

Convectors



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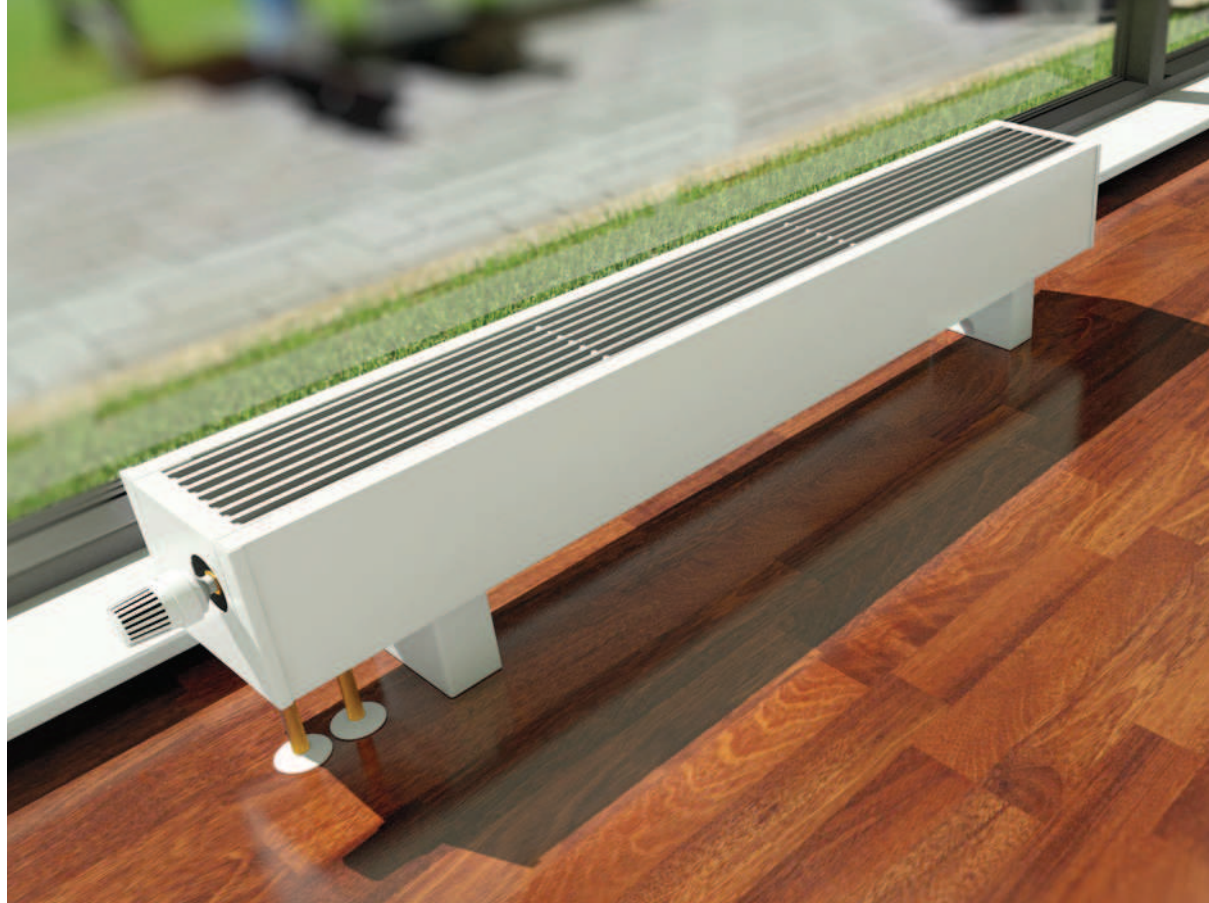
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[Products equipped with forced convection to increase efficiency in heating, cooling and dry-cooling





[KORALINE

NEW

FREE STANDING CONVECTORS with forced convection and optimized convection

Exclusive free standing convectors design enhanced by the state-of-the-art technologies. Universal design of the free standing convectors with high efficiency also at low temperature gradients. This predominates them as ideal system to be heated by heat pumps.

- high efficiency at low temperature of the heating water
- also suitable for installations with a heat pump
- energy efficient fans with an electric engine and a minimal input
- immediate reaction to temperature changes in the room
- very quiet operation

 **OPTIMIZED
CONVECTION**

Free standing convectors with forced convection KORALINE LV 15/11

NEW



**OPTIMIZED
CONVECTION**

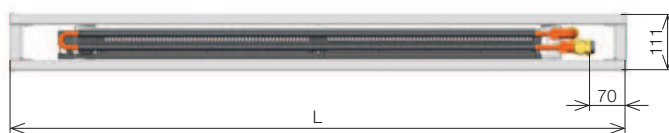
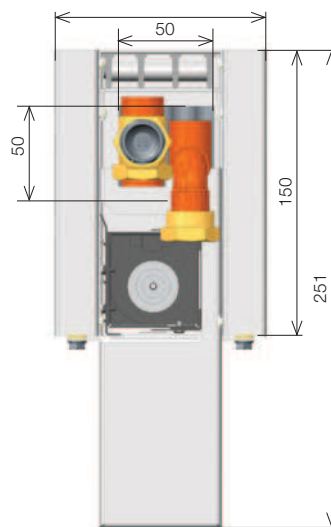
- used for heating
- quietest operation at low speed
- also suitable for installations with a heat pump
- possibility of control through BMS
(Building Management System)
- only bottom connection
- the convectors is intended for dry environment

Specification

casing element height (mm)	150
width (mm)	111
length (L mm)	900, 1 200, 1 600, 2 000, 2 400, 2 800
exchanger height (mm)	50
exchanger width (mm)	50
exchanger approximate length (mm)	L - 300
fans' impeller diameter (mm)	30
connection to the heating system	2x inner G 1/2"

Version Exclusive • coated in RAL 9010 zinc galvanised steel with aluminium unpainted grid

* only bottom connection



The given dimensions are in mm.

Technical parameters



Width	cm	11																							
Depth	cm	15																							
Total length	cm	90				120				160				200				240				280			
Noisiness – acoustic pressure 1m	dB(A)	0	10.1	19.4	23.2	0	10.3	19.5	23.7	0	10.7	20.1	23.9	0	11.6	22.4	24.9	0	11.9	22.9	25.1	0	12	23.1	25.2
Power input	W/V	4/13.5				5.5/13.5				7.5/13.5				10.5/13.5				13/13.5				15/13.5			
Speed switch position		Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3
Heat output	t1 °C	Heat output [W]/EN 442																							
90/70 °C	20	160	366	498	629	240	550	746	943	347	794	1078	1362	453	1038	1410	1782	560	1282	1742	2201	667	1527	2073	2620
	18	139	318	431	545	208	476	647	817	300	688	934	1181	393	900	1222	1544	485	1111	1509	1907	578	1323	1797	2271
	22	128	293	398	503	192	440	597	755	277	635	863	1090	363	831	1128	1425	448	1026	1393	1761	533	1221	1659	2096
75/65 °C	18	119	272	369	466	178	408	554	700	257	589	800	1010	336	770	1046	1321	415	951	1292	1632	494	1132	1538	1943
	20	113	260	352	445	170	389	529	668	246	562	764	965	321	735	999	1262	397	908	1234	1559	472	1081	1469	1856
	22	108	247	336	424	162	371	504	637	234	536	728	920	306	701	952	1203	378	866	1176	1486	450	1031	1400	1769
55/45 °C	18	85	195	265	335	128	293	398	503	185	423	575	727	242	554	752	950	299	684	929	1174	356	814	1106	1397
	20	80	183	249	314	120	275	373	472	173	397	539	681	227	519	705	891	280	641	871	1100	333	763	1037	1310
	22	75	171	232	293	112	256	348	440	162	370	503	636	212	484	658	831	261	598	813	1027	311	712	968	1223
50/40 °C	18	72	165	224	283	108	247	336	424	156	357	485	613	204	467	634	802	252	577	784	990	300	687	933	1179
	20	67	153	207	262	100	229	311	393	144	331	449	568	189	433	587	742	233	534	726	917	278	636	864	1092
	22	61	140	191	241	92	211	286	362	133	304	413	522	174	398	540	683	215	492	668	844	256	585	795	1004
45/35 °C	18	59	134	182	231	88	202	274	346	127	291	395	500	166	381	517	653	205	470	639	807	244	560	760	961
	20	53	122	166	210	80	183	249	314	116	265	359	454	151	346	470	594	187	427	581	734	222	509	691	873
	22	48	110	149	189	72	165	224	283	104	238	323	409	136	311	423	534	168	385	522	660	200	458	622	786

- temperature exponent $m = 1$

Correction factor page 76 • Assembly page 77 • Regulation page 82

Free standing convectors with forced convection KORALINE LV 15/18

NEW

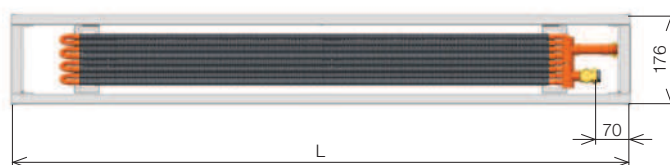
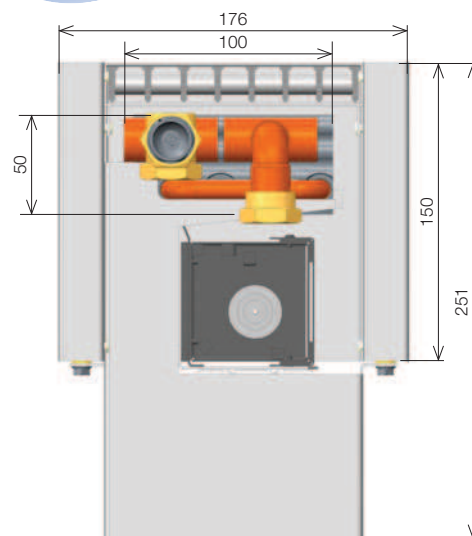
HC OPTIMIZED CONVECTION

- used for heating
- high heat output
- possibility of control through BMS
(Building Management System)
- only bottom connection
- the convectors is intended for dry environment

Specification

casing element height (mm)	150
width (mm)	176
length (L mm)	900, 1 200, 1 600, 2 000, 2 400, 2 800
exchanger height (mm)	50
exchanger width (mm)	100
exchanger approximate length (mm)	L - 300
fans' impeller diameter (mm)	40
connection to the heating system	2× G 1/2" inner

Version Exclusive • coated in RAL 9010 zinc galvanised steel with aluminium unpainted grid
* only bottom connection



The given dimensions are in mm.

Technical parameters



Width	cm	18																							
Depth	cm	15																							
Total length	cm	90				120				160				200				240				280			
Noisiness - acoustic pressure 1m	dB(A)	0	17.6	26.3	33	0	17.9	26.8	33.4	0	18.2	27.1	33.6	0	18.7	27.7	33.9	0	18.9	27.8	34.2	0	19.2	28	34.4
Power input	W/V	8/13.5				11/13.5				12/13.5				21.5/13.5				22.5/13.5				23.5/13.5			
Speed switch position		Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3
Heat output	t1 °C	Heat output [W]/EN 442																							
90/70 °C	20	250	1025	1208	1392	376	1537	1813	2088	543	2220	2618	3016	709	2904	3424	3944	876	3587	4229	4872	1043	4270	5035	5800
	18	217	888	1047	1206	326	1332	1571	1810	470	1924	2269	2614	615	2517	2967	3418	760	3109	3666	4222	904	3701	4364	5027
	22	200	820	967	1114	300	1230	1450	1670	434	1776	2095	2413	568	2323	2739	3155	701	2869	3384	3898	835	3416	4028	4640
75/65 °C	18	186	760	896	1032	279	1140	1344	1549	402	1647	1942	2237	526	2154	2539	2925	650	2660	3137	3613	774	3167	3734	4302
	20	177	726	856	986	266	1089	1284	1479	384	1573	1855	2136	503	2057	2425	2794	621	2541	2996	3451	739	3025	3567	4108
	22	169	692	816	940	254	1038	1224	1409	366	1499	1767	2036	479	1960	2311	2662	592	2421	2855	3289	704	2882	3399	3915
70/55 °C	18	134	547	644	742	200	820	967	1114	289	1184	1396	1609	378	1549	1826	2103	467	1913	2256	2598	556	2277	2685	3093
	20	125	512	604	696	188	769	906	1044	271	1110	1309	1508	355	1452	1712	1972	438	1793	2115	2436	522	2135	2518	2900
	22	117	478	564	650	175	717	846	974	253	1036	1222	1407	331	1355	1598	1841	409	1674	1974	2274	487	1993	2350	2707
55/45 °C	18	113	461	544	626	169	692	816	940	244	999	1178	1357	319	1307	1541	1775	394	1614	1903	2192	470	1922	2266	2610
	20	104	427	504	580	157	641	755	870	226	925	1091	1257	296	1210	1427	1643	365	1495	1762	2030	435	1779	2098	2417
	22	96	393	463	534	144	589	695	800	208	851	1004	1156	272	1113	1313	1512	336	1375	1621	1868	400	1637	1930	2223
50/40 °C	18	92	376	443	510	138	564	665	766	199	814	960	1106	260	1065	1255	1446	321	1315	1551	1786	383	1566	1846	2127
	20	83	342	403	464	125	512	604	696	181	740	873	1005	236	968	1141	1315	292	1196	1410	1624	348	1423	1678	1933
	22	75	307	363	418	113	461	544	626	163	666	785	905	213	871	1027	1183	263	1076	1269	1462	313	1281	1511	1740

- temperature exponent m = 1

Correction factor page 76 • Assembly page 77 • Regulation page 82

Free standing convectors with forced convection KORALINE LV 15/24



NEW

OPTIMIZED CONVECTION

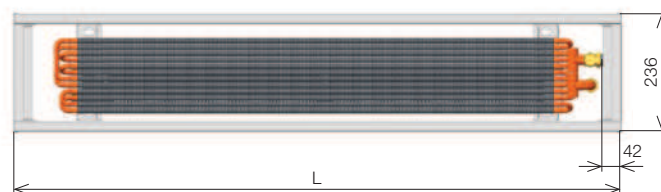
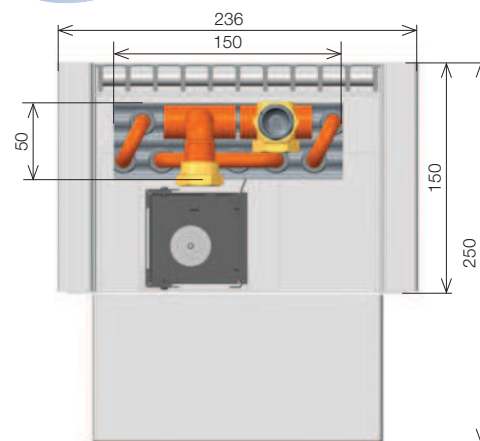
- used for heating
- high heat output
- quietest operation at low speed
- possibility of control through BMS (Building Management System)
- only bottom connection
- the convectors is intended for dry environment

Specification

casing element height (mm)	150
width (mm)	236
length (L mm)	900, 1 200, 1 600, 2 000, 2 400, 2 800
exchanger height (mm)	50
exchanger width (mm)	150
exchanger approximate length (mm)	L - 260
fans' impeller diameter (mm)	40
connection to the heating system	2× G 1/2" inner

Version Exclusive • coated in RAL 9010 zinc galvanised steel with aluminium unpainted grid

* only bottom connection



The given dimensions are in mm.

Technical parameters



Width	cm	24																							
Depth	cm	15																							
Total length	cm	90				120				160				200				240				280			
Noisiness - acoustic pressure 1m	dB(A)	0	17.6	26.3	33	0	17.9	26.8	33.4	0	18.2	27.1	33.6	0	18.7	27.7	33.9	0	18.9	27.8	34.2	0	19.2	28	34.4
Power input	W/V	8/13.5				11/13.5				12/13.5				21.5/13.5				22.5/13.5				23.5/13.5			
Speed switch position		Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3	Off	1	2	3
Heat output	t1 °C	Heat output [W]/EN 442																							
90/70 °C	20	313	1183	1508	1833	460	1738	2215	2692	655	2477	3157	3837	851	3216	4099	4982	1046	3956	5042	6128	1242	4695	5984	7273
	18	271	1025	1307	1588	398	1506	1919	2333	568	2147	2736	3325	737	2788	3553	4318	907	3428	4370	5311	1076	4069	5186	6303
	22	250	946	1206	1466	368	1390	1772	2153	524	1982	2526	3070	681	2573	3279	3986	837	3165	4033	4902	994	3756	4787	5818
75/65 °C	18	232	877	1118	1359	341	1289	1642	1996	486	1837	2341	2846	631	2386	3040	3695	776	2934	3739	4545	921	3482	4438	5394
	20	222	838	1068	1298	326	1231	1569	1907	464	1755	2236	2718	603	2278	2904	3529	741	2802	3571	4340	880	3326	4239	5152
	22	211	799	1018	1237	310	1173	1495	1817	442	1672	2131	2590	574	2171	2767	3363	706	2670	3403	4136	838	3169	4039	4909
70/55 °C	18	167	631	804	977	245	927	1181	1436	349	1321	1684	2046	454	1715	2186	2657	558	2110	2689	3268	662	2504	3192	3879
	20	156	592	754	916	230	869	1107	1346	328	1239	1578	1918	425	1608	2050	2491	523	1978	2521	3064	621	2348	2992	3637
	22	146	552	704	855	214	811	1033	1256	306	1156	1473	1791	397	1501	1913	2325	488	1846	2353	2860	580	2191	2793	3394
55/45 °C	18	141	532	679	825	207	782	997	1211	295	1115	1421	1727	383	1447	1845	2242	471	1780	2269	2757	559	2113	2693	3273
	20	130	493	628	764	192	724	923	1122	273	1032	1315	1599	354	1340	1708	2076	436	1648	2101	2553	517	1956	2493	3030
	22	120	454	578	702	176	666	849	1032	251	950	1210	1471	326	1233	1571	1910	401	1516	1933	2349	476	1800	2294	2788
45/35 °C	18	115	434	553	672	169	637	812	987	240	908	1158	1407	312	1179	1503	1827	384	1450	1849	2247	455	1722	2194	2667
	20	104	394	503	611	153	579	738	897	218	826	1052	1279	284	1072	1366	1661	349	1319	1681	2043	414	1565	1995	2424
	22	94	355	452	550	138	521	664	807	197	743	947	1151	255	965	1230	1495	314	1187	1513	1838	373	1409	1795	2182

- temperature exponent m = 1

Correction factor page 76 • Assembly page 77 • Regulation page 82

Correction factor k_t for a variant temperature difference Δt (K)

KORALINE LV 15/11, 15/18, 15/24

Δt (K)	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
k_t	0.360	0.380	0.400	0.420	0.440	0.460	0.480	0.500	0.520	0.540	0.560	0.580	0.600	0.620	0.640	0.660
Δt (K)	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
k_t	0.680	0.700	0.720	0.740	0.760	0.780	0.800	0.820	0.840	0.860	0.880	0.900	0.920	0.940	0.960	0.980
Δt (K)	50	51	52	53	54	55	56	57	58	59	60					
k_t	1.000	1.020	1.040	1.060	1.080	1.100	1.120	1.140	1.160	1.180	1.200					

- temperature exponent $m = 1.1$

Weights and water volumes of free standing convectors

KORALINE LV	15/11	15/18	15/24
kg/linear meter	9.2	11.21	12.10
l/linear meter	0.28	0.6	0.85

The listed weights are without a packaging.

The contents of supplies and selectable specifications

Standard delivery contains

- sheathing of zinc galvanised steel coated in shade RAL 9010 – white
- Al/Cu heat exchanger with low water content, air vent and uniquely shaped lamellas for a higher heat output
- group of low-energy fans
- connecting terminal (F Box)
- temperature switch
- stands for fixing to floor covering (it is not possible to use the wall mounting brackets or stands for the subfloor with the KORALINE LV product)
- the set is packed in a cardboard packaging

Optional accessories

- shutt of valve and thermoelectric drive
- in case of ordering more than 5 units it is possible to select another sheathing colour shade (the manufacturer must be consulted)

Note

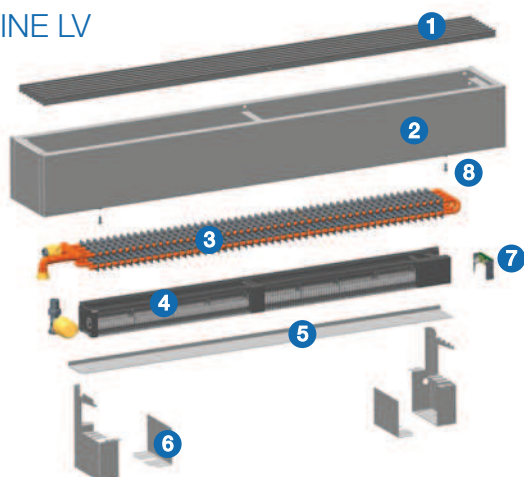
- Standard supply does not include the regulation
- The regulation must be ordered separately in accordance with the technical parameters
- Electrical regulation and regulation elements, see page 82
- Regulation is identical for all OC convectors



Convectors assembly



KORALINE LV



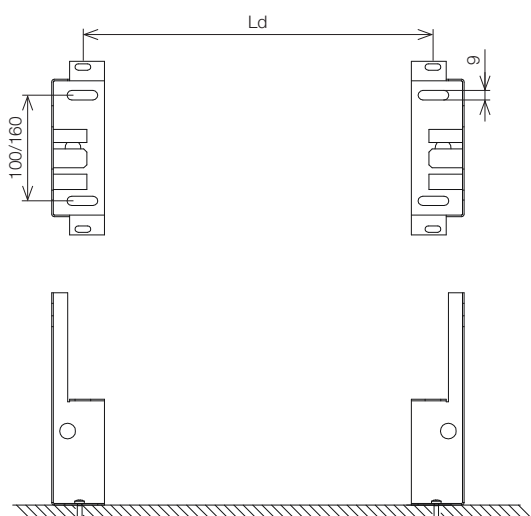
Convectors breakdown

- 1 aluminium cover grid
- 2 metal plating
- 3 heat exchanger KORABASE 20
- 4 fans
- 5 fan support
- 6 stands
- 7 connecting terminal (F Box)
- 8 screw DIN 7981

Installation technique for KORALINE LV (valid for all models)

Determine the stands spacing for anchoring them to the floor by pushing the fan's rail into the stands. The heat exchanger is then positioned in the stands and connected to the heating system.

The fan is fixed to the fan support and connected to the F-box. Finally, the cover with the cover grid is put on and screwed onto the stands. The grid is removable for easy cleaning. You will find more detailed information in the installation instructions.



L = Convectors length

Ld = L - 300 mm (up to the convectors length of 1 400 mm)

Ld = L - 400 mm (up to the convectors length of 2 000 mm)

Ld = L - 600 mm (above the convectors length of 2 000 mm)

Ordering codes KORALINE LV

			Length (cm)	Height (cm)	Width (cm)	Colour	
Exclusive	white steel/unpainted exchanger	LVX	...	15	..	-	10
Free standing convectors with forced convection KORALINE LV							



[Regulation and acoustics





Description of electrical regulation of KORAFLEX FV, FV InPool, FI, FW, KORALINE LV and KORAWALL WI (hereinafter referred to as fan-coils)

Standard regulation:

The regulation is designed for the control of the heating and cooling output of convectors with blow fans. The standard part of the fans is:

- Group of fans with a unique disk type synchronous engine with permanent magnets. It is characterized mainly by very low power consumption – the power input of the engine at the full range of speed does not exceed 7.5 watts; the engine also runs very quietly.
- Connecting terminal (F Box)
- Exchanger temperature sensor (switch)

Optional accessories

The DC power supply source in accordance with the total power input of the controlled fan-coil units. The offer includes 2 sizes, 60 W and 100 W. The power supply sources are supplied separately for installation in the electrical switchboard on DIN rail.

- R-Box, containing the speed signal galvanic separation module, controlling the fan speed and which also allows the selection and optimization of various degrees of speed. The R-Box is designed for mounting on DIN rail in the switchboard
- Plastic box for the placement of the DC power supply and the R-Box for installations where the switchboard is too far
- Siemens thermostats
- Valves, thermoelectric drive 12 V DC

The performance is controlled by the working media On/Off switching valve, if used, and by switching the On/Off the three speed blower fan. When using a Siemens thermostat RDG100T the speed is controlled automatically. All three speeds of the fan can be smoothly adjusted. The fan speed is given by the size of the voltage control signal CNTRL from the galvanic separation signal module (R-Box). Detailed description of functions and settings is available in the installation instructions supplied with the product.

Fans are normally blocked by a temperature switch (TS1) at a switching temperature of about 35 °C. This function may be disconnected. This accessory is not supplied for KORAWALL WI. For fan coils with dry-cooling effect it is still necessary to use one cooling medium thermal switch (TS2) connected in parallel to the temperature switch which activates at a temperature below 13 °C. The temperature and speed is controlled by Siemens Thermostats RAB11, RDF600/IR or RDG 100T. Contact fields of

these thermostats (TS1) are connected to mains voltage, and that is why it is necessary to use the R-Box signals' galvanic separation (the galvanic separation of signals is implemented by using optocouplers).

The thermostat switches the DC power supply source of the output voltage of approx. 13.5 V. Once the power supply source is switched on the heating medium valves (if used) start opening. Furthermore, the thermostat through galvanic separation module generates the control voltage signal CNTRL. The control voltage signal is of three levels, with each speed level smoothly adjustable. The convectors control can be also carried out using a BMS (Building Management System) higher-level output elements. One BMS relay output controls the valve's opening/closing, and the second continuous 0–10 V output controls the speed. The standard regulation enables the use of a thermoelectric drive 12 V DC that closes or opens the heating media valve. The function is set in such a way that if heating is required, i.e. after the thermostat switches on, the power supply is activated. The voltage from the power supply source directly supplies the thermoelectric drives of the valve for the control of the heating media inlet to the fan-coil unit. If the heating output is not sufficient without the fan, it is possible to select the required speed of the fan (I. II. III.) with a switch.

Description of regulation of KORAFLEX FV InPool

The above described system of regulation applies to pool applications for which this product is intended. The principle is the same but the electrical equipment of the convectors differs the electronics of the motor, F box are located in a plastic box with high degree of protection IP 67 which is placed inside the convectors. When installing the connecting cables to the terminal block of the F box must be connected as per instructions. In terms of temperature and speed regulation the same types and variations of thermostats are used with a restriction that the thermostats must not be placed in the pool area. For these purposes we recommend using the temperature sensor which senses the temperature in the pool area, see Accessories. The sensor is designed for thermostats RDF 600 and RDG 100T.

The convectors is not designed for continuous flooding by pool water. Get thoroughly familiar with the warranty and operating conditions.

[Installation must be performed according to valid standards and safety regulations! The manufacturer is not liable for defects or damage caused by improper installation.](#)

Electrical regulation elements

SIEMENS RAB 11

- room thermostat with a speed switch
- switching between heating and cooling
- manual switching of the fan speed
- voltage 24 to 250 V AC, current 0.2 to 6 (2) A
- temperature setting range 8 to 30 °C
- degree of protection class IP 30
- dimensions w × h × d (mm) – 96 × 110 × 35.4



SIEMENS IRA 211

- infrared remote control for RDF 600/IR and RDG 100T
- operation type selection
- temperature setting
- fan speed selection
- compatible for use with the RDF 600, RDG 100T thermostats
- power supply 2× 1.5 V, AAA type
- degree of protection class IP 30
- dimensions w × h × d (mm) – 42 × 106 × 18



SIEMENS RDF 600

- room thermostat with a display and weekly program for two/four-pipe fan-coil units
- automatic switching between heating/cooling
- manual or automatic 3-stage fan speed control
- operating voltage AC 230 V, current loading max. 4 (2) A
- setting range of the required temperature 5–40 °C
- switching hystereses adjustable in the range of 0.5 to 4 K
- possibility of connection of a separate sensor e.g. for applications in a wet environment
- possibility to control the control valve with the use of a thermo-electric drive
- degree of protection class IP 30
- dimensions w × h × d (mm) – 86 × 86 × 57



Room temperature sensor QAA32

- to measure space temperature in systems of heating where it is not possible to place a thermostat
- suitable for pool application installations
- can be connected to thermostats RDF 600, RDG 100T
- measurement range: 0–40 °C, accuracy of measurement at 25 °C ± 0.3 K
- measuring sensor – NTC, 3 kΩ at 25 °C
- safety class II according to EN 60 730, degree of protection IP 30 according to EN 60 529
- dimensions w × h × d (mm) – 96.4 × 99.6 × 36



SIEMENS RDG 100T

- room thermostat with a display and weekly program for two/four-pipe fan-coil units
- automatic switching between heating/cooling
- manual or automatic 3-stage fan speed control
- operating voltage AC 230 V, current loading max. 5 (4) A
- setting range of the required temperature 5–40 °C
- switching hystereses adjustable in the range of 0.5 to 6 K
- possibility of connection of a separate sensor e.g. for applications in a wet environment
- possibility of control using the infrared remote control
- wide range of accessories, modern design
- degree of protection class IP 30
- dimensions w × h × d (mm) – 93 × 128 × 30



DC power supply source 60 W and 100 W

- switching DC power supply
- noiseless operation, high efficiency
- DIN rail mounting
- degree of protection class IP 20



model	DR-60-12	DR-100-12
power supply size	60 W	100 W
input control voltage	230 V AC/0,88 A	230 V AC/1,6 A
heat output voltage	15 V DC/4 A	15 V DC/6.5 A
dimensions w × h × d (mm)	78 × 93 × 56	100 × 93 × 56

R-Box

- input voltage: 230 V/50 Hz
- output signal: 0 to 10 V/1 kΩ
- galvanically separated 4 kV AC – optocouplers
- degree of protection: IP 20
- instalation on the DIN rail in the switchboard
- incorporates speed signal galvanic separator module
- operating ambient temperature: 0–40 °C
- dimensions w × h × d (mm) – 52 × 23 × 40





Installation box

- wall built-in
- used for the DC power supply source installation and the R-Box in cases where the installation in switchboard is not possible
- IP 40
- dimensions w × h × d (mm) – 258 × 318 × 72



Heating control elements (cooling) medium

Thermoelectric drive

- power supply voltage:
12 V DC/150 mA/1.8 W
- CLOSED without power supply
- degree of protection: IP 54
- connection cable 2 × 0.75 mm², length 1 m
- closing/opening time < 3 min.



Shut-off valve

- straight or corner section (according to the order)
- dimension 1/2" G
- material – nickel-plated brass



Thermostatic head fluid with capillary

- regulation range +6.5 to +28 °C
- installation of the actuator into the wall
- length of capillary 5 m
- hysteresis: ≤ 0.6 °C



Preset stage	1	2	3	4	5	6	7	8	9
speed	1 1/4	1 1/2	1 3/4	2	2 1/2	3	3 1/2	4	Complete opening
Kv	0.14	0.20	0.31	0.43	0.60	0.79	1.00	1.20	1.35

Kv flow coefficient (m³/h)

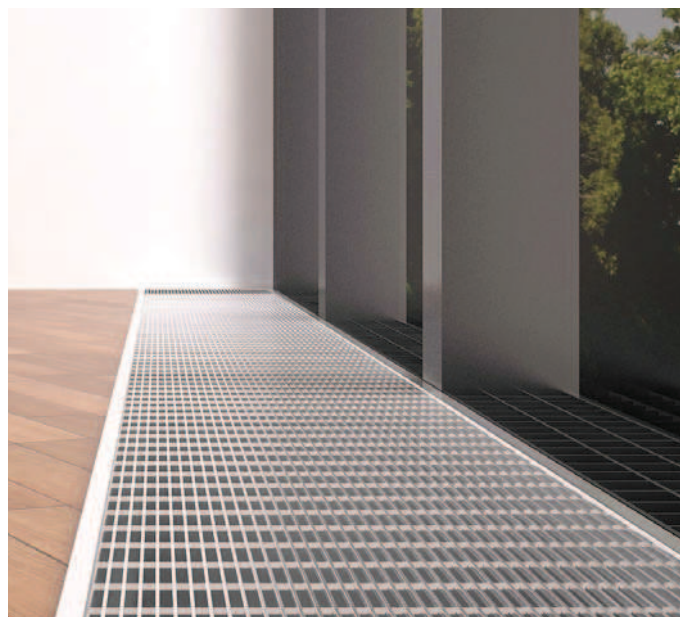
Thermostatic valve

- straight or corner section (according to the order)
- with preset Kv value
- dimension 1/2" G
- connection dimension of the head M 30 × 1.5
- material – nickel-plated brass
- maximum operating pressure PN 10
- maximum operating temperature 90 °C



Preset stage	1	2	3	4	5	6
Kv (Δt = 2K)	0.10	0.20	0.30	0.40	0.50	0.60
Kvs	0.10	0.20	0.30	0.40	0.57	0.80

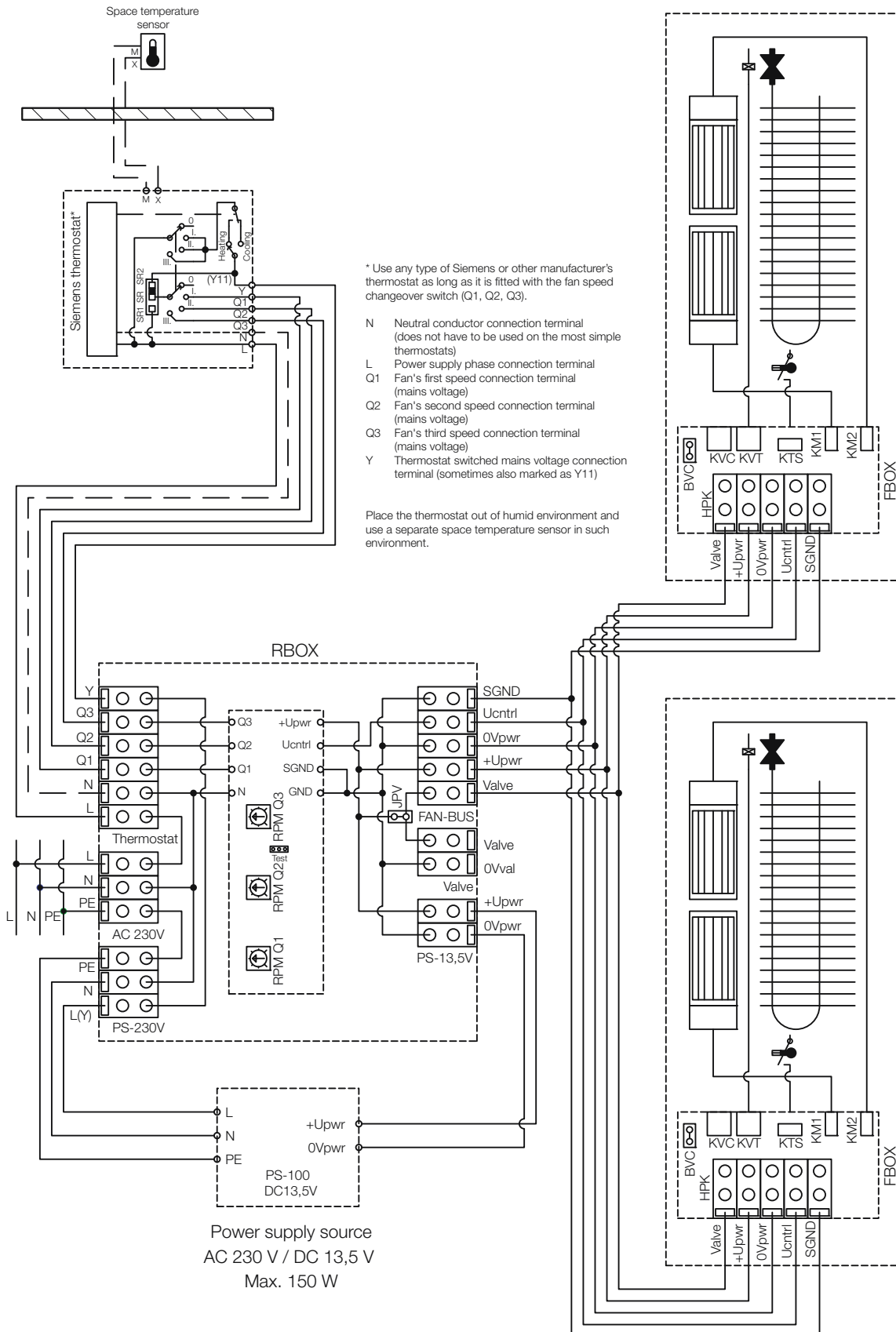
Kv flow coefficient (m³/h)
Kvs maximum flow (m³/h)
Δt = 2K valve proportionality band (K)

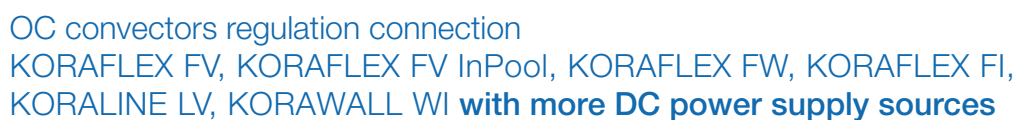


Connection diagram of convectors in the variant with heating media valves.

Convectors regulation basic connection OC

KORAFLEX FV, KORAFLEX FV InPool, KORAFLEX FW, KORAFLEX FI, KORALINE LV, KORAWALL WI





Example of the design calculation of the output of the DC power supply

The electrical input must be calculated in terms of regulation so that the correct size of the DC power supply source is selected. The total input power will be a sum of all input power of the convectors with forced convection which will be controlled through one thermostat.

For example:

According to the project we have the following fan-coil unit types:

2 pcs of KORAFLEX FV 160/9/28 – we find the input power of 12 W in the table

1 pc of KORALINE LV 240/15/18 – we find the input power of 22.5 W in the table

2 pcs of KORAWALL WI 100/45/11 – we find the input power of 8 W in the table (optionally 4 pieces of thermoelectric drives –

$4 \times 1.8 \text{ W} = 7.2 \text{ W}$)


Total power input:

$12 + 12 + 22.5 + 8 + 8 + (7) = 62.5 \text{ W}$ (69.5 W)

Select source rated 100 W.

		100
0	23.4	31.7
		8 / 13.5
Off	1	2
0	291	407

Acoustics

Apart from the input power one of the main parameters is the noise level of the fan convectors. Manufacturer develops and designs its products so that they do not exceed under any circumstances the specified noise levels laid down by the health standards for this type of equipment. Generally this limit is 30 dB (A) of the sound power that means that the product does not exceed this limit at the minimum speed. Products marked with the logo OC  has been optimized for the noise/performance ratio.

Manufacturer uses in its products always the most advanced technology, as well as in the case of the fans. The used fans are equipped with a patented disc engine with permanent magnets. Among the main benefits is belong a significant noise reduction and a low energy consumption compared to commercially available fans with the rotor and stator.

Manufacturer indicates in its materials a parameter to assess the noise level the acoustic pressure L_p (A) measured at 1 m from the source. The measurements were carried out by an authorised test laboratory.

The values of the sound power are available on request.

Acoustic pressure

The acoustic pressure is a change of the air pressure generated by a source of noise. Such pressure fluctuations are measured in N/m^2 and expressed by the symbol "p". The acoustic pressure represents the measure of volume. It depends on the distance between the source of the noise and the place of the measurement and also on the characteristics of the space.

Sound power

The energy converted by a piece of equipment (the source of sound) to sound is referred to the sound power. This sound power is brought to the air in the form of pressure fluctuations. The sound power is not a directly measurable quantity. It is determined by integrating of the acoustic pressure in the form

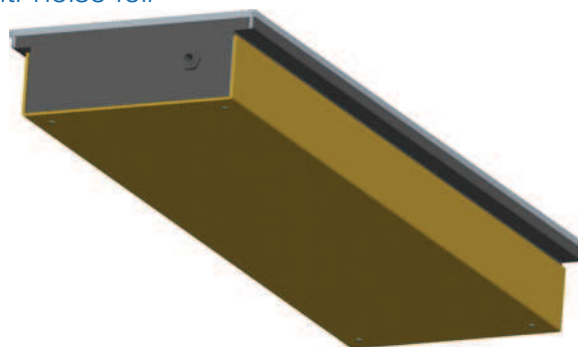
of a hemisphere or a sphere around the sound source.

The acoustic pressure is on this basis a quantity that is independent of space and distance. It is used for all further calculations. On request, will provide values of sound power of its OC products. Although the acoustic pressure level and sound power level use the same unit (dB), they are two different physical quantities. The sound power level is the sound generated at the sound source (energy introduced to the space) while the acoustic pressure level is the sound registered at a certain distance from the sound source. This means that the sound power level is generally higher than the acoustic pressure level.

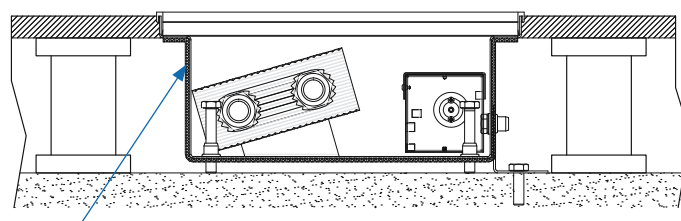
Case with noise-absorbing foil

For further noise reduction, it is possible to order a convectors case fitted with noise-absorbing foil. The foil reduces the noisiness by 1 to 3 dB depending on the type, length and speed of the convectors.

Anti-noise foil



Anti-noise foil – cross section



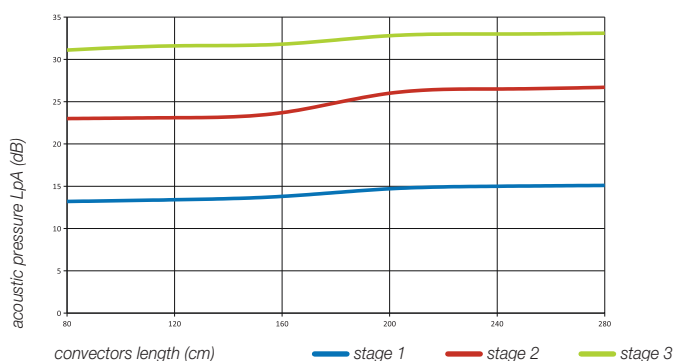
acoustically absorbent sheet

Graphic representation of the noisiness level of OC convectors



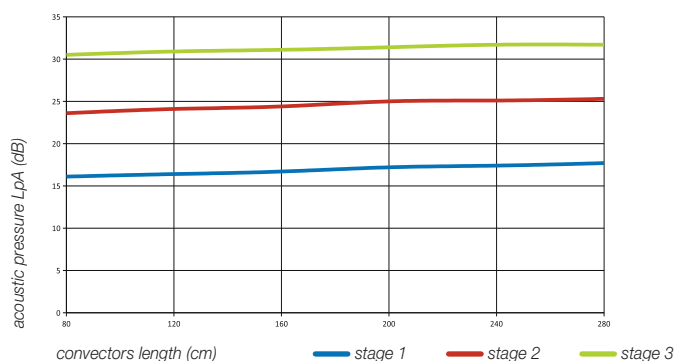
Acoustic pressure at the distance of 1 m from the convectors with forced convection of Ø 30 mm.

For convectors type KORAFLEX FV 8/16 a 8/28.



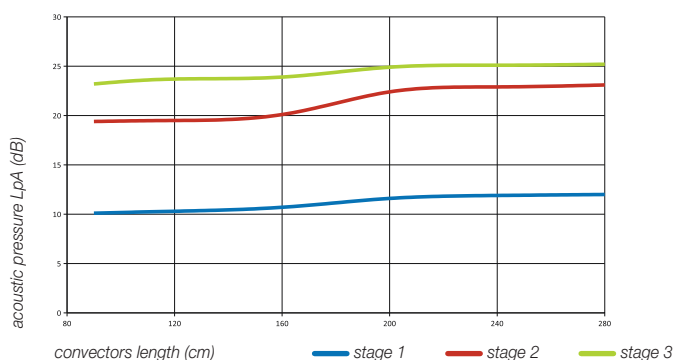
Acoustic pressure at the distance of 1 m from the convectors with forced convection of Ø 40 mm.

For convectors type KORAFLEX FV 9/28, 11/20, 11/28, 11/34, 11/42, KORAFLEX FI 11/20, KORAFLEX FV InPool 13/34.



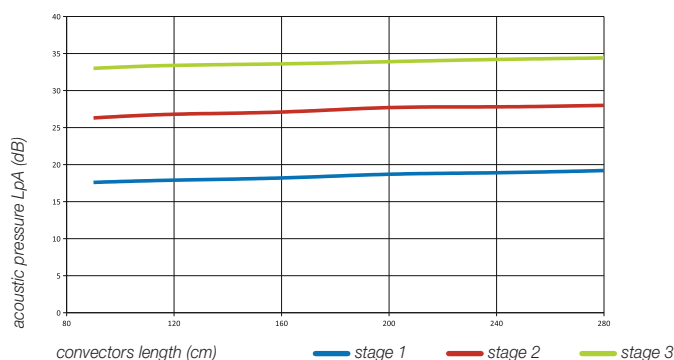
Acoustic pressure at the distance of 1 m from the convectors with forced convection of Ø 30 mm.

For convectors type KORALINE LV 15/11.



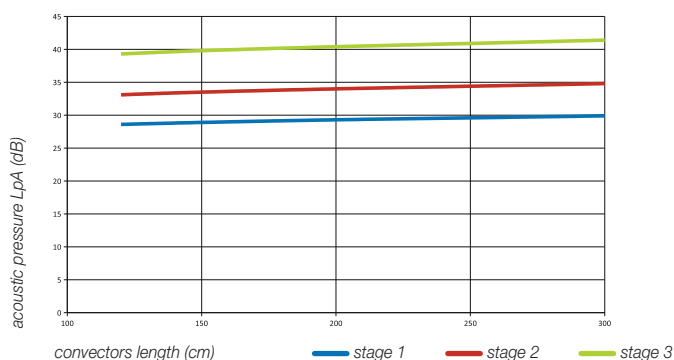
Acoustic pressure at the distance of 1 m from the convectors with forced convection of Ø 40 mm.

For convectors type KORALINE LV 15/18 a 15/24.



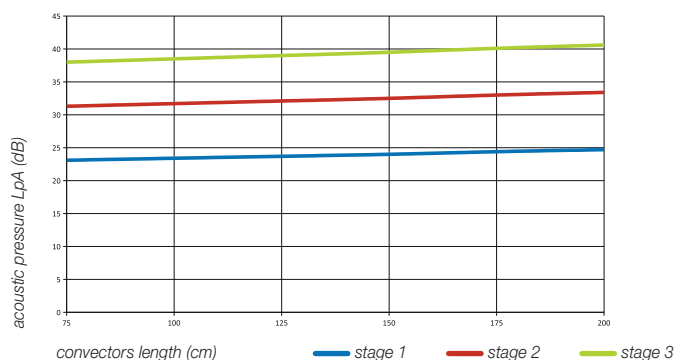
Acoustic pressure at the distance of 1 m from the convectors with forced convection of Ø 60 mm.

For convectors types KORAFLEX FI 13/34, KORAFLEX FW 13/34.



Acoustic pressure at the distance of 1 m from the convectors with forced convection of Ø 60 mm.

For convectors type KORAWALL WI 45/11.

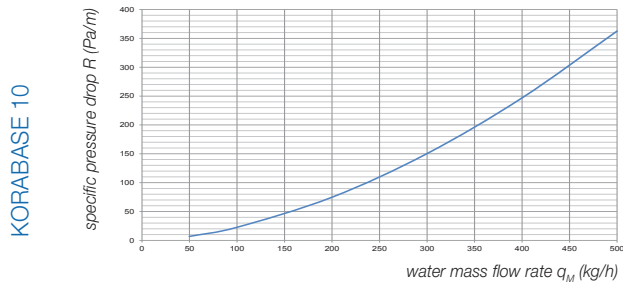


Volume of air per 1 m of fan-cooled heat exchanger length (m³/h)

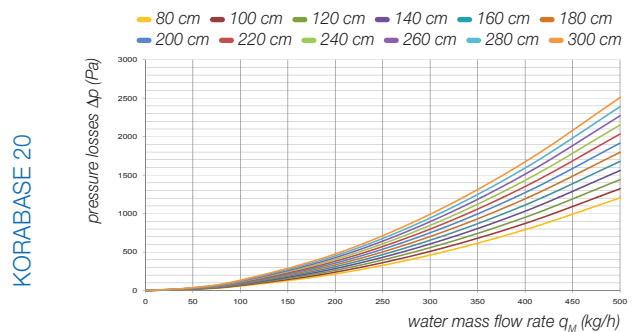
fan diameter	stage 1 speed	stage 2 speed	stage 3 speed
30mm	135	180	225
40mm	180	240	300
60mm	325	437	512

Pressure losses of convectors

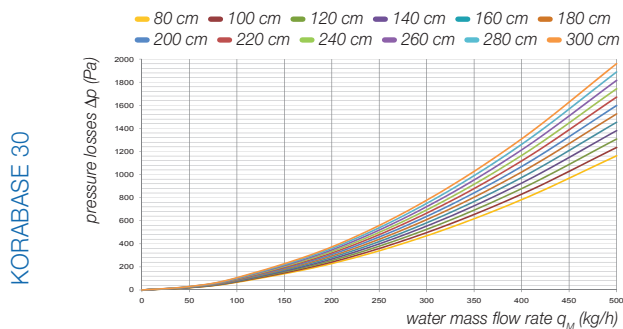
KORAFLEX FK 9/16, 11/16
KORABASE 10



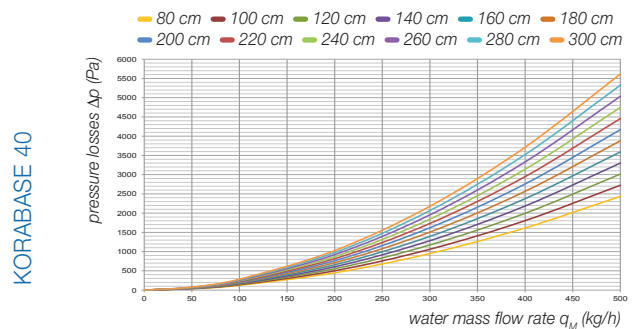
KORAFLEX FK 9/20, 9/28, 11/20, 11/28
KORALINE 9/18 and 9/24, KORABASE 20
KORAFLEX FV 8/28, 9/28, 11/28
KORAFLEX FV InPool 13/34



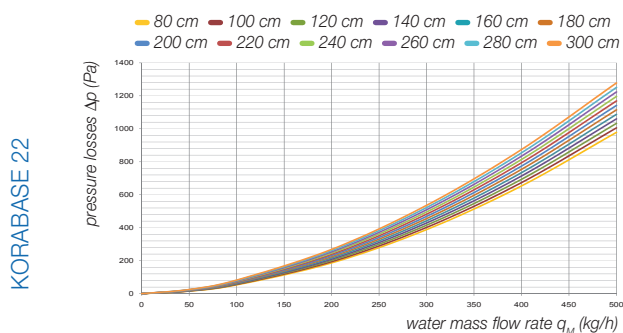
KORAFLEX 9/34, 11/34
KORAFLEX FV 11/34, KORABASE 30



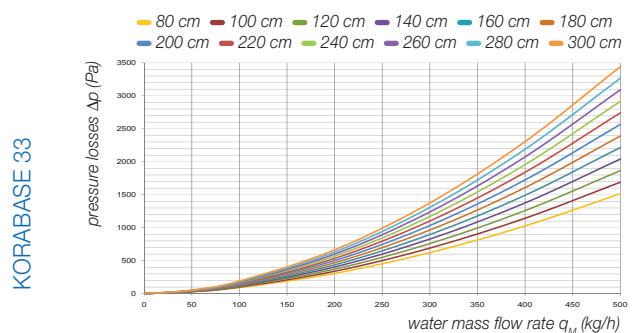
KORAFLEX FK 9/42, 11/42
KORAFLEX FV 11/42



KORAFLEX FK 15/28, 19/28, 30/28, 45/28
KORALINE LK 15/18, 30/18, 45/18, 60/18
KORABASE 22

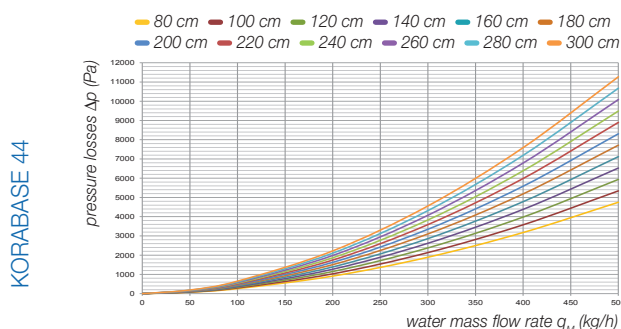


KORAFLEX FK 15/34, 19/34, 30/42, 45/42
KORALINE LK 15/24, 45/24, 60/24
KORABASE 33

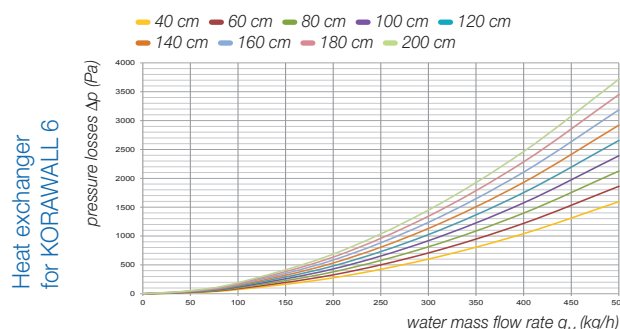




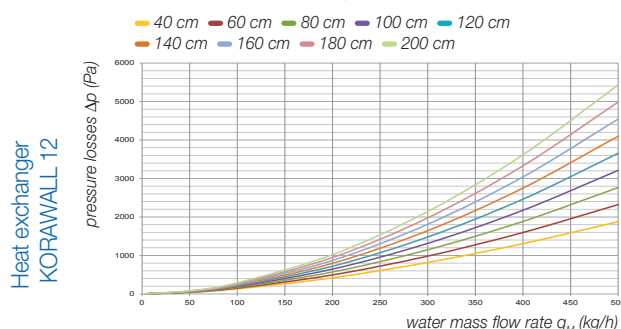
KORAFLEX FK 15/42, 19/42



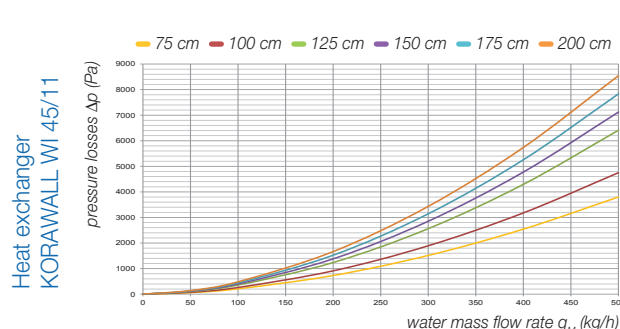
KORAWALL WK 45/6, 60/6



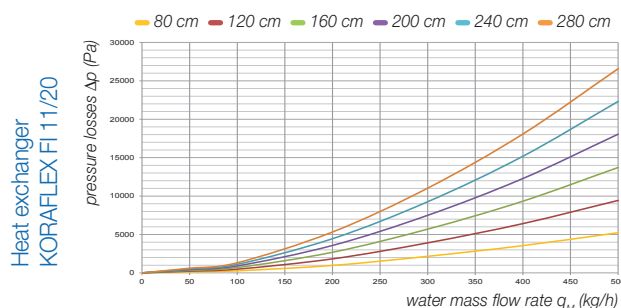
KORAWALL WK 45/12, 60/12



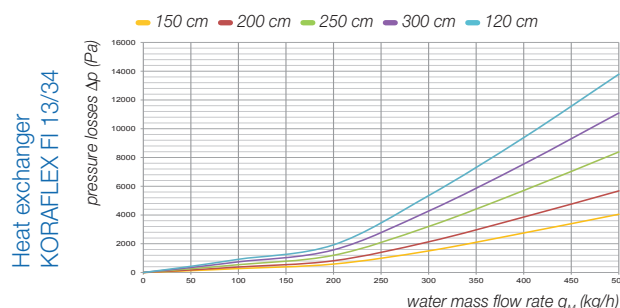
KORAWALL WI 45/11



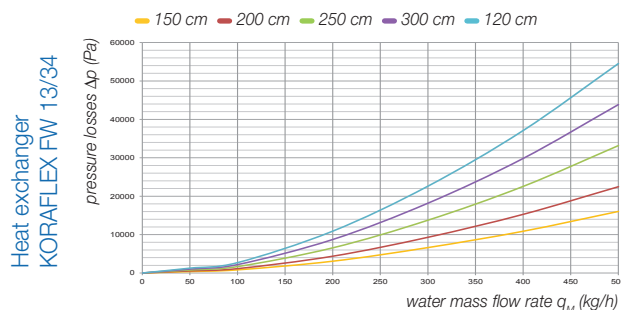
KORAFLEX FI 11/20



KORAFLEX FI 13/34



KORAFLEX FW 13/34



Examples of conversion to a variant temperature difference

$$\Delta t = (tw_1 + tw_2)/2 - ti$$

Where: tw_1 is the inlet water temperature (°C)
 tw_2 is the outlet water temperature (°C)
 ti is the air temperature (°C)
 Δt is the cooling of water (K)

The resistance coefficient is valid for both 1/2" connections. You will find the kt factor in the table of correction factors of the particular element.

Entered: KORABASE 22/140 heating element

Rated operating condition: 75/65/20 °C

$Q_n = 1\,198\text{ W}$ should be converted to the temperature difference $\Delta t = 40\text{ K}$

$Q = Q_n \times \text{factor kt} = 1\,198 \times 0.748 = 896\text{ W}$

Entered: KORAWALL WK 140/60/6 heating element

Computational operating status: 75/65/20 °C

$Q_n = 1\,018\text{ W}$ should be converted to the temperature difference $\Delta t = 30\text{ K}$

$Q = Q_n \times \text{factor kt} = 1\,018 \times 0.515 = 525\text{ W}$

* Pressure losses of KORALINE LV are available on request.

General information about products

Heating elements are produced using the state-of-the-art technologies. Most production operations are executed on CNC machines. The surface of elements is treated with powder coating of epoxy-polystyrene paints on an environment-friendly line. In-house production of high performance heat exchangers (copper pipe, aluminium lamellas) guarantees high quality and wide variety of products offered. To achieve an "invisible" impression you can order a black coated exchanger.

The case supplied as the standard is made of a black coated galvanised steel sheet. For use in wet environments you can order a case of a high corrosion resistance stainless steel. Thanks to our advanced production technology we are able to produce atypical dimensions, including angled and arc convectors' designs.

The shortest possible delivery periods are offered, from 3 to 10 working days. Guaranteed warranty and after-warranty service.



Universal regulation



Natural convection



Heating



Forced convection



Quiet operation



Swimming pools design



Cooling



Dry-cooling



Environmentally friendly



Minimal Energy consumption



Higher performance



Information

Transport and storage instruction

During transport the elements must be handled with extreme care and must be secured against motion and damage. The transport and storage area must be dry and protected from climatic influences.

Maintenance

The convectors must be kept clean and especially before the heating season any dirt and dust should be removed from the convectors. The fan convectors must be checked if the fans are not mechanically blocked (by fallen objects, a layer of dust, etc.).

Quality

Manufacturer is a holder of the certified quality management system as per ISO 9001:2008. The products are manufactured and tested according to EN 422. By using CE mark the producer confirms that the convectors are in conformity with the characteristics stated in the Declaration of Performance issued in conformity with the directive of EP and the Council (EU) No. 305/2011. This conformity was approved by the notified body No.1015, Strojírenský zkušební ústav, s.p. Brno.



Proven heating and cooling performances



Warranties

The products are subject to 2-year warranty. 10-year warranty is provided for the tightness of the heat exchanger. Full service and warranty terms and conditions are available on demand.

Manufacturer KORADO, a.s. is not responsible for damage caused by improper installation, or damages arising from poor electrical or thermal installations (such as fluctuating voltage or hydraulic pressure which deviates significantly from normal values).

Manufacturer reserves the right to change technical specifications without a prior notice.