



PKV WITH FRAME, WITH  
PERFORATED METAL  
FACING



TESTED TO VDI 6022



EUROVENT-  
ZERTIFIZIERUNG



PKV WITHOUT  
PERFORATED METAL  
FACING, RAL 9005,  
BLACK



PKV WITH FRAME, WITH  
PERFORATED METAL  
FACING

## PKV

### PASSIVE CHILLED BEAM IN NOMINAL LENGTHS OF UP TO 3000 MM AND WITH A HORIZONTAL HEAT EXCHANGER

Passive chilled beam with 2-pipe heat exchanger for ceiling installation,  
either freely suspended or above an open cell ceiling

- For room heights from 2.60 m
- Comfortable room cooling
- Water connection from the side or from the top

- 3 standard widths and heights for optimum dissipation of heat loads

#### Optional equipment and accessories

- Control equipment
- Aluminium frame with perforated metal facing
- Heat exchanger powder-coated black
- Powder coating in many different colours, e.g. RAL CLASSIC

## Application



### Application

- Passive chilled beam of Type PKV for ceiling installation, either freely suspended or above an open cell ceiling, suitable for room heights from 2.60 m
- Passive chilled beam (no supply air) for new buildings and refurbishment projects
- Dissipation of high heat loads using a 2-pipe heat exchanger
- Energy-efficient solution since water is used for cooling

### Special characteristics

- Air-water component for the dissipation of heat loads
- Horizontal heat exchanger as 2-pipe system
- Aesthetic frame and perforated metal facing for freely suspended installation in comfort zones
- Water connections at the narrow side, Ø12 mm Cu pipe, with plain tails, either straight or 90° bent upwards

### Nominal sizes

- Nominal length: 1000, 1500, 2000, 2500, 3000 mm
- Nominal width: 295, 455, 575 mm
- Nominal height: 110, 200, 300 mm
- Width of heat exchanger: 280, 440, 560 mm

## Description



### Variants

- PKV-0: Casing and heat exchanger
- PKV-L: Including perforated metal facing
- PKV-R-L: Including frame and perforated metal facing

### Construction

- PKV-0 (without frame): Powder-coated RAL 9005, black, gloss level 70 %
- PKV-L (with perforated metal facing): Powder-coated RAL 9010, pure white, gloss level 50 %
- PKV-R-L (with frame and perforated metal facing): Powder-coated RAL 9010, pure white, gloss level 50 %
- P1: Powder-coated in any other RAL colour, gloss level 70 %
- G3: Heat exchanger, powder-coated RAL 9005, black, gloss level 70 %

### Attachments

- Frame
- Perforated metal facing

### Useful additions

- Connecting hoses
- Control equipment consisting of control panel including a controller with integral room temperature sensor; valve and valve actuator; and lockshield
- X-AIRCONTROL control system

### Materials and surfaces

- Casing and perforated metal facing made of galvanised sheet steel
- Frame (PKV-R) made of aluminium
- Heat exchanger with copper tubes and aluminium fins, and with galvanised flanges
- Casing without frame: powder-coated black (RAL 9005) as standard
- Casing with frame and/or perforated metal facing: powder-coated pure white (RAL 9010) as standard

### Standards and guidelines

- Products are certified by Eurovent (no. 09.12.432) and listed on the Eurovent website
- Declaration of hygiene conformity to VDI 6022

### Maintenance

- No moving parts, hence low maintenance
- The heat exchanger can be vacuumed with an industrial vacuum cleaner if necessary
- VDI 6022, Part 1, applies (Hygiene requirements for ventilation and air-conditioning systems and units)

## TECHNICAL INFORMATION

Function, Technical data, Quick sizing, Specification text, Order code, Related products

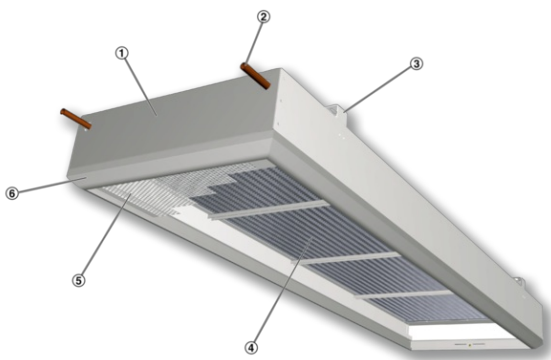


### Functional description

Passive chilled beams are used to dissipate high heat loads.

Warm room air rises due to thermal buoyancy, is cooled by the heat exchanger, then slowly flows downwards again to the occupied zone.

### Schematic illustration of the PKV



- ① Casing
- ② Water connections, Ø12 mm, straight (90° bent upwards as an option)
- ③ Hanging bracket
- ④ Heat exchanger
- ⑤ Perforated metal facing (optional)
- ⑥ Aluminium frame (optional)

<b>Length</b>	1000, 1500, 2000, 2500, 3000 mm
<b>Height</b>	110, 200, 300 mm
<b>Width</b>	295, 455, 575 mm
<b>Width of heat exchanger</b>	280, 440, 560 mm
<b>Cooling capacity</b>	Up to 1000 W
<b>Max. operating pressure, water side</b>	6 bar
<b>Max. operating temperature</b>	75 °C

The quick sizing table lists standard cooling capacities. For other operating points you may use the Easy Product Finder design software.

**Quick sizing - nominal cooling capacity [W] to EN 14518**

Length	Width	Height	$\Delta t_{Wm-Ref} = 8 \text{ K}; \Delta t_W = 2 \text{ K}$		
			Distance to ceiling		
Length	Width	Height	100 mm	200 mm	300 mm
mm			W		
1000	295	110	72	76	76
		200	92	98	98
1000	295	300	110	117	117
1500		110	120	128	128
	1500	295	200	162	174
1500		295	300	203	218
	2000		295	110	182
2000		295	200	253	271
	2000		295	300	310
2500		295		110	256
	2500		295	200	342
2500		295		300	409
	3000		295	110	328
3000		295		200	426
	3000		295	300	504
1000		455		110	95
	1000		455	200	123
1000		455		300	150
	1500		455	110	178

	<b>455</b>	<b>200</b>	249	290	302
<b>1500</b>	<b>455</b>	<b>300</b>	304	347	361
<b>2000</b>	<b>455</b>	<b>110</b>	291	334	347
		<b>200</b>	377	426	441
<b>2000</b>	<b>455</b>	<b>300</b>	442	497	513
<b>2500</b>		<b>110</b>	392	442	457
	<b>2500</b>	<b>455</b>	<b>200</b>	493	552
<b>300</b>			572	638	658
<b>3000</b>	<b>455</b>	<b>110</b>	486	544	562
		<b>200</b>	604	674	696
<b>3000</b>	<b>455</b>	<b>300</b>	698	777	801
<b>1000</b>	<b>575</b>	<b>110</b>	111	135	139
		<b>200</b>	149	191	198
<b>1000</b>	<b>575</b>	<b>300</b>	190	242	250
<b>1500</b>		<b>110</b>	244	300	307
	<b>1500</b>	<b>575</b>	<b>200</b>	324	384
<b>300</b>			382	446	455
<b>2000</b>	<b>575</b>	<b>110</b>	421	443	452
		<b>200</b>	472	546	556
<b>2000</b>	<b>575</b>	<b>300</b>	543	625	637
<b>2500</b>		<b>110</b>	498	575	585
	<b>2500</b>	<b>575</b>	<b>200</b>	610	700
<b>300</b>			697	799	813
<b>3000</b>	<b>575</b>	<b>110</b>	612	702	797
		<b>200</b>	744	852	867
<b>3000</b>	<b>575</b>	<b>300</b>	848	970	987

Passive chilled beams of Type PKV, without frame for installation above open cell ceilings, or with frame for freely suspended installation, suitable for the dissipation of high heat loads.

**Special characteristics**

- Air-water component for the dissipation of heat loads
- Horizontal heat exchanger as 2-pipe system
- Aesthetic frame and perforated metal facing for freely suspended installation in comfort zones
- Water connections at the narrow side, Ø12 mm Cu pipe, with plain tails, either straight or 90° bent upwards

**Materials and surfaces**

- Casing and perforated metal facing made of galvanised sheet steel
- Frame (PKV-R) made of aluminium
- Heat exchanger with copper tubes and aluminium fins, and with galvanised flanges
- Casing without frame: powder-coated black (RAL 9005) as standard
- Casing with frame and/or perforated metal facing: powder-coated pure white (RAL 9010) as standard

**Construction**

- PKV-0 (without frame): Powder-coated RAL 9005, black, gloss level 70 %
- PKV-L (with perforated metal facing): Powder-coated RAL 9010, pure white, gloss level 50 %
- PKV-R-L (with frame and perforated metal facing): Powder-coated RAL 9010, pure white, gloss level 50 %
- P1: Powder-coated in any other RAL colour, gloss level 70 %
- G3: Heat exchanger, powder-coated RAL 9005, black, gloss level 70 %

**Technical data**

- Length: 1000, 1500, 2000, 2500, 3000 mm
- Height: 110, 200, 300 mm
- Width: 295, 455, 575 mm
- Width of heat exchanger: 280, 440, 560 mm
- Cooling capacity: up to 1000 W
- Max. operating pressure, water side: 6 bar
- Max. operating temperature: 75 °C

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

**PKV-G-W/2000×455×110**

Water connection	Pipe connection, Ø12 mm, straight
Suspension	Hanging brackets
Length	2000 mm
Width	455 mm
Height	110 mm

**PKV-R-L-B-W/3000×575×110/P1 RAL 9016/G3/VS**

Aluminium frame	With
Perforated metal facing	With
Water connection	Water connections, Ø12 mm, 90° bent upwards
Suspension	Hanging brackets
Length	3000 mm
Width	575 mm
Height	110 mm
Surface of casing	P1 RAL 9016, traffic white
Surface of heat exchanger	RAL 9005, black
Valves and actuators	With

**PKV - R - L - G - W / 2500 x 440 x 200 / P1 - RAL ... / G3 / VS**

1
2
3
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10
11

**1 Type**

**PKV** Passive chilled beam

**2 Aluminium frame**

No entry: none  
**R** With

**3 Perforated metal facing**

No entry: none  
**L** With

**4 Water connection**

**G** Pipe connection, Ø12 mm, straight  
**B** Pipe connection, Ø12 mm, 90° bent upwards

**5 Suspension**

**W** Hanging brackets

**6 Length [mm]**

L  
**1000**  
**1500**  
**2000**  
**2500**  
**3000**

**7 Width [mm]**

B  
**280**  
**440**  
**560**

**8 Height [mm]**

H  
**110**  
**200**  
**300**

**9 Surface of casing**

No entry: no frame,  
RAL 9005, black  
No entry: with frame and/or perforated metal facing,  
RAL 9010, pure white  
**P1** Powder-coated, specify RAL CLASSIC colour  
  
Gloss level  
RAL 9010 50 %  
RAL 9006 30 %  
All other RAL colours 70 %

**10 Surface of heat exchanger**

No entry: untreated  
**G3** RAL 9005, black

**11 Valves and actuators**

No entry: none  
**VS** With



PKV without perforated metal facing



**Dimensions [mm]**

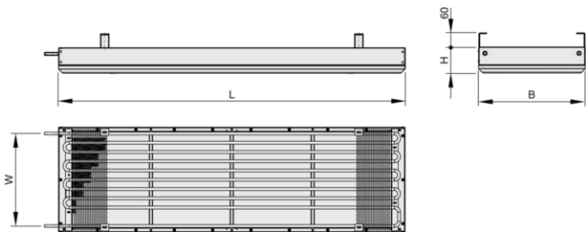
<b>L</b>	100, 1500, 2000, 2500, 3000
<b>B</b>	295, 455, 575
<b>W</b>	240, 400, 520
<b>H</b>	110, 200, 300

**Weights**

Variant	B	L <sub>N</sub>														
		1000			1500			2000			2500			3000		
Variant	B	H														
		110	200	300	110	200	300	110	200	300	110	200	300	110	200	300
PKV-0	295	9	11	13	12	15	18	15	19	23	18	23	28	22	27	33
	455	11	14	16	14	18	21	18	23	26	22	27	32	26	32	37
PKV-0	575	12	15	17	17	21	24	22	27	31	26	32	36	31	37	43
PKV-L	295	10	12	14	14	17	20	18	22	26	21	26	31	26	31	37
	455	12	15	17	17	21	24	22	27	30	27	32	37	32	38	43
PKV-L	575	14	17	19	21	25	28	26	31	35	32	38	42	38	44	50
PKV-R-L	295	12	14	16	17	20	23	21	25	29	26	31	36	31	36	42
	455	14	17	19	20	24	27	26	31	34	32	37	42	37	43	48
PKV-R-L	575	16	19	21	24	28	31	31	36	40	37	43	47	44	50	56
Contained water	295	0.5	0.5	0.5	0.8	0.8	0.8	1.0	1.0	1.0	1.3	1.3	1.3	1.5	1.5	1.5
	455	0.8	0.8	0.8	1.2	1.2	1.2	1.5	1.5	1.5	1.9	1.9	1.9	2.3	2.3	2.3
Contained water	575	1.0	1.0	1.0	1.5	1.5	1.5	2.0	2.0	2.0	2.5	2.5	2.5	3.0	3.0	3.0

B + H + L<sub>N</sub> [mm]

**PKV-R**



## Installation and commissioning

- Preferably for rooms with a clear height from 2.60 m
- Installation either freely suspended or above an open cell ceiling
- Installation and connections to be performed by others; fixing, connection and sealing material to be provided by others
- The beam is fitted with four hanging brackets to fix it to the ceiling using threaded rods, metal hangers or wires
- Heat exchangers are fitted with water flow and water return connections at the narrow side
- Hanging brackets can be positioned facing inwards or outwards

## Nomenclature

### $t_{wv}$ [C°]

Water flow temperature – cooling/heating

### $t_R$ [C°]

Room temperature

### $t_{AN}$ [C°]

Secondary air intake temperature

### $Q_{tot}$ [W]

Thermal output – total

### $Q_w$ [W]

Thermal output – water side, cooling/heating

### $V_w$ [l/h]

Water flow rate – cooling/heating

### $\Delta t_w$ [K]

Temperature difference – water

### $\Delta p_w$ [kPa]

Water-side pressure loss

### $\Delta t_{Rwv} = t_{wv} - t_R$ [K]

Difference between water flow temperature and room temperature

### $\Delta t_{Wm-Ref}$ [K]

Difference between mean water temperature and reference temperature

### $L_N$ [mm]

Nominal length

## Convection

Passive chilled beams remove the heat from the room air and transfer it via a heat exchanger to the water (transport medium). More than 90 % of the heat are transferred through convection. As the air passes over the surfaces of the heat exchanger, its temperature decreases while its density increases as a consequence, hence accelerating the downward airflow. The air flows straight down from the top to the bottom of the unit. This further increases the downward airflow (stack effect) and hence the cooling output.

## Heat exchanger

The maximum water-side operating pressure for all heat exchangers is 6 bar.

The maximum water flow temperature (heating circuit) for all heat exchangers is 75 °C; if flexible hoses are used, the water flow temperature should not exceed 55 °C. Units for other pressures and temperatures are available on request.

The water flow temperature (cooling circuit) should be at least 16 °C such that it does not permanently fall below the dew point. For units with a condensate drip tray the water flow temperature may be reduced to 15 °C.

## Heat exchanger as 2-pipe system

Air-water systems with a 2-pipe heat exchanger may be used for either heating or cooling. In changeover mode it is possible to use all units within a water circuit exclusively for cooling in summer and exclusively for heating in winter.

#### Principle of operation - PKV



#### Wärmeübertrager 2-Leiter-System

