

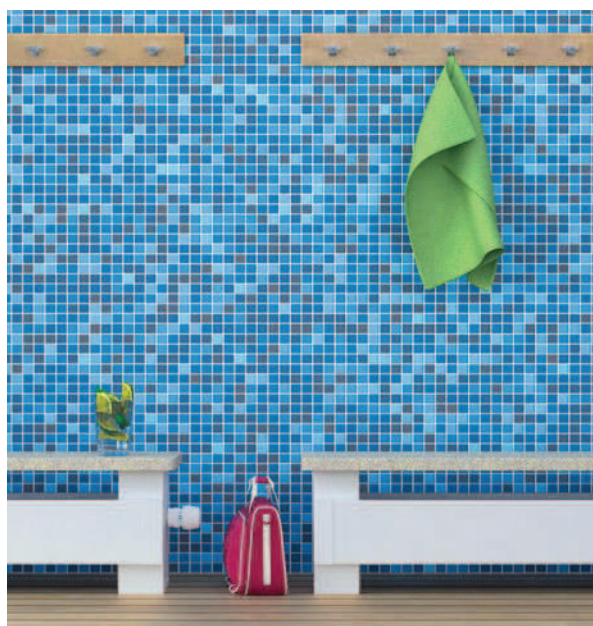
## Convectors



KORADO, a.s.  
Bří Hubálků 869  
560 02 Česká Třebová  
Czech Republic

e-mail: [info@korado.cz](mailto:info@korado.cz)  
[www.korado.com](http://www.korado.com)





## [ KORALINE with desk

### HEATING BENCHES WITH DESK (natural convection)

For heating and rest? Yes. Just sit back, rest, relax or just wait. For benches with top desk made of solid oak, beech or of artificial stone a load is no problem. Proven clever combination of design, performance and utility features will be appreciated in the implementation of residential development and public spaces.



## Natural convection heating benches with desk KORALINE LD

KORALINE LD Exclusive was designed for premises intended for relaxation. The bench is fitted with a covering desk that can withstand static load without problems and is also suitable to sit on. Attention, the covering desk must be ordered separately. The desks are positioned on the convectors and fixed to the convectors structure. The KORALINE LD Exclusive convectors can be installed for example in halls or winter gardens. For use in pool areas we recommend the order is placed for complete stainless steel finish – so called pool version.

- natural convection convectors
- wide range of types and designs offered
- easy to clean and maintain

### Standard delivery contains

- steel sheathing, coated in colour shade RAL 9010 – white
- Al/Cu heat exchanger with low water content, air vent and uniquely shaped lamellas for higher heat output
- the set is packed in durable packaging and contains installation instructions
- mounting instructions

### Specification

bench element height (mm)	290
width (mm)	260
length (mm)	1 000, 1 200, 1 400, 1 600, 1 800, 2 000
length of bench with desk (mm)	1 060, 1 260, 1 460, 1 660, 1 860, 2 060
heat output (W)	from 1 369 to 2 902
max. working pressure (bar)	12
max. working temperature	110 °C
max. surface temperature	40 °C
connecting thread	inner G 1/2"
connection method	recommended bottom connection, side
design of the covering desk	stone imitation (Terrazzo); wood – beech, oak

Version KORALINE LD Exclusive • steel sheathing, coated in colour shade RAL 9010 – white

Version KORALINE LD InPool (LD InPool) • steel sheathing, stainless steel AISI 316 coated in colour shade RAL 9010 – white, suitable for humid environment

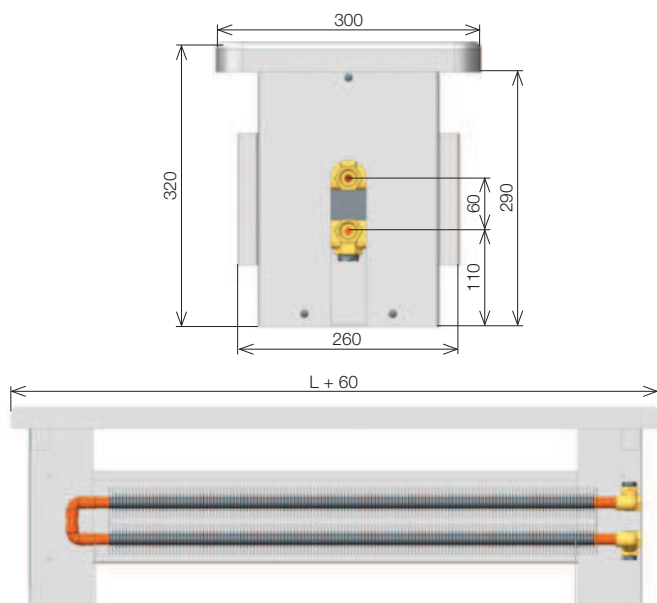


### Selectable specification

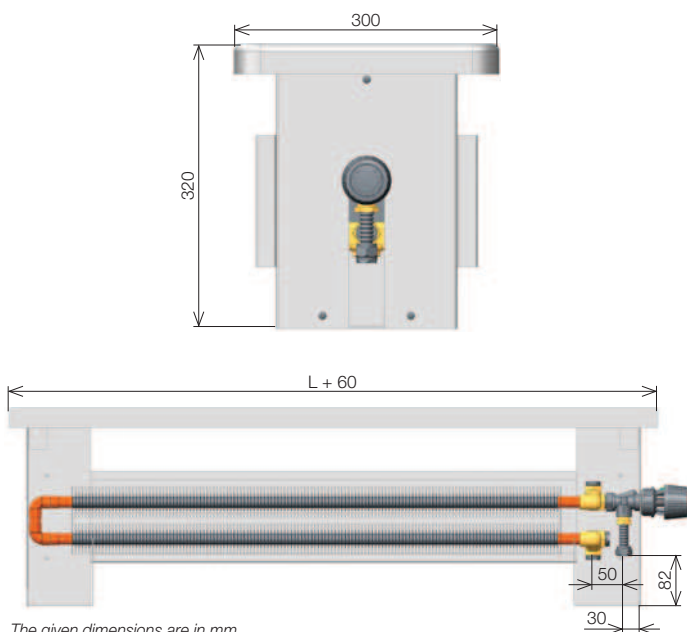
- set for the bottom connection comprising the thermostatic valve and the thermostatic head Danfoss including an extension piece, see page 33
- covering desk – Terazzo stone imitation, beech, oak wood
- if more than 5 pieces are ordered, another colour shade may be ordered according to the RAL scale (the change must be consulted with the manufacturer)
- stainless steel design suitable for humid environments such as swimming pools, for which the radiator is made of stainless steel AISI 316 and coated in colour shade RAL 9010
- in pool areas the bench must be fitted with stone desk (Terrazzo)

## Elements' sections

Side connection



Bottom connection



The given dimensions are in mm.

## Heat outputs

Heat output (W) at  $t_{w1}/t_{w2}/t_i = 85/75/20$  °C ( $t_{60}$ ) and  $75/65/20$  °C ( $t_{50}$ )

Height (cm)	Width (cm)	$\Delta t$	Length L (cm)					
			100	120	140	160	180	200
32	26	$\Delta t 50$	1122	1346	1570	1794	2018	2242
		$\Delta t 40$	839	1007	1174	1342	1509	1677

## Correction factor $k_t$ for a variant temperature difference $\Delta t$ (K)

$\Delta t$ (K)	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
$k_t$	0.248	0.267	0.287	0.306	0.326	0.347	0.367	0.389	0.410	0.432	0.453	0.476	0.498	0.521	0.544	0.567
$\Delta t$ (K)	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
$k_t$	0.591	0.615	0.639	0.663	0.688	0.713	0.738	0.763	0.788	0.814	0.840	0.866	0.892	0.919	0.946	0.973
$\Delta t$ (K)	50	51	52	53	54	55	56	57	58	59	60					
$k_t$	1.000	1.027	1.055	1.083	1.111	1.139	1.167	1.196	1.224	1.253	1.282					

• temperature exponent  $m = 1.364$

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

## Weights and volumes of water of the heating benches and desks

### Sheathing

Type	100
kg/linear meter	11.9
l/1 linear meter	1.6

### Desk

Type	Terrazzo	wood
kg/linear meter	27	8

The listed weights are without a packaging.

## Cover desk design versions



terrazzo



oak



beech

**Caution:** There is a rule for Terrazzo desk that for the dimensions of KORALINE LD benches of 140, 160, 180 and 200 cm two shorter desks per bench are used for reasons of weight and dimensions. The desks are made of natural materials and therefore minor deviations in the colour design cannot be eliminated. The supplier cannot fully guarantee the presented colours and accept claims due to possible colour deviations. The desks are blocked against movement.

## Heat benches installation KORALINE with desk

### Installation practice

We recommend to fix the element to the floor using a fastening anchor that is inside the side desk (leg). Once positioned on the convectors the desks are fixed on sides against unwanted movement. You will find more detailed information in the installation instructions. The elements are supplied assembled.

### KORALINE InPool

Convectors intended for use at pools must be kept clean and regularly washed with clean water. It is also necessary to fit the pool area benches with stone desks (Terrazzo) only.

## Elements connection set content Kv values for the Danfoss RA-N 15 UK 1/2" valve

### RA-N 15 valve

- thermostatic valve Danfoss RA-N 15 1/2"
- valve body allowing presetting of flow
- flow can be set without using tools
- basic setting is selectable in 7 stages
- maximum working pressure 10 bar
- maximum working temperature 120 °C
- threadless connection with the thermostatic head



### Thermostatic head

- thermostatic gas-steam head Danfoss RA 2980
- the fastest response time
- anti-theft lock
- temperature setting limiting/blocking pins



### Extension piece

- used for height compensation between the input and output of the heat exchanger screw union
- stainless-steel design
- connection thread G 1/2" inner
- straight piece for two-row exchangers



Preset stage	1	2	3	4	5	6	7	N
Kv	0.16	0.20	0.25	0.36	0.47	0.59	0.74	0.81



Note: The connecting set elements are packed as a complete set and cannot be supplied separately.

## Ordering codes Heat benches KORALINE LD with desk

		Length (cm)	Height (cm)	Width (cm)		Colour
Exclusive	white steel/unpainted exchanger	LDX	...	29	26	- 10
InPool	stainless steel* white/unpainted exchanger**	LDP	...	29	26	- 10

\* humid environment stainless steel AISI 316

\*\* custom-made design

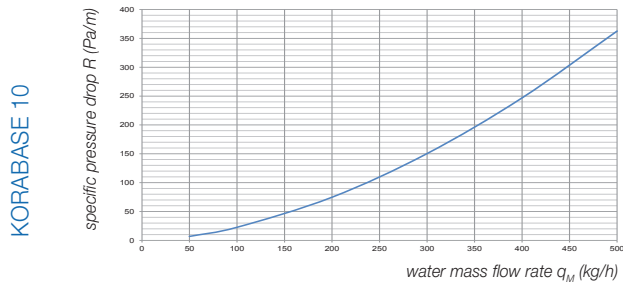
Heat benches  
KORALINE LD with desk

ORDERING CODE: heat bench KORALINE length (cm).  
Example: LDX1602926-10 = heat bench KORALINE with desk, length 160 cm.

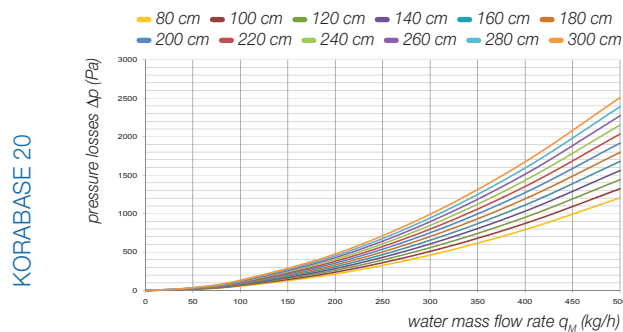
The desk must be ordered separately! The standard version enables side or bottom connection to the heating system; there is no need to specify this in the order.

# Pressure losses of convectors

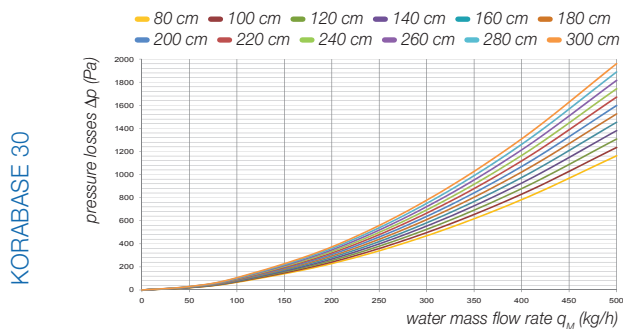
KORAFLEX FK 9/16, 11/16  
KORABASE 10



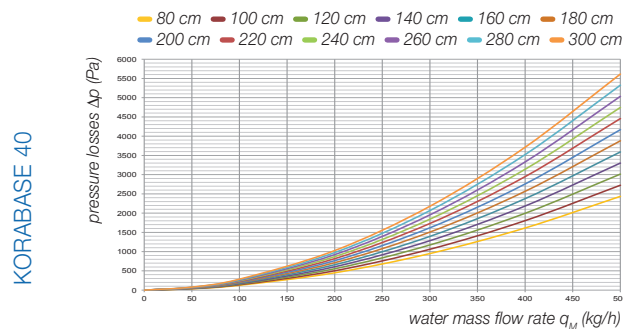
KORAFLEX FK 9/20, 9/28, 11/20, 11/28  
KORALINE 9/18 and 9/24, KORABASE 20  
KORAFLEX FV 8/28, 9/28, 11/28  
KORAFLEX FV InPool 13/34



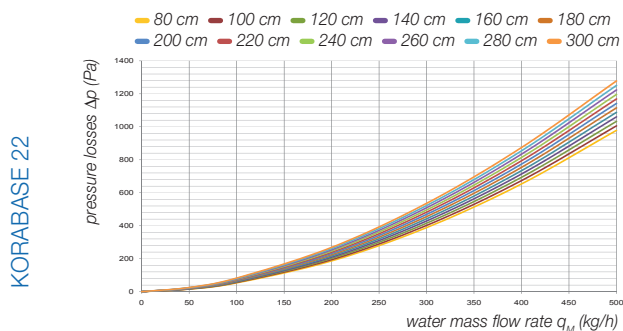
KORAFLEX 9/34, 11/34  
KORAFLEX FV 11/34, KORABASE 30



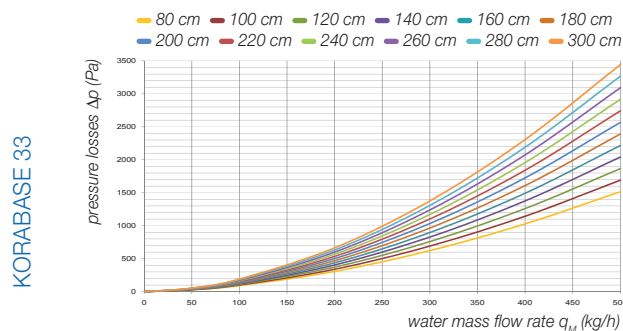
KORAFLEX FK 9/42, 11/42  
KORAFLEX FV 11/42



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

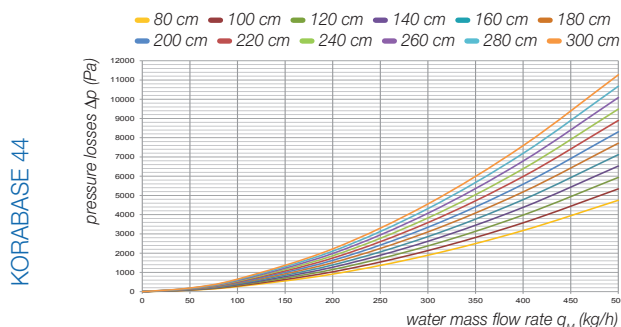


KORAFLEX FK 15/34, 19/34, 30/42, 45/42  
KORALINE LK 15/24, 45/24, 60/24  
KORABASE 33

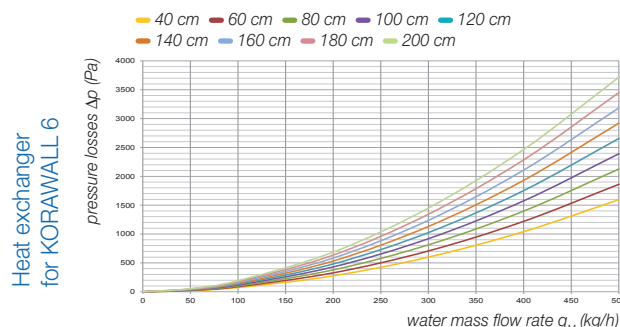




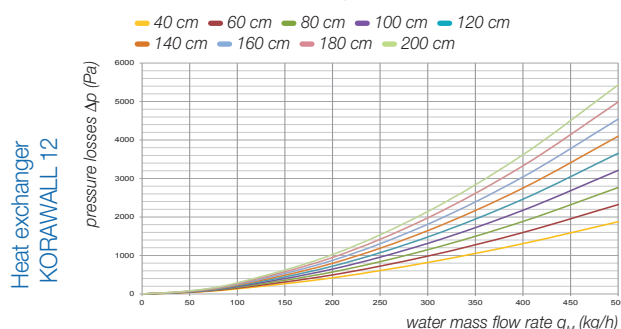
## KORAFLEX FK 15/42, 19/42



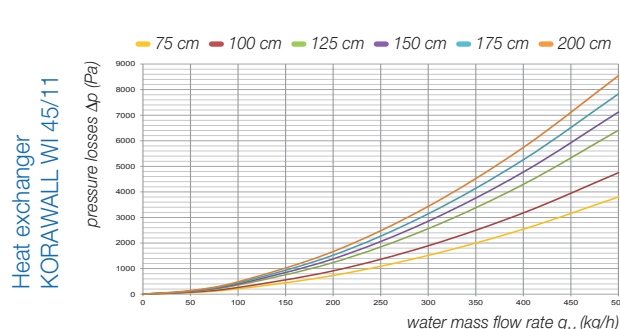
## KORAWALL WK 45/6, 60/6



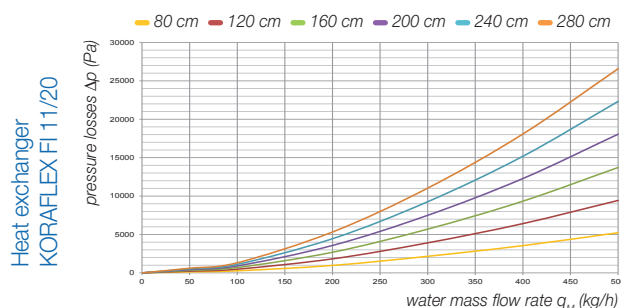
## KORAWALL WK 45/12, 60/12



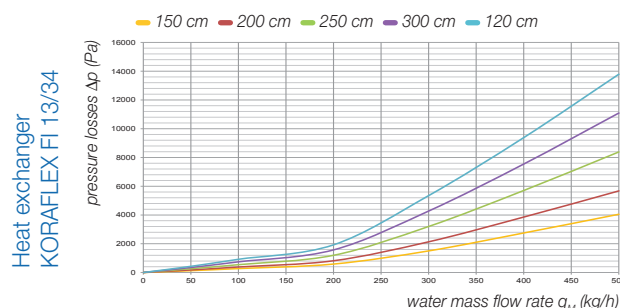
## KORAWALL WI 45/11



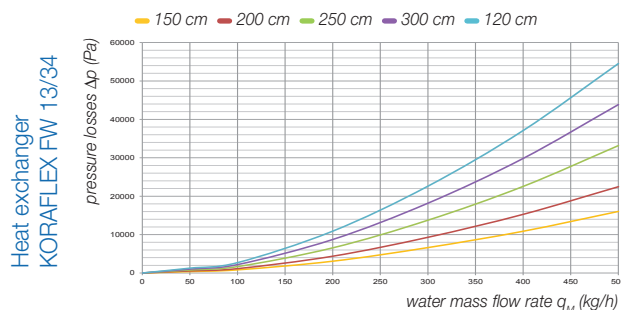
## KORAFLEX FI 11/20



## 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)  
 $\Delta t$  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.