

Floor convectors

LINE



Boiler-Gas.ru  
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**HEATMANN**

SMART CONVECTION SOLUTIONS





ON THE BASIS OF EUROPEAN STANDARDS AND THEIR ACCURATE EXECUTION AS WELL AS TAKING INTO ACCOUNT CONSTANTLY GROWING ENERGY PRICES, COMPANY "HEATMANN" HAS DEVELOPED A MODERN DEVICE THAT WILL AID YOU IN HEATING ANY OF YOUR ROOMS. IT PAYS SPECIAL ATTENTION TO AESTHETICS: AN UNUSUAL DESIGN AND SPACE ECONOMY IN AN INSTALLATION ROOM. ALTOGETHER OUR PRODUCT IS A SIMPLE CONSTRUCTION IN ITS OWN WAY REPRESENTING A SYNERGY OF DESIGN, ECONOMY, FUNCTIONALITY AND MANUFACTURABILITY.

**"LINE" SERIES - FLOOR CONVECTORS WITH NATURAL CONVECTION**

Floor convectors without a ventilator of a series "LINE" are devices functioning on the basis of a physical phenomenon called "natural convection". Convection is understood as a vertical movement of a significant air flow generated by temperature difference of its macro-particles that move in upward direction during the temperature increase. Series "LINE" convectors are designed for

heating residential and office space, salesroom, hotels, showrooms, etc., mostly places with different kinds of glass or stain-glass windows, walls installed. Due to the unique functions our convectors provide not only economical room heating, but also a comfortable stay in it due to the fact that the glazed area is divided by a warm air flow curtain that additionally heats the air in the room.

**ENERGY SAVING**

Company "HEATMANN" using only the best materials in our heat-exchange units offers a very effective device in respect of the heating space capacity. Very high room heating velocity is acquired by the means of heating super small amount of heat-carrying agent and optimally

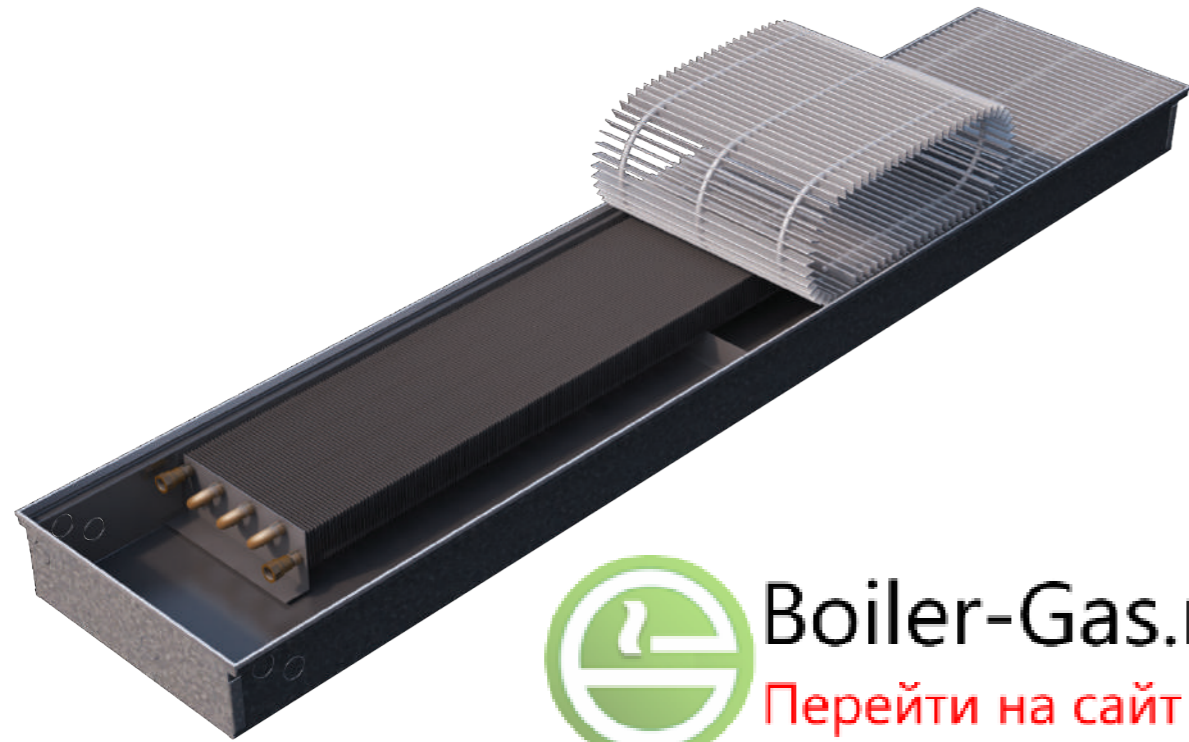
used materials in the whole heating system, and in such a manner high efficiency of this device is acquired. In comparison of classical steel radiators with the same heating capacity require ten times more water and consequently use more energy for heating this water.

**HIGH QUALITY MATERIALS**

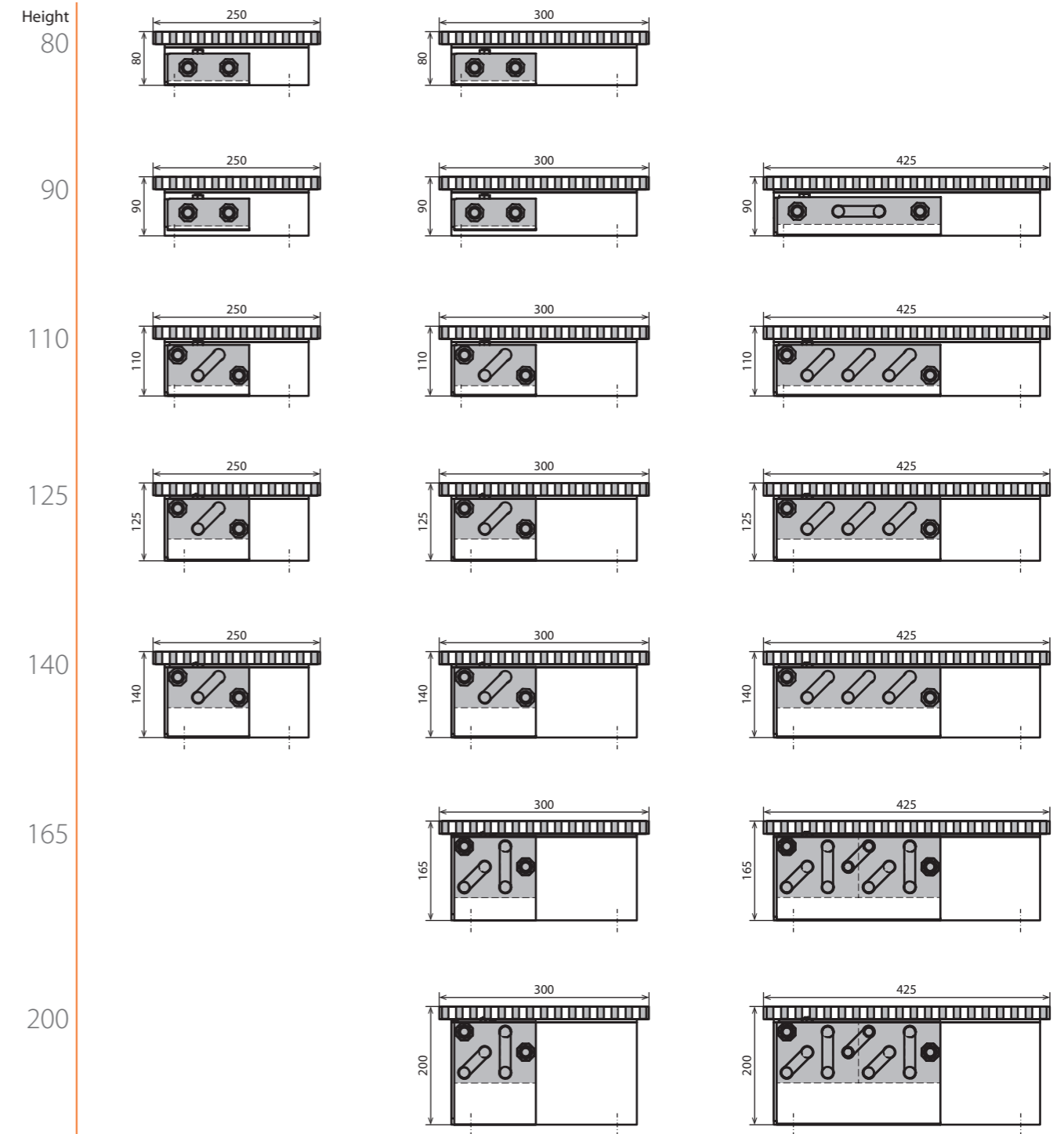
Our heat-exchange units are produced from the best heat conductive materials on the basis of copper, aluminium and brass, where all the components that have optimal form and size with unique dust proof and dirt

guard lacquer graphitic-grey coating, form one compact device guaranteeing maximum efficiency, functionality and the long-term usage possibility in household or industrial cleaning conditions, etc.



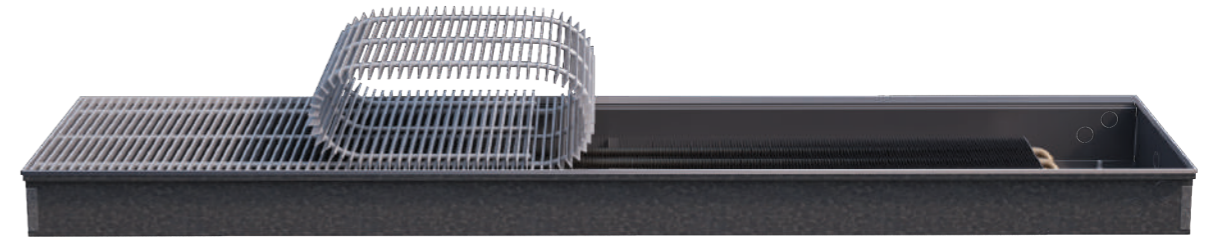


CONVECTOR	Width	250, 300, 425 mm
	Height	80, 90, 110, 125, 140, 165, 200 mm
	Length	800–4800 mm in step 100 mm
	Height adjustment	0–35 mm
	Stainless trough	galvanized steel covered with durable black matt spray painting or stainless steel DIN 1,4301 (17 240)
	Grill type	cross / linear
	Grill material	anodized aluminium, wood, stainless steel
Heat medium connection	2 × G1/2" inner	
OPERATING CONDITIONS	Max. working temperature	110 °C
	Working overpressure	1 MPa (10 Bar)
	Max. working overpressure	1,6 MPa (16 Bar)
	Ambient temperature	+2°C – +40 °C
	Relative humidity	20–70 %







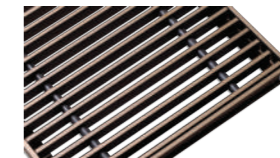


ROLL-UP GRILLS

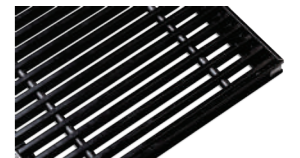
lamellas positioned perpendicular to the length of the convector, grille can be rolled-up



Grill: aluminium, anodized  
Frame: aluminium, anodized



Grill: aluminium bronze, anodized  
Frame: aluminium bronze, anodized



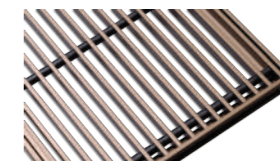
Grill: aluminium, black  
Frame: aluminium, black

LINEAR GRILLS

lamellas are arranged parallel to the length of the convector



Grill: aluminium, anodized  
Frame: aluminium, anodized



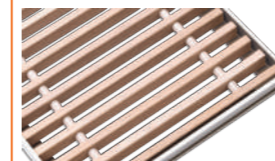
Grill: aluminium bronze, anodized  
Frame: aluminium bronze, anodized



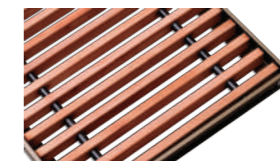
Grill: aluminium, black  
Frame: aluminium, black

WOODEN ROLL-UP GRILLS

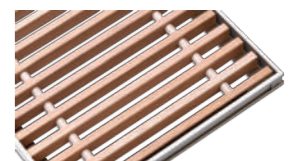
lamellas positioned perpendicular to the length of the convector, grille can be rolled-up



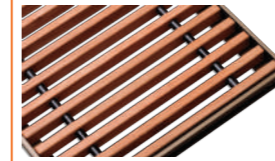
Grill: natural beech, wooden  
Frame: aluminium, anodized



Grill: stained beech, wooden  
Frame: aluminium bronze, anodized



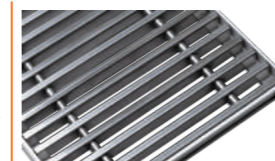
Grill: natural oak, wooden  
Frame: aluminium, anodized



Grill: stained oak, wooden  
Frame: aluminium bronze, anodized

STAINLESS STEEL GRILLS

lamellas positioned perpendicular to the length of the convector, a fix non-rolling grill



Grill: stainless steel, stainless steel  
Frame: aluminium, anodized

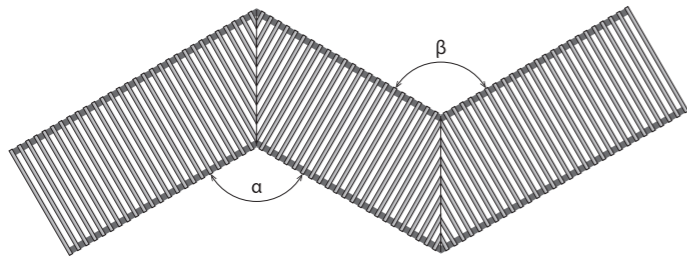


We deliver arched, broken-line and curved convectors to fit the architectural design of buildings and customer requirements. A large variety of shapes and arrangements of floor convectors can be delivered. It is important to specify in the customer order the dimensions and a detailed and accurate measurement of the actual shape.

The measurement of the convector, performed by the customer or by an Heatmann specialist, must be carried out on site on the actual structure (not based on the design). The level of completeness of the structure required for the measurement is as follows: final shape of the wall along which the convection heater is to be installed, windows

mounted, access to the measuring area (scaffolding dismantled, etc.). The technical documentation developed for the convection heaters previously measured is discussed and approved by the customer and technical details are agreed (water connection side, power connection). Following that, the manufacturing of the floor convector starts.

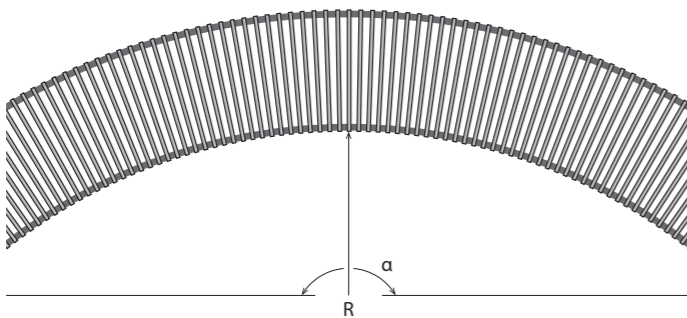
BROKEN-LINE  
SHAPE  
CONVECTORS



To allow for the design of the convector, the following measured values are necessary:

- lengths of the heater edges (window-side edges) and the angle formed by the edges (calculated using the length of the third leg of the triangle formed by the two edges), the angles  $\alpha$  and  $\beta$  are used for verification only
- width (type) of the convection heater
- a sketch of the convection heater

ARCHED  
CONVECTORS



To allow for the design of an arched convector, the following measured values are necessary:

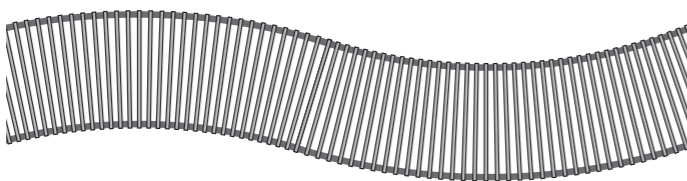
- outer (inner) diameter of the arc and a total angle formed by the arc sector calculated using the distance of the end points and the diameter (for gentle curved arcs) or the angle  $\alpha$  (for arcs forming an angle larger than  $120^\circ$ )
- width (type) of the convection heater
- a sketch of the convection heater

or

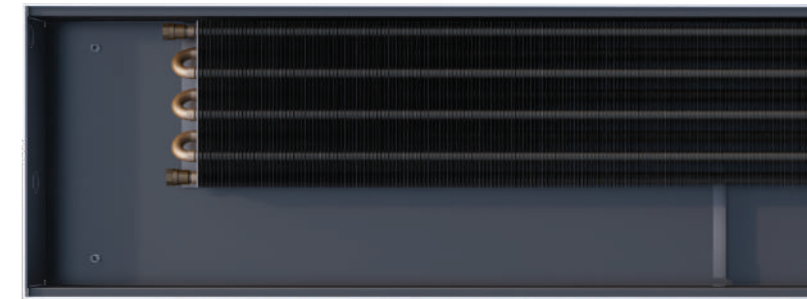
- outer (inner) diameter of the arc and the perimeter length of the outer (inner) edge of the arc
- width (type) of the convection heater
- a sketch of the convection heater

Remember that regular shapes occur rarely in real structures.

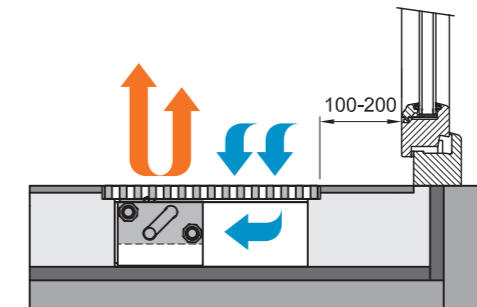
CURVED  
CONVECTORS



In case of more complicated shapes, it is necessary to use the reference points to determine the shape. It is recommended that the measurements are performed by Heatmann specialists.



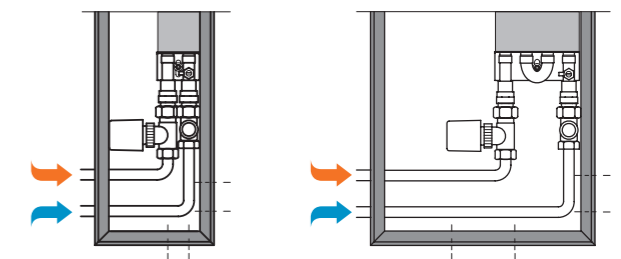
RECOMMENDED  
STANDARD  
INSTALLING  
IN FLOOR



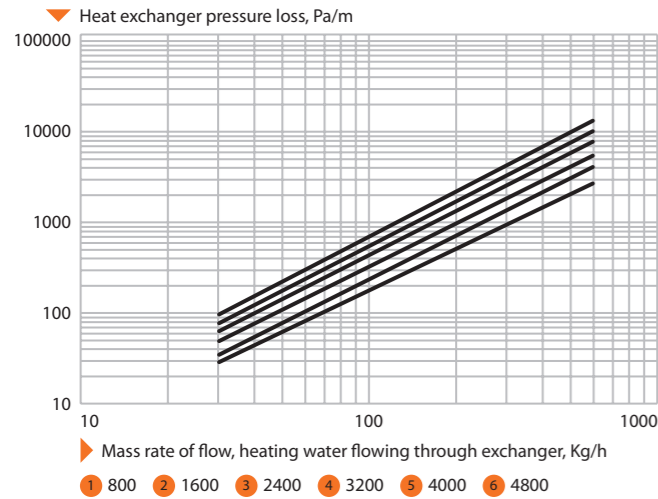
- Ideal position 100–200 mm distance from window
- The air is warmed up by flowing through exchanger
- Hot air is mixed with cold air flowing off the window surface
- Air circulation:
  - warms up the room air
  - screens the window surface
  - secondary demisters the window surface

CONVECTOR  
CONNECTION  
TO THE HEATING  
SYSTEM

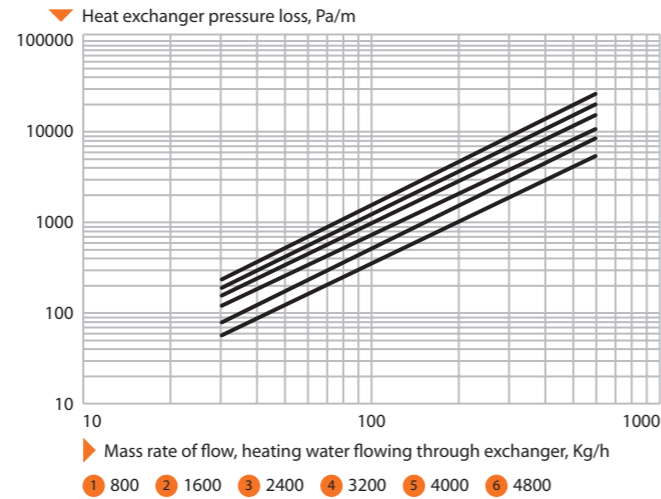
Floor convector is fitted with openings for connection to the heating system. There are three connection possibilities, from the room, side or window wall.



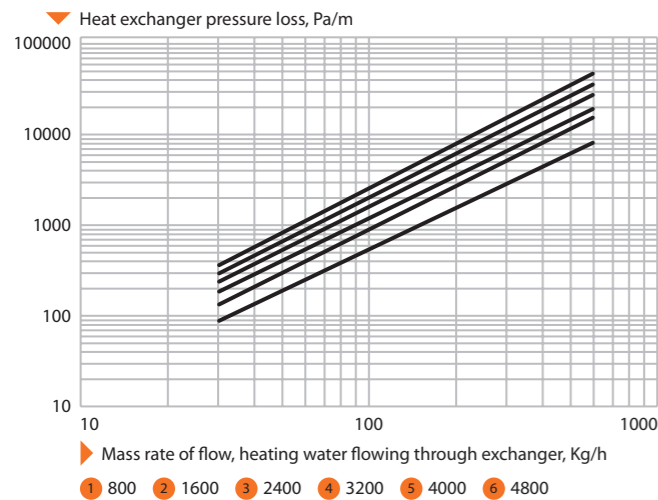
## Pressure loss 2 tubular heat exchanger



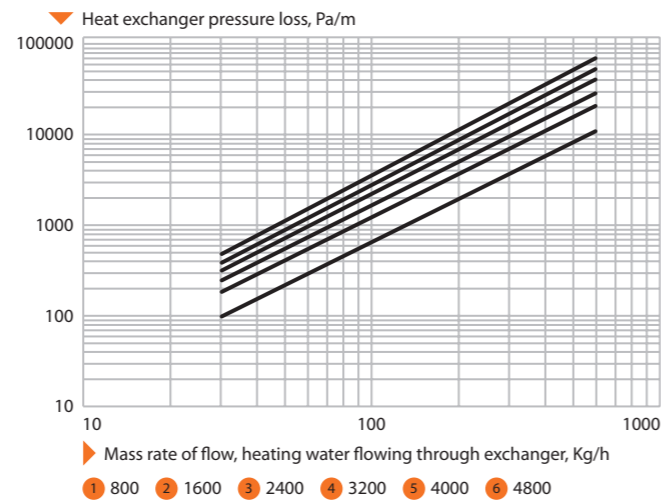
## Pressure loss 4 tubular heat exchanger



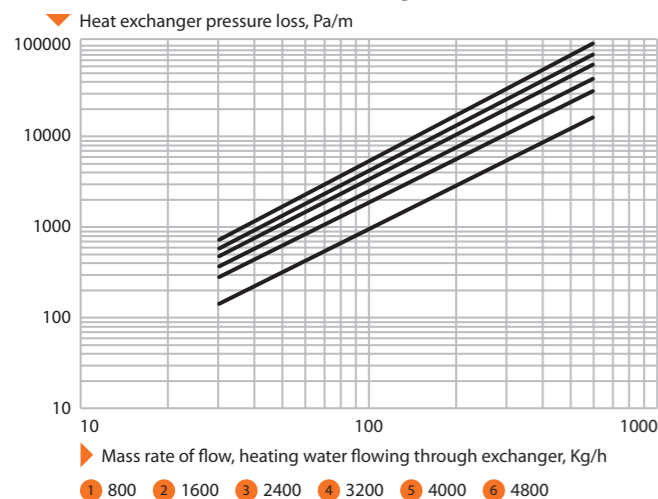
## Pressure loss 6 tubular heat exchanger



## Pressure loss 8 tubular heat exchanger



## Pressure loss 10 tubular heat exchanger



## HEATING OUTPUT RECALCULATION FOR ANOTHER TEMPERATURE GRADIENT

Convector heating output reckoning follows by recalculation of the standardized output  $Q_n$  75/65/20 °C

$$Q = Q_n \times \psi \times (\Delta T/50)^m \text{ [W]}, \text{ where } \Delta T = (T_1 + T_2)/2 - T_i \text{ [}^\circ\text{C]}$$

$Q_n$ [W]	heating output for temperature gradient $T_1/T_2/T_i = 75/65/20$ °C
$\psi$ [-]	mass rate of flow coefficient (for current flow rate $\psi=1$ )
$T_1$ [°C]	input water temperature
$T_2$ [°C]	output water temperature
$T_i$ [°C]	temperature in the room
$m$ [-]	temperature exponent

Height	Width	Temperature exponent (m)
80	250	1,401
	300	1,344
90	250	1,445
	300	1,415
	425	1,396
110	250	1,443
	300	1,451
	425	1,425
125	250	1,491
	300	1,493
	425	1,477
140	250	1,445
	300	1,44
	425	1,487
165	300	1,462
	425	1,487
200	300	1,405
	425	1,495

## QUICK CONVERSION TO $T_i=22$ °C AND $T_i=15$ °C

- If you want to learn convector output for the room temperature of 22 °C or for a corridor temperature of 15 °C - multiply heating output of the chosen convector by the "k" coefficient for  $T_i=22$  °C,  $k=0,95$   
 $Q[90/70/22$  °C] = 0,95 ×  $Q[90/70/20$  °C]

for  $T_i=15$  °C,  $k=1,14$   
 $Q[75/65/15$  °C] = 1,14 ×  $Q_n[75/65/20$  °C]

## HEATING WATER FLOW RATE THROUGH EXCHANGER

$M = 0,86Q/(T_1 - T_2)$  [kg/h]  
 $M$  [kg/h] mass rate of flow, heating water flowing through exchanger  
 $Q$  [W] convector heating output  
 $T_1 - T_2$  [°C] difference between input and output temperature  
 0,86 [-] invariable for recalculation of units

## WARRANTY TERMS

Company "Heatmann" GmbH gives warranty only under the following conditions.

Seller warranty includes all the manufacturing defects (design defects and material defects) in cases when:  
 - the device is assembled, connected and installed according to the applicable standards and operates on the basis of operating conditions and manufacturer technical data sheet  
 - the customer follows all the rules

contained in assembly instruction and general rules and norms during the assembly and the whole operating period of the product  
 - device condition and its working capacity were examined by the customer during the product transfer from the seller to the customer  
 - the warranty is valid during days from the moment of defect detection by the customer  
 - in the installation area of the convector the applicable standards of the

corrosive impact of the surrounding surface in respect of the device surface should not be exceeded  
 Main warranty periods:  
 a) for the heat-exchange unit - 10 years from the date of sale  
 b) for the stainless steel convector duct - 10 years from the date of sale  
 c) for the galvanized steel convector duct - 5 years from the date of sale  
 d) other convector parts - 2 years  
 e) the warranty period starts from the product date of sale

## TERMS OF DELIVERY

Rights and responsibilities of the contracting parties in accordance with the delivery contract:

1. The Customer estimates the terms of the delivery and means of transportation and if necessary promptly informs of any transportation changes.
2. The customer makes available free of charge and secure room for the transport delivering the goods.

3. In the place of delivery there must be a person responsible for the acceptance of the supplied goods.
4. The Seller has the right to know or control the identity of the driver or forwarder delivering the goods.
5. Each delivery of the goods is accompanied by a packing list or other documentation necessary for transportation of goods and is obligatory

by the terms of the contract between the Seller and the Customer.  
 6. The Customer undertakes to provide and send signed and stamped confirmed packing list to the Seller.  
 7. In case of any differences the written notification must be attached to the accompanying documents.

## AMOUNT OF DELIVERY

Stainless steel or galvanized steel duct, copper-aluminium heat-exchange-unit, aluminium frame, air valve installed on the heat-exchange unit, adjusting screws, decorative lid installation manual.

The following items are not included in the delivery package:  
 Decorative grate, connection faucets, thermostatic head.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
L	N	-	0	9	0	4	2	5	2	3	5	0	-	X	T	R	0
Model			Height (mm)			Width (mm)			Length (mm)			Surface finish of trough, frame, connection, note					

Position	Symbol	Transcript
1, 2, 3 <b>Model</b>	LN-	Floor convector without fan
	LNP	Floor convector without fan for wet areas
	LNA	Floor convector without fan with a supply of ventilation
	LNW	Floor convector without fan for wet areas with a supply of ventilation
4, 5, 6 <b>Height (mm)</b>	LF-	Floor convector with fan
	LFP	Floor convector with fan for wet areas
	LFA	Floor convector with fan with a supply of ventilation
	LFW	Floor convector with fan for wet areas with a supply of ventilation
	LFC	Floor convector with heating/cooling fan
	080	convector height 80 mm
	090	convector height 90 mm
	110	convector height 110 mm
7, 8, 9 <b>Width (mm)</b>	125	convector height 125 mm
	140	convector height 140 mm
	165	convector height 165 mm
	200	convector height 200 mm
10, 11, 12, 13 <b>Length (mm)</b>	250	convector width 250 mm
	300	convector width 300 mm
	425	convector width 425 mm
14 <b>Free position</b>	0900	convector length 900 mm
	2500	convector length 2500 mm
15 <b>Surface finish of trough</b>	convector length is possible from 800 to 4800 mm. More details on pages 6-7	
	N	standard (galvanized steel trough painted in black)
	Z	galvanized steel
	X	stainless steel
16 <b>Frame and grill</b>	W	stainless steel (trough painted in black)
	P - frame profile P, color: aluminium	S - frame profile T, color: aluminium
	T - frame profile P, color: light bronze	E - frame profile T, color: light bronze
	K - frame profile P, color: dark bronze	F - frame profile T, color: dark bronze
	M - frame profile P, color: order by RAL	D - frame profile T, color: order by RAL
17 <b>Connection</b>	R	right
	L	left
	B	non standard
18 <b>Note</b>	-	standard model
	0	non standard model (should be a description of deviations from the standard model)

Example: floor convector without fan, height 90 mm, width 425 mm, length 2350 mm (non standard), trough from stainless steel, frame profile P, color: aluminium, right connection, non standard model (length is not consistent with the standard).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
G	R	L	-	2	5	0	1	2	0	0	-	A	L	R	G	D	0
Model			Width (mm)			Length (mm)			Grill material		Color, appearance, grill type						

Position	Symbol	Transcript	
1, 2, 3, 4 <b>Model</b>	GRL-	floor convector grill	
	5, 6, 7 <b>Width (mm)</b>	250	convector width 250 mm
		300	convector width 300 mm
		425	convector width 425 mm
8, 9, 10, 11 <b>Length (mm)</b>	0900	convector length 900 mm	
	2500	convector length 2500 mm	
12 <b>Free position</b>	convector length is possible from 800 to 4800 mm. More details on pages 6-7		
13, 14 <b>Grill material</b>	AL	aluminium	
	OK	oak, wooden	
	BE	bleech, wood	
	IN	stainless steel	
	15 <b>Color</b>	P	aluminium
16 <b>Appearance</b>	T	light bronze	
	K	dark bronze	
	R	order by RAL	
	H	stain varnish	
	17 <b>Type</b>	G	horizontal
V		transverse	
D		roll-up	
18 <b>Note</b>	C	sectional	
	S	non standard	
	-	standard model	
	0	non standard model (should be a description of deviations from the standard model)	

Example: floor convector grill, width 250 mm, length 1200 mm, aluminium grill material, color by RAL, transverse appearance, roll-up type, non standard model (RAL 9001 colored).



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# HEATMANN

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