



## OKNI 300 & 400

- ▶ Ventilation, cooling and heating
- ▶ T-bar and surface mounted, suspended
- ▶ Minimal height, closed type
- ▶ Removable faceplate

### Application:

The OKNI chilled beam is a high capacity device designed for ventilation, cooling and heating of areas with ceiling heights up to 3 metres.

The beam has been designed for integration with suspended ceilings with 300, 400 mm centres. Integration in a sheet metal cassette ceiling is a possibility. Module sizes range from 1200 to 3000 mm. Suitable for most suspended ceiling systems employing Tee-bar or lattice supports, the beam can be supplied in any length from 1140 to 2995 mm in 5mm steps. Due to its lightweight construction it is possible to mount the type 300 in a Tee-bar ceiling or to suspend each beam on drop rods or wires.

The closed beam supplies air from both sides and due to its high induction rate can be mounted parallel to the perimeter in the middle of an office. In order to obtain an efficient combination of ventilation and cooling capacity, three different nozzle types are available.

To facilitate nozzle and coil cleaning the perforated faceplate is removable without the need of tools (page 436).

The chilled beam type "OKNI extravent" (nozzle type BD 00 t/m BD14) has additional nozzles which groups can be switched from small to large nozzles. The operation takes place via the front by sliding a magnetic closing strip. This patented system guarantees complete closure and prevents unwanted sound production. By using the extravents primary air flow can be significantly changed without the unit air or water side affects from the work area. Change an office to meeting room, or vice versa, is easily possible with this unit.

### Design:

**Casing:**  
 material: steel  
 treatment: galvanised  
                   sendzimir  
 finish: visible parts;  
                   epoxy powder  
 colour: white RAL 9010

**Coil:**  
 tubes: copper  
 fins: aluminium  
 finish: none  
 working/test pressure: 15/10 bar

### Certification:



### Available types:

- O K N I - - -**
- O** chilled beam
  - K** closed type
  - N** ventilation and cooling
  - I** Tee-bar mountable
- **type**  
**300**  
**400**
  - **model**  
**1200 / 1500 / 1800 / 2400 / 3000**
  - **nozzle**
    - **fixed:**  
**A1 / A2**  
**B1 / B2 / B3**  
**C1 / C2**
    - **adjustable (extravent):**  
**BD00 t/m BD14**  
 (depends on model choice)
  - **coil**
    - K** only cooling
    - V** cooling and heating  
 (dubbel circuit)

For full order code see page: 438.

### Remarks:

Side connection is optional.

The dimensions are given in mm.  
 The weight is given in kg.

For optimum performance of the OKNI it is crucial to ensure the duct connection to the beam is correct. Any reduction/increase must be a minimum length of 3 times the diameter prior to the spigot.

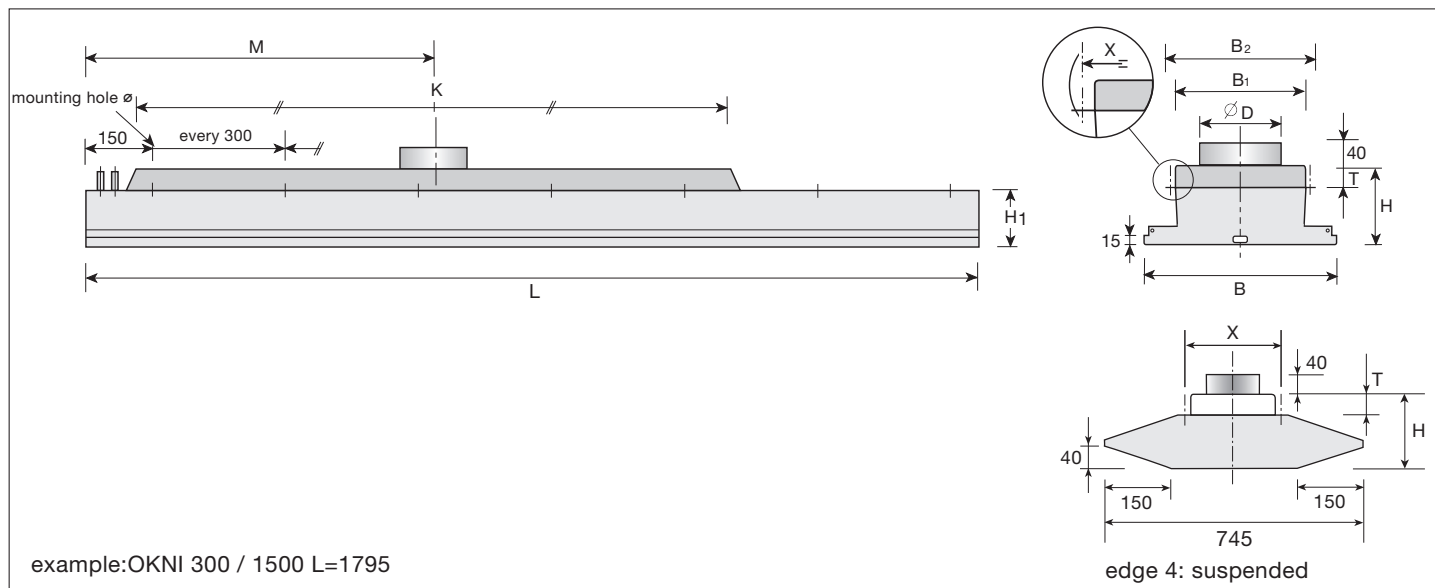
For condensation-free operation we recommend to dehumidify the primary air with a capacity of 1 to 2 gr/kg dry air. For specific information refer to a psychrometric chart.

Consult CB-Select for extensive data selection and ordering codes.

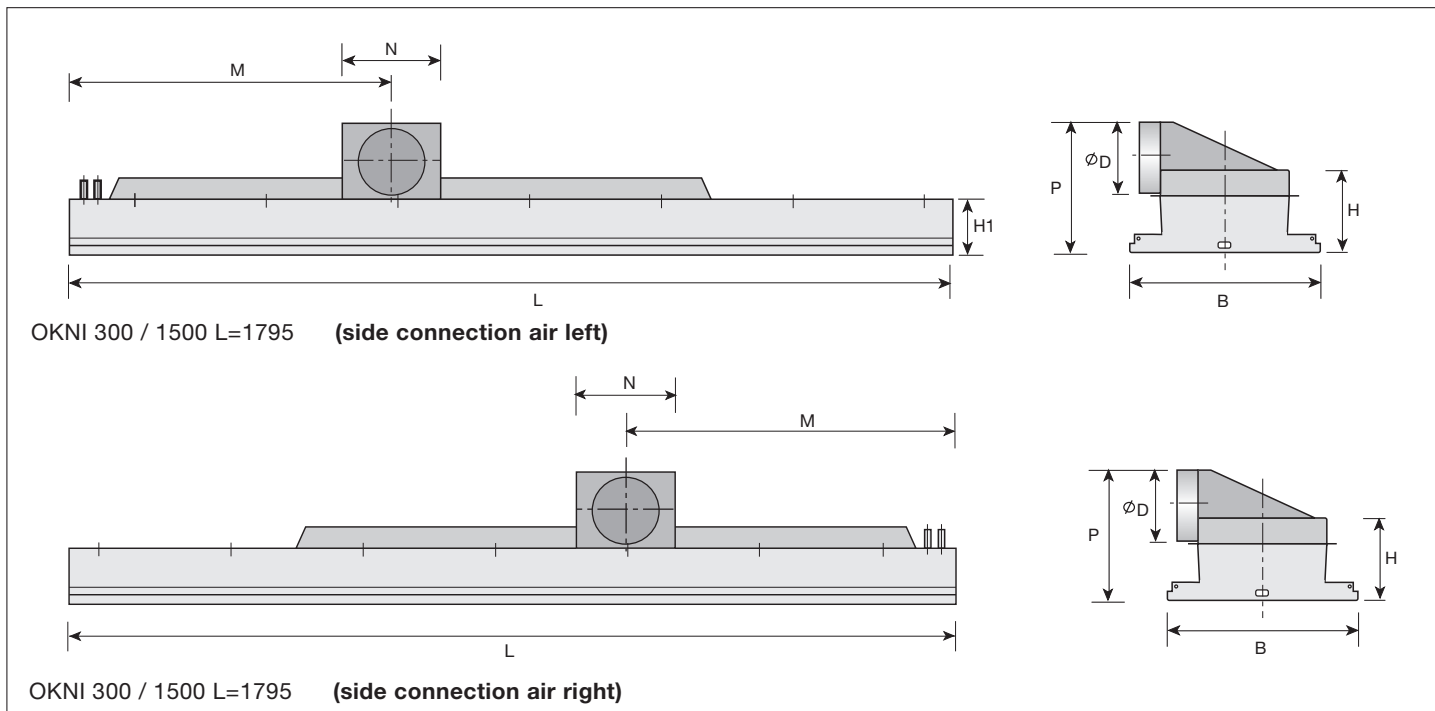
The dimensions are given in mm.  
 The weight is given in kg.

**Dimensions:**

**Top connection:**



**Water connections:**



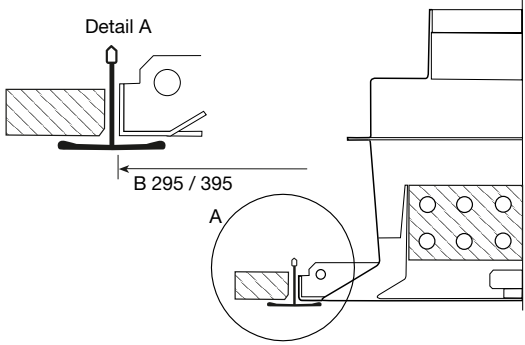
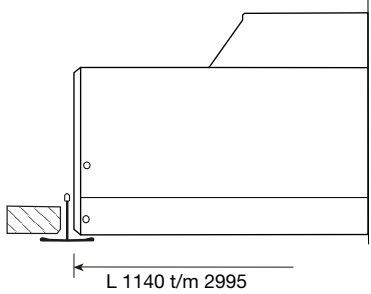
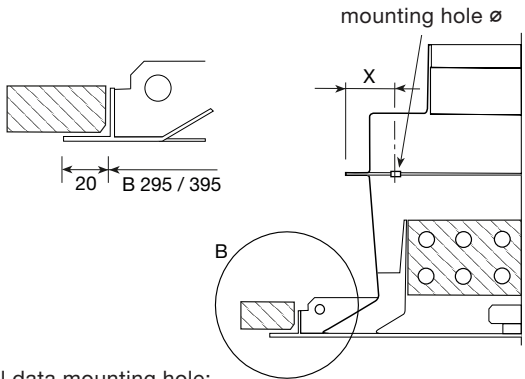
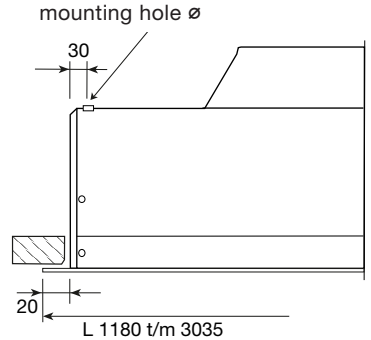
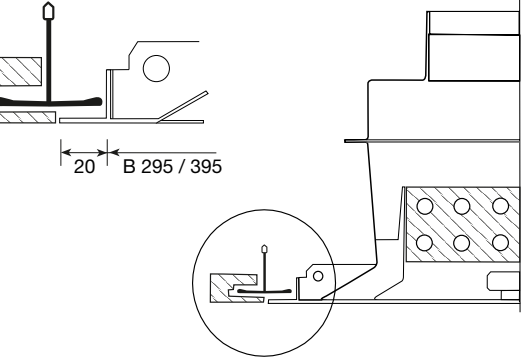
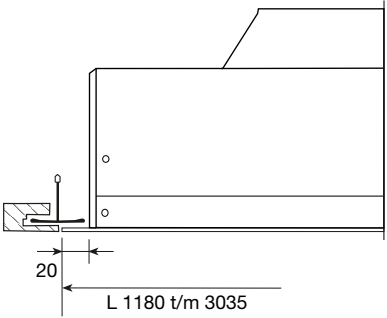
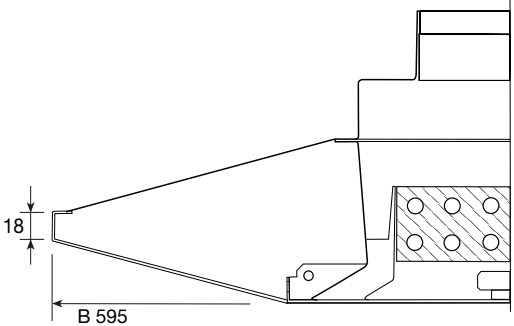
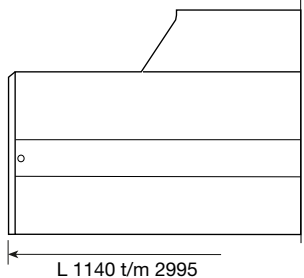
**Dimensional data:**

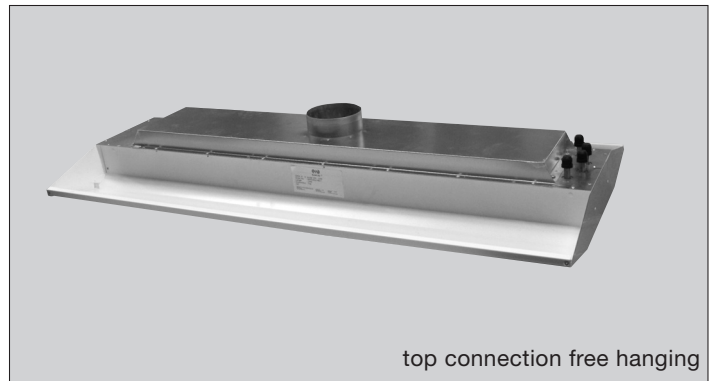
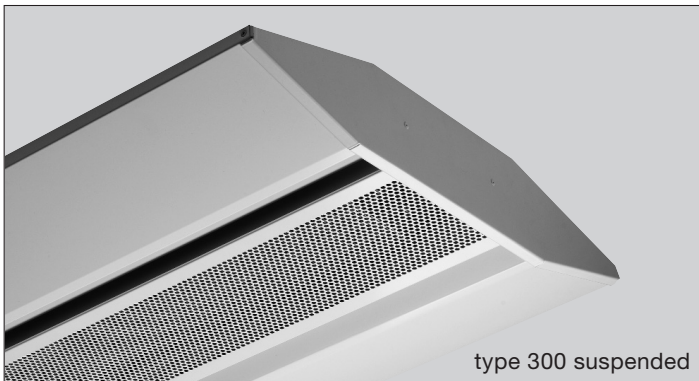
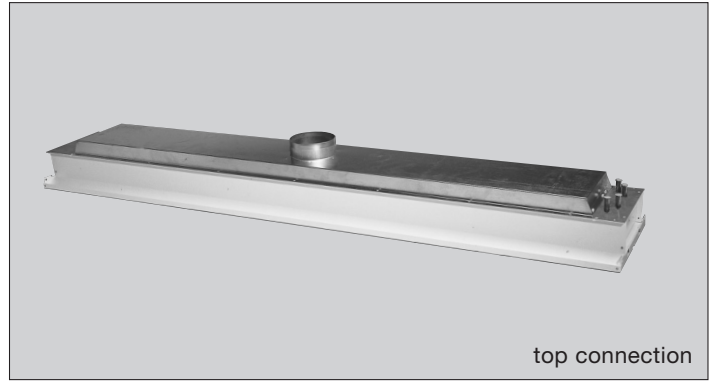
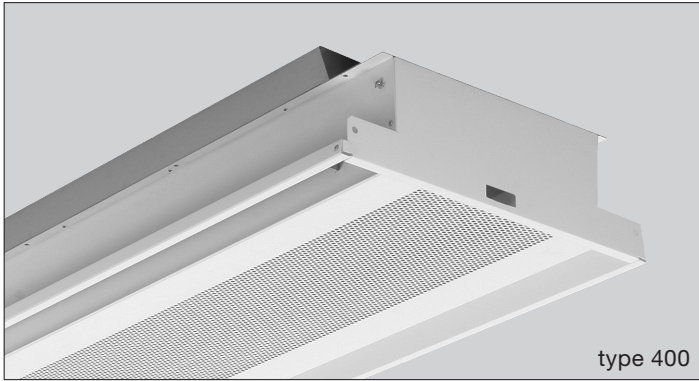
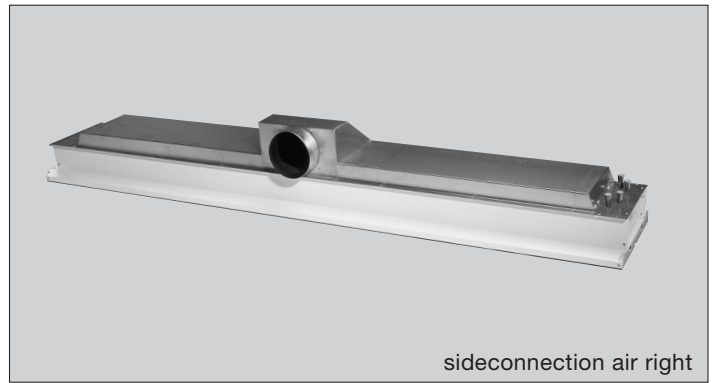
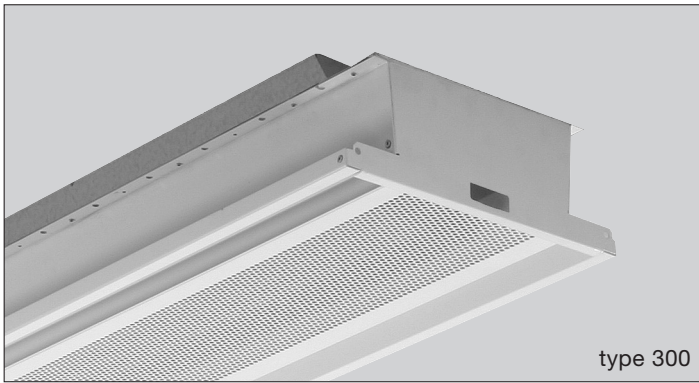
type	model	L from/to	B <sub>2</sub>	B <sub>1</sub>	X	B <sub>2</sub>	H	H <sub>1</sub>	D	M	N	P	K	T	weight
300 of 400	1200	1140 / 2995	295/395	200	219	230	145	105	123	580	225	235	980	40	12
	1500	1440 / 2995	295/395	200	219	230	145	105	123	730	225	235	1280	40	14
	1800	1670 / 2995	295/395	200	219	230	145	105	123	845	225	235	1510	40	16
	2400	2295 / 2995	295/395	200	219	230	145	105	158	1170	300	270	2110	40	22
	3000	2895 / 2995	295/395	200	219	230	165	105	158	1470	300	270	2710	60	28
300 of 400 extravent	1200	1140 / 2995	295/395	200	219	230	165	105	123	580	225	235	980	60	12
	1500	1440 / 2995	295/395	200	219	230	165	105	123	730	225	235	1280	60	14
	1800	1670 / 2995	295/395	200	219	230	165	105	158	845	225	270	1510	60	17
	2400	2295 / 2995	295/395	200	219	230	165	105	158	1170	300	270	2110	60	23
	3000	2895 / 2995	295/395	200	219	230	165	105	158	1470	300	270	2710	60	29

\*) Special widths are available on request.

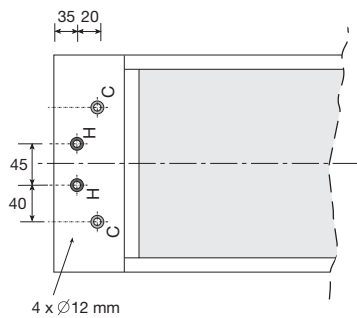
Dimension tolerances: width B: +2 / -2 mm, length L: +0 / -4 mm

**Edge configuration:**

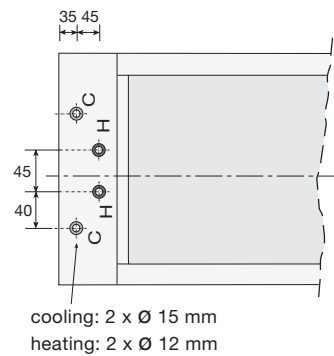
Actual width: Dimensions in mm. Tolerance $\pm 2.0$ mm.	Actual length L: Tolerance $+ 0 / -4$ mm
<p>1 T-bar mountable</p> 	
<p>2 Surface mounted</p>  <p>Dimensional data mounting hole: Model 1200/1500/1800 =&gt; X=35. Model 2400/3000 =&gt; X=25.</p>	
<p>3 Concealed ceiling system</p> 	
<p>4 Suspended application</p> 	



**Water connection: OKNI type 300 en 400:**



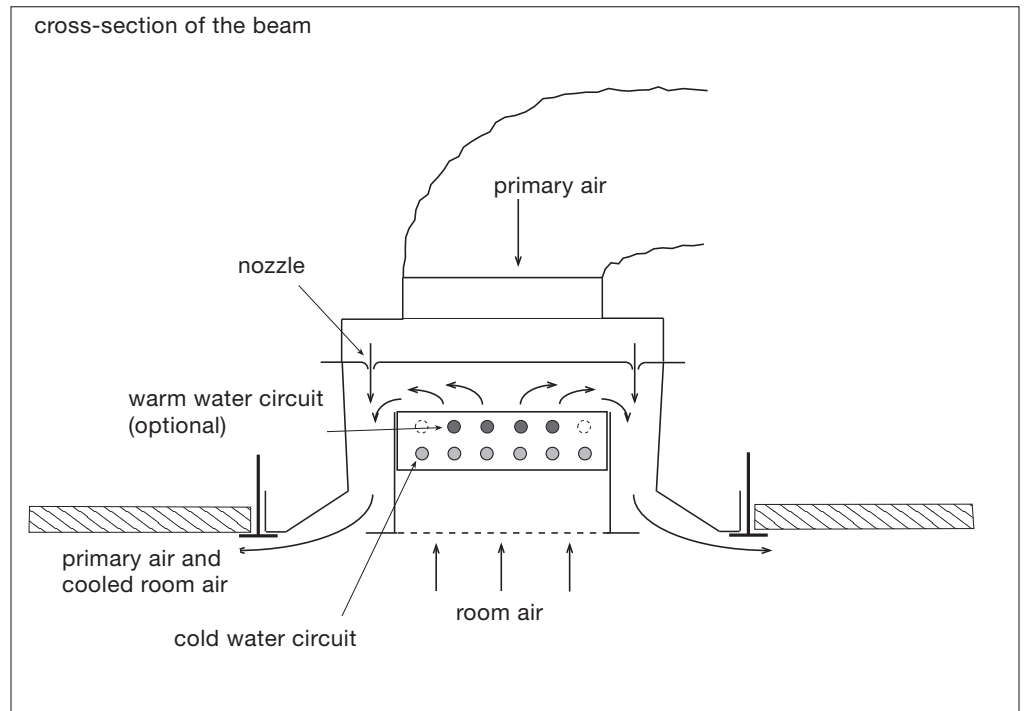
model 1200 / 1500 / 1800



model 2400 / 3000

### System technology:

The primary air is supplied through the nozzles at a very high velocity. This results in a strong induction effect which causes a flow of room air over the coil via the mesh face-plate. The combined room air and primary air is then directed through the integrated slot outlets and supplied to the room. Whilst passing over the coil the air can be either cooled or heated (optional), depending on the requirements in the room.



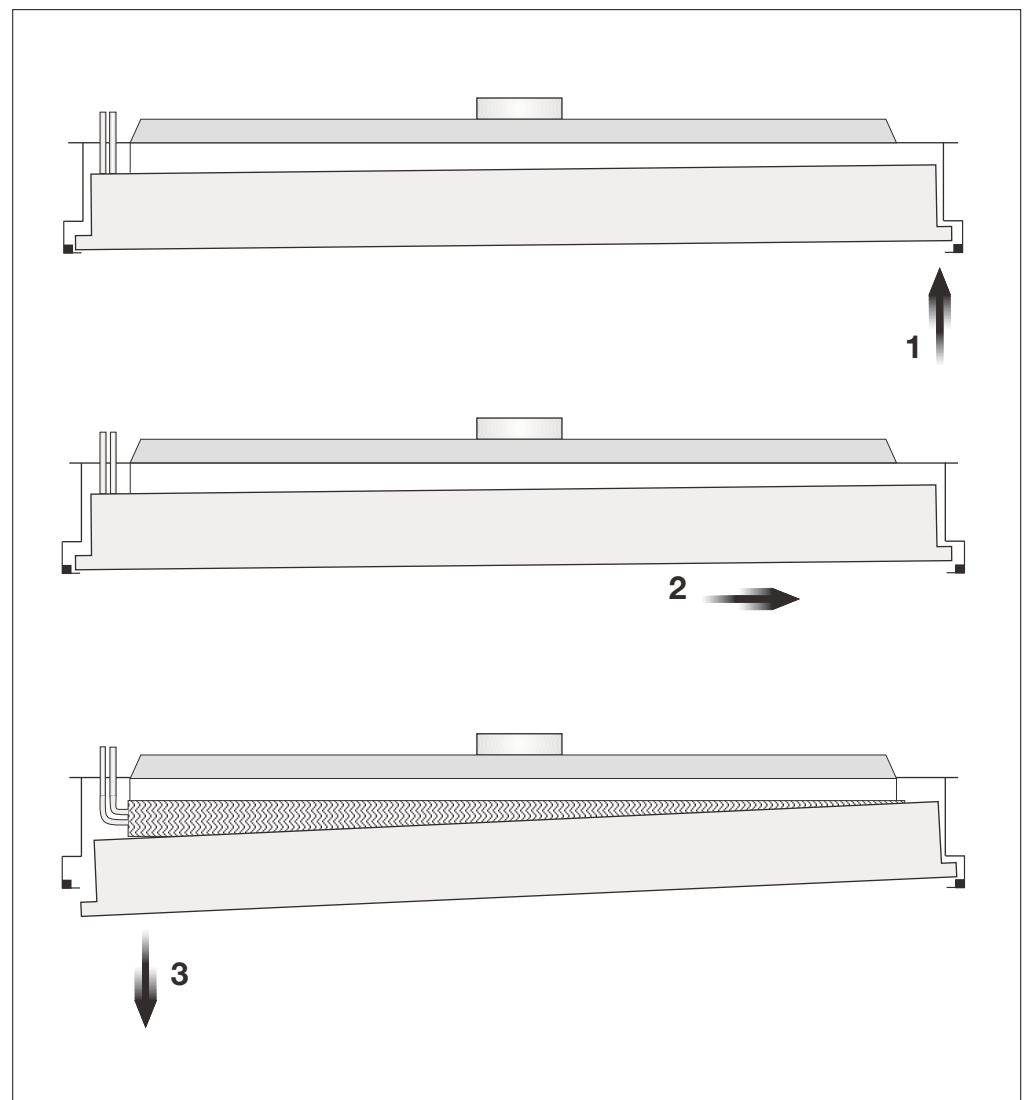
### Maintenance of the middle segment

For maintenance of the beam the perforated front can be removed. This is very simple and can be done without additional tools.

Instructions:

- 1 Push the far end on either side of the perforated face plate next to the endcap upward in the middle part of the perforation (5 mm).
- 2 Move the face plate further in to the endcap on one end.
- 3 Beware! The other side of the face plate will come out of its endcap. The complete face plate can be removed now. It is still connected to the unit by a safety catch on both sides of the face plate.

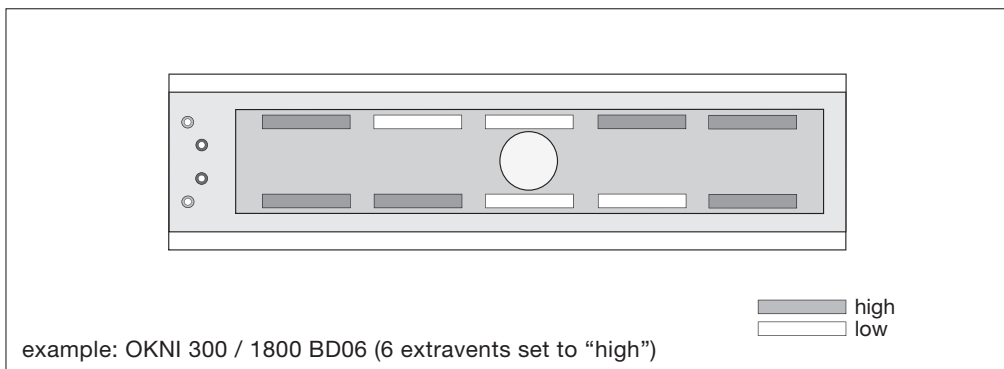
Fitting the face plate is done in reverse order.



## Factory settings

### extravents:

When choosing nozzle type BD (extravent model), the chilled beams will be set in the factory according to a fixed protocol. This means that extravents will be set to “high” from the outside. See the drawing on the right as an example of OKNI 300/1800 nozzle type BD06. When the units have to be set differently, we advise you to contact our sales department.



## Extravents control:

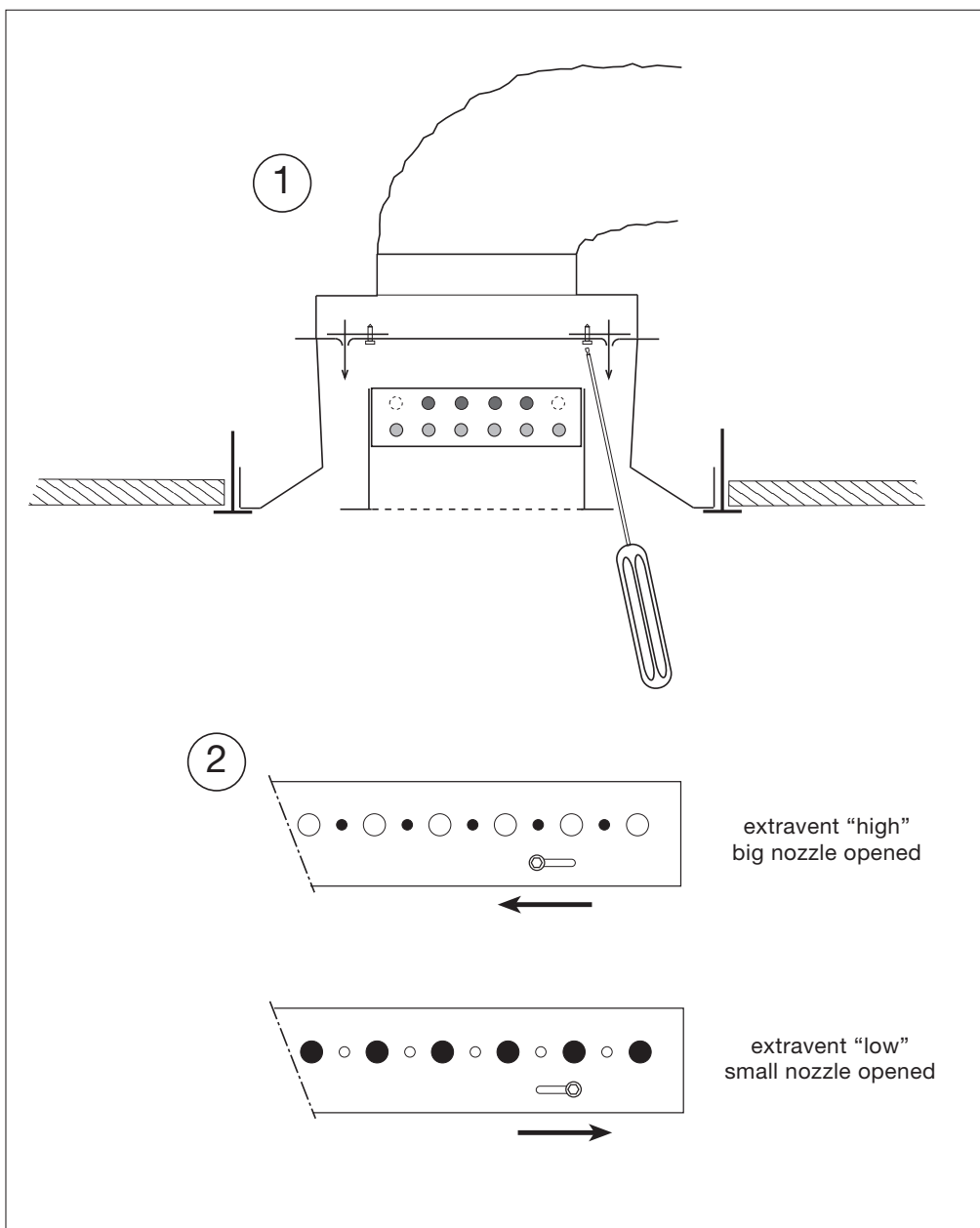
By means of extra nozzles it is possible to raise or reduce the net nozzle free area. This can be done in sections of grouped nozzles. In this way the primary airflow can be raised or reduced at a constant inlet pressure or the ratio between primary flow and inlet pressure can be changed.

One extravent consists of sliding magnetic strip fitted on the plenum box side of the nozzle plate. At each end of the strip two socket head screws are fitted. The screws can be reached through the discharge slot with a socket head screwdriver of at least 110mm length.

Adjusting the extravents:

- Unscrew the screws 1 full turn ①
- Move 1 of the screws to either the “low” or high” position. Intermediate settings are not allowed. The setting is low. ②
- Tighten both screws.

Consult CB-Select for the data selection.



## Extravents per model:

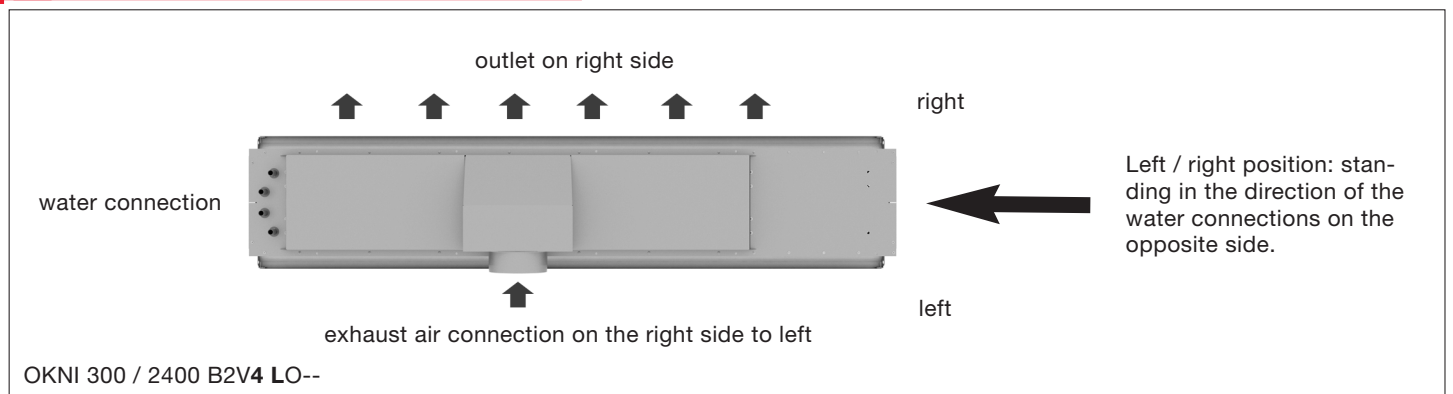
model	amount extravents
1200	6 (BD00 t/m BD06)
1500	8 (BD00 t/m BD08)
1800	10 (BD00 t/m BD10)
2400	12 (BD00 t/m BD12)
3000	14 (BD00 t/m BD14)



Order and option codes:

<b>OKNI 300/1200</b>	<b>B2 V U</b>	<b>T L - -</b>	<b>O I O</b>	<b>295 x 1195</b>	<b>9010 55</b>
<b>Type</b> _____ 300 - 400					
<b>Model</b> _____ 1200 - 1500 - 1800 - 2400 - 3000					
<b>Nozzle</b> _____ A1 - A2 B1 - B2 - B3 C1 - C2 BD00 to BD14 (depends on model choice)					
<b>Coil</b> _____ K cooling only V cooling and heating O none (dummy) L cooling and electrical heating 500 W M cooling and electrical heating 1000 W					
<b>Spread pattern</b> _____ 2 2-way (standard) 3 1-way left 4 1-way right					
<b>Air connection position</b> _____ T top L left R right					
<b>Water connection</b> _____ O standard					
<b>Air connection</b> _____ - standard see table page: 433.					
<b>Plenum</b> _____ - standard see table page: 433.					
<b>Diffuser</b> _____ O not applicable					
<b>Edge</b> _____ 1 T-bar mounting 2 surface mounted 3 concealed ceiling 4 suspended					
<b>Flow Pattern Control</b> _____ O not applicable					
<b>Actual width (mm)</b> _____ 295 (type 300) 395 (type 400) 595 (suspended)					
<b>Actual length (mm, actual length = L-2)</b> _____ 1140....2995					
<b>RAL colour</b> _____ 9010 (standard)					
<b>Gloss</b> _____ 55% (standard)					

Position of air- en waterconnection:



## Selection example:

### Known Parameters:

Office with 2 people, air exchange rate is 2 (L x W x H)	5.4 x 3.6 x 2.7m.
Required: cooling capacity	1085 Watt
heating capacity	925 Watt
Temperatures: summer: room air (50% Relative Humidity)	25 °C
cooling water	15 °C
supply air	16 °C
winter: room air	20 °C
heating	50 °C
supply air	20 °C
So: summer: temperature difference room air - water in	10 °C
room air - primary air	9 °C
winter: temperature difference water in - room air	30 °C
primary air - room air	0 °C

Looking at the size of the room and the required exchange rate we can see that the air duty should be 110 m<sup>3</sup>/h. There are several solutions of which 3 you can find below:

### Solution 1

2 x OKNI BV type 300 - model 1800, air duty: 15.3 l/s (55 m<sup>3</sup>/h) each.

Selection data for each beam:

	Cooling	Heating	
Air each unit (total)	165	0	Watt
P water each unit (total)	380	622	Watt
P total (actual) each unit (total)	545	622	Watt
Water duty each unit (total)	80	50	l / h
Temperature difference water in- out	4.1	10.9	°C
Pressure drop on the water side	1.9	0.5	kPa
Static pressure on air side	91	91	Pa
Sound power level Lw	29	29	dB(A)

### Solution 2

1 x OKNI BV type 300 - model 3000, air duty: 30.6 l/s (110 m<sup>3</sup>/h)

Selection data:

	Cooling	Heating	
Air	330	0	Watt
P water	778	1112	Watt
P total (actual)	1108	1112	Watt
Water duty	180	70	l / h
Temperature difference water in- out	3.7	13.9	°C
Pressure drop on the water side	2.8	2.0	kPa
Static pressure on air side	115	115	Pa
Sound power level Lw	36	36	dB(A)

### Solution 3

1 x OKNI BV type 600 - model 2400, air duty: 30.6 l/s (110 m<sup>3</sup>/h)

Selection data:

	Cooling	Heating	
Air	330	0	Watt
P water	758	958	Watt
P total (actual)	1088	958	Watt
Water duty	265	50	l / h
Temperature difference water in- out	2.5	16.7	°C
Pressure drop on the water side	7.5	1.1	kPa
Static pressure on air side	91	91	Pa
Sound power level Lw	22	22	dB(A)

## Remarks:

To keep the chilled beam free from condensation it is important to compensate the moisture production with ventilation air. For an average office situation this means a minimum of 2 air changes per hour with a dehumidification capacity of about 2 gr/kg.