

Size (mm)	Primary airflow		Cooling capacity* - water (W) for pressure 125 Pa at given ΔT (°C)					Cooling capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
	l/s	[m³/h]	6	7	8	9	10	6	7	8	9	10	
600	10	[36]	265	309	353	397	441	72	84	96	108	120	-
	12	[43]	270	315	360	405	450	86	101	115	130	144	
	15	[54]	279	326	372	419	465	108	126	144	162	180	
	18	[65]	287	335	383	431	479	130	151	173	194	216	
	20	[72]	293	342	391	440	489	144	168	192	216	240	
	22	[79]	299	349	398	448	498	158	185	211	238	264	
800	12	[43]	367	428	490	551	612	86	101	115	130	144	< 20
	17	[61]	383	447	511	575	639	122	143	163	184	204	< 20
	20	[72]	391	456	522	587	652	144	168	192	216	240	20
	24	[86]	401	468	534	601	668	173	202	230	259	288	21
	27	[97]	407	475	542	610	678	194	227	259	292	324	22
	30	[108]	412	481	550	618	687	216	252	288	324	360	23
1000	16	[58]	474	553	632	711	790	115	134	154	173	192	20
	20	[72]	490	571	653	734	816	144	168	192	216	240	21
	25	[90]	501	585	668	752	835	180	210	240	270	300	23
	29	[104]	510	595	680	765	850	209	244	278	313	348	24
	34	[122]	520	607	694	780	867	245	286	326	367	408	24
	38	[137]	527	615	703	791	879	274	319	365	410	456	27
1200	19	[68]	578	674	770	867	963	137	160	182	205	228	< 20
	25	[90]	598	697	797	896	996	180	210	240	270	300	21
	30	[108]	611	713	815	917	1019	216	252	288	324	360	22
	35	[126]	623	727	831	935	1039	252	294	336	378	420	24
	40	[144]	634	740	846	951	1057	288	336	384	432	480	26
	46	[166]	645	753	860	968	1075	331	386	442	497	552	28
1500	22	[79]	697	813	929	1045	1161	158	185	211	238	264	-
	28	[101]	743	867	991	1115	1239	202	235	269	302	336	
	34	[122]	763	890	1018	1145	1272	245	286	326	367	408	
	39	[140]	779	909	1039	1169	1299	281	328	374	421	468	
	45	[162]	799	932	1066	1199	1332	324	378	432	486	540	
	50	[180]	815	951	1087	1223	1359	360	420	480	540	600	
1800	22	[79]	862	1005	1149	1292	1436	158	185	211	238	264	-
	30	[108]	896	1045	1194	1344	1493	216	252	288	324	360	
	38	[137]	923	1077	1230	1384	1538	274	319	365	410	456	
	46	[166]	946	1104	1262	1419	1577	331	386	442	497	552	
	54	[194]	965	1126	1286	1447	1608	389	454	518	583	648	
	62	[223]	982	1146	1310	1473	1637	446	521	595	670	744	

*Cooling capacity: Valid at water flow 0.066 l/s.

T.9. Selection chart

Cooling capacity

Size (mm)	Primary airflow		Cooling capacity* - water (W) for pressure 150 Pa at given ΔT (°C)					Cooling capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
	l/s	[m³/h]	6	7	8	9	10	6	7	8	9	10	
600	11	[40]	277	323	370	416	462	79	92	106	119	132	-
	14	[50]	286	334	382	429	477	101	118	134	151	168	
	16	[58]	292	341	390	438	487	115	134	154	173	192	
	20	[72]	305	356	406	457	508	144	168	192	216	240	
	22	[79]	310	362	414	465	517	158	185	211	238	264	
	25	[90]	319	372	426	479	532	180	210	240	270	300	
800	14	[50]	388	453	518	582	647	101	118	134	151	168	21
	18	[65]	401	468	535	602	669	130	151	173	194	216	22
	22	[79]	412	480	549	617	686	158	185	211	238	264	22
	26	[94]	421	491	561	631	701	187	218	250	281	312	23
	29	[104]	427	498	569	640	711	209	244	278	313	348	24
	33	[119]	434	506	578	651	723	238	277	317	356	396	26
1000	17	[61]	496	578	661	743	826	122	143	163	184	204	22
	22	[79]	512	597	682	768	853	158	185	211	238	264	23
	27	[97]	525	613	700	788	875	194	227	259	292	324	24
	32	[115]	536	625	714	804	893	230	269	307	346	384	25
	37	[133]	545	636	727	818	909	266	311	355	400	444	27
	42	[151]	554	647	739	832	924	302	353	403	454	504	28
1200	21	[76]	608	709	810	912	1013	151	176	202	227	252	23
	27	[97]	627	732	836	941	1045	194	227	259	292	324	24
	33	[119]	643	750	857	964	1071	238	277	317	356	396	25
	38	[137]	655	764	873	982	1091	274	319	365	410	456	27
	44	[158]	666	777	888	999	1110	314	367	419	472	524	29
	50	[180]	677	790	903	1016	1129	360	420	480	540	600	31
1500	25	[90]	762	889	1016	1143	1270	180	210	240	270	300	-
	31	[112]	782	913	1043	1174	1304	223	260	298	335	372	
	37	[133]	803	937	1070	1204	1338	266	311	355	400	444	
	43	[155]	823	960	1098	1235	1372	310	361	413	464	516	
	49	[176]	844	984	1125	1265	1406	353	412	470	529	588	
	55	[198]	865	1009	1153	1297	1441	396	462	528	594	660	
1800	25	[90]	909	1061	1212	1364	1515	180	210	240	270	300	-
	33	[119]	941	1098	1255	1412	1569	238	277	317	356	396	
	42	[151]	971	1133	1294	1456	1618	302	353	403	454	504	
	50	[180]	993	1159	1324	1490	1655	360	420	480	540	600	
	59	[212]	1013	1182	1351	1520	1689	425	496	566	637	708	
	68	[245]	1031	1203	1375	1547	1719	490	571	653	734	816	

*Cooling capacity: Valid at water flow 0.066 l/s.

T.10. Selection chart

Heating capacity for 4/6/8/10-row heating

Size (mm)	Primary airflow		Heating capacity* - water (W) for pressure 50 Pa at given ΔT (°C)												Heating capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
			4 row heating			6 row heating			8 row heating			10 row heating								
	l/s	[m³/h]	10	15	20	10	15	20	10	15	20	10	15	20	2	3	4	5	6	
600	6	[22]	183	275	366	215	322	429	246	370	493	275	412	549	14	22	29	36	43	-
	8	[29]	187	281	374	220	329	439	252	378	504	281	421	562	19	29	39	48	58	-
	9	[32]	189	284	379	222	333	444	255	382	510	284	426	568	22	33	43	54	65	-
	11	[40]	194	291	388	228	341	455	261	392	522	291	436	582	26	40	53	66	79	-
	13	[47]	198	297	396	232	349	465	267	400	533	297	446	594	31	47	63	78	94	-
	14	[50]	200	300	400	235	352	470	270	404	539	300	450	601	34	51	67	84	101	-
800	8	[29]	253	379	505	296	445	593	340	510	680	379	569	758	19	29	39	48	58	< 20
	11	[40]	263	395	526	309	463	617	354	531	708	395	592	789	26	40	53	66	79	
	13	[47]	269	403	538	315	473	631	362	543	724	403	605	807	31	47	63	78	94	
	15	[54]	274	410	547	321	481	642	368	552	736	410	615	821	36	54	72	90	108	
	17	[61]	278	417	556	326	490	653	375	562	749	417	626	835	41	61	81	102	122	
	19	[68]	282	423	564	331	496	661	379	569	759	423	634	846	46	69	91	114	137	
1000	10	[36]	324	487	649	381	571	761	437	655	874	487	730	973	24	36	48	60	72	< 20
	13	[47]	335	502	670	393	589	786	451	676	902	502	753	1005	31	47	63	78	94	
	16	[58]	344	516	687	403	605	806	463	694	925	516	773	1031	38	58	77	96	115	
	19	[68]	351	527	702	412	618	824	473	709	945	527	790	1053	46	69	91	114	137	
	21	[76]	355	533	710	417	625	833	478	717	956	533	799	1065	50	76	101	126	151	
	24	[86]	361	542	723	424	636	848	487	730	973	542	813	1084	58	87	115	144	173	
1200	12	[43]	396	594	791	464	696	928	533	799	1065	594	890	1187	29	43	57	72	86	< 20
	16	[58]	410	615	821	481	722	963	552	828	1105	615	923	1231	38	58	77	96	115	
	19	[68]	419	629	838	492	737	983	564	846	1128	629	943	1257	46	69	91	114	137	
	22	[79]	427	640	854	501	751	1002	575	862	1149	640	961	1281	53	79	105	132	158	
	26	[94]	436	654	872	511	767	1022	587	880	1173	654	980	1307	62	94	125	156	187	
	29	[104]	441	662	883	518	777	1036	594	891	1189	662	993	1324	70	105	139	174	209	
1500	14	[50]	506	759	1012	594	890	1187	681	1022	1362	759	1138	1518	34	51	67	84	101	-
	17	[61]	513	770	1026	602	903	1204	691	1036	1382	770	1155	1540	41	61	81	102	122	-
	21	[76]	523	784	1045	613	920	1226	704	1055	1407	784	1176	1568	50	76	101	126	151	-
	25	[90]	532	798	1064	624	936	1248	716	1074	1432	798	1197	1596	60	90	120	150	180	-
	28	[101]	539	808	1077	632	948	1264	725	1088	1450	808	1212	1616	67	101	135	168	202	-
	32	[115]	549	823	1097	644	965	1287	739	1108	1477	823	1234	1646	77	115	153	192	230	-
1800	14	[50]	590	885	1180	692	1039	1385	795	1192	1589	885	1328	1771	34	51	67	84	101	-
	19	[68]	614	920	1227	720	1080	1440	826	1239	1652	920	1381	1841	46	69	91	114	137	-
	24	[86]	632	948	1264	741	1112	1482	851	1276	1701	948	1422	1895	58	87	115	144	173	-
	29	[104]	647	970	1294	759	1138	1518	871	1306	1742	970	1455	1941	70	105	139	174	209	-
	34	[122]	660	990	1320	774	1161	1548	888	1332	1777	990	1485	1980	82	123	163	204	245	-
	39	[140]	671	1007	1343	788	1181	1575	904	1356	1807	1007	1510	2014	94	141	187	234	281	-

*Heating capacity: Valid at water flow 0,03 l/s.

T.11. Selection chart

Heating capacity for 4/6/8/10-row heating

Size (mm)	Primary airflow		Heating capacity* - water (W) for pressure 75 Pa at given ΔT (°C)												Heating capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
			4 row heating			6 row heating			8 row heating			10 row heating								
	l/s	[m³/h]	10	15	20	10	15	20	10	15	20	10	15	20	2	3	4	5	6	
600	8	[29]	200	300	400	235	352	470	270	404	539	300	450	601	19	29	39	48	58	-
	10	[36]	205	307	410	240	361	481	276	414	552	307	461	615	24	36	48	60	72	-
	11	[40]	207	310	414	243	364	486	279	418	557	310	466	621	26	40	53	66	79	-
	14	[50]	214	321	427	251	376	501	288	432	575	321	481	641	34	51	67	84	101	-
	16	[58]	218	327	436	256	383	511	293	440	587	327	490	654	38	58	77	96	115	-
	17	[61]	220	331	441	259	388	517	297	445	594	331	496	661	41	61	81	102	122	-
800	10	[36]	278	417	555	326	489	651	374	561	748	417	625	833	24	36	48	60	72	< 20
	13	[47]	287	431	574	337	505	673	386	580	773	431	646	861	31	47	63	78	94	
	16	[58]	295	442	590	346	519	692	397	595	794	442	663	885	38	58	77	96	115	
	18	[65]	300	449	599	351	527	703	403	605	806	449	674	899	43	65	87	108	130	
	21	[76]	305	458	610	358	537	716	411	616	822	458	687	916	50	76	101	126	151	
	24	[86]	310	466	621	364	546	728	418	627	836	466	698	931	58	87	115	144	173	
1000	12	[43]	355	532	709	416	624	832	477	716	955	532	798	1064	29	43	57	72	86	< 20
	16	[58]	368	551	735	431	647	863	495	742	990	551	827	1103	38	58	77	96	115	
	19	[69]	375	563	751	440	661	881	505	758	1011	563	845	1126	46	69	91	114	137	
	23	[83]	384	576	768	450	675	900	517	775	1033	576	863	1151	55	83	111	138	166	
	26	[94]	390	585	780	458	686	915	525	788	1050	585	878	1170	62	94	125	156	187	
	30	[108]	397	596	795	466	699	932	535	802	1070	596	894	1192	72	108	144	180	216	
1200	15	[54]	435	652	869	510	765	1020	585	878	1170	652	978	1304	36	54	72	90	108	< 20
	19	[68]	448	672	895	525	788	1050	603	904	1205	672	1007	1343	46	69	91	114	137	
	24	[86]	461	691	921	540	811	1081	620	930	1240	691	1037	1382	58	87	115	144	173	
	27	[97]	468	702	936	549	824	1098	630	945	1260	702	1053	1404	65	97	129	162	194	
	31	[112]	476	714	952	558	837	1116	641	961	1281	714	1071	1427	74	112	149	186	223	
	36	[130]	485	728	970	569	854	1138	653	980	1306	728	1092	1455	86	130	173	216	259	22
1500	17	[61]	548	822	1096	643	964	1286	738	1107	1476	822	1233	1644	41	61	81	102	122	-
	21	[76]	558	838	1117	655	983	1310	752	1128	1504	838	1257	1675	50	76	101	126	151	-
	26	[94]	571	856	1142	670	1005	1340	769	1153	1537	856	1285	1713	62	94	125	156	187	-
	30	[108]	581	872	1163	682	1023	1364	783	1174	1565	872	1308	1744	72	108	144	180	216	-
	35	[126]	594	891	1188	697	1045	1393	799	1199	1599	891	1336	1782	84	126	168	210	252	-
	39	[140]	604	906	1208	709	1063	1418	813	1220	1627	906	1360	1813	94	141	187	234	281	-
1800	17	[61]	646	970	1293	758	1137	1516	870	1305	1740	970	1454	1939	41	61	81	102	122	-
	23	[83]	672	1008	1344	788	1182	1576	904	1357	1809	1008	1512	2016	55	83	111	138	166	-
	30	[108]	694	1041	1388	814	1222	1629	935	1402	1869	1041	1562	2083	72	108	144	180	216	-
	36	[130]	710	1065	1421	833	1250	1667	956	1434	1912	1065	1598	2131	86	130	173	216	259	-
	42	[151]	724	1087	1449	850	1275	1699	975	1463	1950	1087	1630	2173	101	151	201	252	302	-
	48	[173]	737	1105	1474	864	1297	1729	992	1488	1984	1105	1658	2211	115	173	231	288	346	-

*Heating capacity: Valid at water flow 0,03 l/s.

T.12. Selection chart

Heating capacity for 4/6/8/10-row heating

Size (mm)	Primary airflow		Heating capacity* - water (W) for pressure 100 Pa at given ΔT (°C)												Heating capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
			4 row heating			6 row heating			8 row heating			10 row heating								
	l/s	[m³/h]	10	15	20	10	15	20	10	15	20	10	15	20	2	3	4	5	6	
600	9	[32]	218	327	436	256	383	511	293	440	587	327	490	654	22	33	43	54	65	-
	11	[40]	223	334	445	261	392	522	300	449	599	334	501	668	26	40	53	66	79	-
	13	[47]	227	341	454	267	400	533	306	459	612	341	511	682	31	47	63	78	94	-
	16	[58]	235	352	469	275	413	550	316	474	631	352	528	704	38	58	77	96	115	-
	18	[65]	240	360	479	281	422	562	323	484	645	360	539	719	43	65	87	108	130	-
	20	[72]	244	367	489	287	430	573	329	494	658	367	550	733	48	72	96	120	144	-
800	11	[40]	302	453	604	354	532	709	407	610	813	453	680	906	26	40	53	66	79	< 20
	15	[54]	315	472	629	369	554	738	424	635	847	472	708	944	36	54	72	90	108	
	18	[65]	322	483	644	378	566	755	433	650	867	483	724	966	43	65	87	108	130	
	21	[76]	328	492	656	385	577	770	442	663	883	492	738	984	50	76	101	126	151	
	24	[86]	334	501	668	392	587	783	449	674	899	501	751	1002	58	87	115	144	173	
	27	[97]	339	509	678	398	597	795	456	685	913	509	763	1017	65	97	129	162	194	
1000	14	[50]	388	583	777	456	684	911	523	784	1046	583	874	1165	34	51	67	84	101	< 20
	18	[65]	401	601	802	470	705	941	540	810	1079	601	902	1203	43	65	87	108	130	
	22	[79]	411	616	822	482	723	964	553	830	1106	616	924	1232	53	79	105	132	158	
	26	[94]	419	629	838	492	737	983	564	846	1128	629	943	1257	62	94	125	156	187	
	30	[108]	427	640	854	501	751	1002	575	862	1149	640	961	1281	72	108	144	180	216	
	34	[122]	434	651	867	509	763	1017	584	876	1168	651	976	1301	82	123	163	204	245	
1200	17	[61]	475	712	950	557	835	1114	639	959	1278	712	1068	1424	41	61	81	102	122	< 20
	22	[79]	490	736	981	575	863	1150	660	990	1320	736	1103	1471	53	79	105	132	158	
	27	[97]	503	755	1007	590	886	1181	678	1016	1355	755	1133	1510	65	97	129	162	194	
	31	[112]	512	768	1023	600	900	1200	689	1033	1378	768	1151	1535	74	112	149	186	223	
	36	[130]	522	782	1043	612	918	1224	702	1053	1404	782	1174	1565	86	130	173	216	259	
	41	[148]	530	795	1060	622	932	1243	713	1070	1427	795	1192	1590	98	148	197	246	295	22
1500	20	[72]	597	896	1195	701	1051	1402	804	1206	1609	896	1344	1792	48	72	96	120	144	-
	25	[90]	612	917	1223	717	1076	1435	823	1235	1646	917	1376	1835	60	90	120	150	180	-
	30	[108]	625	938	1250	733	1100	1466	841	1262	1683	938	1406	1875	72	108	144	180	216	-
	35	[126]	639	958	1277	749	1124	1498	860	1289	1719	958	1437	1916	84	126	168	210	252	-
	40	[144]	653	979	1305	766	1148	1531	879	1318	1757	979	1468	1958	96	144	192	240	288	-
	45	[162]	666	999	1332	781	1172	1563	897	1345	1793	999	1499	1998	108	162	216	270	324	-
1800	20	[72]	710	1065	1420	833	1249	1665	956	1433	1911	1065	1597	2129	48	72	96	120	144	-
	27	[97]	737	1105	1474	864	1297	1729	992	1488	1984	1105	1658	2211	65	97	129	162	194	-
	34	[122]	759	1138	1517	890	1335	1780	1021	1532	2043	1138	1707	2276	82	123	163	204	245	-
	41	[148]	777	1165	1554	911	1367	1823	1046	1569	2092	1165	1748	2331	98	148	197	246	295	-
	48	[173]	792	1189	1585	930	1394	1859	1067	1600	2134	1189	1783	2377	115	173	231	288	346	-
	55	[198]	806	1209	1612	946	1418	1891	1085	1628	2170	1209	1814	2418	132	198	264	330	396	-

*Heating capacity: Valid at water flow 0,03 l/s.

T.13. Selection chart

Heating capacity for 4/6/8/10-row heating

Size (mm)	Primary airflow		Heating capacity* - water (W) for pressure 125 Pa at given ΔT (°C)												Heating capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
			4 row heating			6 row heating			8 row heating			10 row heating								
	l/s	[m³/h]	10	15	20	10	15	20	10	15	20	10	15	20	2	3	4	5	6	
600	10	[36]	229	344	459	269	404	538	309	463	617	344	516	688	24	36	48	60	72	-
	12	[43]	234	351	468	275	412	549	315	473	630	351	527	702	29	43	57	72	86	-
	15	[54]	242	363	484	284	425	567	326	488	651	363	544	725	36	54	72	90	108	-
	18	[65]	249	374	498	292	438	584	335	503	671	374	560	747	43	65	87	108	130	-
	20	[72]	254	381	509	298	447	597	342	513	685	381	572	763	48	72	96	120	144	-
	22	[79]	259	388	518	304	456	608	349	523	697	388	583	777	53	79	105	132	158	-
800	12	[43]	318	477	636	373	560	747	428	643	857	477	716	955	29	43	57	72	86	< 20
	17	[61]	332	498	665	390	585	780	447	671	895	498	748	997	41	61	81	102	122	< 20
	20	[72]	339	509	678	398	597	795	456	685	913	509	763	1017	48	72	96	120	144	20
	24	[86]	347	521	695	407	611	815	468	701	935	521	782	1042	58	87	115	144	173	21
	27	[97]	353	529	705	414	620	827	475	712	949	529	793	1058	65	97	129	162	194	22
	30	[108]	357	536	714	419	629	838	481	721	962	536	804	1072	72	108	144	180	216	23
1000	16	[58]	411	616	822	482	723	964	553	830	1106	616	924	1232	38	58	77	96	115	20
	20	[72]	424	636	849	498	747	996	571	857	1142	636	955	1273	48	72	96	120	144	21
	25	[90]	434	651	868	509	764	1019	585	877	1169	651	977	1303	60	90	120	150	180	23
	29	[104]	442	663	884	519	778	1037	595	893	1190	663	995	1326	70	105	139	174	209	24
	34	[122]	451	676	902	529	793	1058	607	910	1214	676	1014	1353	82	123	163	204	245	24
	38	[137]	457	686	914	536	804	1072	615	923	1231	686	1028	1371	91	137	183	228	274	27
1200	19	[68]	501	751	1002	587	881	1175	674	1011	1348	751	1127	1502	46	69	91	114	137	< 20
	25	[90]	518	777	1036	608	911	1215	697	1046	1394	777	1165	1554	60	90	120	150	180	21
	30	[108]	530	795	1060	622	932	1243	713	1070	1427	795	1192	1590	72	108	144	180	216	22
	35	[126]	540	810	1081	634	951	1268	727	1091	1455	810	1216	1621	84	126	168	210	252	24
	40	[144]	550	824	1099	645	967	1290	740	1110	1480	824	1237	1649	96	144	192	240	288	26
	46	[166]	559	839	1118	656	984	1312	753	1129	1505	839	1258	1677	110	166	221	276	331	28
1500	22	[79]	604	906	1207	708	1062	1416	813	1219	1625	906	1358	1811	53	79	105	132	158	-
	28	[101]	644	966	1289	756	1134	1512	867	1301	1735	966	1450	1933	67	101	135	168	202	-
	34	[122]	661	992	1323	776	1164	1552	890	1336	1781	992	1488	1984	82	123	163	204	245	-
	39	[140]	675	1013	1351	792	1189	1585	909	1364	1819	1013	1520	2026	94	141	187	234	281	-
	45	[162]	693	1039	1385	813	1219	1625	932	1399	1865	1039	1558	2078	108	162	216	270	324	-
	50	[180]	707	1060	1413	829	1243	1658	951	1427	1903	1060	1590	2120	120	180	240	300	360	-
1800	22	[79]	747	1120	1493	876	1314	1752	1005	1508	2010	1120	1680	2240	53	79	105	132	158	-
	30	[108]	776	1165	1553	911	1366	1821	1045	1568	2090	1165	1747	2329	72	108	144	180	216	-
	38	[137]	800	1200	1600	938	1407	1876	1077	1615	2153	1200	1799	2399	91	137	183	228	274	-
	46	[166]	820	1230	1640	962	1443	1924	1104	1656	2208	1230	1845	2460	110	166	221	276	331	-
	54	[194]	836	1254	1672	981	1471	1962	1126	1688	2251	1254	1881	2508	130	195	259	324	389	-
	62	[223]	851	1277	1702	999	1498	1997	1146	1719	2292	1277	1915	2554	149	223	297	372	446	-

*Heating capacity: Valid at water flow 0,03 l/s.

T.14. Selection chart

Heating capacity for 4/6/8/10-row heating

Size (mm)	Primary airflow		Heating capacity* - water (W) for pressure 150 Pa at given ΔT (°C)												Heating capacity* - air (W) at given ΔT (°C)					Sound-level, dB(A)
			4 row heating			6 row heating			8 row heating			10 row heating								
	l/s	[m³/h]	10	15	20	10	15	20	10	15	20	10	15	20	2	3	4	5	6	
600	11	[40]	240	360	480	282	423	564	323	485	647	360	541	721	26	40	53	66	79	-
	14	[50]	248	372	496	291	436	582	334	501	668	372	558	744	34	51	67	84	101	-
	16	[58]	253	380	506	297	446	594	341	511	682	380	570	760	38	58	77	96	115	-
	20	[72]	264	396	528	310	465	620	356	533	711	396	594	792	48	72	96	120	144	-
	22	[79]	269	403	538	315	473	631	362	543	724	403	605	807	53	79	105	132	158	-
	25	[90]	277	415	553	325	487	649	372	559	745	415	622	830	60	90	120	150	180	-
800	14	[50]	336	505	673	395	592	789	453	679	906	505	757	1009	34	51	67	84	101	21
	18	[65]	348	522	696	408	612	816	468	702	937	522	783	1044	43	65	87	108	130	22
	22	[79]	357	535	713	418	628	837	480	720	960	535	803	1070	53	79	105	132	158	22
	26	[94]	365	547	729	428	641	855	491	736	981	547	820	1094	62	94	125	156	187	23
	29	[104]	370	555	739	434	651	867	498	747	995	555	832	1109	70	105	139	174	209	24
	33	[119]	376	564	752	441	662	882	506	759	1012	564	846	1128	79	119	159	198	238	26
1000	17	[61]	430	644	859	504	756	1008	578	867	1156	644	966	1289	41	61	81	102	122	22
	22	[79]	444	665	887	520	780	1041	597	896	1194	665	998	1331	53	79	105	132	158	23
	27	[97]	455	683	910	534	801	1068	613	919	1225	683	1024	1365	65	97	129	162	194	24
	32	[115]	464	697	929	545	817	1089	625	938	1250	697	1045	1393	77	115	153	192	230	25
	37	[133]	473	709	945	554	832	1109	636	954	1273	709	1064	1418	89	133	177	222	266	27
	42	[151]	480	721	961	564	845	1127	647	970	1294	721	1081	1441	101	151	201	252	302	28
1200	21	[76]	527	790	1054	618	927	1236	709	1064	1418	790	1185	1580	50	76	101	126	151	23
	27	[97]	543	815	1087	637	956	1275	732	1097	1463	815	1223	1630	65	97	129	162	194	24
	33	[119]	557	835	1114	653	980	1307	750	1125	1499	835	1253	1671	79	119	159	198	238	25
	38	[137]	567	851	1135	666	998	1331	764	1146	1527	851	1276	1702	91	137	183	228	274	27
	44	[158]	577	866	1154	677	1016	1354	777	1166	1554	866	1299	1732	106	159	211	264	317	29
	50	[180]	587	881	1174	689	1033	1377	790	1185	1581	881	1321	1761	120	180	240	300	360	31
1500	25	[90]	660	991	1321	775	1162	1549	889	1334	1778	991	1486	1981	60	90	120	150	180	-
	31	[112]	678	1017	1356	795	1193	1591	913	1369	1826	1017	1526	2034	74	112	149	186	223	-
	37	[133]	696	1044	1392	816	1224	1632	937	1405	1873	1044	1565	2087	89	133	177	222	266	-
	43	[155]	713	1070	1427	837	1255	1674	960	1441	1921	1070	1605	2140	103	155	207	258	310	-
	49	[176]	731	1097	1462	858	1286	1715	984	1476	1968	1097	1645	2193	118	177	235	294	353	-
	55	[198]	749	1124	1499	879	1319	1758	1009	1513	2017	1124	1686	2248	132	198	264	330	396	-
1800	25	[90]	788	1182	1576	924	1386	1848	1061	1591	2121	1182	1773	2363	60	90	120	150	180	-
	33	[119]	816	1224	1632	957	1436	1914	1098	1647	2197	1224	1836	2448	79	119	159	198	238	-
	42	[151]	841	1262	1683	987	1480	1974	1133	1699	2265	1262	1893	2524	101	151	201	252	302	-
	50	[180]	861	1291	1721	1010	1514	2019	1159	1738	2317	1291	1936	2582	120	180	240	300	360	-
	59	[212]	878	1317	1757	1030	1545	2061	1182	1773	2365	1317	1976	2635	142	213	283	354	425	-
	68	[245]	894	1341	1788	1049	1573	2097	1203	1805	2407	1341	2011	2682	163	245	327	408	490	-

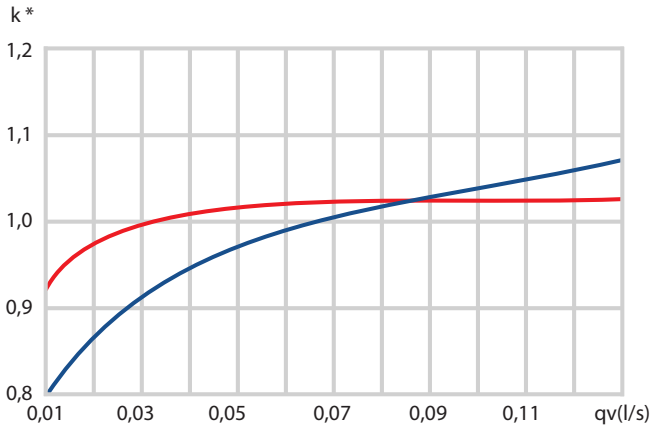
*Heating capacity: Valid at water flow 0,03 l/s.

Correction Chart

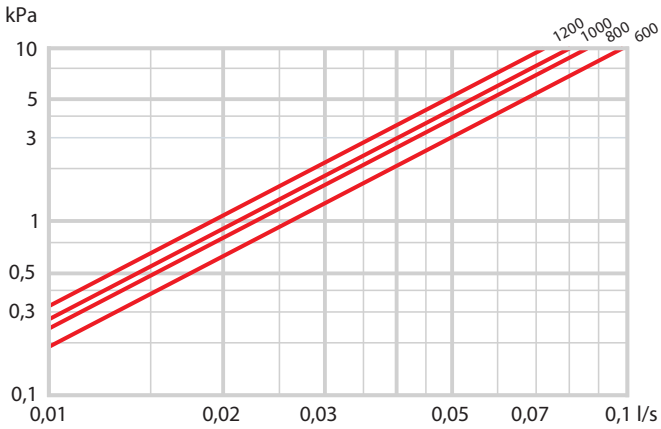
The chart below applies:

- Correction diagram for water flow refers to one water circuit, the two water circuits halve water flow.
- Blue curve = cold
- Red curve= heating
- k = correction factor
- 1wc / 2wc = number of water circuits

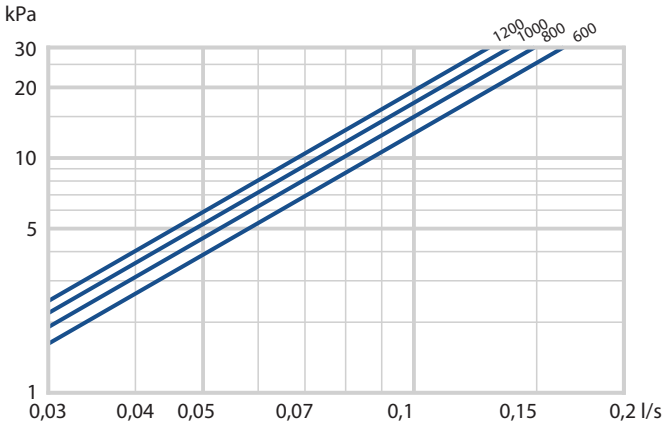
D.1.
Correction for other water flow



D.2.
Pressure drop heating



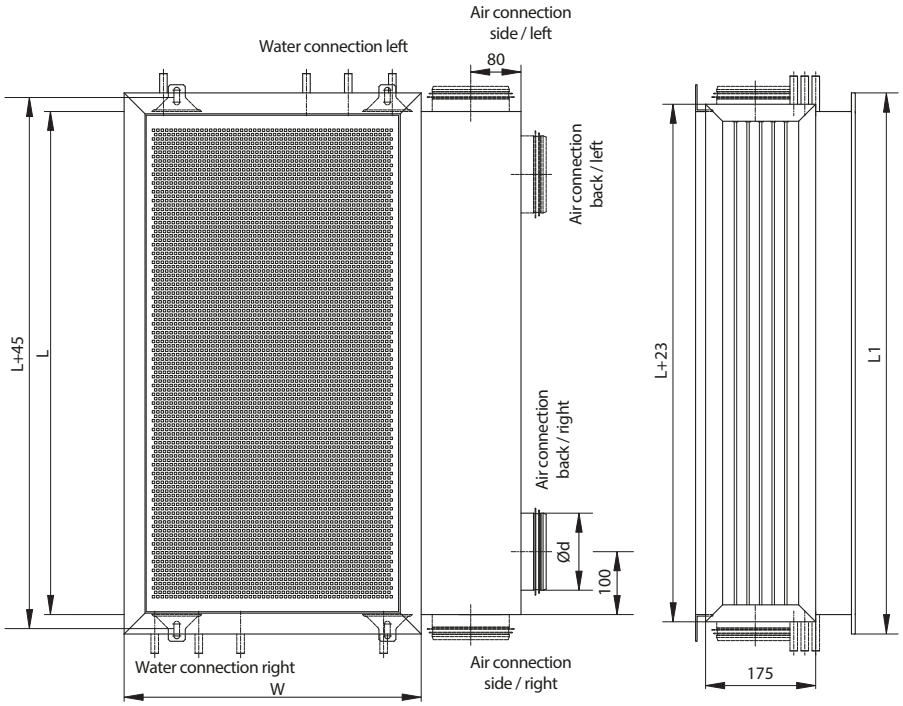
D.2.
Pressure drop cooling

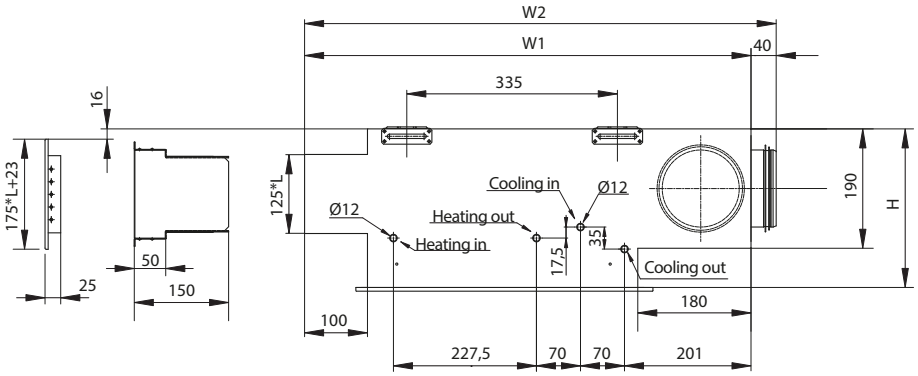


k* = correction factor
** Applies to 1 water circuit. In case of 2 water circuits, the water flow is halved.

Pressure drop
4= 40%
6=60%
8=80%
10=100% of the chart value.

Dimensions





DH or DR grille

The drawing illustrates a heating+cooling product version.

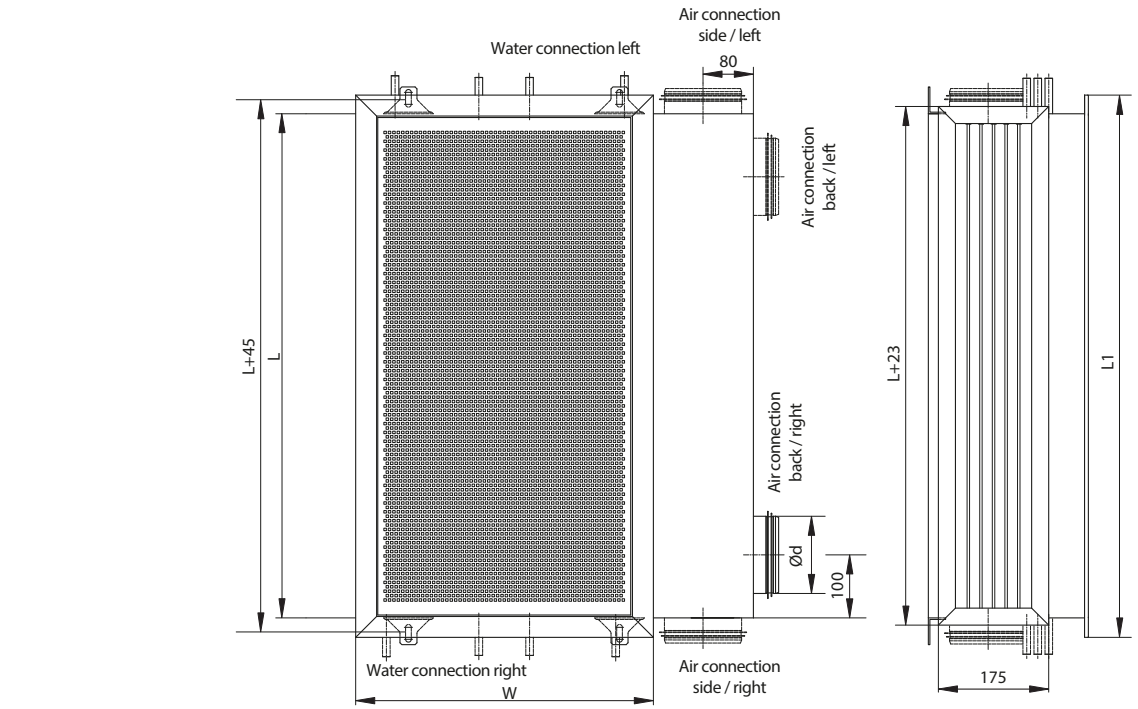
T.15. Dimensions

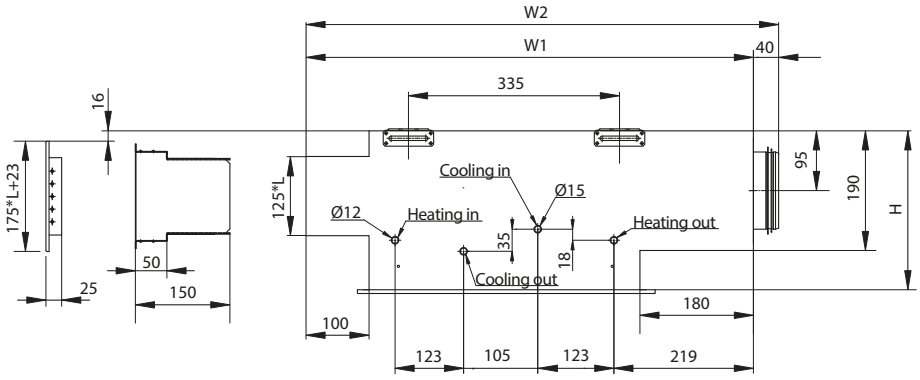
Type	Sizes (mm)							Weight (kg)	Water flow (l)
	L	W	H	L1	W1	W2	Ød		
600	600	473	252	661	710	750	123	15	1,8
800	800			861				23	2,2
1000	1000			1061				29	3,2
1200	1200			1261				32	4,4

T.16. Water connections

Number of water circuits	600	800	1000	1200
1	Ø12*			
2	-		Ø12 / Ø15*	

The sizes are in mm.
*Connection size of copper water pipe.





DH or DR grille

The drawing illustrates a heating+cooling product version.

T.17. Dimensions

Type	Sizes (mm)							Weight (kg)	Water flow (l)
	L	W	H	L1	W1	W2	Ød		
1000	1000	473	252	1061	710	750	123	29	3,2
1200	1200			1261				32	4,4
1500	1500			1561				44	5,0
1800	1800			1861				54	6,1

T.18. Water connections

Number of water circuits	1000	1200	1500	1800
2	Ø12 / Ø15*			

The sizes are in mm.
*Connection size of copper water pipe.

T.19. Specification

Ordering code	XX	-X	-XXX	-XX	-XX	-X	-XxXXX	-XX
Product type	HA							
Construction	without heating	0						
	4-row cooling and heating	1						
	6-row cooling and heating	2						
	8-row cooling and heating	3						
	10-row cooling and heating	4						
Coil type	1-circuit cooling		C1					
	2-circuit cooling		C2					
	1-circuit cooling and heating		C1H					
	2-circuit cooling and heating		C2H					
	1-circuit changeover		C1O					
	2-circuit changeover		C2O					
Size (mm):			600	06				
			800	08				
			1000	10				
			1200	12				
			1500	15				
			1800	18				
Nozzle position				side C	C1			
					C2			
					C3			
					C4			
					C5			
					C6			
Orientation of water connection					left	L		
					right	R		
Duct size(s)							1x100	
							1x125	
							1x160	
Type of grille								DR
								DH
Example	HA-1-C1H-06-C4-L-1x125-DR							

Please use our selection tool for the exact type.