

## OKNI 450 & 600

- ▶ **Ventilation, cooling and heating**
- ▶ **T-bar and surface mounted, suspended**
- ▶ **Minimal height**
- ▶ **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 450, 600 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. We suggest type 600 to be suspended 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 ???).

The chilled beam type "OKNI extravent" (nozzle type BD00 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 extra vents primary airflow 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:

<b>Casing:</b>	
material:	steel
treatment:	galvanised sendzimir
finish:	visible parts; epoxy powder
colour:	white RAL 9010

<b>Coil:</b>	
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**  
**450**  
**600**
- **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)

### Remarks:

Side connection is optional.

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

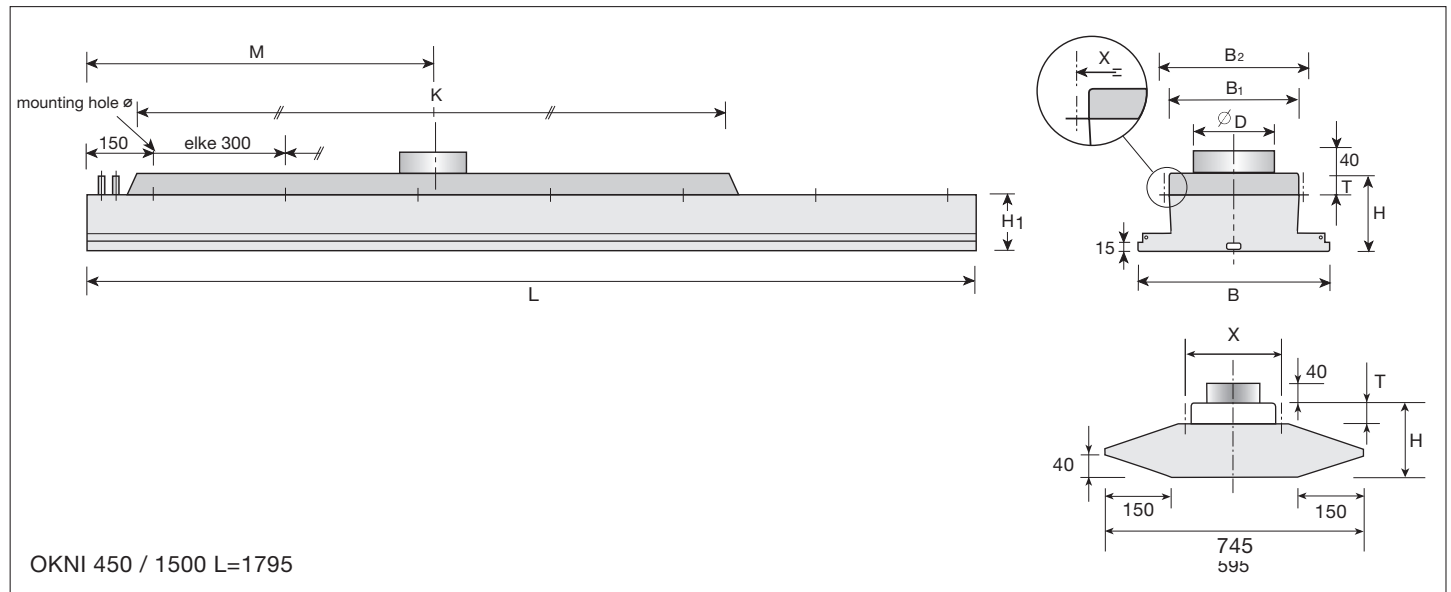
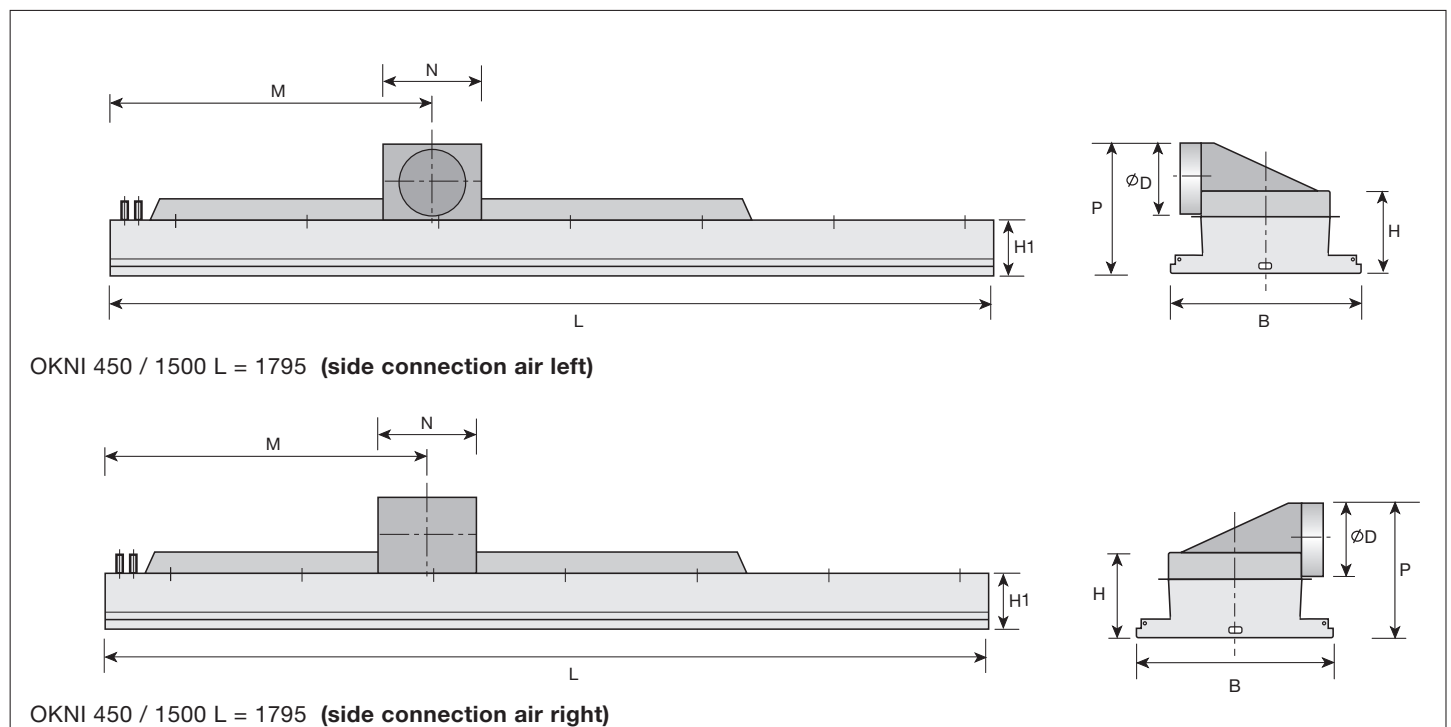
For optimum performance of the OKNI it is crucial to ensure the duct connection to the beam is correct. Any reduction/increase must be a minimum length of 3 times the diameter prior to the spigot.

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 the psychrometric chart.

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

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

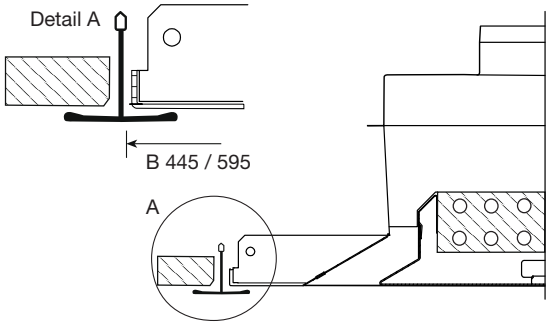
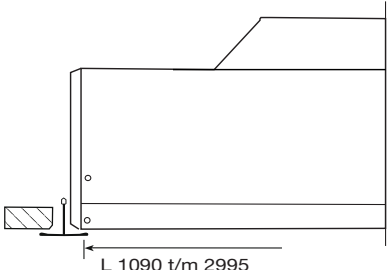
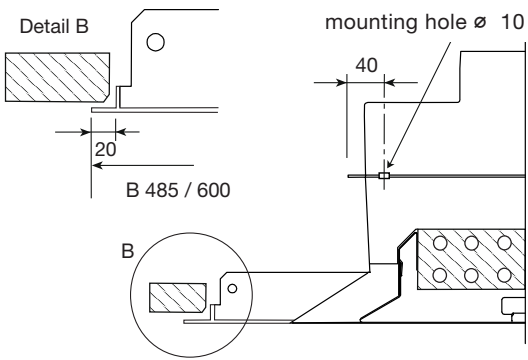
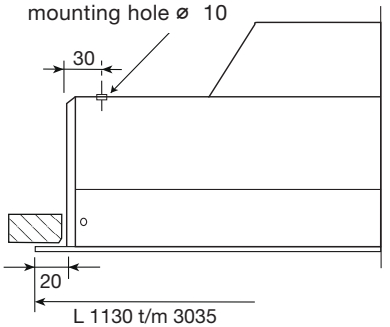
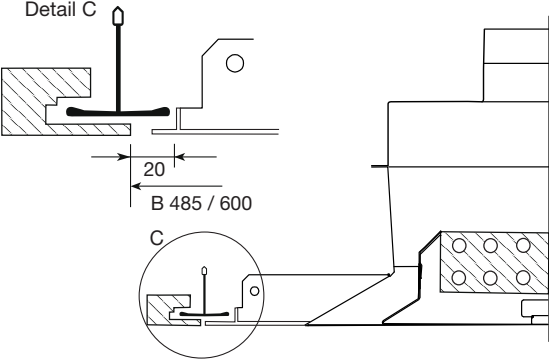
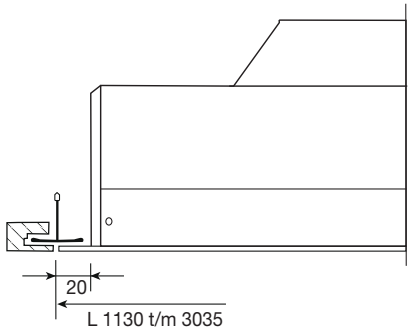
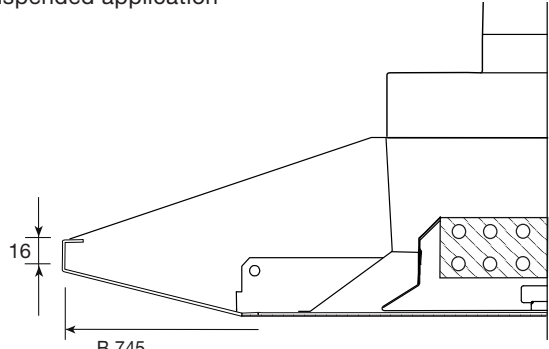
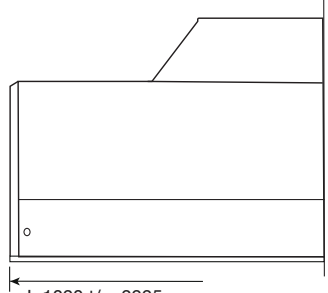
For full order code see page: 446.

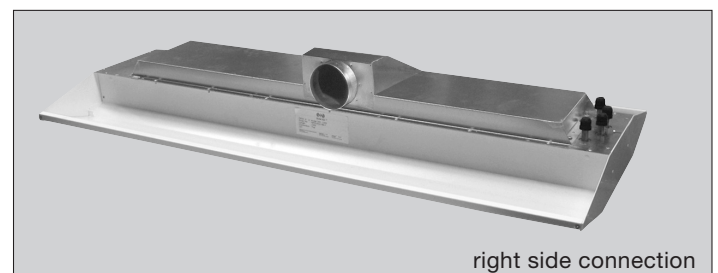
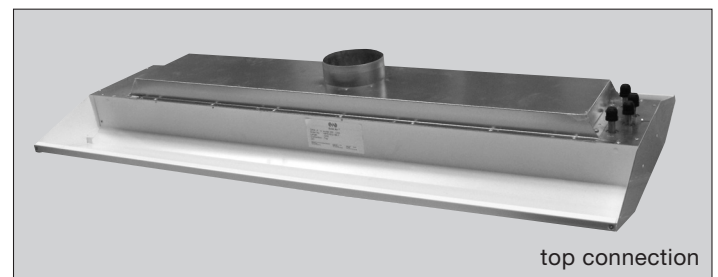
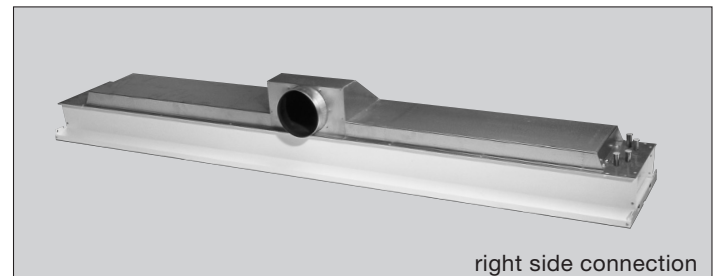
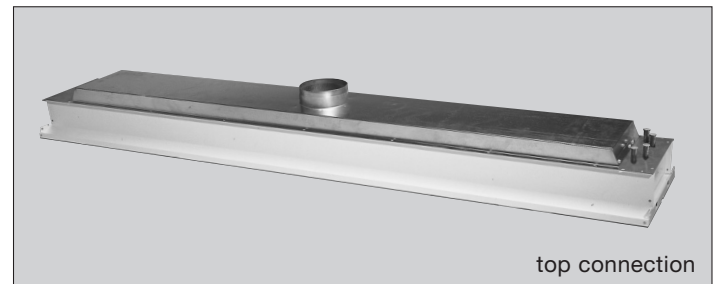
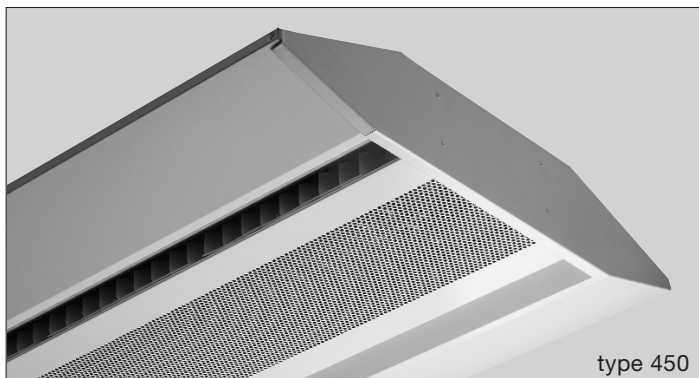
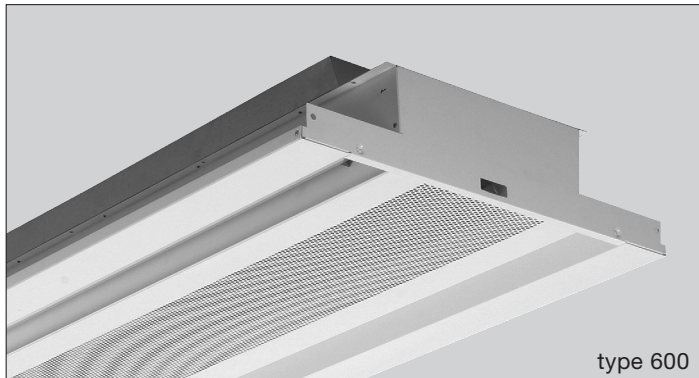
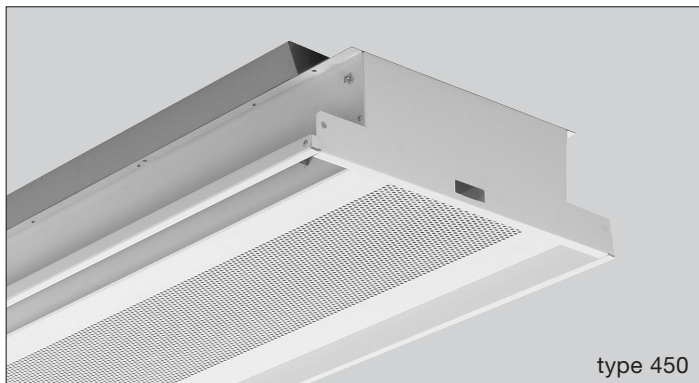
**Dimensions:****Top connection:****Side connection (optional):****Dimensional data:**

type	model	L from / to	B <sub>1</sub>	B <sub>2</sub>	X	B <sub>2</sub>	H	H <sub>1</sub>	D	M	N	P	K	T	weight
450 of 600	1200	1090 / 2995	445/595	300	319	330	195	135	123	555	225	265	980	60	16
	1500	1390 / 2995	445/595	300	319	330	195	135	123	705	225	265	1280	60	21
	1800	1640 / 2995	445/595	300	319	330	195	135	123	840	225	265	1510	60	24
	2400	2240 / 2995	445/595	300	319	330	195	135	158	1140	300	300	2110	60	33
	3000	2840 / 2995	445/595	300	319	330	195	135	198	1440	300	340	2710	60	41
450 of 600 extravent	1200	1090 / 2995	445/595	300	319	330	215	135	123	555	225	265	980	80	17
	1500	1390 / 2995	445/595	300	319	330	215	135	158	705	300	300	1280	80	22
	1800	1640 / 2995	445/595	300	319	330	215	135	158	840	300	300	1510	80	25
	2400	2240 / 2995	445/595	300	319	330	215	135	158	1140	300	300	2110	80	34
	3000	2840 / 2995	445/595	300	319	330	215	135	198	1440	300	340	2710	80	44

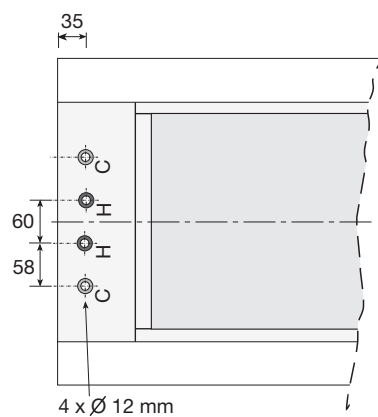
\*) Special widths are available on request.

**Side-edge configuration:**

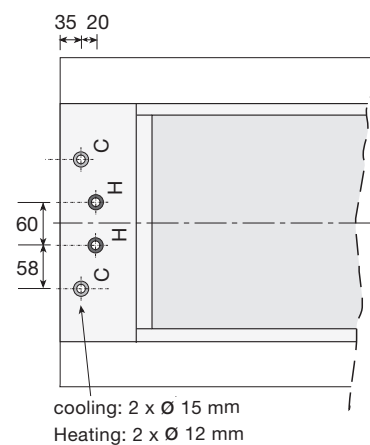
Actual width B: Dimensions in mm. tolerance $\pm 2.0$ mm.	Actual length L chilled beam: Tolerance + 0 / - 4 mm.
<p>1 T-bar mountable</p> 	
<p>2 Surface mounted</p> 	
<p>3 Concealed ceiling system</p> 	
<p>4 Suspended application</p> 	



### Water side connection: OKNI type 450 and 600:



model 1200 / 1500

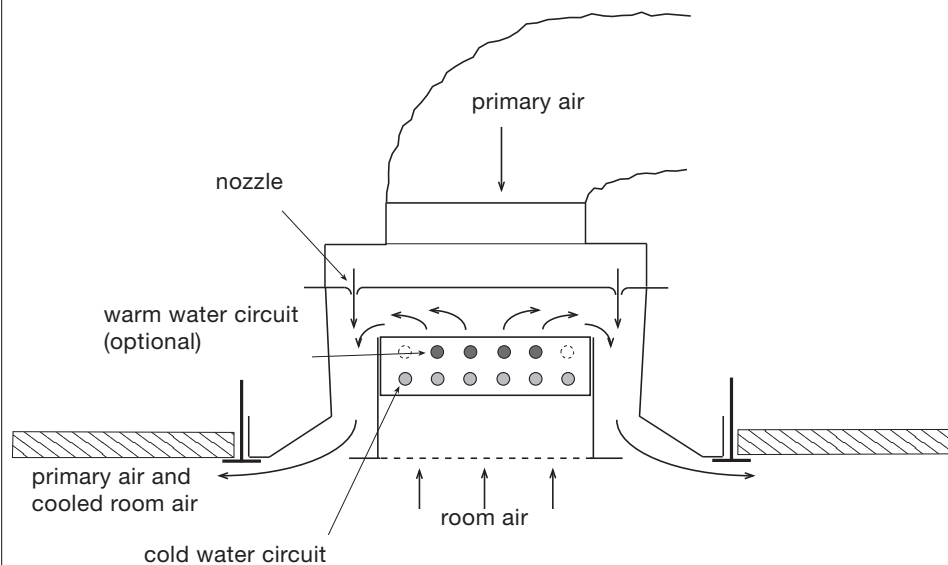


model 1800 / 2400 / 3000

## 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 faceplate. 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.

cross-section of the beam



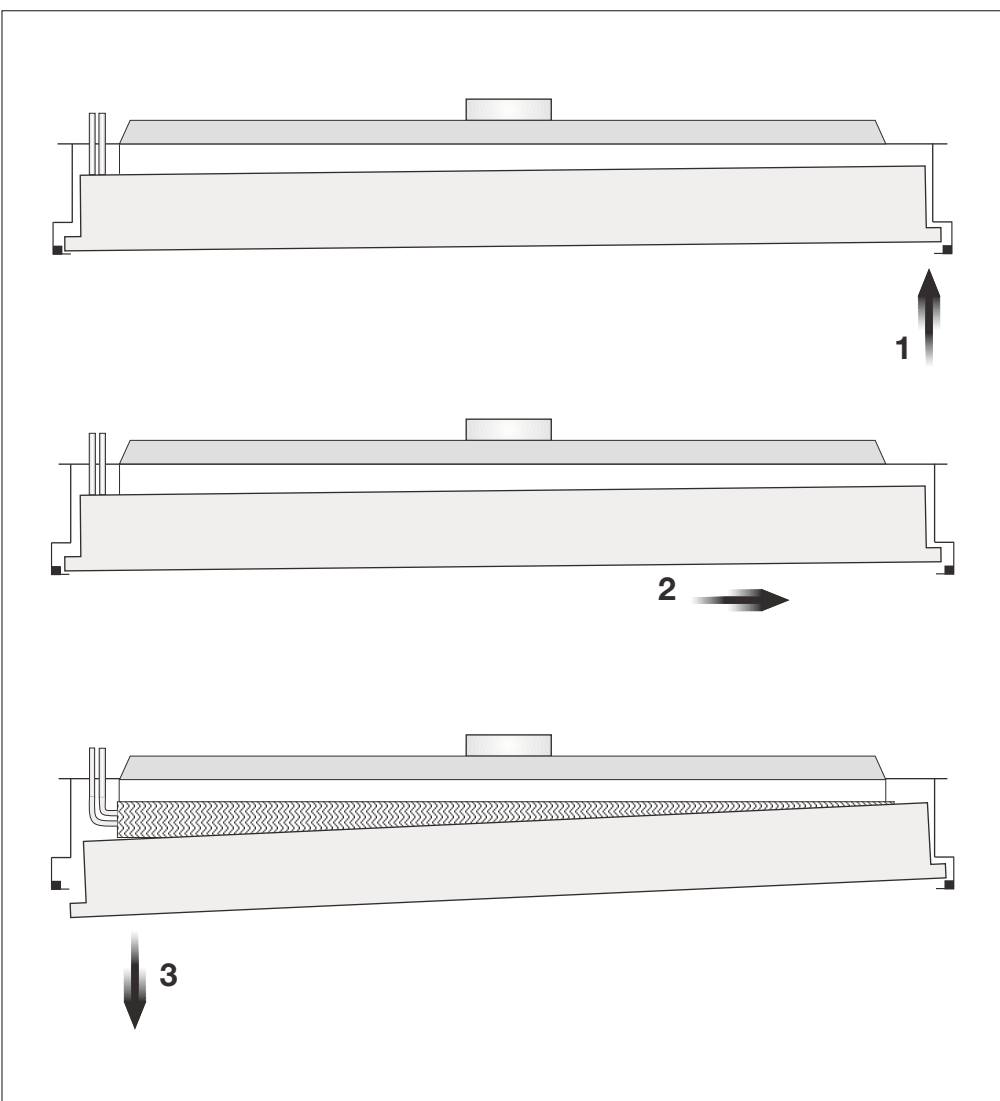
## Maintenance of the middle segment:

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 it's 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.

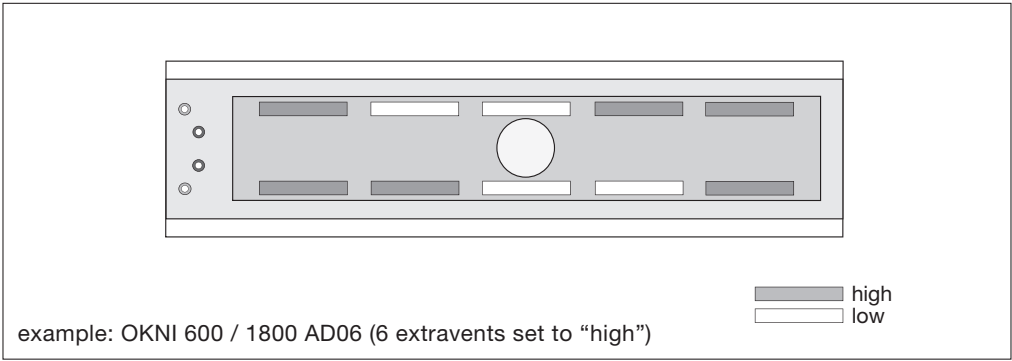
Fitting the face plate is done in reverse order.



Factory settings

extravents:

When choosing nozzle type BD (extravent version), 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.

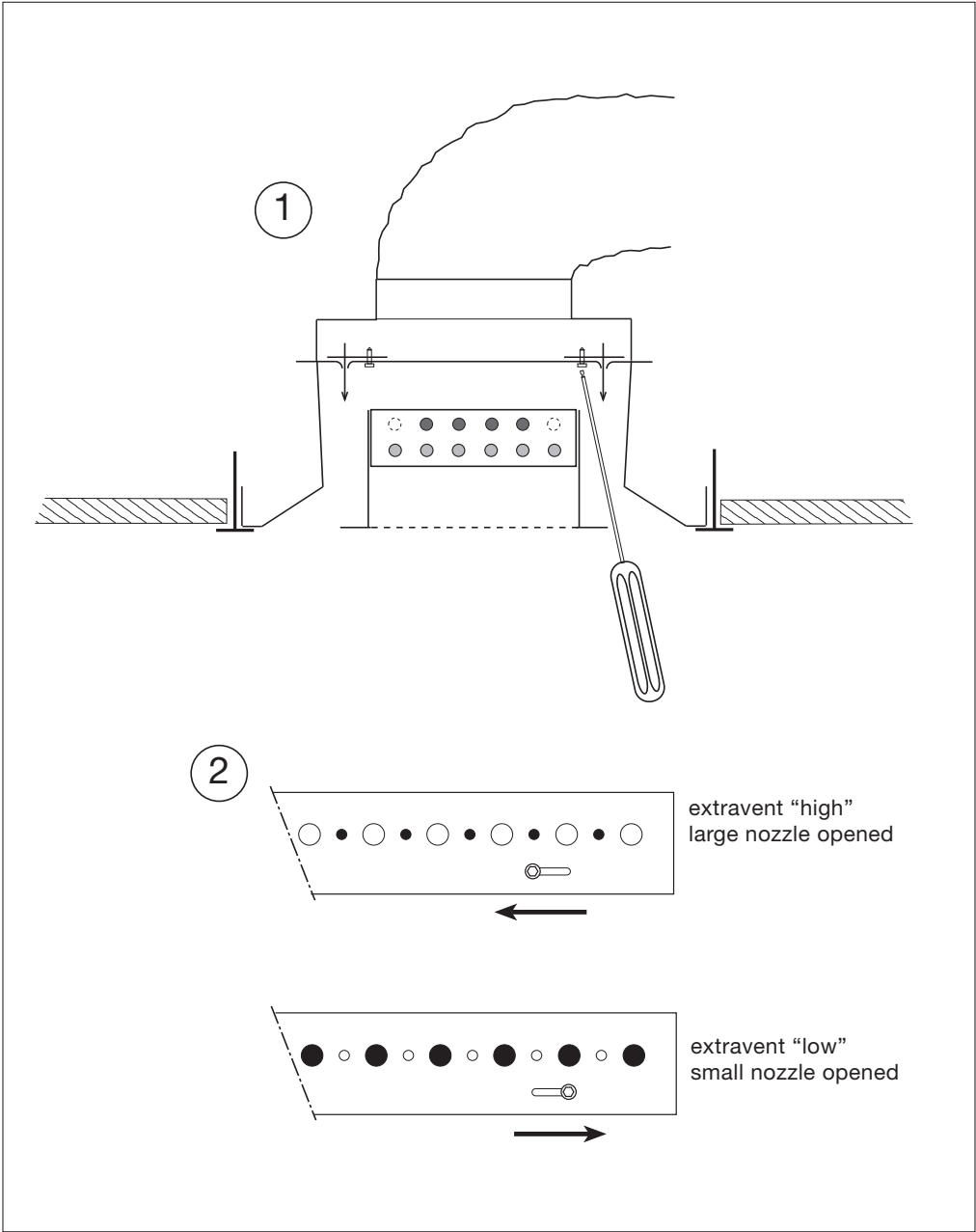


Extravents control:

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 600/1200</b>	<b>A1 K 2</b>	<b>T O - -</b>	<b>O 1 O</b>	<b>595 x 1195</b>	<b>9010 55</b>
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**Type** \_\_\_\_\_  
450 - 600

**Model** \_\_\_\_\_  
1200 - 1500 - 1800 - 2400 - 3000

**Nozzle** \_\_\_\_\_  
A1 - A2  
B1 - B2 - B3  
C1 - C2  
AD00 to AD14 (depends on model choice)

**Coil** \_\_\_\_\_  
K cooling only  
V cooling and heating  
O none (dummy)  
L cooling and electrical heating 500 W  
M cooling and electrical heating 1000 W

**Spread pattern** \_\_\_\_\_  
2 2-way  
3 1-way left  
4 1-way right

**Air connection position** \_\_\_\_\_  
T top  
L left  
R right

**Water connections** \_\_\_\_\_  
O standard

**Air connection** \_\_\_\_\_  
- standard see table page: 441.

**Plenum** \_\_\_\_\_  
- standard see table page: 441.

**Diffuser** \_\_\_\_\_  
O not applicable

**Edge** \_\_\_\_\_  
1 T-bar mounting  
2 surface mounted  
3 concealed ceiling  
4 suspended

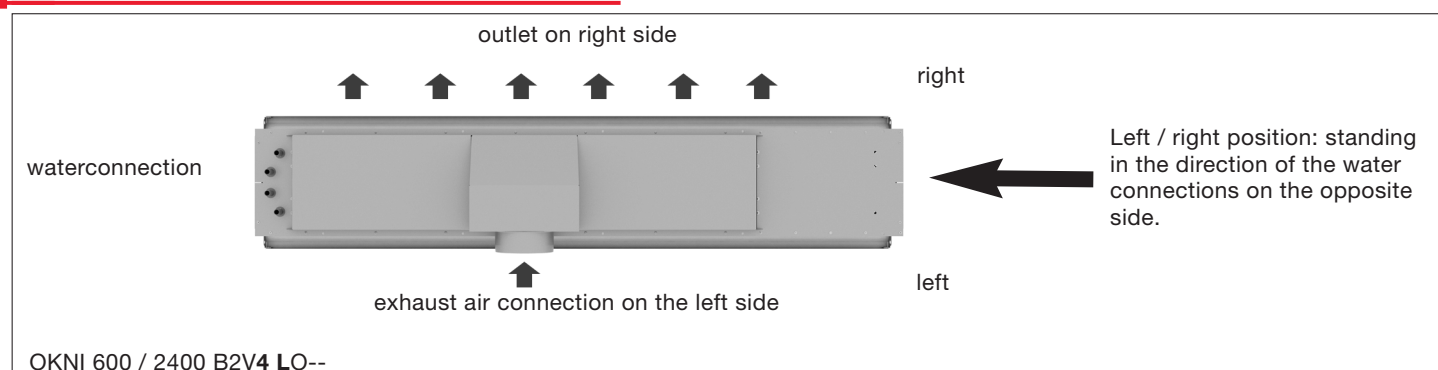
**Flow Pattern Control** \_\_\_\_\_  
O not applicable  
F FPC

**Actual width** \_\_\_\_\_  
445 (type 450)  
595 (type 600)  
745 (suspended)

**Actual length** \_\_\_\_\_  
depending on model size (from 1090 upto 2995 mm)

**RAL colour** \_\_\_\_\_  
9010 (standard)

**Gloss** \_\_\_\_\_  
55% (standard)

**Positie van lucht- en wateraansluiting:**

## 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 m³/h.

### Solution

2 x OKNI XV type 300 - model 1800, duty: 15.3 l/s (55 m³/h) each, 0 extravents in "high" position

### Selection data for each beam:

	Cooling	Heating	
Air each unit (total)	164	0	Watt
P water each unit (total)	401	638	Watt
P total (actual) each unit (total)	565	638	Watt
Water duty each unit (total)	90	50	l / h
Temperature difference water in- out	3.8	11	°C
Pressure drop on the water side	2.6	0.5	kPa
Static pressure on air side	105	105	Pa
Sound <b>power</b> level Lw	25	25	dB(A)

If later a higher primary air duty is required of i.e. 40.2 l/s (145 m³/h) the data will change if 8 extravents are set to "high":

### Selection data:

	Cooling	Heating	
Air	432	0	Watt
P water	497	783	Watt
P total (actual)	929	783	Watt
Water duty	90	50	l / h
Temperature difference water in- out	4.8	13.5	°C
Pressure drop on the water side	2.6	0.5	kPa
Static pressure on air side	105	105	Pa
Sound <b>power</b> level Lw	36	36	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.