

Convectors



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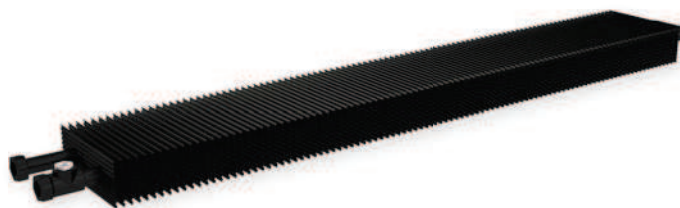
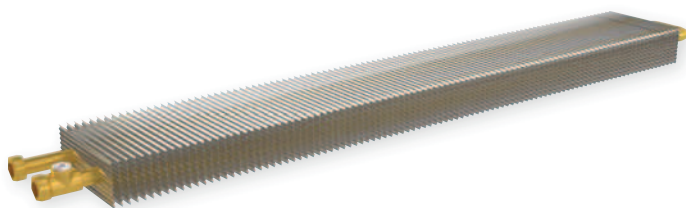




[KORABASE

HEAT EXCHANGERS

The heart of the convectors is the heat exchanger KORABASE. However, its application is much wider. Imagine that you would like your heating elements to completely blend with the interior. Build your exchangers into materials, the entire interior of which is compactly created, and into places where you want to have them. A real design solution that will fulfil even the most exacting notions of preserving the interior design.



Al/Cu heat exchanger with low water content KORABASE

It is suitable for individual installation, especially in places where compactness of interior is required in terms of materials used. If certain conditions are adhered to, the KORABASE heat exchangers can be covered with almost any material to integrate them unobtrusively into the space. The exchanger is made of copper pipes and aluminium lamellas.

Standard delivery contains

- Al/Cu heat exchanger with low water content, air vent and uniquely shaped lamellas for a higher heat output
- mounting instructions
- the set is packed in strong PVC foil and protectors on edges

Specification

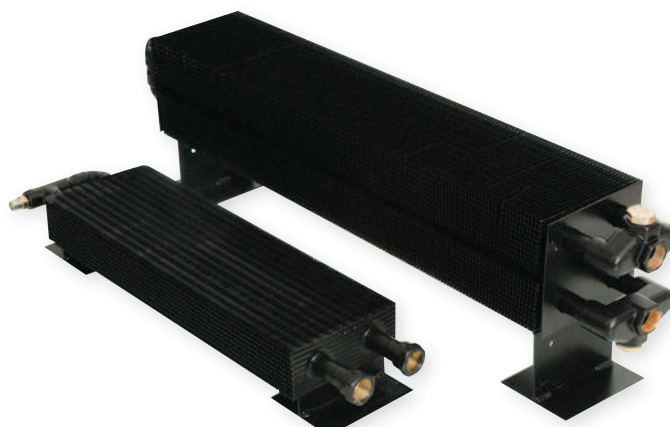
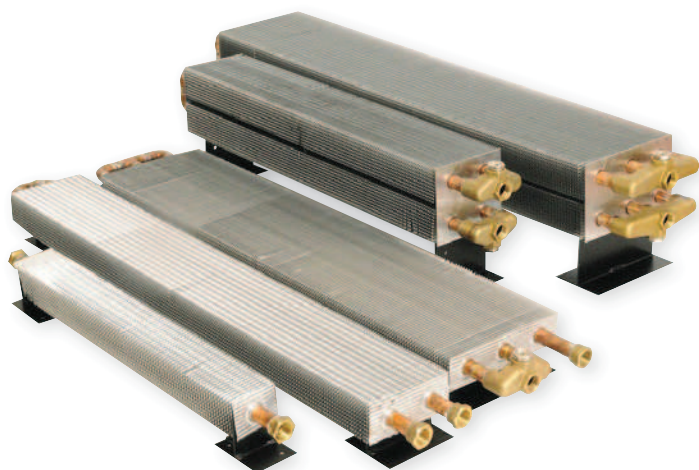
width (mm)	60, 120, 180
height (mm)	50, 110
length (mm)	800 up to 3 000 (at 200 mm steps)
max. working pressure (bar)	12
max. working temperature	110 °C
connecting thread	inner G 1/2"
heat output	according to the exchanger covering height, see the output and correction factors tables for a variant case height

Version KORABASE Economic • exchanger with no surface finish
Version KORABASE Exclusive • black coat

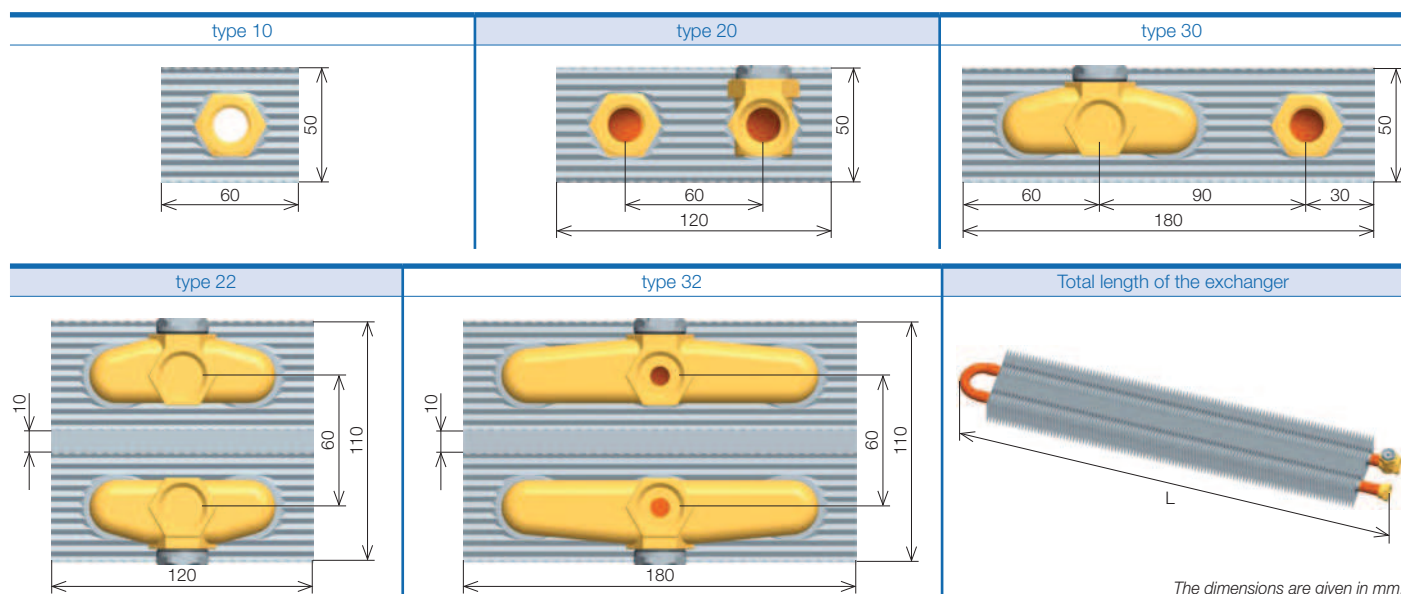


Selectable specification

- version KORABASE Exclusive
- stands or brackets to fit the exchanger on, see page 45



Elements' sections



Heat outputs

Heat outputs (W) at $t_{w1}/t_{w2}/t_i$ = at 75/65/20 °C ($\Delta t=50$) and 65/55/20 °C ($\Delta t=40$)/EN 442

type KORABASE	Δt	Length L (cm)											
		80	100	120	140	160	180	200	220	240	260	280	300
10	Δt 50	269	344	419	494	568	643	718	793	868	942	1017	1092
	Δt 40	201	257	313	369	425	481	537	593	649	705	761	817
20	Δt 50	542	697	851	1006	1161	1316	1471	1625	1780	1935	2090	2245
	Δt 40	405	521	637	753	869	984	1100	1216	1332	1448	1564	1679
30	Δt 50	685	890	1095	1299	1504	1708	1913	2118	2322	2527	2731	2936
	Δt 40	513	666	819	972	1125	1278	1431	1584	1737	1891	2044	2197
22	Δt 50	636	824	1011	1198	1385	1572	1760	1947	2134	2321	2508	2696
	Δt 40	476	616	756	896	1036	1177	1317	1457	1597	1737	1877	2017
32	Δt 50	948	1227	1506	1784	2063	2342	2621	2900	3178	3457	3736	4015
	Δt 40	709	918	1126	1335	1544	1752	1961	2169	2378	2587	2795	3004

The stated heat outputs apply to the height of 10 cm above the floor and the cover height of 20 cm from the bottom edge of the lamellas.

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

Δt (K)	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
k_t	0.265	0.284	0.304	0.324	0.344	0.364	0.385	0.406	0.427	0.449	0.471	0.493	0.515	0.537	0.560	0.583
Δt (K)	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
k_t	0.606	0.629	0.652	0.676	0.700	0.724	0.748	0.773	0.797	0.822	0.847	0.872	0.897	0.923	0.948	0.974
Δt (K)	50	51	52	53	54	55	56	57	58	59	60					
k_t	1.000	1.026	1.052	1.079	1.105	1.132	1.159	1.186	1.213	1.240	1.267					

• temperature exponent $m = 1.3$

See the formula and example of conversion to a variant temperature difference on page 91.

Weights and volumes of water of the heating benches

Type	10	20	30	22	32
kg/linear meter	0.74	1.47	2.23	3.04	4.56
l/1 linear meter	0.22	0.5	0.75	1	1.6

The listed weights are without a packaging.

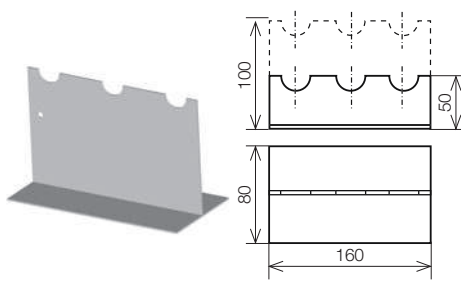
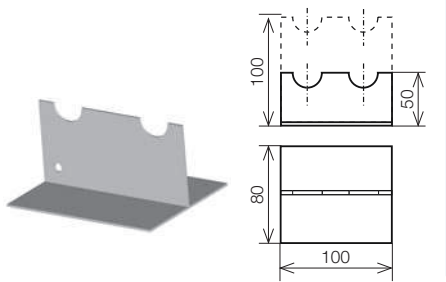
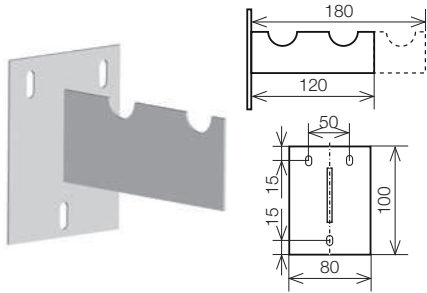


Installation instructions

For proper functioning ensure sufficient supply of air, adequately sealed convectors case and the outlet grid must vent adequately (see fig. on page 18). We recommend the exchangers are installed 10 cm above the floor covering. We supply 2 types of brackets for

this purpose. These could be of the floor mounting design (stand type) of 5 and 10 cm height, or of the wall-suspension design. The number of the exchanger's pipes determines the width of the bracket, see below. The brackets are not part of the supply.

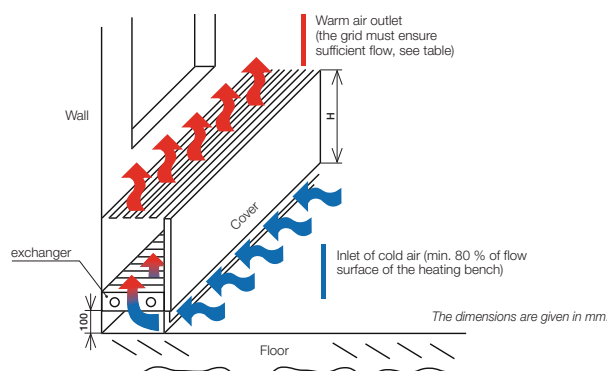
Mounting location

Floor mounting stands	Floor mounting stands	Wall mounting brackets
KORABASE 30 and 32	KORABASE 20 and 22	KORABASE 20, 22, 30 and 32
(supplied in black finish as standard)	(supplied in black finish as standard)	(supplied in white finish as standard)
		

The dimensions are given in mm.

Correct installation

The heat output of the exchanger is dependent on several key conditions: the effective height of the cover, how well the cover (case) seals, the supply of the heated air and the size of the outlet grid's flow area (see fig.). In general, the higher the cover is positioned, the higher the heat output. The case of the convectors and the adjacent building structures must be resistant to the rated temperatures of the heat-carrying media.



Correction factor for a different case height H

Correction factor of the cover grid's flow surface

H (m)	0.200	0.250	0.300	0.350	0.400	0.450	0.500	0.550	0.600
kh	1.000	1.051	1.136	1.207	1.268	1.322	1.371	1.416	1.457

The case height H (m) is taken from the bottom edge of the heat exchanger lamellas. Example: Conversion of the heat output of the KORABASE 30-180 exchanger to the output in a case 0.45 m high.
 $Q = 1\,708 \times 1.322 = 2258\text{ W}$

% of flow surface	> 75	60	50	40	30
correction factor	1.00	0.95	0.90	0.85	0.60

The flow surface means the flow surface of the heat exchanger (width × length of the radiator) minus the area of the cover grid (all dimensions given in %). The heat output of the particular convectors is multiplied by this correction factor. Measurements of the performances of products include the cover grid, therefore it is not necessary to further recalculate them.

Ordering codes

KORABASE

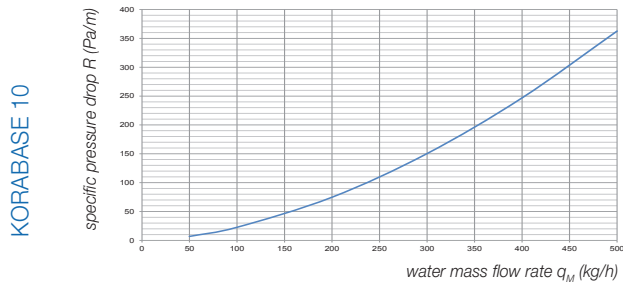
	Type of connection	Type	Number of horizontal rows (1,2,3)	Number of vertical rows (0,2)	Length (cm)
Economic	V reversible	E Economic	-	-	...
Exclusive	P continuous	X Exclusive	-	-	...

Heat exchangers KORABASE

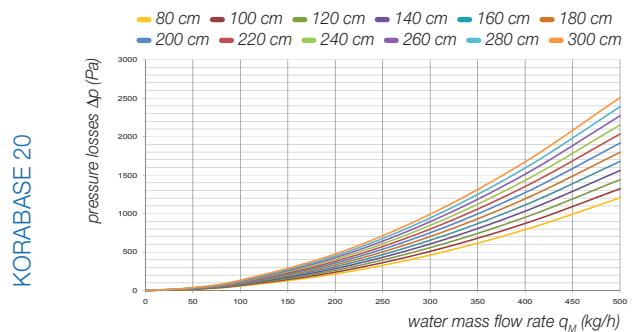
ORDERING CODE: type/length (cm), example: BVE-30-200 = KORABASE single-row three-pipe heat exchanger, length 200 cm.

Pressure losses of convectors

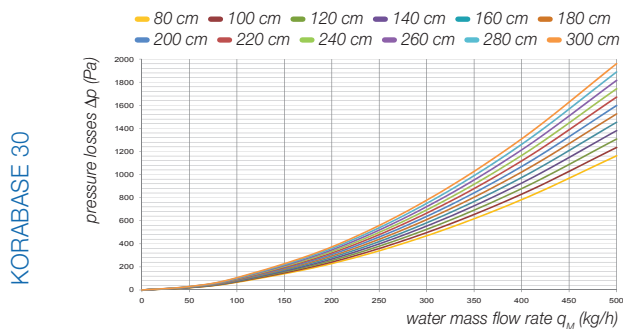
KORAFLEX FK 9/16, 11/16
KORABASE 10



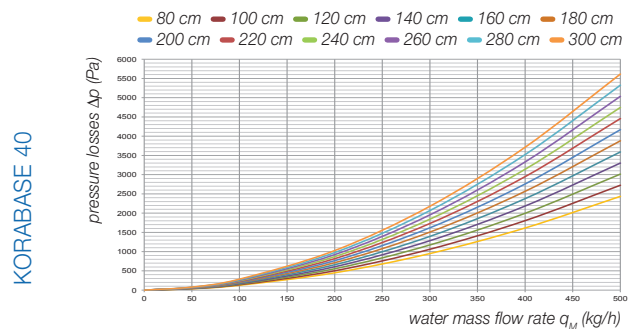
KORAFLEX FK 9/20, 9/28, 11/20, 11/28
KORALINE 9/18 and 9/24, KORABASE 20
KORAFLEX FV 8/28, 9/28, 11/28
KORAFLEX FV InPool 13/34



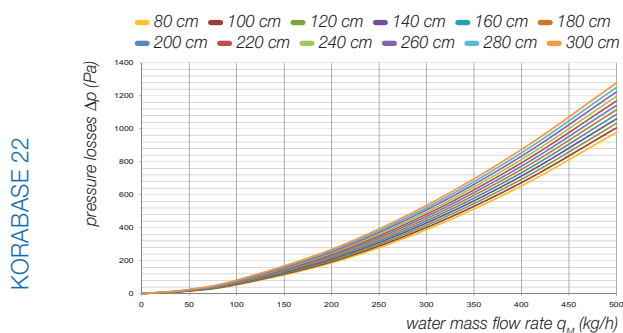
KORAFLEX 9/34, 11/34
KORAFLEX FV 11/34, KORABASE 30



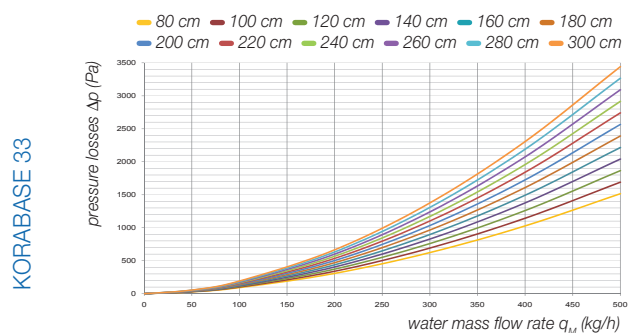
KORAFLEX FK 9/42, 11/42
KORAFLEX FV 11/42



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

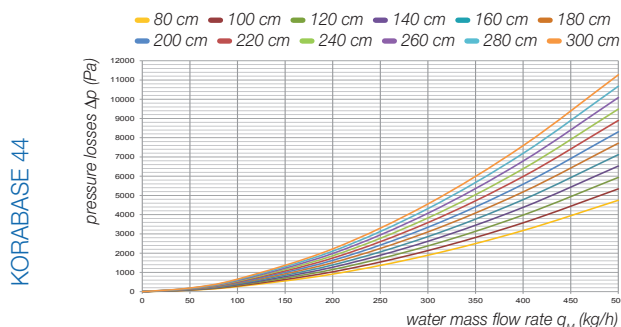


KORAFLEX FK 15/34, 19/34, 30/42, 45/42
KORALINE LK 15/24, 45/24, 60/24
KORABASE 33

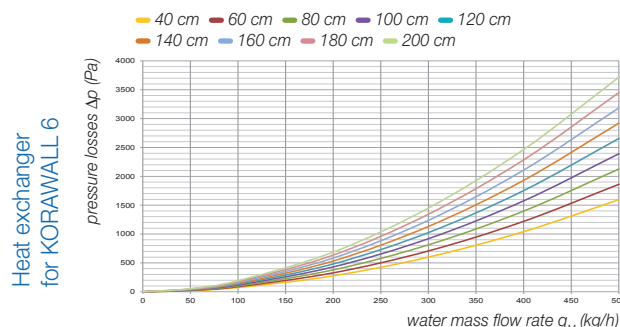




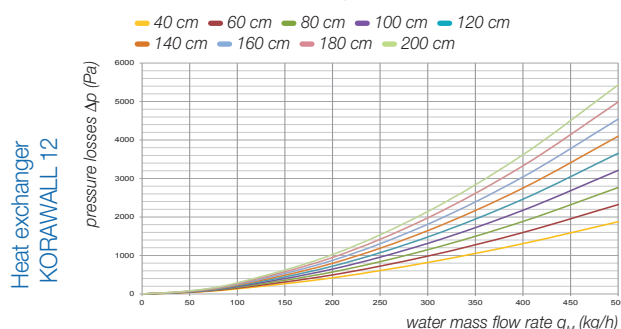
KORAFLEX FK 15/42, 19/42



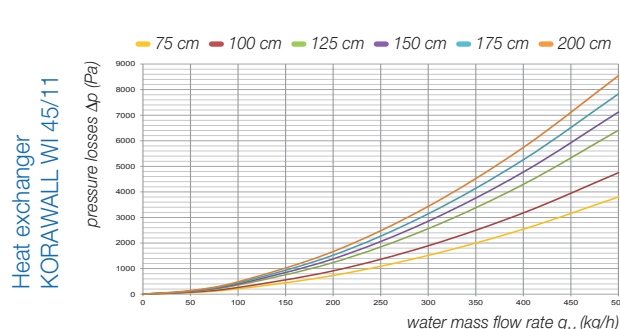
KORAWALL WK 45/6, 60/6



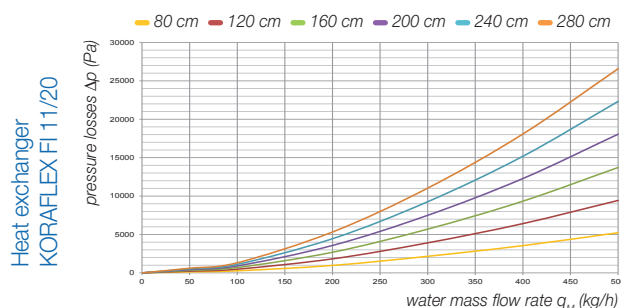
KORAWALL WK 45/12, 60/12



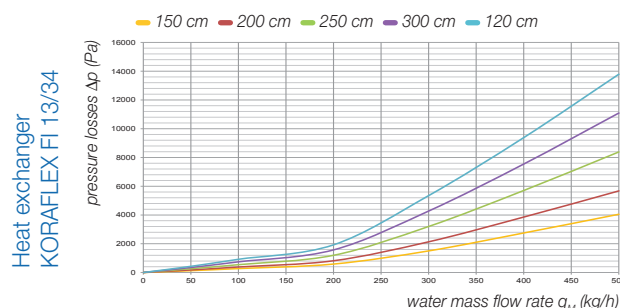
KORAWALL WI 45/11



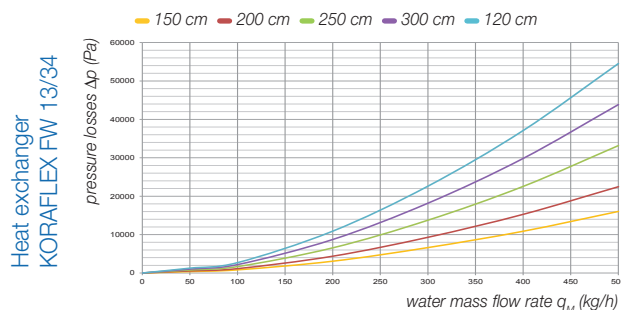
KORAFLEX FI 11/20



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.