

Article group
1.41



05/2006

Katherm QL

KAMPMAN

Quality is our benchmark

Kampmann – the name today is synonymous with innovative and intelligent systems in the fields of heating, cooling and ventilation and, over the last 33 years, the Company has grown into an internationally-renowned group of companies.

Performance and quality are the benchmark for the continued success of Kampmann. Kampmann products are defined by their high performance capability, with guaranteed EN-tested heat outputs, materials fully rated to requirements, first-class workmanship, design-orientated form and shaping and fast delivery times. The quality management system has been documented for many years and is certified by DIN 9001:2000.

Kampmann systems for heating, cooling and ventilation:

- high-output convectors
- underfloor heating and cooling systems
- air handling systems
- door air curtains
- façade heating systems
- air conditioning systems
- radiant ceiling panels
- floor and façade ventilation systems
- fresh air climate with **OXYCELL TECHNOLOGY**

Versatility

The wide product range comprises a mix of standard, non-standard and products tailor-made for specific projects. Kampmann systems are currently proving their reliability and efficiency in industrial, commercial and private buildings around the globe.

Sales

Kampmann places great emphasis on technical discussions and collaboration with architects, project engineers, heating contractors and builders, as well as with wholesalers. In Germany some 50 sales engineers, operating out of six regional offices, and a further 70 sales engineers working in 14 subsidiary offices throughout Europe provide on-the-spot technical assistance.

HQ and production

In addition to the Kampmann headquarters building in Lingen (Ems), there is a second production plant in Gräfenhainichen (Sachsen-Anhalt). The high-quality products are developed, manufactured and sold by a total workforce of over 550 employees in a production area of more than 55,000 m².

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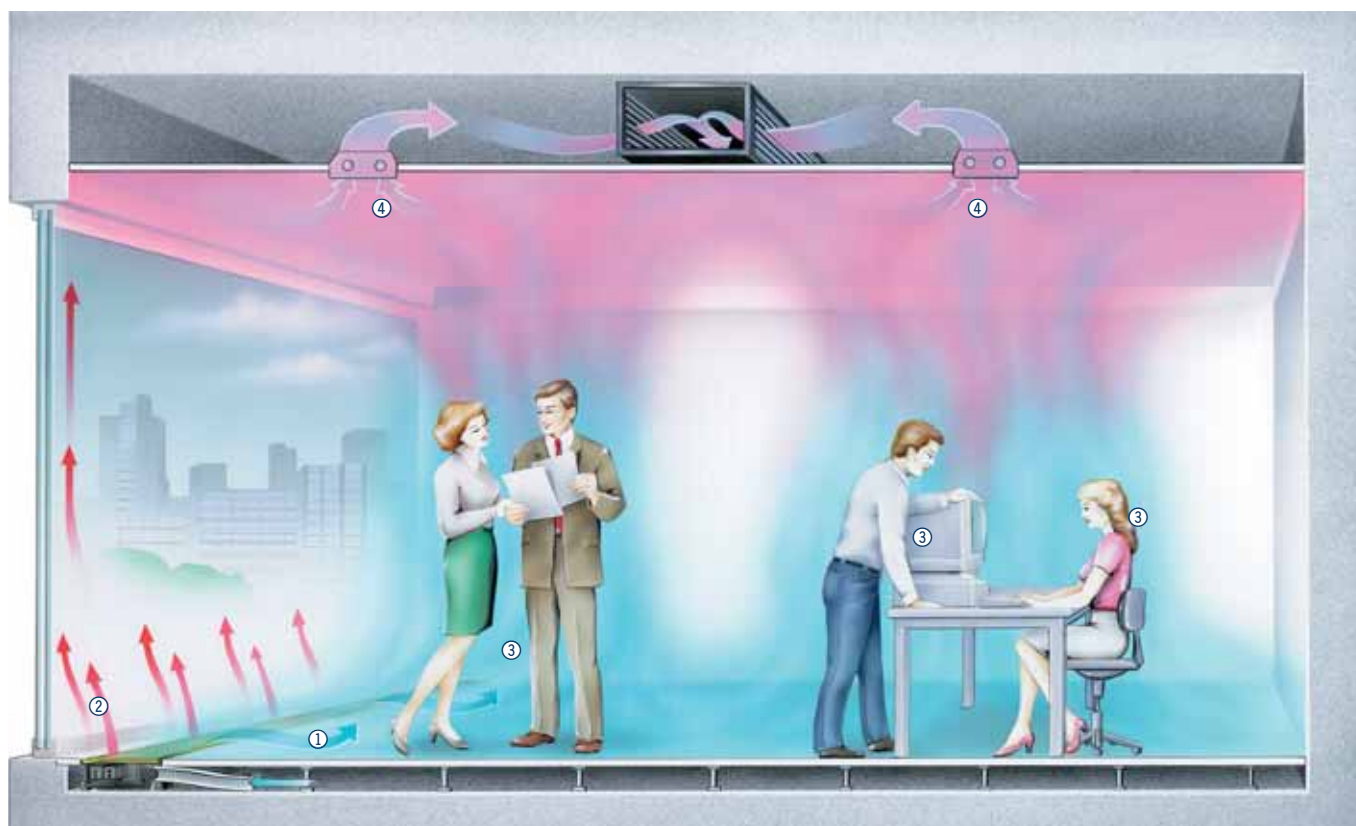
Technical data

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① Fresh, cool air enters the displacement ventilation duct.

② Warmed air rises and screens the window.

③ The fresh air rises up heat sources, such as people or equipment, on natural thermal currents.

④ Polluted air is drawn off.

Katherm QL - comfortable heating and ventilation from a floor duct

"Heavy air" tires and drains. However scientific studies have shown that, in contrast, clean, unused, pollutant-free air at a pleasant temperature has a lasting positive effect on a person's well-being.

The Katherm QL heating and ventilation system efficiently provides buildings with a steady supply of heat and fresh air. Moreover, the high-output convector also effectively screens off cold air falling from the external glazing.

Displacement ventilation is a superior solution for the specific supply of conditioned air into a room. In accordance with current thinking, the air is supplied into the room turbulence-free via air outlets in the floor. Thus the discharge velocity and temperature of the air can be kept to a minimum to ensure optimum levels of comfort.



1.41 Katherm QL - Displacement ventilation

Ready-to-install floor duct convectors

Description



Katherm QL - Displacement ventilation

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Grille finish (see table on right)

- 1 = roll-up grille
- 3 = linear grille

Duct height

- 13 = duct height 130 mm
- 18 = duct height 180 mm
- 23 = duct height 230 mm

Overall frame width

- 2 = overall frame width 315 mm
- 3 = overall frame width 340 mm
- 4 = overall frame width 365 mm
- 5 = overall frame width 395 mm
- 6 = overall frame width 420 mm
- 7 = overall frame width 445 mm

Please state floor duct length when ordering (minimum length 1100 mm)

Grille finishes

11 = aluminium, natural anodized



12 = aluminium, brass anodized



13 = aluminium, bronze anodized



14 = aluminium, black anodized



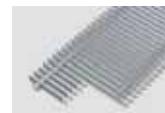
15 = aluminium, bronze-effect



16 = aluminium, painted basalt grey, DB 703



31 = stainless steel



32 = stainless steel, polished



33 = natural brass, CuZn 44

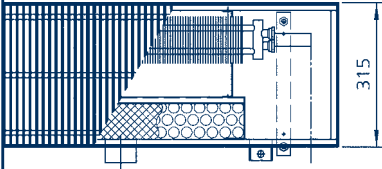
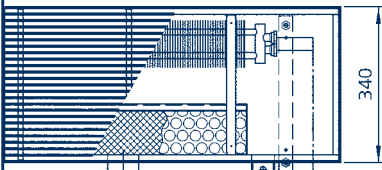
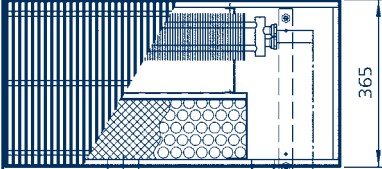
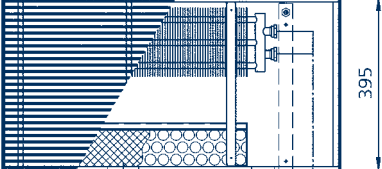
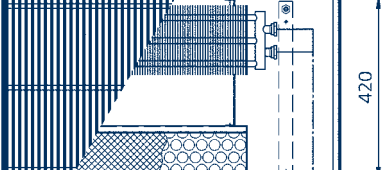
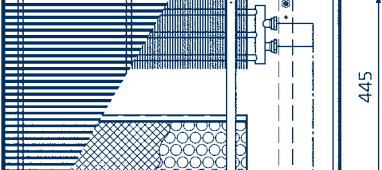


34 = natural brass, CuZn 44, polished, oxydation-proof



Further grille finishes can be supplied on request

The above grilles are shown using a four-colour printing process and thus do not represent an exact reproduction of their original colour.

	Description	Duct width	Duct length	Duct height	Max. supply air volume	Heat output ¹⁾			Dimensions
	Katherm QL 315	315 mm	from 1100mm upwards	130 mm 180 mm 230 mm	40 $\frac{\text{m}^3}{\text{h}}$ m	LPHW 82/71 °C, t _{L1} = 20 °C: 463-630 w/m (convector height 100 mm)	LPHW 75/65 °C, t _{L1} = 20 °C: 381-519 w/m (convector height 100 mm)	LPWW 55/45 °C, t _{L1} = 20 °C: 167-227 w/m (convector height 100 mm)	p 8
	Katherm QL 340	340 mm	from 1100mm upwards	130 mm 180 mm 230 mm	50 $\frac{\text{m}^3}{\text{h}}$ m				
	Katherm QL 365	365 mm	from 1100mm upwards	130 mm 180 mm 230 mm	60 $\frac{\text{m}^3}{\text{h}}$ m				
	Katherm QL 395	395 mm	from 1100mm upwards	130 mm 180 mm 230 mm	40 $\frac{\text{m}^3}{\text{h}}$ m	LPHW 82/71 °C, t _{L1} = 20 °C: 698-911 w/m (convector height 150 mm)	LPHW 75/65 °C, t _{L1} = 20 °C: 589-769 w/m (convector height 150 mm)	LPWW 55/45 °C, t _{L1} = 20 °C: 286-373 w/m (convector height 150 mm)	p 9
	Katherm QL 420	420 mm	from 1100mm upwards	130 mm 180 mm 230 mm	50 $\frac{\text{m}^3}{\text{h}}$ m				
	Katherm QL 445	445 mm	from 1100mm upwards	130 mm 180 mm 230 mm	60 $\frac{\text{m}^3}{\text{h}}$ m				

¹⁾ Heat output without supply air volume per m finned convector

1.41 Katherm QL – Displacement ventilation

Ready-to-install floor duct convectors

Description

Katherm QL – Displacement ventilation from the floor

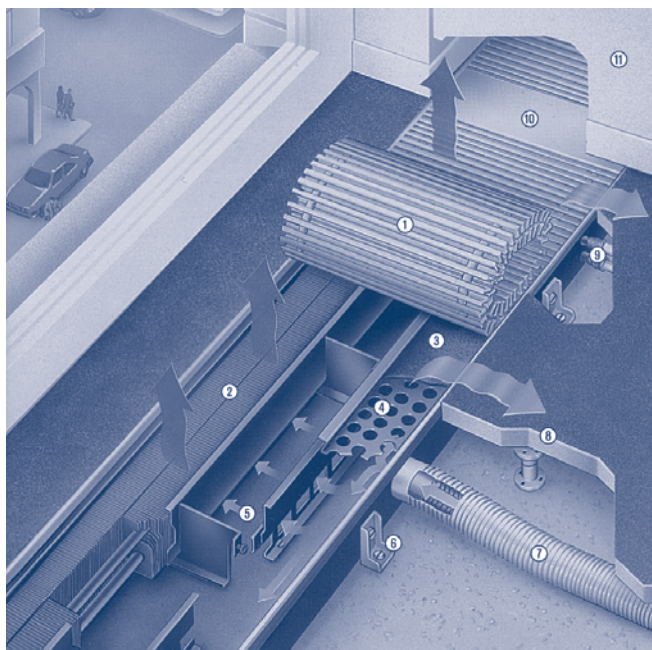
Supply air, cooled to 2 to 4 K below room temperature, is fed to the displacement ventilation unit and is discharged into the room at a velocity of less than 0.3 m/s. All service cabling can be accommodated within the raised floor (if higher than 140mm) or can be fed in from the void underneath. The height of the system can be designed to fit around the structure of the floor.

The air inlets and outlets are arranged in such a way that the warm air from the Kampmann high-output convector and also the cooler air from the displacement ventilation outlet can be fed into the room in a controlled and directional manner to ensure maximum levels of comfort.

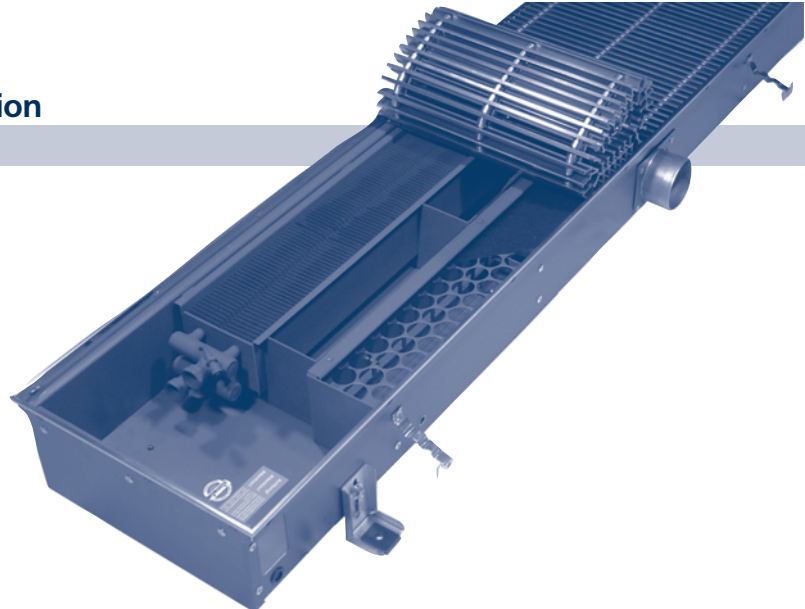
Katherm QL

The “prepared” cool air is fed into the room from the floor duct and stabilizes as a layer just above floor-level. The fresh air rises from this “pool of cool air” on natural thermal currents whenever it meets sources of heat, such as electrical equipment and people in the room. A natural turbulence-free air exchange takes place and a supply of pleasant, cooled air is guaranteed.

The discharge temperature and velocity can thus be kept to a minimum. Room air is simultaneously passed through the convector and heated up. When it is discharged into the room, this warm air mixes with the cold air falling from the window, thereby preventing a drop in temperature at the window.

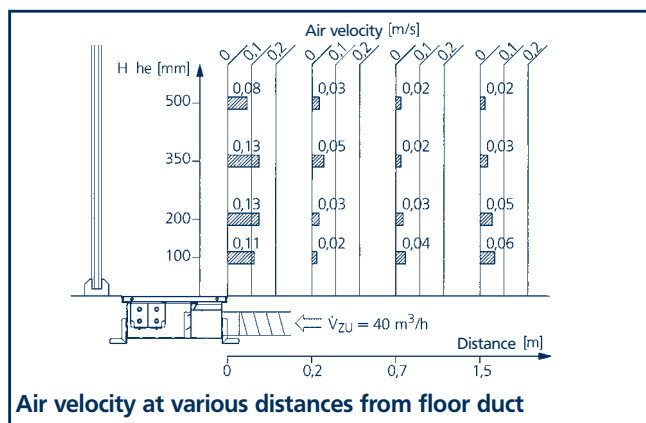


- | | |
|--------------------------------------|-----------------------------|
| ① Kampmann “optiline” roll-up grille | ⑦ Flexible pipe |
| ② High-output convector | ⑧ Raised floor |
| ③ Filter G2 (EU 2) | ⑨ Heating connection |
| ④ Perforated plate | ⑩ Cover plate |
| ⑤ Slide control | ⑪ Adjustable partition wall |
| ⑥ Mounting feet | |



Katherm QL - the engineering at a glance

- sendzimir galvanized steel duct, painted graphite-grey inside and out
- duct height 130, 180 and 230 mm, minimum overall height 140 mm; further dimensions on request
- overall frame width 315, 340, 365, 395, 420 and 445 mm; intermediate lengths on request
- minimum floor duct length 1100 mm
- internal bracketry at regular spacings along the duct to provide additional reinforcement
- special height adjustment feet
- high-output cu/al convector (depth 100 and 150 mm)
- water connection 1/2" room side; supply air spigot Ø 70 mm room side
- G2 (EU2) filter, when used with perforated plate, ensures evenly-distributed air discharge. The discharge pulse can no longer be felt 500mm from the air outlet
- additional slide control between the displacement outlet and convector which can increase the percentage of warmed air in problem areas.
- draughts are non-existent as discharge velocity is well below 0.3 m/sec
- standard and non-standard units, mitred corners, cut-outs and curves are all manufactured to exact structural dimensions and are easy to install.
- duct is covered by attractive “optiline” roll-up grille





The benefits of a Kampmann Katherm displacement ventilation system:

- displacement ventilation ensures a pleasant living and working environment.
- cold air falling from large expanses of glazing is effectively screened.
- the air velocity is max. 0.3 m/sec.
- the room design can take place independently of the location of heaters.
- the appearance of the building is not impinged by unsightly heaters.
- there is no need for heaters to be fitted to mullions so that the useable floor area can be maximised.
- all service cabling can be accommodated within the raised floor.

Research

Katherm QL was designed as a result of close collaboration between project engineers and architects. A large number of projects of all types have now been fitted with Katherm QL. The HLK Research Institute, attached to the University of Stuttgart, has carried out extensive tests so that exact, detailed information can now be given for each project.

Tailor-made and easy-to-fit

When asked to do so, the Kampmann installation team will take dimensions and ensure the precise manufacture of mitred corners, curves and recesses. In this way the correct and exact fitting of complicated components is easily done!

Project solutions · Non-standard units

Units can be tailor-made for specific projects to meet the individual requirements of builders, architects and design engineers or to fit around the structure of the building or accommodate specific floor constructions or façade designs:

- higher heat outputs to cover the heat losses through large expanses of glazing or due to the absence of secondary heating
- higher supply air volume and appropriate adjustment of displacement ventilation outlet
- a wide range of grilles - both in terms of colour and material
- duct dimensions and design to fit around floor and façade construction with consideration of:
 - duct height in relation to floor structure and raised floor height adjustment feet
 - building grid, with sound-insulated partition walling cover plates for versatile room design
 - floor-/façade construction and fixing options

1.41 Katherm QL - Displacement ventilation

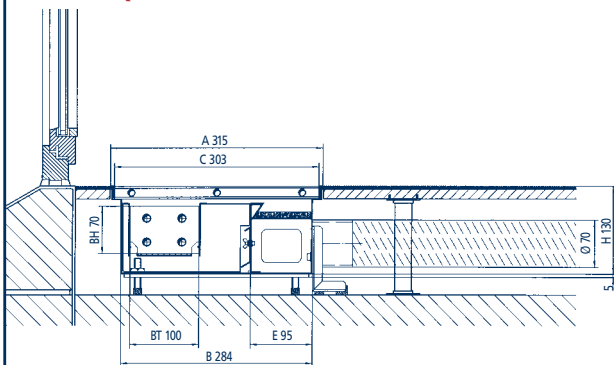
Technical data

Convector depth 100 mm

Dimensions · Air volume Convector depth 100 mm

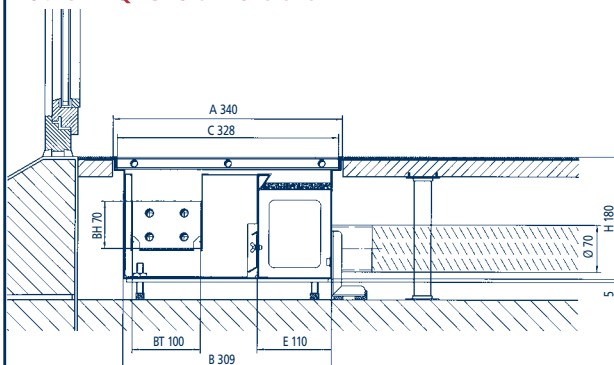
Overall frame width	A [mm]	315	340	365
Floor duct width	B [mm]	284	309	334
Grille width	C [mm]	303	328	353
Supply air duct width	E [mm]	95	120	145
Max. air volume per m finned convector	V $\left[\frac{\text{m}^3/\text{h}}{\text{m}} \right]$	40	50	60
Factor	-	1,59		

Katherm QL 315 dimensions



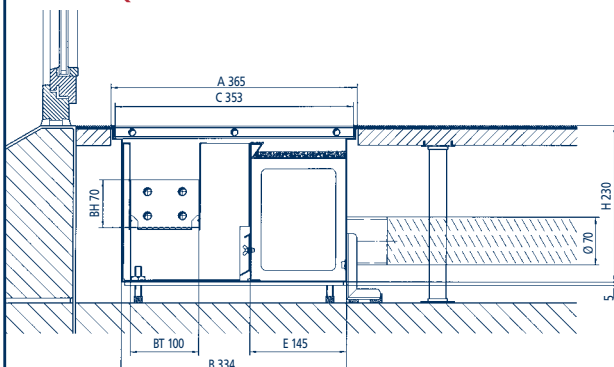
Floor duct height 130 mm

Katherm QL 340 dimensions



Floor duct height 180 mm

Katherm QL 365 dimensions



Floor duct height 230 mm

Heat outputs* · Convector depth 100 mm

Floor duct height H (mm)		130	180	230
Water temp.	Room temp. °C	Heat output per m finned convector (w/m)		
LPWW 55/45 °C	18	185	236	252
	20	167	213	227
	22	149	190	203
LPHW 70/55 °C	18	317	404	431
	20	294	375	401
	22	273	348	371
LPHW 75/65 °C	18	406	517	552
	20	381	486	519
	22	357	455	486
LPHW 82/71 °C	18	489	624	666
	20	463	590	630
	22	437	557	595
LPHW 90/70 °C	20	509	649	694

*Heat output without supply air volume

Conversion to other water temperatures

If the water temperatures used are not shown in the tables, they can be calculated using the formulae, tables and diagrams on this page.

Formulae

$$\Delta t = \frac{t_{w1} + t_{w2}}{2} - t_L \quad (1)$$

$$f = \left[\frac{\Delta t}{50} \right]^n \quad (2)$$

$$Q = Q_n \cdot f \quad (3)$$

Abbreviations

- t_{w1} [°C] = flow temperature
- t_{w2} [°C] = return temperature
- t_L [°C] = room temperature
- Δt [K] = average excess temperature
- Δt_{ln} [K] = logarithmically-calculated excess temperature
- f [-] = heat output correction factor
- Q [w/m] = heat output per m finned convector
- Q_n [w/m] = standard heat output per m finned convector at LPHW 75/65 °C, $t_L=20$ °C
- n [-] = factor = 1.59 with 100mm deep convector
= factor = 1.39 with 150mm deep convector

Formula (1) should not be used for temperature differences of more than 20 K or for flow temperatures below 60 °C. In these instances, the average temperature should be calculated using the following formula:

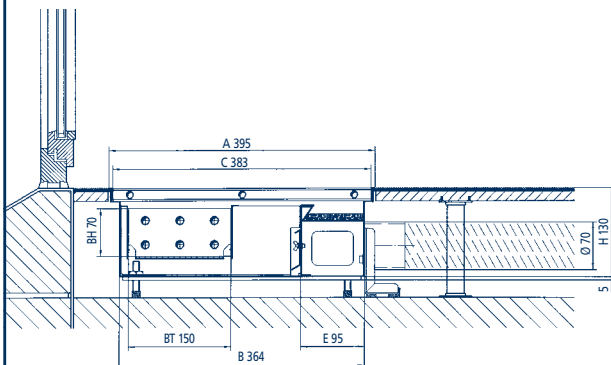
$$\Delta t_{ln} = \frac{t_{w1} - t_{w2}}{\ln \frac{t_{w1} - t_L}{t_{w2} - t_L}} \quad (4)$$

Convector depth 150 mm

Dimensions · Air volume Convector depth 150 mm

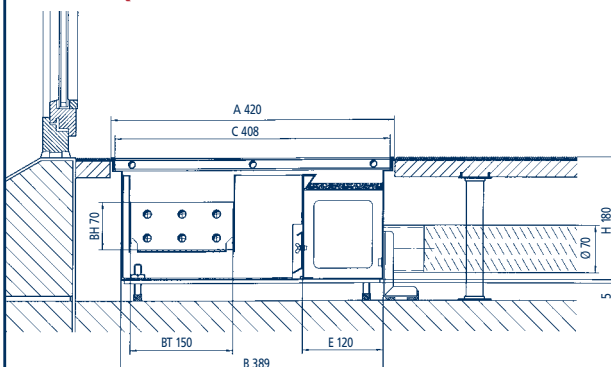
Overall frame width	A [mm]	395	420	445
Floor duct width	B [mm]	364	389	414
Grille width	C [mm]	383	408	433
Supply air duct width	E [mm]	95	120	145
Max air volume per m finned convector	V $\left[\frac{\text{m}^3/\text{h}}{\text{m}} \right]$	40	50	60
Factor	-		1,39	

Katherm QL 395 dimensions



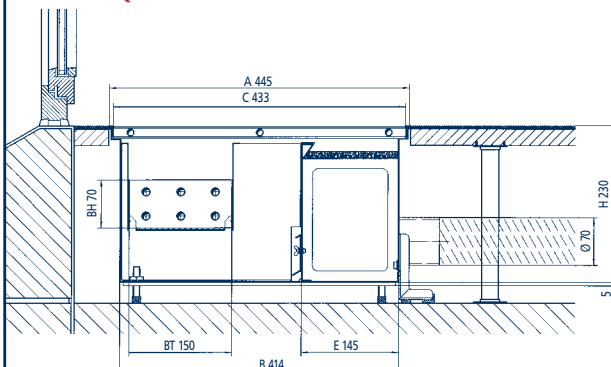
Floor duct height 130 mm

Katherm QL 420 dimensions



Floor duct height 180 mm

Katherm QL 445 dimensions

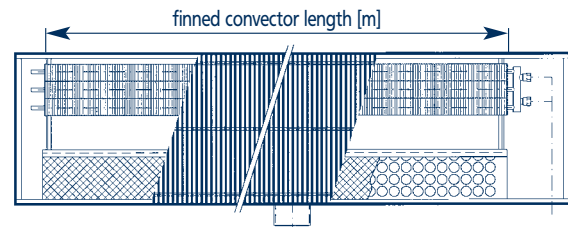


Floor duct height 230 mm

Heat outputs* · Convector depth 150 mm

Floor duct height H (mm)		130	180	230
Water temp.	Room temp. °C	Heat output per m finned convector (w/m)		
LPWW 55/45 °C	18	313	365	409
	20	286	333	373
	22	259	302	338
LPHW 70/55 °C	18	501	584	654
	20	470	548	614
	22	439	513	574
LPHW 75/65 °C	18	622	725	812
	20	589	687	769
	22	557	649	727
LPHW 82/71 °C	18	733	855	957
	20	698	814	911
	22	664	774	867
LPHW 90/70 °C	20	759	885	991

* Heat output without supply air volume



Katherm QL with roll-up grille (plan view)

Calculation

Given:

Katherm QL 420

overall frame width A = 420 mm

floor duct height H = 180 mm

flow temperature $t_{w1} = 65$ °C

return temperature $t_{w2} = 55$ °C

room temperature $t_L = 22$ °C

Required:

heat output Q in w

Calculation:

$$\Delta t = \frac{t_{w1} + t_{w2}}{2} - t_L \quad (1) = \frac{65 + 55}{2} - 22 = 38 \text{ K}$$

$$f = \left[\frac{\Delta t}{50} \right]^n \quad (2) = \left[\frac{38}{50} \right]^{1,39} = 0,68$$

to obtain standard heat output Q_n :

heat output for 150mm deep convector,

at LPHW 75/65 °C, $t_L = 20$ °C; $Q_n = 687 \text{ w/m}$

$$Q = Q_n \cdot f \quad (3) = 687 \cdot 0,68 = 467 \text{ w/m}$$

Result:

heat output Q = 467 w/m

1.41 Katherm QL - Displacement ventilation

Specifications

Katherm QL

Qty.	Article no.	Description	Price/each	Total price
m	141 0 2 13 1 11 00	Katherm QL displacement ventilation ducts ready-to-install floor duct convectors with a supply air connection to provide displacement ventilation, comprising: sendzimir galvanized steel duct, painted graphite-grey inside and out, with mounting feet, fitted internally and along the side of the duct to provide height-adjustment for use with raised floors; with height-adjustable mounting feet along the side of the duct, fitted with sound insulation; with a copper/aluminium convector, painted graphite-grey, suitable for use with a max. operating pressure of 10 bar and 120 °C, sitting on steel brackets with felt underlay, with additional bracketry to provide reinforcement within the duct; with supply air spigot on side of duct with slide control to regulate air volume; displacement ventilation outlet with perforated plate and filter to ensure even distribution of air; grille frame to match double-T profile grille, bar dimensions 18 x 5 mm, bar spacing 9mm; on corrosion-proof steel spring with matching spacers; free area approx. 65%. Available with: 1 roll-up grille 3 linear grille 11 aluminium, natural anodized 12 aluminium, brass anodized 13 aluminium, bronze anodized 14 aluminium, black anodized 15 aluminium, bronze effect 16 aluminium, painted basalt grey, DB 703 31 stainless steel 32 stainless steel, polished 33 natural brass CuZn 44 34 natural brass, CuZn 44, polished, oxydation-proof 2 Katherm QL 315 width 315 mm max. supply air volume 40 m³/h per m connection 1/2" room side 3 Katherm QL 340 width 340 mm max. supply air volume 50 m³/h per m connection 1/2" room side 4 Katherm QL 365 width 365 mm max. supply air volume 60 m³/h per m connection 1/2" room side 5 Katherm QL 395 width 395 mm max. supply air volume 40 m³/h per m connection 1/2" room side 6 Katherm QL 420 width 420 mm max. supply air volume 50 m³/h per m connection 1/2" room side 7 Katherm QL 445 width 445 mm max. supply air volume 60 m³/h per m connection 1/2" room side 13 floor duct height 130 mm 18 floor duct height 180 mm 23 floor duct height 230 mm Technical data: Supply air spigot diameter DN 70 Water temp. LPHW _____ / _____ °C Room temperature _____ °C Heat output _____ W Type Kampmann, article no.. 1410-_____, type _____ Please state duct length (minimum length 1100 mm)!		
	required to complete DataNorm/EDV article no.		further dimensions on request	
			other supply spigot dimensions on request	



Recess with cover plate



Mitred corner, acute angle



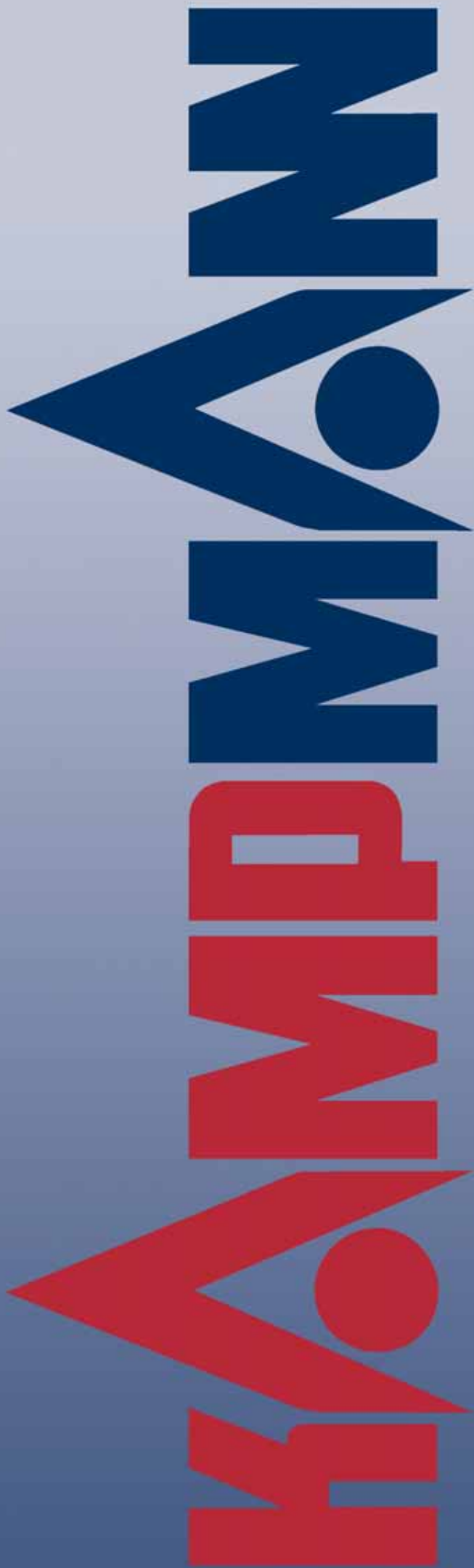
Curved unit



Mitred corner with cut-out

Tailor-made solutions, based on the Katherm QL system, have been developed by Kampmann in collaboration with architects, designers and heating contractors.

When asked to do so, the Kampmann installation team will take dimensions and ensure the precise manufacture of mitred corners, curves and recesses. In this way the correct and exact fitting of complicated components is easily done!



KAMPMANN UK Office

Sunbury Int. Business Centre, Brooklands Close
Windmill Road, Sunbury, Middlesex TW16 7DX
Tel. +44 (0) 19 32-72 40 68 • Fax +44 (0) 19 32-724 218
info@kampmann-uk.co.uk • www.kampmann-uk.co.uk

Keane Environmental Ltd

Kilkenny Office • Kilcross • Inistioge • Co. Kilkenny
Tel. +353 (0) 56 77 58 524 • Fax +353 (0) 56 77 58 737
keaneenv@iol.ie • www.kampmann.de



**KAMPMANN GMBH • 49794 LINGEN (EMS)
Germany**

Friedrich-Ebert-Straße • Postfach 60 44
Tel. +49 (0) 591-71 08-0 • Fax +49 (0) 591-71 08-300
info@kampmann.de • www.kampmann.de