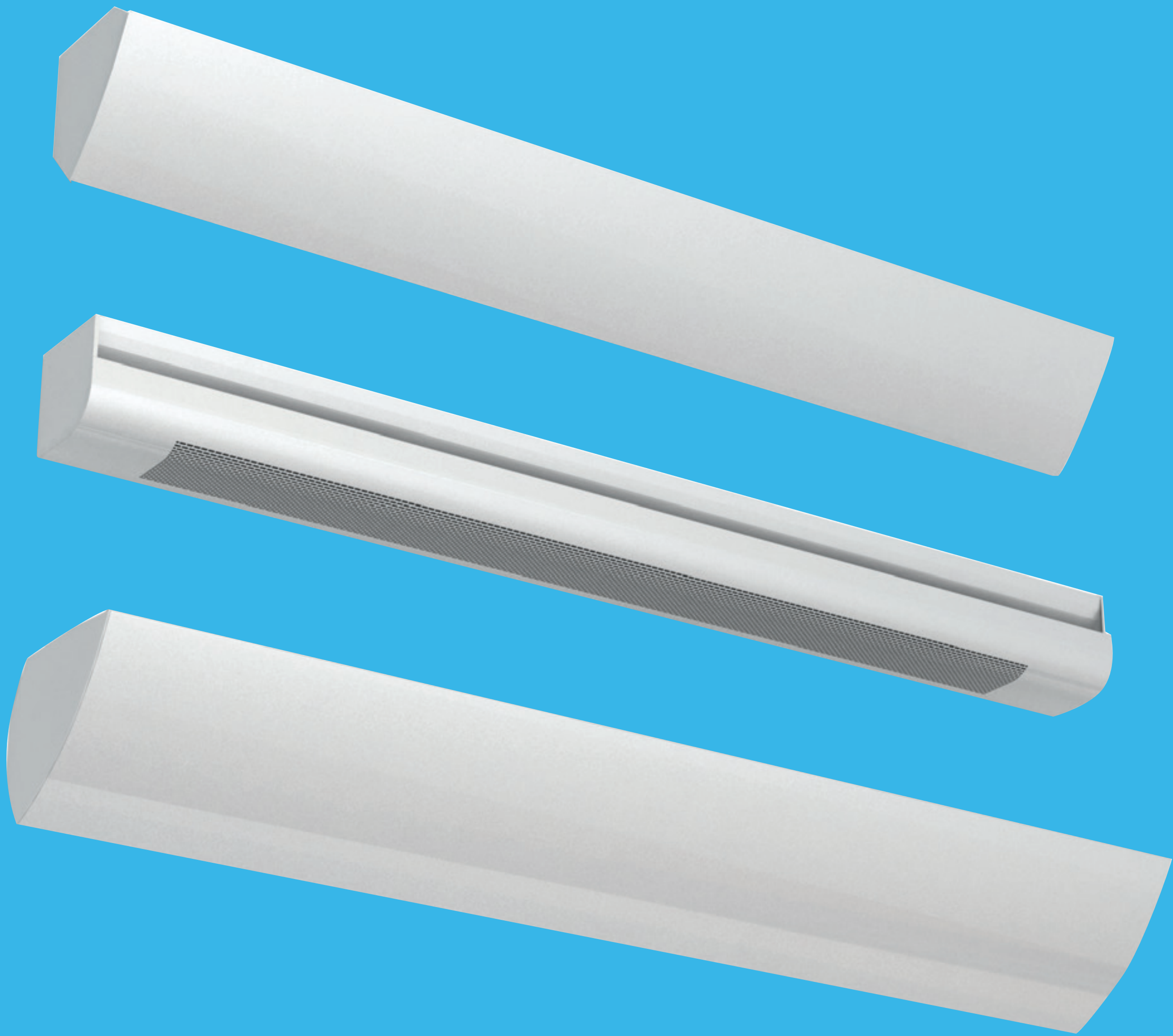


Lindab Plafond

Supply air beam

Supply air beam

Plafond

Picture 1. Plafond is suitable when the ceiling should be free from equipment.

Use

Offices, hotels, hospitals, schools, banks, etc.

Installation

Visible installation in corners between a wall and a ceiling, or on a wall.

Worth noting

Especially suitable when the ceiling should be free from equipment (see picture 1). The supply air is directed along the ceiling or wall. Available with Regula Secura condensation guard.

The beam can be easily integrated/used in a Pascal water system to enable VAV/DCV.

Lindabs active chilled beams are Eurovent-certified and tested according to EN-15116.

Key figures

Length:	1200 - 3600 mm (steps of 100 mm)
Width:	Plafond B: 320x310 mm
	Plafond C: 240x230 mm
	Plafond D: 357x301 mm
Capacity:	1600 W

Calculation setup

Room temp: 25°C, Water temp: 14-17°C, Air temp: 18°C, Nozzle air pressure: 80 Pa, Air flow: 15 l/s/m

Supply air beam Plafond

Function

Plafond's function is based on the induction principle. Ventilation air with a certain dynamic pressure is released through specially-formed nozzles into a dispersal zone, thereby creating a low static pressure. This low pressure causes warm air from the room to be sucked towards the ventilation air passing through the battery. The volume of the warm indoor air is 4 to 5 times that of the ventilation air. The air is cooled as it passes through the battery, which consists of aluminium ribs with copper ducts filled with cold running water. The heat of the room is absorbed through the aluminium ribs and then transferred through the copper pipe to the water circuit and on to a central cooling unit. Despite the small external dimensions of the product, the construction makes it possible to achieve a high cooling capacity. The nozzles releasing the ventilation air are designed to maintain the Coanda effect, i.e. the adhesive capacity of the air in the duct, in the nozzles. The air then follows the side of the duct towards the ceiling or the wall. In this way, the air "adheres" to the room's ceiling or wall, where the air velocity later diminishes.

Lindab Pascal Water Solution VAV/DCV combined with active chilled beams

For an extra energy- and cost saving and environmentally friendly ventilation and cooling system, the Lindab Pascal Water solution should be applied. The Pascal solution will optimize the ventilation, cooling, heating and even lighting for a perfect indoor climate at the lowest running cost by combining the active chilled beam with VAV (Variable Air Volume) or DCV (Demand Controlled Ventilation) technique.

Please refer to: Pascal Water Solutions

Design

Plafond is available in three designs: B, C and D (see picture 2). The shape of the product is suitable for installation in a corner between a wall and a ceiling, or directly on a wall. If a uniform appearance throughout the whole room is desired, Plafond can be supplied either with an inactive part or fitted with side covers. The side covers have the same shape as the product, and can be designed to extend from wall to wall, max. 3.6 m.

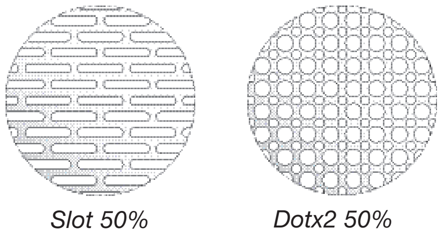
For the best possible accessibility for cleaning, suspension, adjustment or maintenance, the whole front plate of Plafond can be removed. Valves and controls can be placed behind the front plate, so they are easily accessible for adjustment and maintenance. The beam is suspended before the front plate is put into place.

Plafond can be ordered with a preset airflow at a selected air pressure. By removing the nozzle plugs or plugging more nozzles, respectively, the airflow, if necessary, can be increased or decreased at a later time. The increase, however, is limited by the number of nozzles.

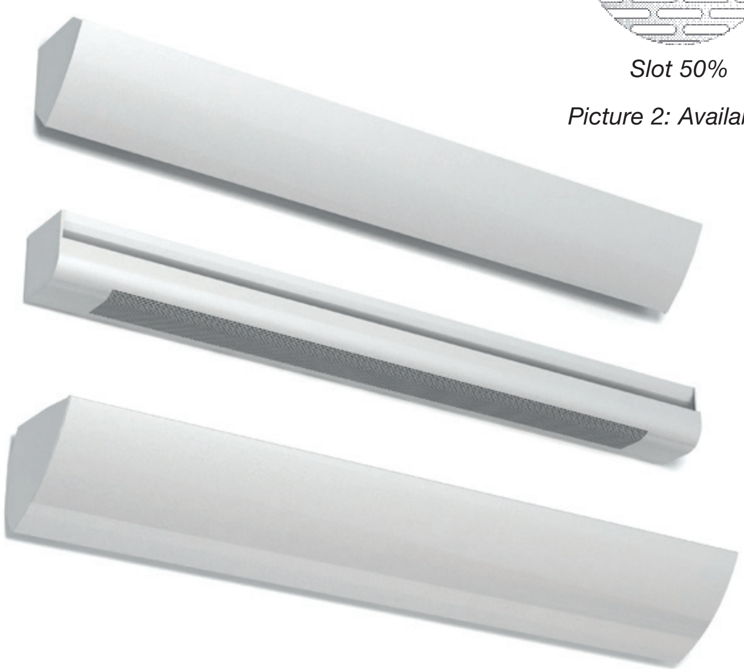
The water pipes are made of copper. Nevertheless, the water should be oxygen-free to prevent corrosion.

Perforation pattern

The beam is available in two perforation pattern Slot 50% (standard) and Dotx2 50% (plus feature).



Picture 2: Available perforations Plafond C



Picture 3. Plafond B (top), Plafond C (middle) and Plafond D (bottom).

Supply air beam

Plafond

Hygiene

Everything is accessible

The requirement for all parts of the beam to be easy to clean is met by the removable front plate (see picture 3). A cleaning hatch on the beam's air duct provides easy access so the air duct can be cleaned from the inside. The cooling battery is accessible from three sides and therefore can be cleaned thoroughly. The same applies to the Coanda nozzles, which are accessible from the sides or from underneath. All of this allows thorough cleaning of the product. It is of primary importance to be able to clean the batteries in products installed in premises with high concentrations of dust particles.

Room environment

The ventilation principle in Plafond can be selected according to the layout of the room and the location of the product. If the air is directed upwards, the ventilation principle is to spread the cooled air across the ceiling (see pictures 5 to 6). The heated air is then absorbed from the central area of the room and fed to the beam for further cooling. If the air is directed downwards, the ventilation principle is to spread the cooled air down along the walls (see picture 5).

The air reaches the floor, and then it is dispersed in the room. When the room air is heated, it rises to the ceiling to be cooled again. In both scenarios, the room is well ventilated.

Conventional supply air beams, which spread the air linearly, can create high air velocities, as the air stream tends to be compressed and concentrated towards the centre. To reduce air velocities, the air distribution in the Lindab Plafond is angled outwards. The outer nozzles point slightly outwards, which leads to air velocities that are significantly lower than those from conventional supply air beams, with a linear outlet.

As regards to noise, the nozzles are shaped like an inverted trumpet, i.e. some what negatively directed at the outlet, which also leads to very low noise from the nozzle.

Plafond's one-way air injection is especially suited for premises where the ceiling has beams or is at different levels. The construction is designed to enable the product to be installed with the air direction horizontal or vertical. The product's air circulation can thereby be adapted to the conditions of the specific room, resulting in low air velocities.

Picture 4. Battery and air duct are accessible for maintenance and cleaning.

Picture 5. Plafond D with air injection across the wall.

Picture 6. Plafond C with air injection across the ceiling.

Picture 7. Plafond C with air injection across the ceiling.

Supply air beam

Plafond

Data

Versions

Plafond is an exposed, 1-way active chilled beam installed in the corner between the ceiling and the wall. It is available in three different designs: A, B and C.

Lengths: Plafond is available in lengths from 1.2 m to 3.6 m in steps of 0.1 m.

Hight and width:
Plafond B has the format 320 × 301 mm.
Plafond C has the format 240 × 230 mm.
Plafond D has the format 357 × 301 mm.

Water connection: The cooling water connections are 12 mm.

Air connection: The air connection can be rotated into a horizontal or vertical position, Ø 100 mm.

Design: Plafond C is perforated with longitudinal slots (Slot 50%, see page 4 and 5).

Nozzle angle: The nozzles can be ordered with different angles, 0°, 16° or 30°. The default is 30°.

Surface treatment: Plafond is manufactured as standard from enamelled sheet metal.

Airflow control: The product has a preset pressure drop value, so on-site adjustment is not necessary. A prerequisite is that the duct system in the building has a relatively low-pressure drop compared to that of the product. Where a damper is desired, you can order a balancing damper.

Colour

The product is available as standard, in signal white RAL 9003 or in pure white RAL 9010, gloss value 30. Other RAL colours on request.

Plus features

Factory preinstalled.

Heating: The product can be equipped with an additional water circuit, with 12 mm connections, in the battery to provide a heating function.

Integrated valve and actuator: A control valve, with variable Kv value, and an actuator can be pre-installed in the product.

Integrated Regula Secura: There is an option to have Lindab's Regula Secura condensation guard installed in the product.

Integrated Regula Connect: The product can be equipped with Regula Connect connection card (refer to the chapter Regula).

Exhaust air valve: The product can be delivered with build in exhaust valve.

Air connection: The beam is available with aditional Ø100 connection on the opposite side.

Design: There is another perforation pattern available (Dotx2 50%, see page 4).

Air boost: Additional nozzles and plugs for future flexibility.

Information

Extended cover: Where it is installed with a horizontal air and water connection, the product's cover can be extended to conceal the connection pipes (see figure 11, 12). The cover can be produced in lengths of up to 3.6 m. The extended underside also includes wall or ceiling attachments.

Accessories

Delivered separately.

Control: Refer to chapter Regula.

Side covers: Available in lengths of up to 3.6 m. Supplied non-perforated.

Hangers: For recommended installation principles (see: "Plafond Installation Instruction").

All these different hangers are available at Lindab:

-pendulum hangers (in different sizes)
-threaded rods M8
-Lindab FH-system (Gripple®) - hang fast system

For additional accessories please refer to the "Accessories" document on www.lindQST.com.

Supply air beam Plafond

Dimensioning

Cooling capacity air P_a

1. Start by calculating the capacity required for the room, to keep a certain temperature. Lindab's TEKNOsim is an excellent tool for this.
2. Calculate which cooling capacity, or read in diagram 1, that is supplied by the ventilation air.
3. Remaining heat load needs to be cooled by the water circuit in Plafond.

The formula for calculating the capacity of the air:
$P_a = q_{ma} \times c_{pa} \times \Delta t_{ra}$

Size comparison by t_r = 25°C with:
q_a = Primary air flow rate
P_a [W] = q_a [l/s] x 1.2 Δt_{ra} [K] and
P_a [W] = q_a [m³/h] x 0.33 Δt_{ra} [K]

Minimum flow

Please note that flows below the recommended minimum water flow q_{wmin}, can result in unwanted air in the water pipes. Exceeding the nominal flows is not recommended as the capacity gains will only be minimal.

Pipe diameter	q_{wmin}	q_{wnom}
12 mm	0.025 l/s	0.038 l/s

Definitions:
P_a = Cooling capacity air [W]
P_w = Cooling capacity water [W]
P_{tot} = Cooling capacity total [W]
q_{ma} = Air mass flow rate [kg/s]
q_a = Primary air flow rate [l/s]
q_w = Water flow rate [l/s]
q_{wmin} = Minimal water flow rate [l/s]
q_{wnom} = Nominal water flow rate [l/s]
c_{pa} = Specific heat capacity air [1,004 kJ/kg K]
t_r = Room air temperature [°C]
t_{wi} = Water inlet temperature [°C]
t_{wo} = Water outlet temperature [°C]
Δt_{ra} = Temp. diff., room air and primary air temp. [K]
Δt_{rw} = Temp. diff., room air and mean water temp. [K]
Δt_w = Temp. diff. water circuit [K]
$\varepsilon_{\Delta tw}$ = Capacity correction for temperature
ε_{qw} = Capacity correction for water flow
P_{Lt} = Specific cooling capacity [W/(m K)]

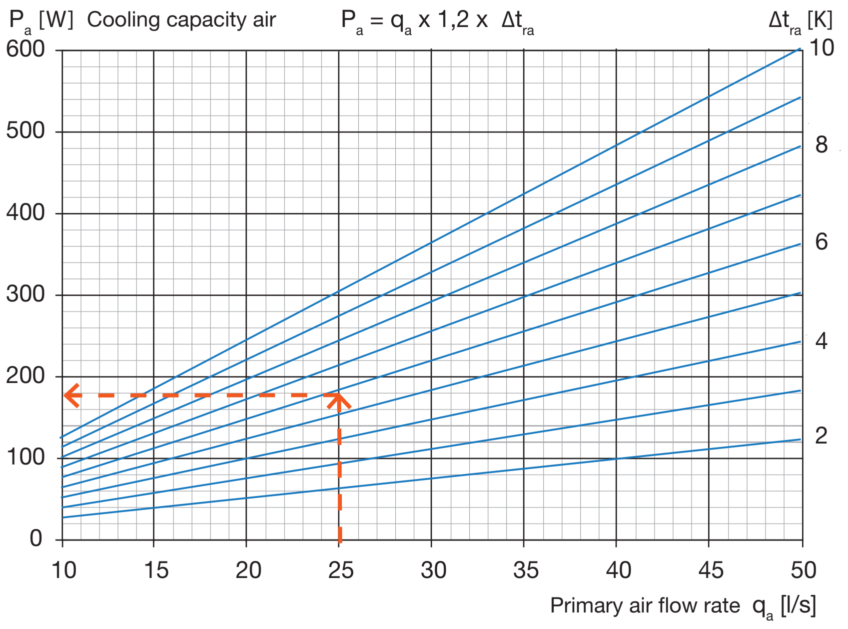


Diagram 1. Cooling capacity air P_a as function of the primary air flow rate q_a. If the air supply flow is 25 l/s and the temperature difference of the room air and the supply air is Δt_{ra} = 6 K, then the Cooling capacity of the air is 180 W.

Supply air beam Plafond

Dimensioning

Cooling capacity water P_w

Follow the instructions below to read off the effect from the diagram.

1. Calculate Δt_{rw}.
2. Product length L minus 0.5 m, to obtain the active length L_{act}.
3. Divide the primary air flow rate q_a by the active length L_{act}. Enter the result on the lower axis of diagram 2.
4. Follow the flow line to the right pressure, and then read off the specific cooling capacity P_{Lt} per active metre.
5. Multiply the specific cooling capacity that was read off by Δt_{rw} and active length L_{act}.

Example 1 Cooling:
What is the cooling capacity of a 2.4 m Plafond with 20 l/s and pressure of 100 Pa?

The room's summer temperature is assumed to be t_r = 24.5°C. The cooling water temperature in/out of the Plafond is 14/17°C.

Answer:
Temperature difference:
$\Delta t_{rw} = t_r - (t_{wi} + t_{wo})/2$
Δt_{rw} = 24.5°C - (14°C +17°C) / 2 = 9 K

Active length:
L_{act} = 2.4 m - 0.5 m = 1.9 m
q_a / L_{act} = 20 l/s / 1.9 m = 10.5 l/(s m)

Read off, from diagram 2: P_{Lt} = 34.75 W/(m K)

Cooling capacity: P_w = 34.75 W/(m K) × 9 K × 1.9 m = 594 W

NB! The capacity diagram applies for the nominal water flow of q_{wnom} = 0.038 l/s. To obtain the right cooling capacity P_w for other flows, read off the capacity correction factor ε_{qw} from diagram 3, and then multiply the capacity, which is read off, by this factor as shown in example 2 for heating.

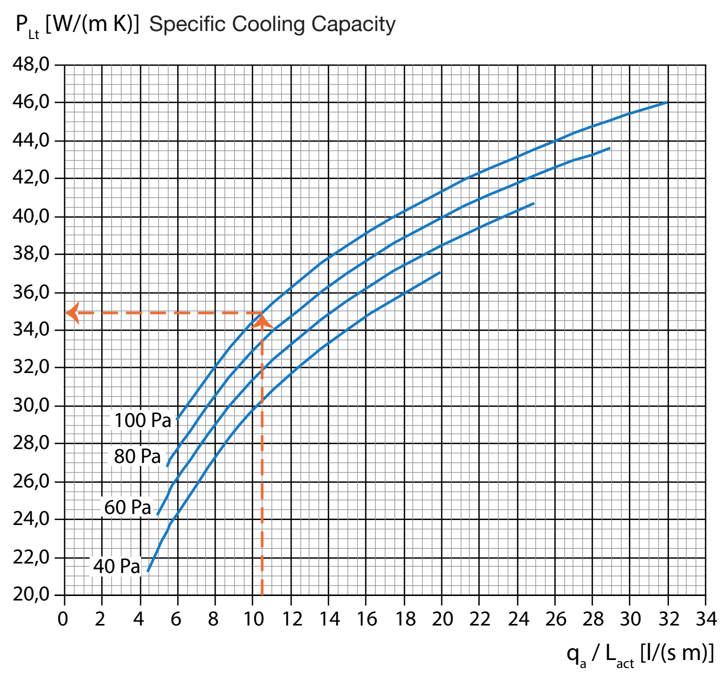


Diagram 2. Specific cooling capacity P_{Lt} as a function of primary air flow rate per active metre at nozzle pressures of 40, 60, 80 and 100 Pa.

Supply air beam

Plafond

Dimensioning

Capacity correction for water flow ε_{qw}

Example 2 Heating:
What is the heating capacity P_w of a 2.4 m Plafond with 20 l/s and pressure of 100 Pa?

The room winter temperature is assumed to be t_r = 21° C. The hot water temperature in/out of Plafond is 55/47° C.

Answer:
Temperature difference:
$\Delta t_{rw} = (t_{wi} + t_{wo})/2 - t_r$
Δt_{rw} = (55°C +47°C) / 2 - 21°C = 30 K

Active length:
L_{act} = 2.4 m - 0.5 m = 1.9 m
q_a / L_{act} = 20 l/s / 1.9 m = 10.5 l/(s m)

Read off, from diagram 2: P_{Lt} = 34.75 W/(m K)
Water capacity: P_w = 34.75 W/(m K) × 30 K × 1.9 m = 1981 W

Use the calculated water capacity and calculate the water flow: $q_w = P_w / (c_{pw} \times \Delta t_w)$
q_w = 1981 W / (4200 Ws/(kg K) × 8 K) = 0.060 l/s

The capacity correction ε_{qw} will then be 0.743 (see diagram 3) and the new capacity:
P_w = 1981 W x 0.743 = 1472 W

Using the new heating capacity, a new water flow is calculated: q_w = 1472 W / (4200 Ws/(kg K) × 8 K) = 0.044 l/s

Read off the capacity correction ε_{qw} at 0.74 and calculate the capacity: P_w = 1981W x 0.74 = 1466 W

Using the new heating capacity, a new water flow is calculated: q_w = 1466 W / (4200 Ws/(kg K) × 8 K) = 0.044 l/s

Seeing that the flow is near stabile at this point in the calculation, the heating capacity is calculated to be 1466 W.

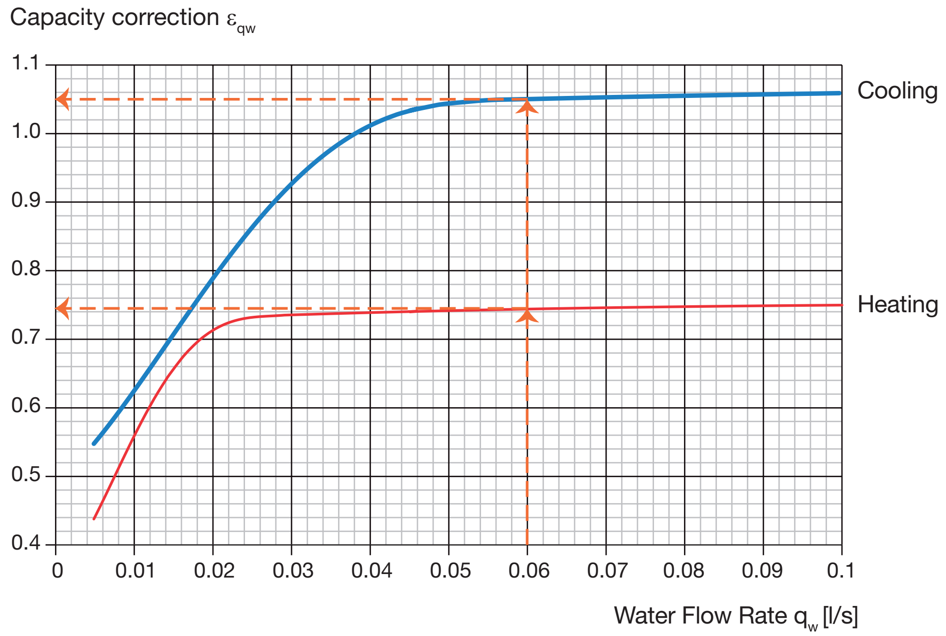
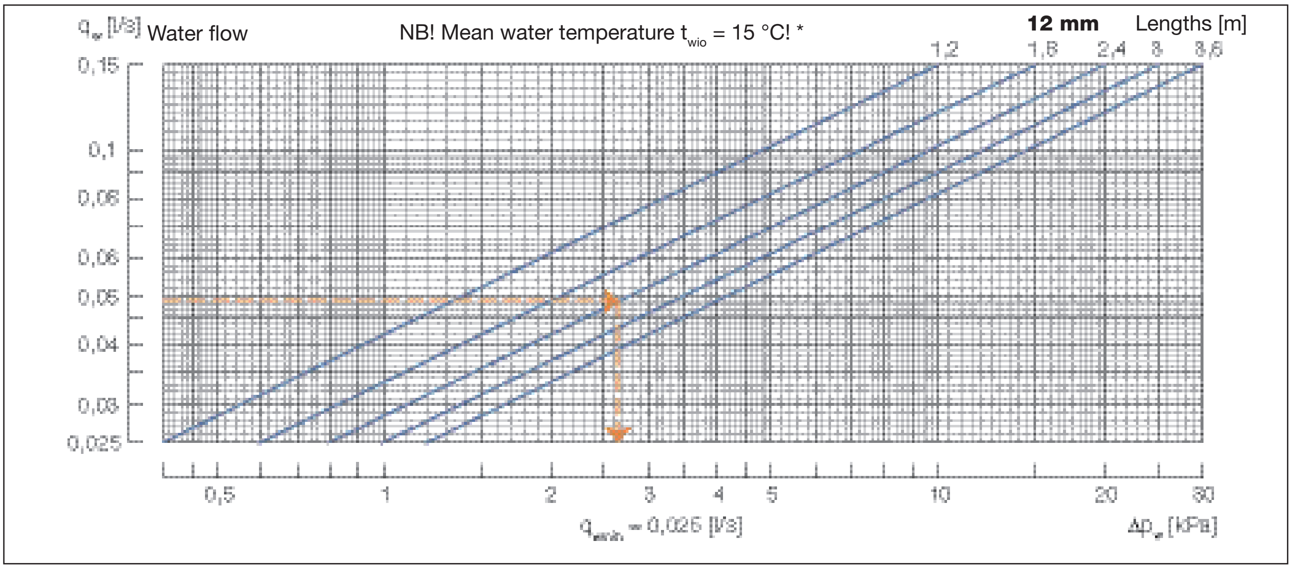
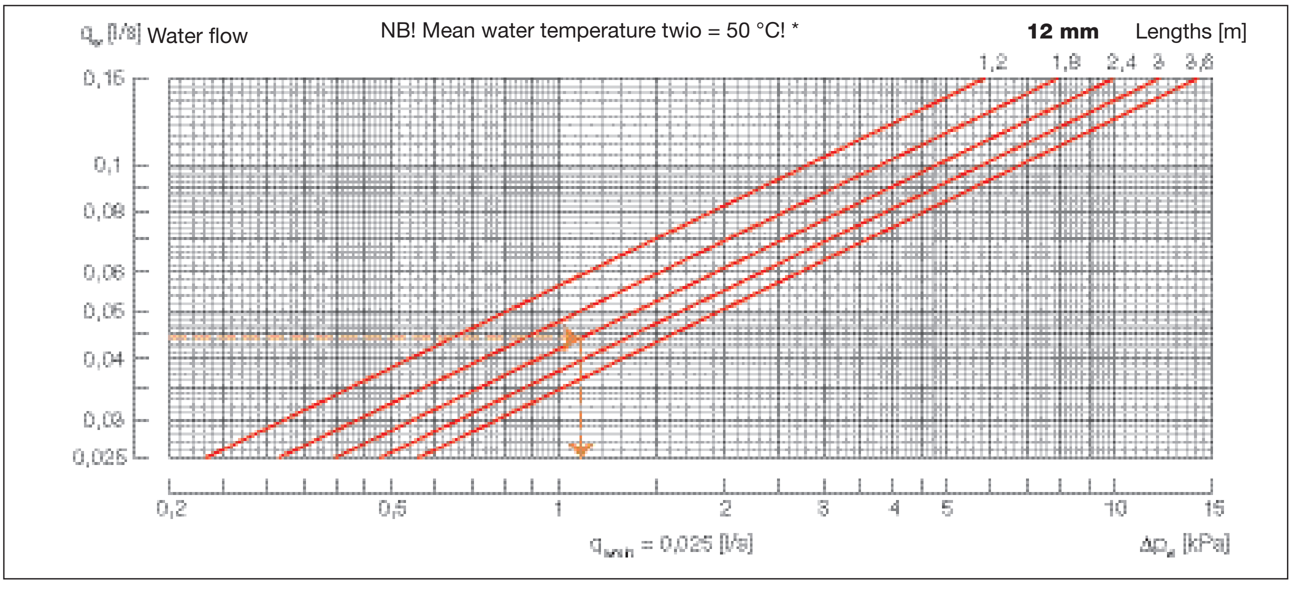


Diagram 3. Capacity correction ε_{qw} for water flow for both cooling and heating.

Supply air beam Plafond

Pressure drop in water circuit, cooling/heating





Example 3 Cooling:
Plafond 2.4 m, which provides an output of 619 W.
$\Delta t_w = 3$ K
$q_w = P_w / (c_{pw} \times \Delta t_w)$
q_w = 619 W / (4200 Ws/(kg K) × 3 K) = 0.049 l/s
The pressure drop in the water circuit in diagram 4 is read off as Δp_w = 2.65 kPa.

Example 4 Heating:
Plafond 2.4 m, which provides an output of 1466 W.
$\Delta t_w = 8$ K
$q_w = P_w / (c_{pw} \times \Delta t_w)$
q_w = 1466 W / (4200 Ws/(kg K) × 8 K) = 0.044 l/s
The pressure drop in the water circuit in diagram 5 is read off as Δp_w = 1.10 kPa.

Definitions:
- q_w = Water flow rate [l/s]
- P_w = Cooling capacity water [W]
- c_{pw} = Specific heat capacity water [4200 Ws/(kg K)]
- Δt_w = Temperature difference water circuit [K]
- t_{wio} = Mean water temperature [°C]

* Diagrams are for a certain mean water temperature twio. For other temperatures please do your calculations in our waterborne calculator in www.lindqst.com!

Supply air beam Plafond

Dimensioning

For dimensioning of chilled beams please refer to our waterborne calculator on www.lindQST.com.

Pressure drop in air connection

Table 1, below shows the pressure drop in the connection. After calculating the required pressure for the supply air beam, add it to the selected static pressure in the nozzles.

Example 5:
Plafond-C-12-100-B2L-3.0 with 20 l/s and static nozzle pressure of 60 Pa. This provides a necessary total pressure in the duct of 60 Pa + 8 Pa = 68 Pa.

Plafond							
Air flow [l/s]	10	15	20	25	30	35	40
Pressure drop [Pa]	3	5	8	12	17	22	28

Table 1. Air pressure drop in connection in Plafond.

Weight and water volume

Type	**Plafond**
Weight, kg/m	11.5
Water content, cooling l/m	0.65
Water content, heating l/m	0.33
Copper pipes, quality	SS/EN 12449
Pressure class	PN10

Table 2. Plafond, weight and water volume.

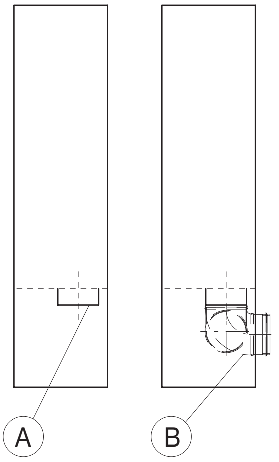
Supply air beam Plafond

Couplings & connections

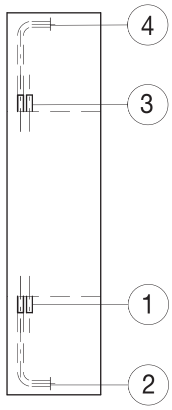
Plafond is supplied in lengths from 1.2 m to 3.6 m in steps of 0.1 m. The connection dimension is 12 mm o.d. for the water and 100 mm for the air.

Plafond is available with a large number of coupling options. This is how to find the designation for the coupling option you require for Plafond:

Step 1
Indicate the position for the ventilation connection.



Step 2
Indicate the position for the pipe connection.



Step 3
Indicate the direction for the air injection: L or R.

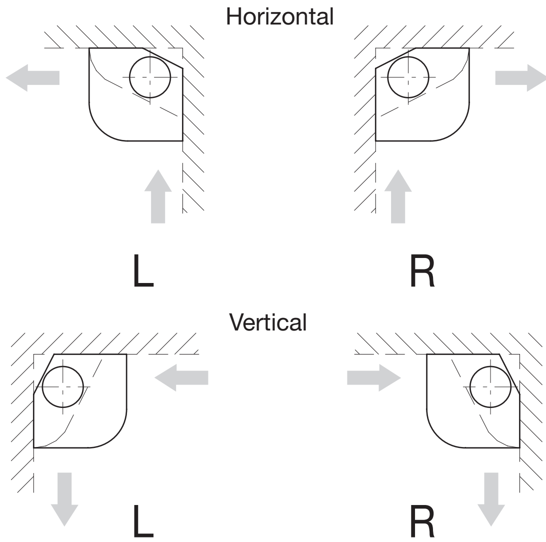


Figure 1 Connections 2 and 4 are vertical and are provided with elbow couplings.

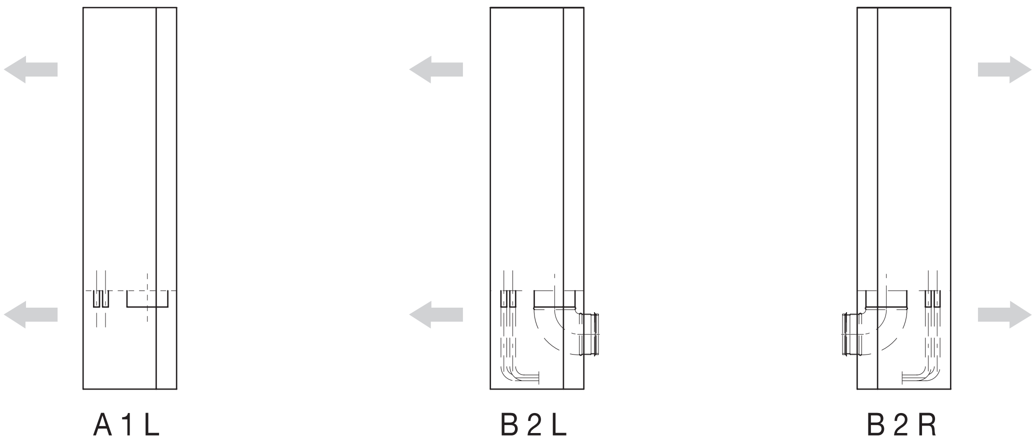
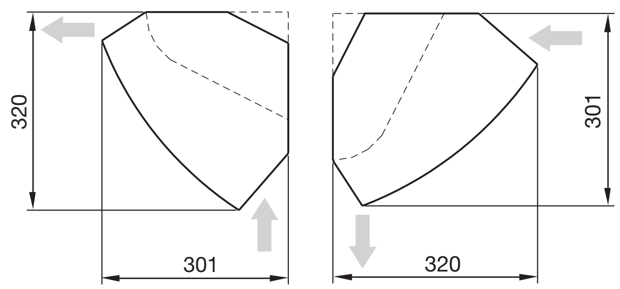


Figure 2. Examples of standard coupling options, horizontal air injection. Type A1L, therefore, has the air connection on the end piece, pipe on the same end piece and the direction of air injection L.

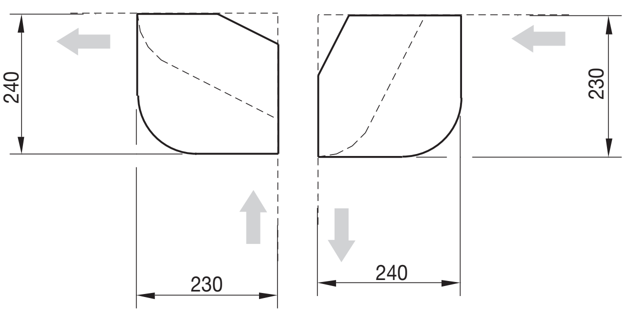
Supply air beam Plafond

Width & height, mm

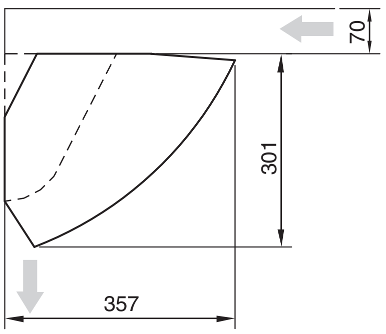
Plafond B



Plafond C



Plafond D



Length, m

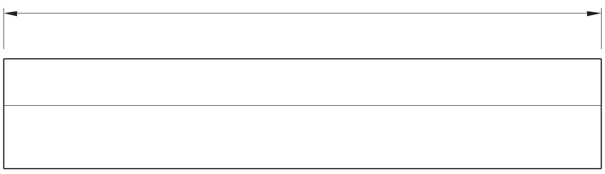
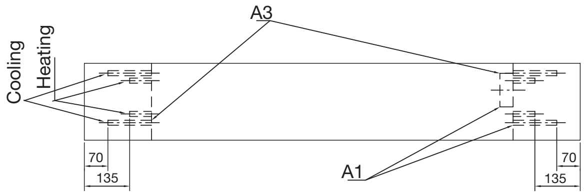


Figure 3. Plafond B, C and D, width, height and length.

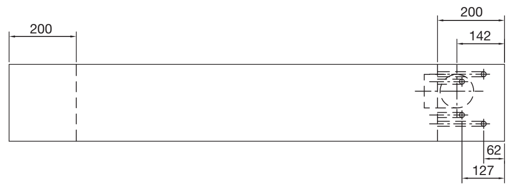
Supply air beam Plafond

Dimensions, mm

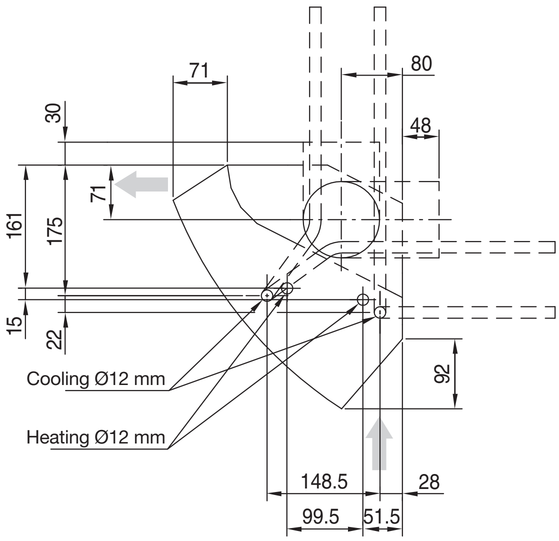
Connection A1, A3



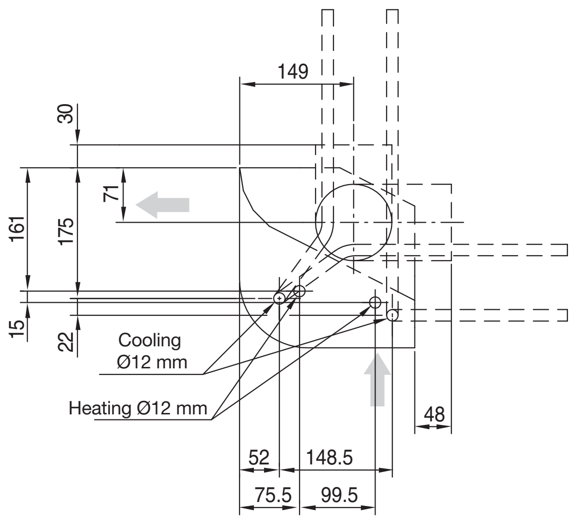
Connection B2



Plafond B



Plafond C



Plafond D

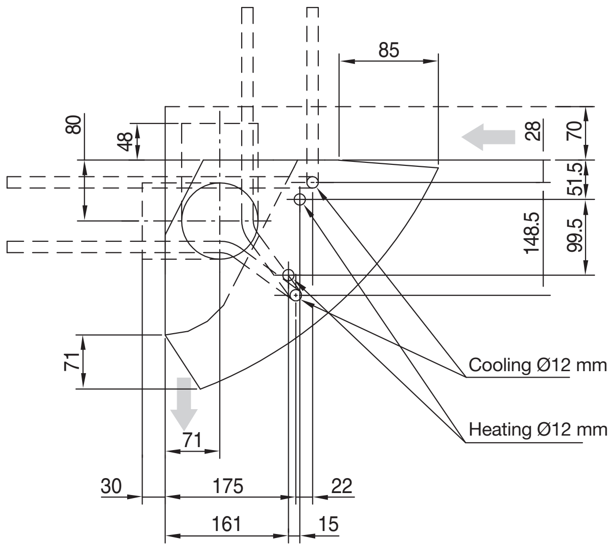
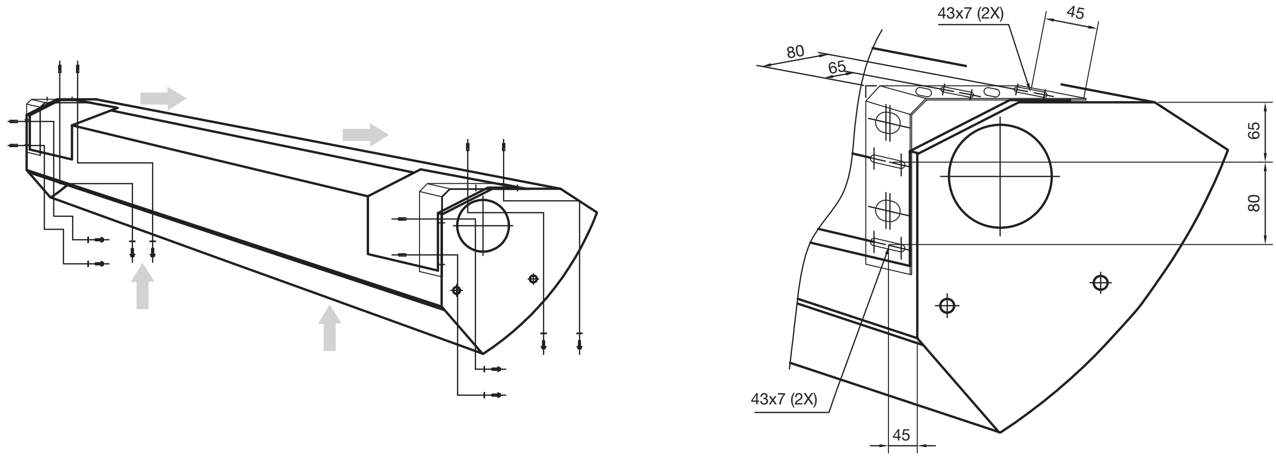


Figure 4. Plafond B, C and D, dimensions.

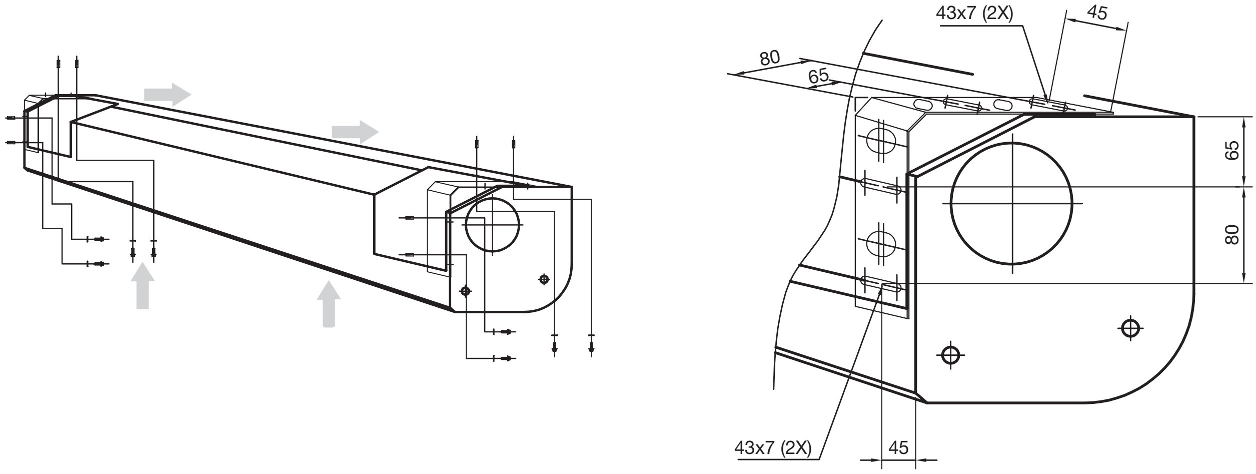
Supply air beam   Plafond

Suspension, mm

Plafond B



Plafond C



Plafond D

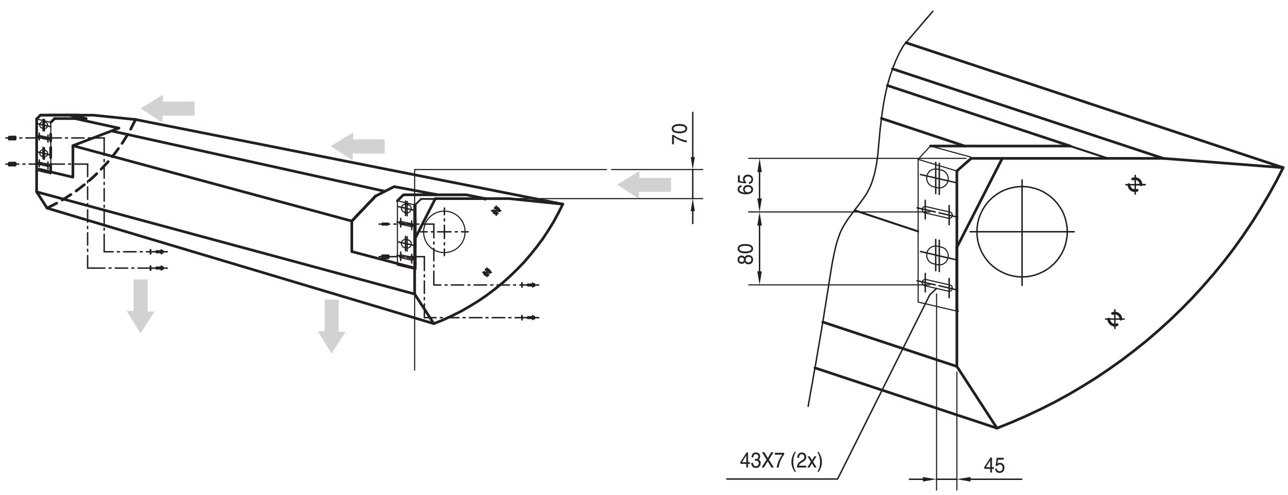


Figure 5. Plafond B, C and D.

Supply air beam Plafond

Installation examples

Plafond is always installed visibly and fixed to the ceiling or wall.

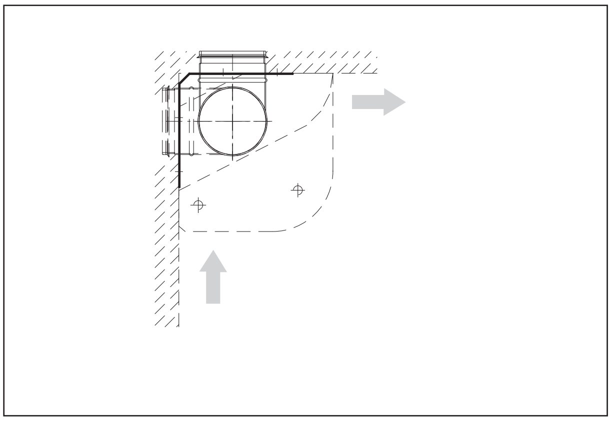


Figure 6. Plafond with air distribution along the ceiling.

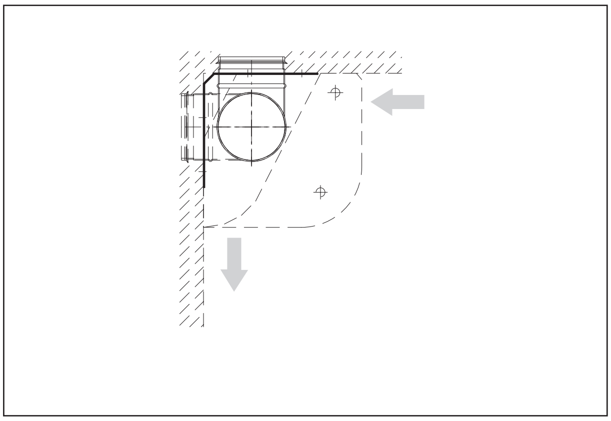


Figure 7. Plafond with air distribution along the wall.

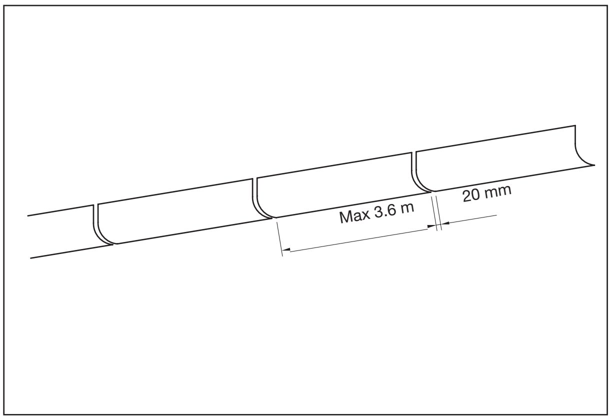


Figure 8. Several Plafond beams installed side by side.

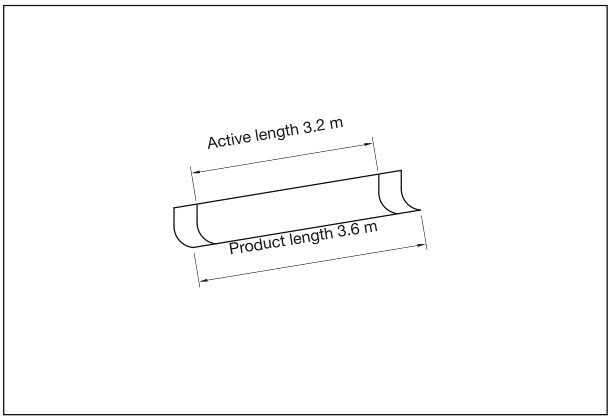
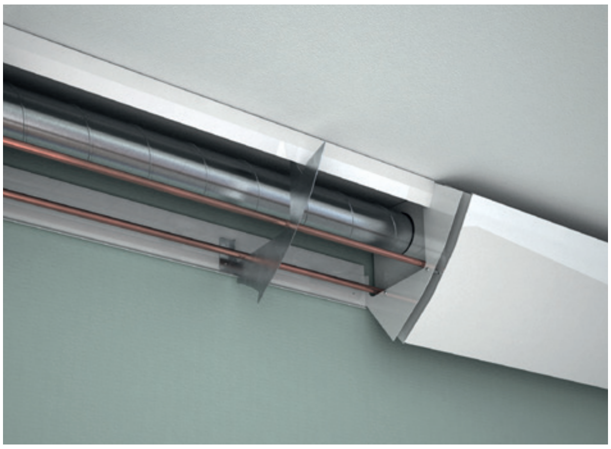


Figure 9. Maximum product length.

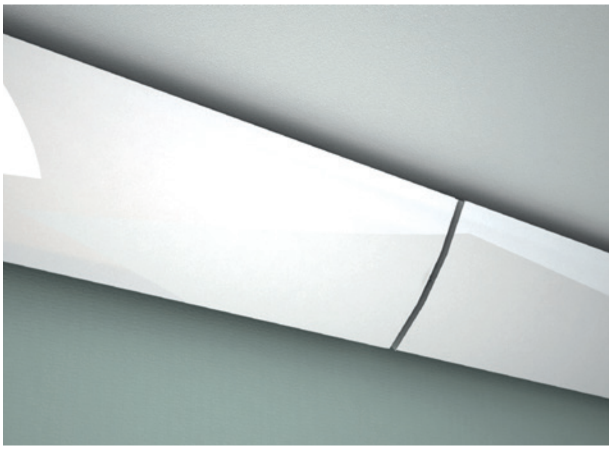
Supply air beam Plafond

Installation of side covers

When installing Plafond with side covers, it can be difficult to place the beam and the side cover in a straight line, if the walls and ceiling are uneven. Therefore, a gap (20 mm) is recommended between the beam and the side cover to indicate the different parts.



Picture 7. Complete installation of Plafond B without side cover.



Picture 8. Complete installation of Plafond B with side cover.

Picture 9. Complete installation of Plafond C without side cover.

Picture 10. Complete installation of Plafond C with side cover.

Supply air beam Plafond

Distribution diagrams & throw lengths

Plafond and other induction beams utilise the pressure of the supply air to cause the room air to circulate through the cooling battery. This enables a high cooling capacity, but also creates significant air movements, which often result in long throw lengths. This is why Plafond is supplied as standard with an air distribution that is angled outwards. It significantly reduces both throw lengths and air velocities compared to the conventional linear nozzle technology.

Depending on the room conditions, Plafond is also available with a long or a short distribution profile. Below is an example of how the nozzle angle affects the throw length and air velocity.

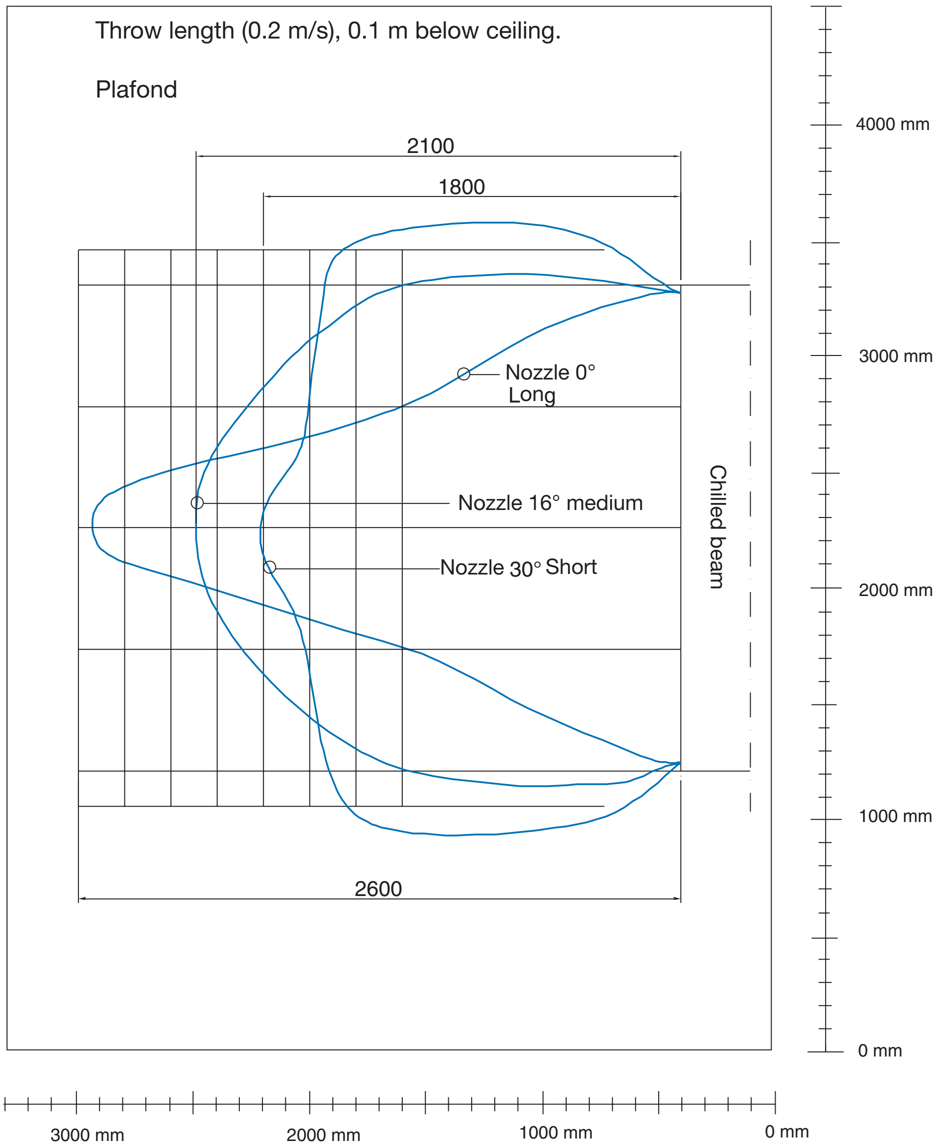


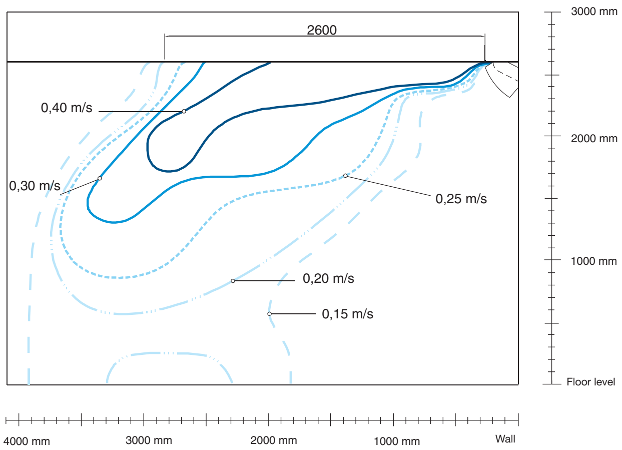
Figure 9. Plafond distribution profile, short 30°, medium 16° and long 0°.

Supply air beam

Plafond

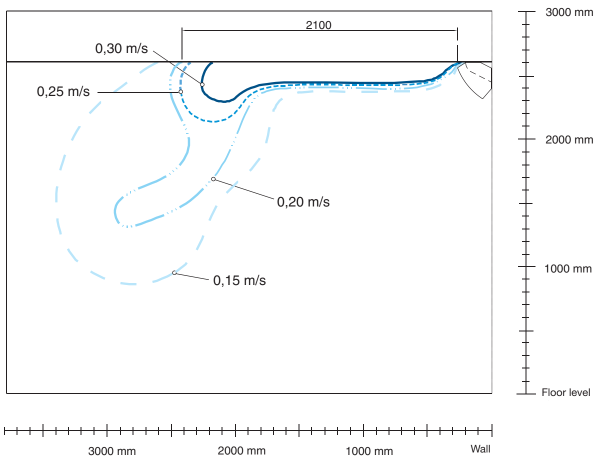
Long distribution profile

Height to the beam's lower edge: 2600 mm.
Airflow: 11 l/s per active metre.
Air duct pressure: 60 Pa.
ΔT room – mean water temperature: 8° C.
ΔT room – supply air temperature: 5° C.
Air velocities with long distribution profile 0°.



Medium distribution profile

Height to the beam's lower edge: 2600 mm.
Airflow: 11 l/s per active metre.
Air duct pressure: 60 Pa.
ΔT room – mean water temperature: 8° C.
ΔT room – supply air temperature: 5° C.
Air velocities with medium distribution profile 16°.



Short distribution profile

Height to the beam's lower edge: 2600 mm.
Airflow: 11 l/s per active metre.
Air duct pressure: 60 Pa.
ΔT room – mean water temperature: 8° C.
ΔT room – supply air temperature: 5° C.
Air velocities with short distribution profile 30°.

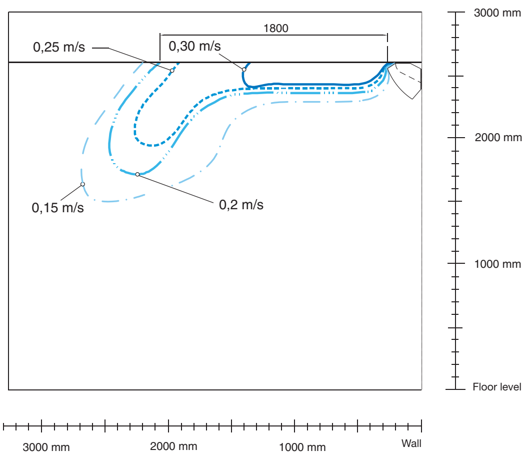


Figure 10. Plafond distribution profiles, short (30°), medium (16°) and long (0°) at an air flow of 11 l/s per active metre and air duct pressure of 60 Pa.

For information concerning air velocities and throw lengths at other airflows, please contact Lindab.

Supply air beam

Plafond

Distribution diagrams

The measurements were conducted with cooled supply air (Δt room air – supply air) of 5° C and cooling in the water circuit (Δt – room air – mean water temperature) of 8° C. All heat supplied through the walls.

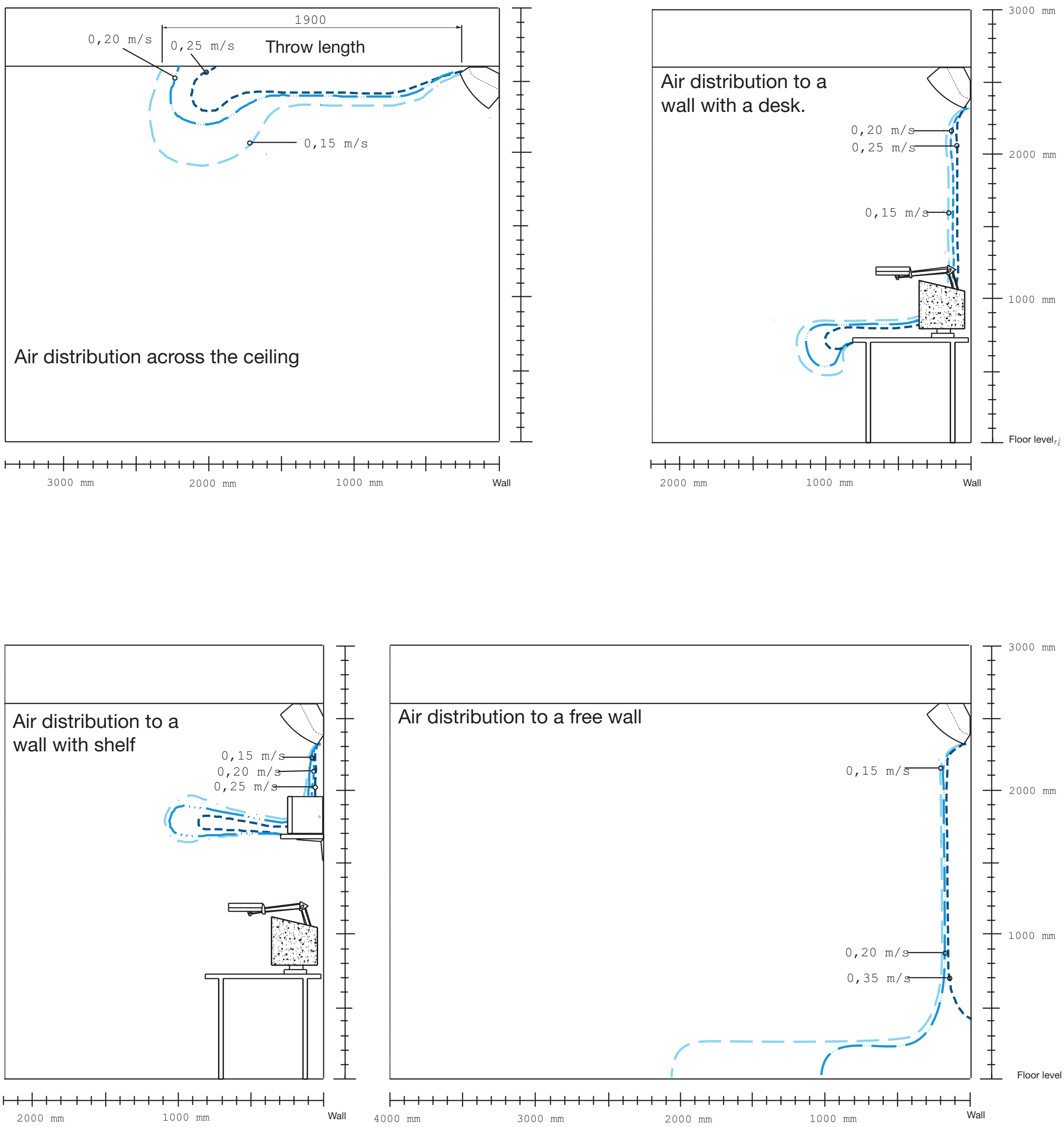


Figure 11. Air velocities below a supply air beam with airflow of 8 l/s per active metre and a short distribution profile 30°.

2017-06-08

Supply air beam

Plafond

Distribution diagrams

The measurements were conducted with cooled supply air (Δt room air – supply air) of 5° C and cooling in the water circuit (Δt – room air – mean water temperature) of 8° C. All heat supplied through the walls.

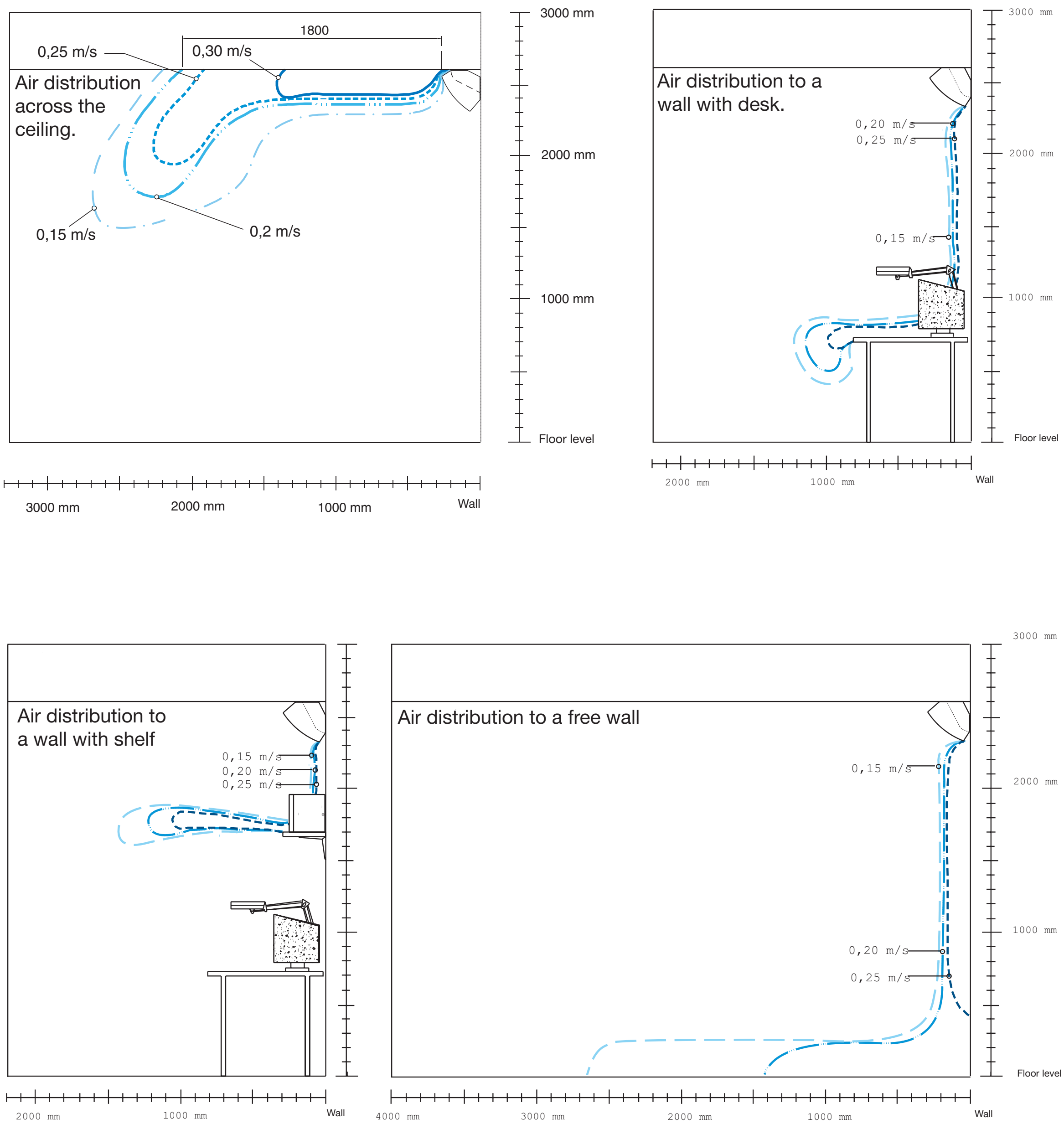


Figure 12. Air velocities below a supply air beam with an airflow of 11 l/s per active metre and short distribution profile 30°.

Supply air beam

Plafond

Distribution diagrams

The measurements were conducted with cooled supply air (Δt room air – supply air) of 5° C and cooling in the water circuit (Δt – room air – mean water temperature) of 8° C. All heat supplied through the walls.

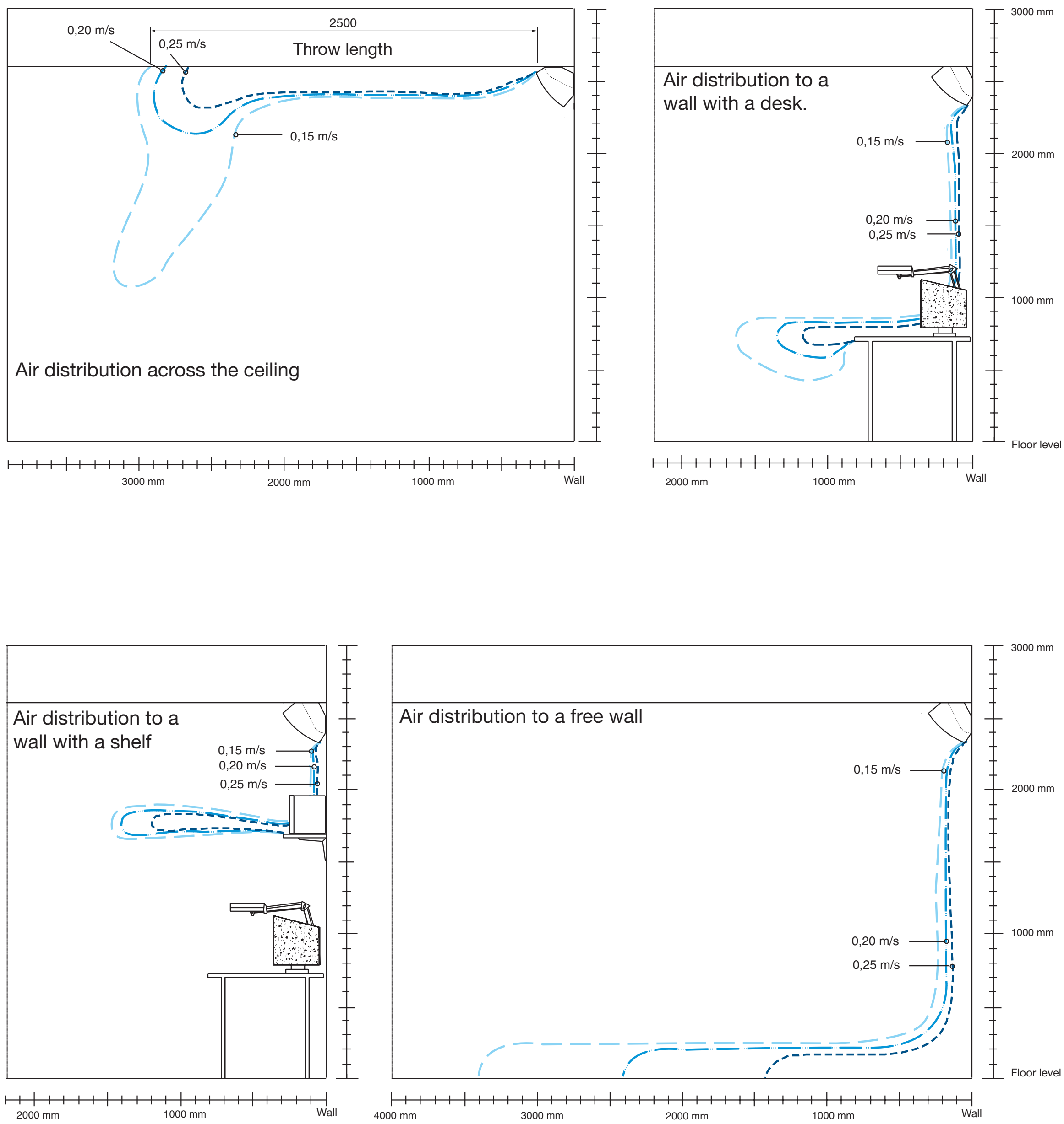


Figure 13. Air velocities below a supply air beam with airflow of 14 l/s per active metre and a short distribution profile 30°.

Supply air beam

Plafond

Distribution diagrams

The measurements were conducted with cooled supply air (Δt room air – supply air) of 5° C and cooling in the water circuit (Δt – room air – mean water temperature) of 8° C. All heat supplied through the walls.

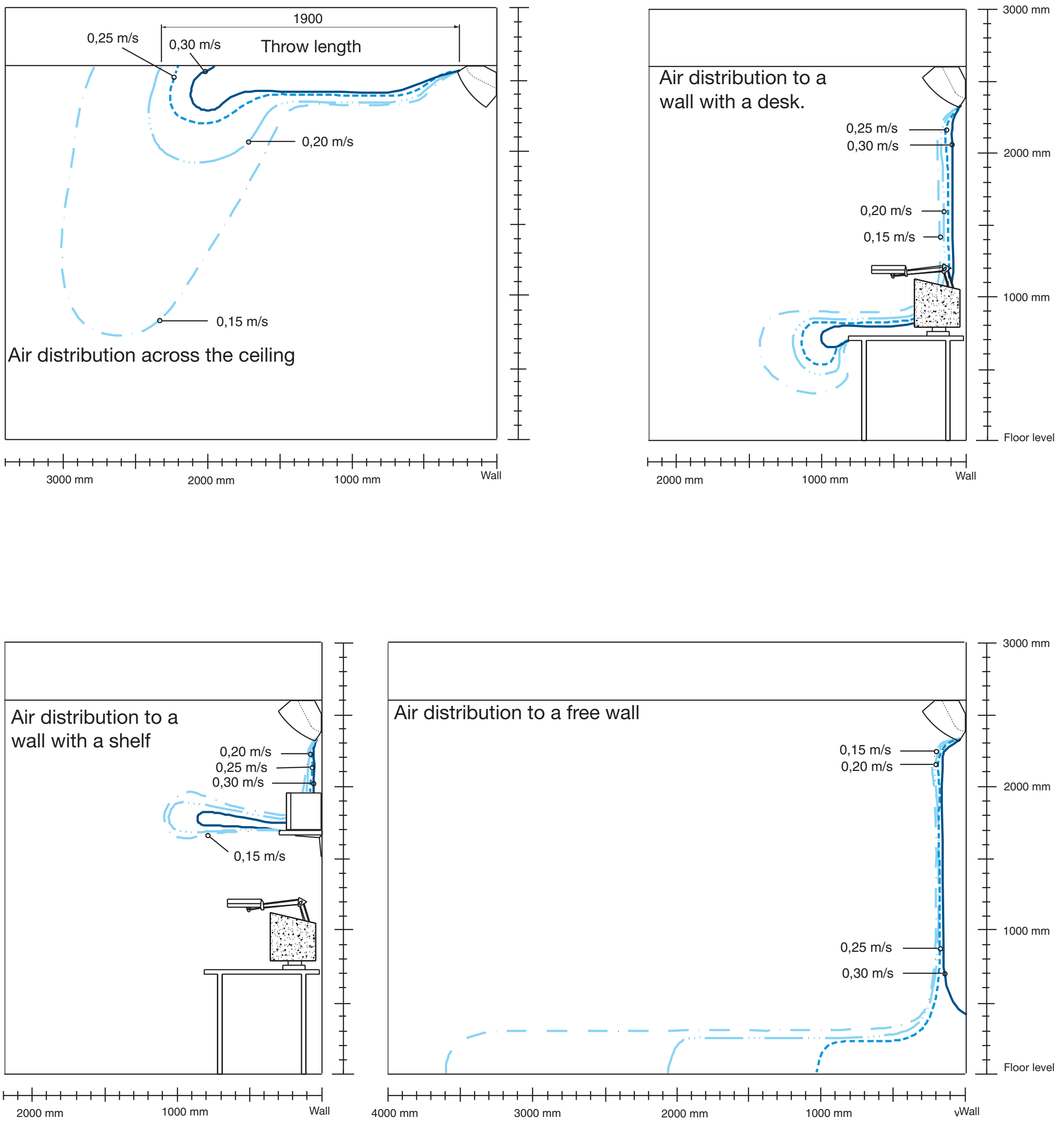


Figure 14. Air velocities below a supply air beam with airflow of 8 l/s per active metre and a medium distribution profile 16°.

Supply air beam

Plafond

Distribution diagrams

The measurements were conducted with cooled supply air (Δt room air – supply air) of 5° C and cooling in the water circuit (Δt – room air – mean water temperature) of 8° C. All heat supplied through the walls.

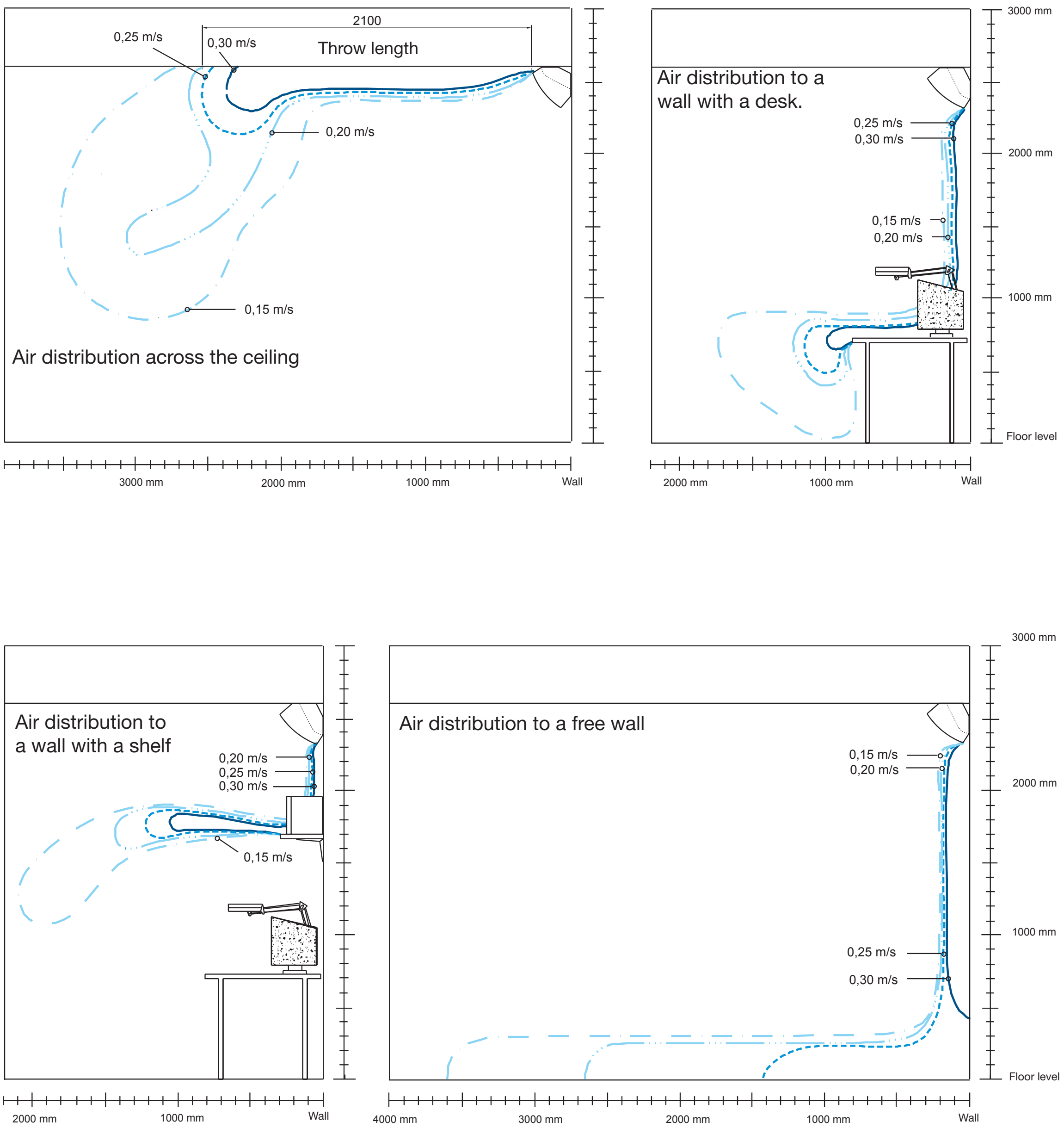


Figure 15. Air velocities below a supply air beam with airflow of 11 l/s per active metre and a medium distribution profile 16°.

Supply air beam

Plafond

Distribution diagrams

The measurements were conducted with cooled supply air (Δt room air – supply air) of 5° C and cooling in the water circuit (Δt – room air – mean water temperature) of 8° C. All heat supplied through the walls.

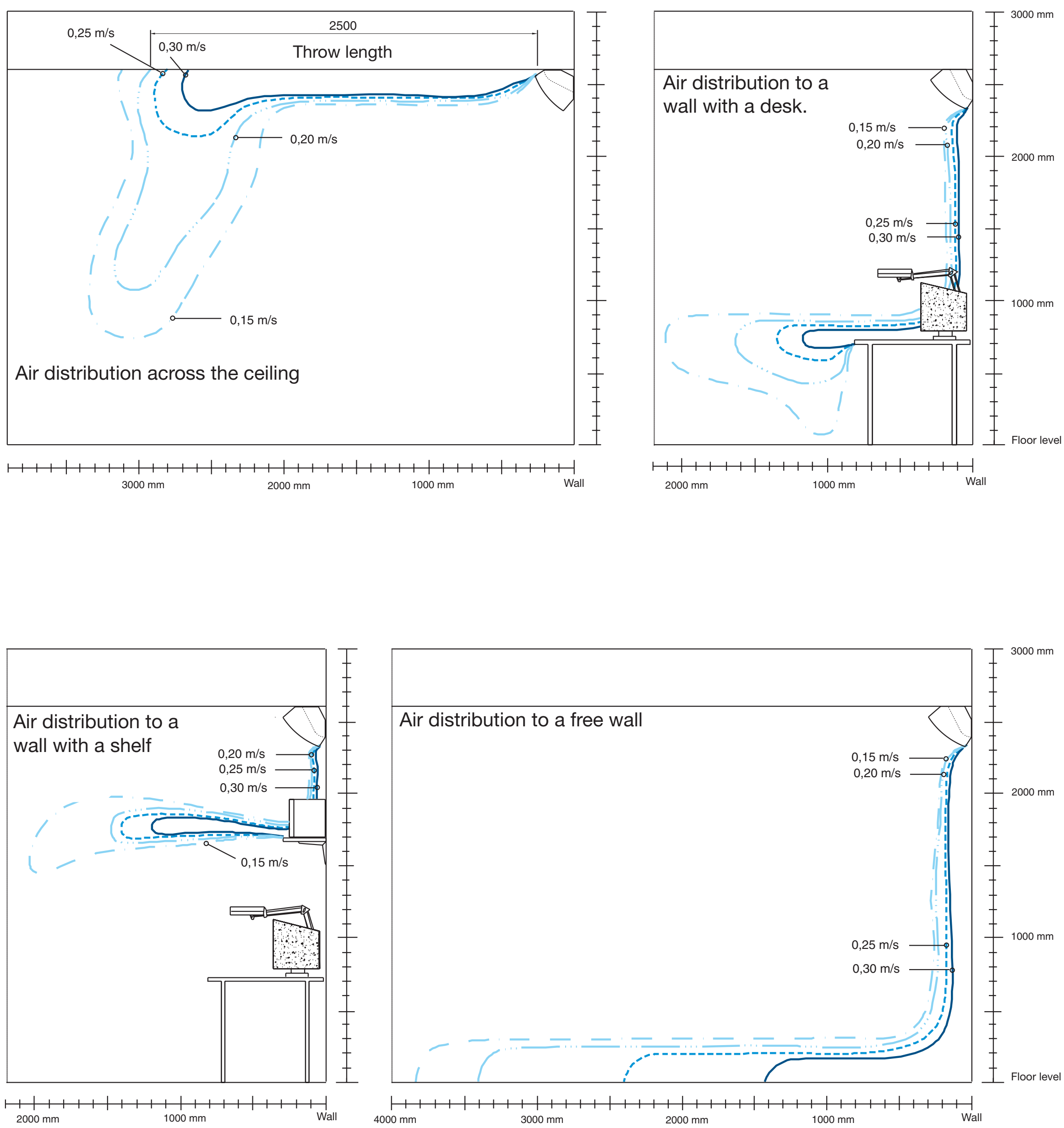


Figure 16. Air velocities below a supply air beam with airflow of 14 l/s per active metre and a medium distribution profile 16°.

Supply air beam

Plafond

Control

Lindab offers control equipment that is very simple to use. To avoid heating and cooling being activated at the same time, the systems are controlled sequentially (Regula Combi). For the technical data, refer to the chapter Regula.

Designations

Product/Version:	Plafond
Type:	B, C, D
Connection diam. water, [mm]:	12
Connection diam. air, [mm]:	100
Coupling options:	Air: A, B
	Water: 1, 2, 3
	Direction of air injection: L/R
Length, [m]:	Length in metres
Air quantity, [l/s]:	Must always be specified)
Nozzle pressure, [Pa]:	Must always be specified)
Distribution profile:	Short (30°)
	Medium (16°)
	Long (0°)
Plus features:	See page 6

Programme text

Supply air beams from Lindab	**Qty**
Product:	
Plafond-B-12-100-A1R-1.8 m	40
Air quantity:	20 l/s
Nozzle pressure:	60 Pa
Distribution profile:	Medium (16°)
Plus features:	
Regula Secura	
Control valve, cooling	
Actuator, cooling	
Accessories:	
Regula Combi:	40
Product:	
Plafond-C-12-100-B2L-3.0	20
Air quantity:	30 l/s
Nozzle pressure:	60 Pa
Distribution profile:	Short (30°)
Plus features:	
Heating	
Regula Secura	
Control valve, cooling	
Actuator, cooling	
Control valve, heating	
Actuator, heating	
Accessories:	
Regula Combi:	20
Side cover 1200 mm:	2

Order code

Product **Plafond** **C** **12** **100** **B2L** **3.0** **60** **30**

Type:
B, C, D

Water connection:
12 mm

Air connection:
100, 2x100 (opposite end)

Connection type:
A1L, A1R, A2L, A2R, A3L, A3R, A4L, A4R,
B1L, B1R, B2L, B2R, B3L, B3R, B4L, B4R

Product length:
1.2 m - 3.6 m (In steps of 0.1 m)

Static nozzle pressure (Pa):

Air volume (l/s):