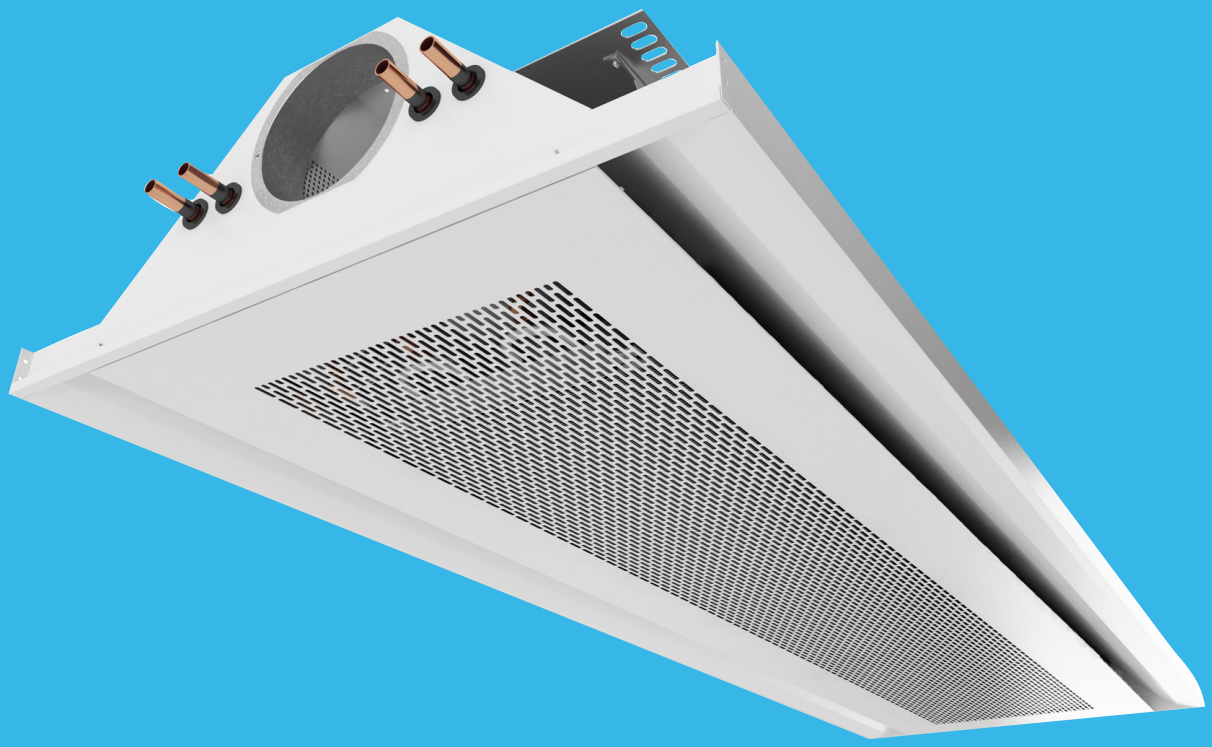


Lindab **Premum**

Active chilled beam

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Active chilled beam Premum



Use

Lindab's active chilled beam Premum can be used for cooling, heating and ventilation. Water valves, actuators, Regula Secura, Regula Combi and Regula Connect can all be built into the Premum beam.

Installation

Premum I-60 is installed into a false ceiling, and can be suspended by hangers or threaded rods.

As standard Premum is delivered for a 600 x 600 T24 false ceiling. Premum can also be delivered with a variety of different Clip-in options, making the beam suitable for other types of false ceilings.

Worth noting

Premum features the Lindab JetCone, an innovative way of regulating the air volume. The air volume can easily be adjusted without having to worry about pressure and noise issues.

The Angled Nozzles system secures a perfect air spread pattern, available in a number of factory preset angles.

As a plus feature the Lindab AirGuide system offers readjustable air spread pattern control.

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:	600 mm (ceiling adaption available)
Height:	200 mm
Capacity:	1580 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.

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Active chilled beam

Premum

Optimal functions

Premum is based on the induction principle. Ventilation air is released through the nozzles into a dispersal zone, thereby creating a low static pressure. The low pressure causes the warm air from the room to be induced into the ventilation air through the battery. The volume of the recirculated indoor air is two to seven times the ventilation air. The air is cooled as it passes through the battery, which consists of aluminium fins with copper pipes filled with cold, running water. The heat from the room is absorbed through the aluminium fins and then transferred through the copper pipe to the water circuit and goes further to a central cooling unit.

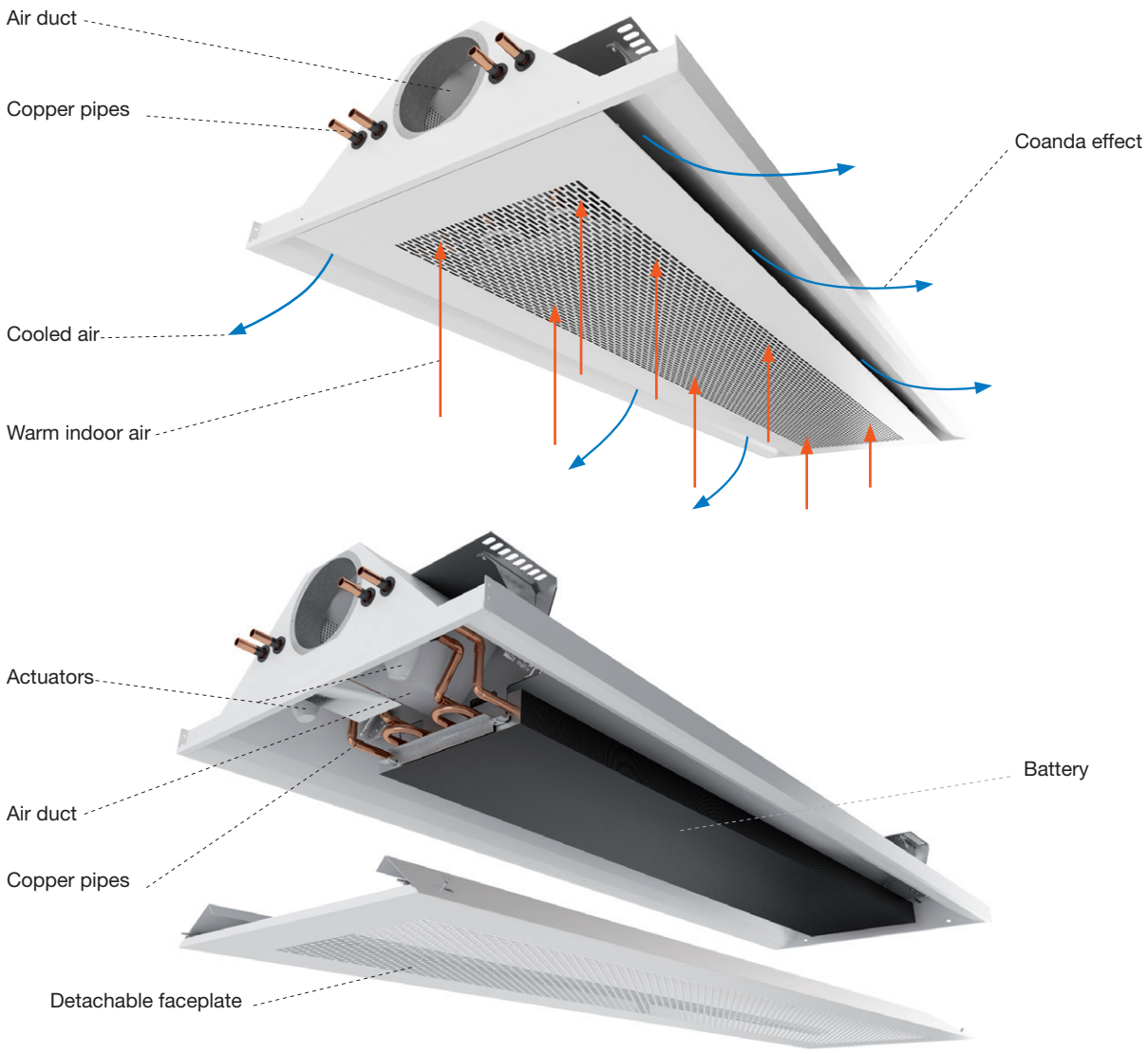
Premum can also be delivered with an exhaust air valve, on request.

JetCone and Angled Nozzles

The opening size of the nozzles can be adjusted, by operating the adjustment pins in each corner of the beam. The air distribution can also be adjusted, to achieve different amounts of air on either side of the beam, or to achieve an asymmetrical air pattern along the side of the beam. All thanks to our patent pending JetCone system.

The Lindab Angled Nozzles system successfully combines the Jetcone air volume adjustment with a preset air spread pattern. The combination of the Jetcone and the Angled Nozzles systems results in reduced throw lengths and optimized air volume regulation.

The design is made to secure the coanda effect and a fan-shaped air pattern. The adherence of the air to the beam already occurs at the JetCone opening. Then, due to the coanda effect, the air follows the side of the beam towards the ceiling.



Picture 1. Premum is based on the induction principle.

Active chilled beam Premum

Hygiene

Everything is accessible for service

The Premum faceplate is simple to lower or remove. The faceplate is kept in place by four cotter pins. If two of the cotter pins, on one of the long sides of the faceplate are removed, the faceplate will open and hang from the other two pins. For complete removal, please see the installation instruction. When the faceplate is lowered or removed, the battery is accessible from below (see picture 2).

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.

Construction

Premum is flexible

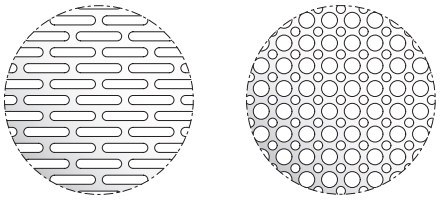
Premum is developed and designed to achieve a high degree of flexibility. The standard Premum with Angled Nozzles and JetCone allows the adjustment of air diffusion, air volume and air pressure.

The beam equipped with the plus feature Airguide, makes it possible to easily change the air spread pattern.

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

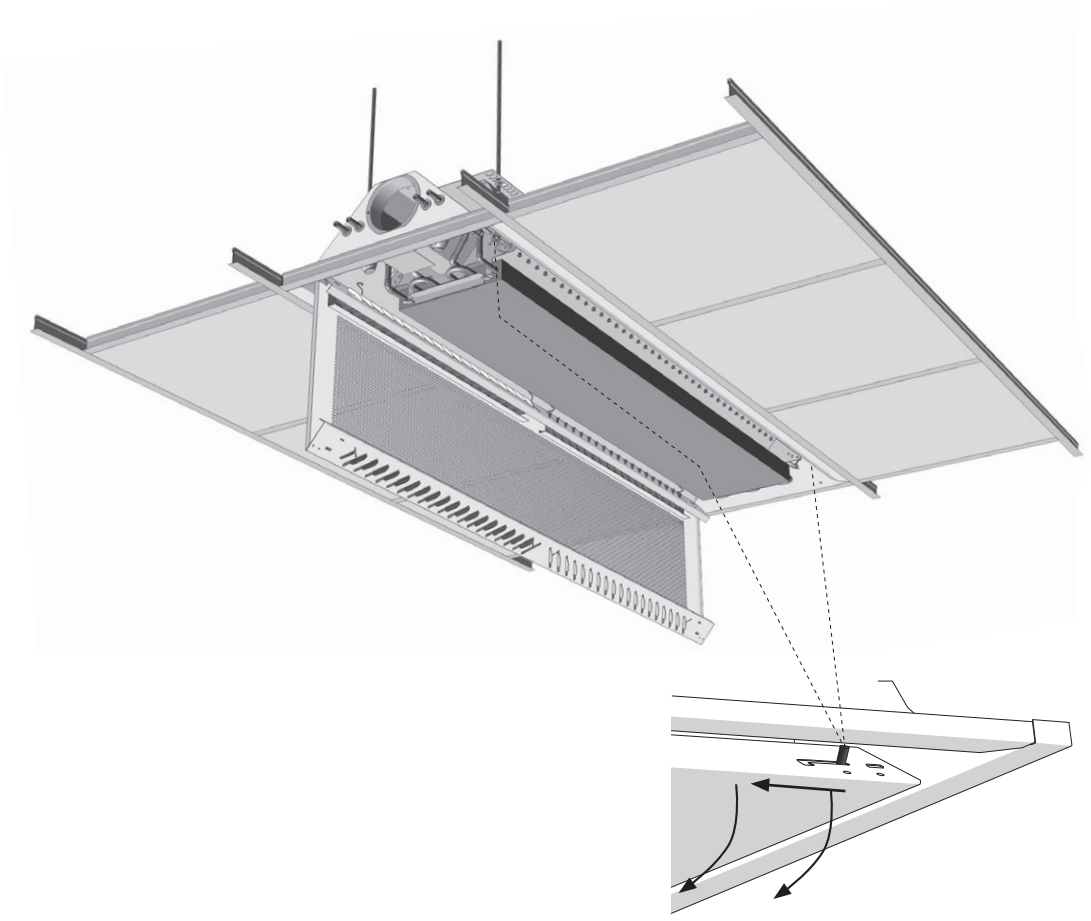
Perforation pattern

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



Slot 50% *Dotx2 50%*

Picture 2: Available preforation.



Picture 3. When the faceplate is lowered or removed, the battery are accessible from below. AirGuide system is shown in picture (plus feature).

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Active chilled beam Premum

Initial settings

Adjustment JetCone

Premum is delivered as standard with Lindab's JetCone air volume adjustment system. The JetCone System makes Premum a very flexible product with possibility of adjusting air diffusion, air volume and air pressure. Adjustment is made by setting the four adjustment pins into different positions. The adjustment pins can be set in any of the 10 steps, thereby offering a total of 40 different settings. The adjustment is done without any tools, which makes it very fast and easy to adjust the air pattern, air volume and air pressure. The fast adjustment system gives an opportunity within planning, since the product choice can be made in an early stage and the products can be drawn into the planning of the project even though the planner do not have all the data normally required to select a suitable beam.

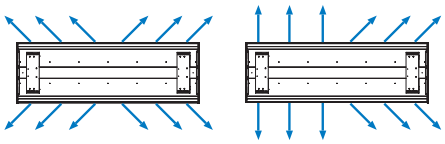
Presetting Angled Nozzles

To achieve a desired air spread pattern the Premum beam is delivered with the Angled Nozzles air distribution system. The Angled Nozzles are a simple yet effective way of creating a divergent air spread pattern without the capacity issues normally related to an air deflector system. The Angled Nozzles can be delivered preset in one of the following standard settings:

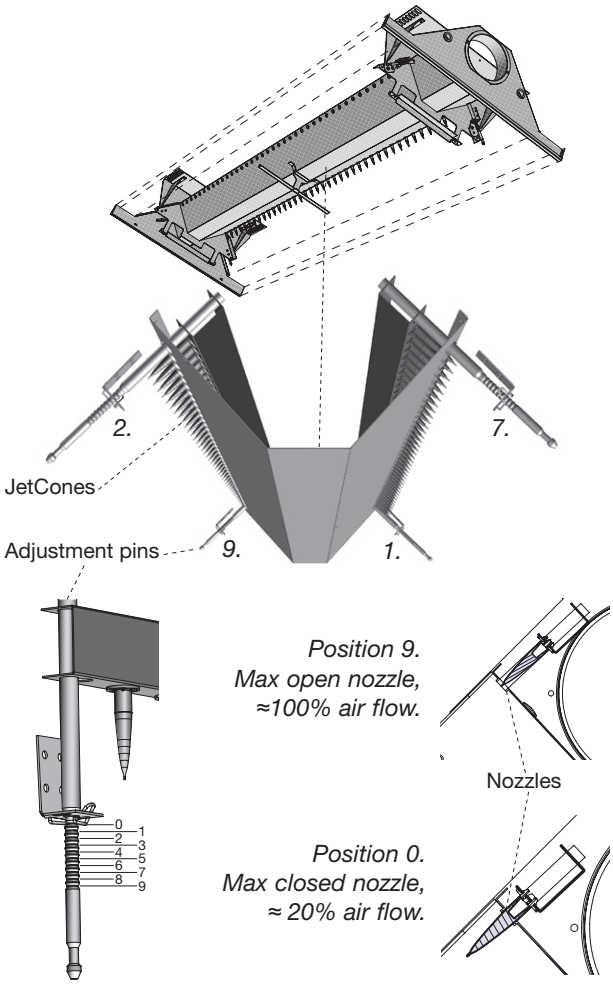
30° (default setting)
16°
0°

In order to meet special demands, the Angled Nozzles can be delivered in other configurations than the ones mentioned above (picture 3). For more information, please contact Lindab.

NB! Please note that the Angled Nozzles are manufactured in a fixed position (default 30°) and cannot be retrofitted or changed.



Picture 4. Different settings for AirGuide (plus feature).



Picture 5. Lindab's JetCone air volume adjustment system.

Example: A number of Premum beams are installed in an open-plan office. A separate office is to be fitted into the room. If the climate is to be optimal, the air volume and air distribution needs to be adjusted on the Premum beam that will be built into the new room (see picture 5). If the air has to be directed in a specific direction, it is also possible to adjust an asymmetrical distribution pattern (see picture 4). For more information please go to www.lindQST.com.



Picture 6. A separate office is to be fitted into the room. If the climate is to be optimal, the air quantity and air volume need to be adjusted for the Premum beam that will be built into the new room.

Active chilled beam Premum

Data

Variants

The Premum beam is a 2-way actice chilled beam and is standardly prepared for ventilation and cooling (2-Pipe connection).

Lengths: Premum is available in lengths from:
I-60 and X-60: 1.2 m to 3.6 m (in steps of 0.1 m).
I-62: 1.2 m to 3.6 m (in steps of 0.6 m).

Width: The beam is available in I-60 (592 mm), X-60 (599 mm) and I-62 (617 mm), according to different ceiling adaptions, see page 16.

Height: The heigth is 200 mm.

Water connection: The water connections for cooling are 12 mm.

Air connection: The air connection is horizontal or vertical, Ø125 mm.

JetCone: The JetCone is standard feature. The factory settings will be done according to desired pressure (Pa) and primary air flow (l/s) and can be changed easily on site.

Angled Nozzles: The Angled Nozzles are manufactured in a fixed position and cannot be retrofitted or changed (default is 30°). Other settings on request.

Design: Perforated with longitudinal slots (Slot 50%, see page 3 and 4).

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

Crosstalk protection: Crosstalk protection is build-in as standard.

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.

Pascal Water Solution

The beam can be easily integrated/used in a Pascal water system to enable VAV/DCV.
Please refer to: Pascal Water Solution documentation.

Plus features

Factory preinstalled.

AirGuide: The Lindab AirGuide system offers readjustable air spread pattern control. With a total of eight adjustment points (two points on each of the four deflector), and four different settings at each adjustment point, the AirGuide deflectors have 32 different settings (Picture 3). The adjustment is simply done by releasing a retaining clip in one end of the deflector. The deflector can then be adjusted to the desired setting and the retaining clip is refitted. These easy steps are then carried out for all the adjustment points that needs to be changed.

The AirGuide will be pres-set (default is 30°-10°) in the factory, If not any other setting is wanted and can be changed easily on side. Selection the AirGuide option will incur a capacity reduction of 6% for cooling and heating compared to the Angled Nozzles system. The AirGuide system is an alternative to the Angled Nozzles.

Recommended settings are:
30°-10° (default, correspondend to 30° Angled Nozzles)
20°-10° (correspondend to 16° Angled Nozzles)
10°-10° (no corrosponded Angled Nozzles)
30°-30° (special setting)
www.lindQST.com/project/icd.aspx

Heating: The product can be equipped with an additional water circuit , with 12 mm connections, in the batteries 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: Lindab's Regula Secura condensation protection can be installed in the product.

Integrated Regula Connect: The product can be equipped with the Regula Connect connection card. Please see the Regula chapter for further information.

Adaptation for suspended ceilings: The product can be adapted to suspended ceiling types Y-60 and Z-60 on request.

Design: There is another perforation pattern available (Dotx2 50%, see page 5).

Air connection: The beam is available with an aditional Ø125 mm connection on the opposite side (type A only!).

Integrated regulation unit: It is possible to have Lindab's room regulator, Regula Combi, pre-installed in the product. The control panel is fully accessible through the faceplate. Please see the Regula chapter.

Accessories

Delivered separately.

Control: Refer to the chapter Regula.

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

All these different hangers are available at Lindab:
-pendulum hangers (in different sizes)
-threaded rods M8

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

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Active chilled beam Premum

Dimensioning

Pressure drop in air connection

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

Example 1:

Premum I 60-15-125-A1-2.4 with 40 l/s and static nozzle pressure of 80 Pa. This provides the necessary total pressure in the duct of 80 Pa + 1 Pa = 81 Pa.

Premum							
Air flow [l/s]	20	25	30	40	50	60	70
Pressure drop [Pa]	0	1	1	1	2	3	4

Table 1. Air pressure drop in the connection to Premum I-60.

Sound data

Internal sound dampening ΔL									
Hz	**JetCone position**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
dB	4	24	15	8	5	8	13	11	16

Table 2. Premum's internal sound dampening

Noise level L_{wokt}

For calculation of the noise level.

Correction C_{oct} (dB) Octave band, average frequency [Hz] - Premum L ≤ 1,8 m								
Hz	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
dB	7	-4	-6	-5	-5	-6	-9	-13

Correction C_{oct} (dB) Octave band, average frequency [Hz] - Premum L > 1,8 m								
Hz	63	125	250	500	1000	2000	4000	8000
dB	12	-2	-4	-3	-6	-8	-10	-14

Table 3a+3b. Premum's noise levels L_{woct} for each octave band in the beam, are calculated by adding the corrections Coct from the table above to the sound power level L_{wa} dB(A). The noise levels are calculated using the following formula: $L_{wokt} = L_{wa} + K_{okt}$

Weight and water volume

Premum	
Dry weight, kg/m	15
Water content, cooling, l/m	0.75
Water content, heating, l/m	0.25
Copper pipes, quality	EN 12735-2 CU-DHP
Pressure class	PN10

Table 4. Premum's weight and water volume.

Active chilled beam Premum

Ventilation connections

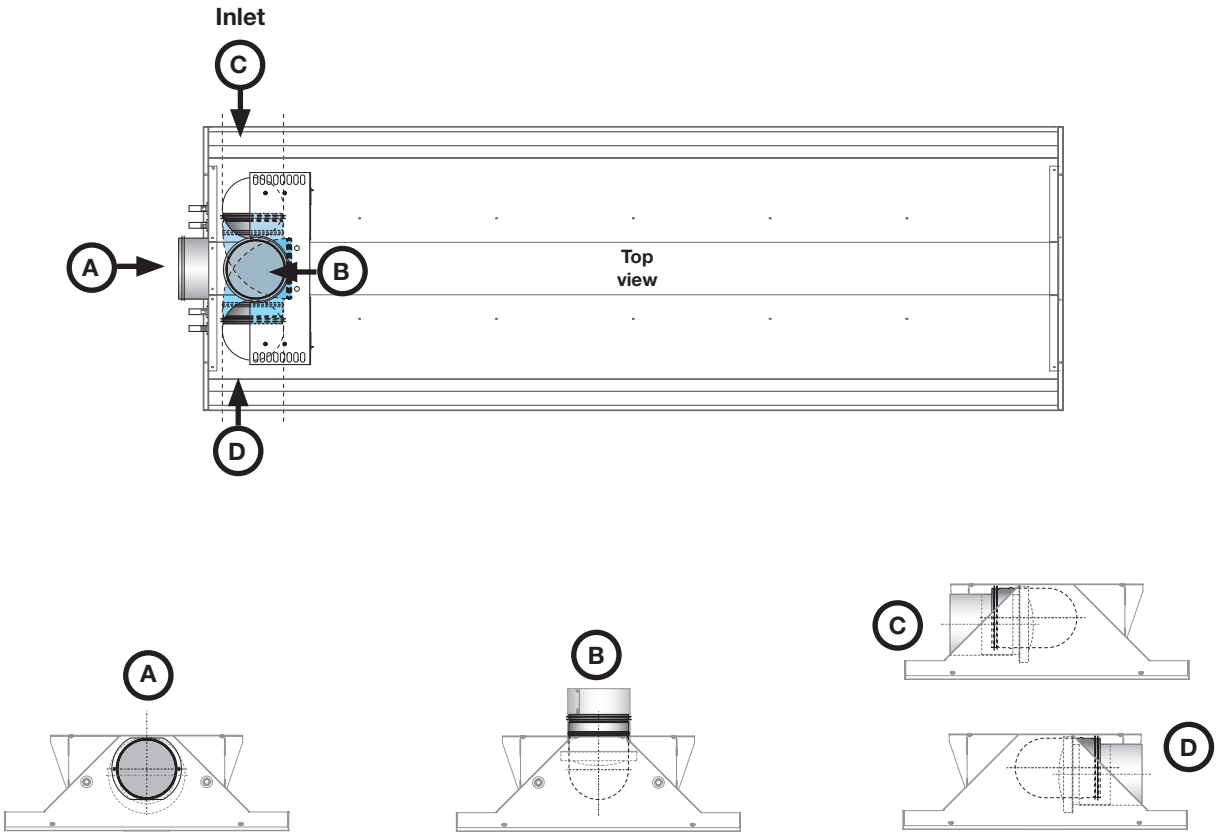


Figure 1. For A connection, Premum is delivered with Lindab's standard nipple (NPU-125). For B, C, and D connection, Lindab's elbow piece (BU 90°) is included.

Water connections

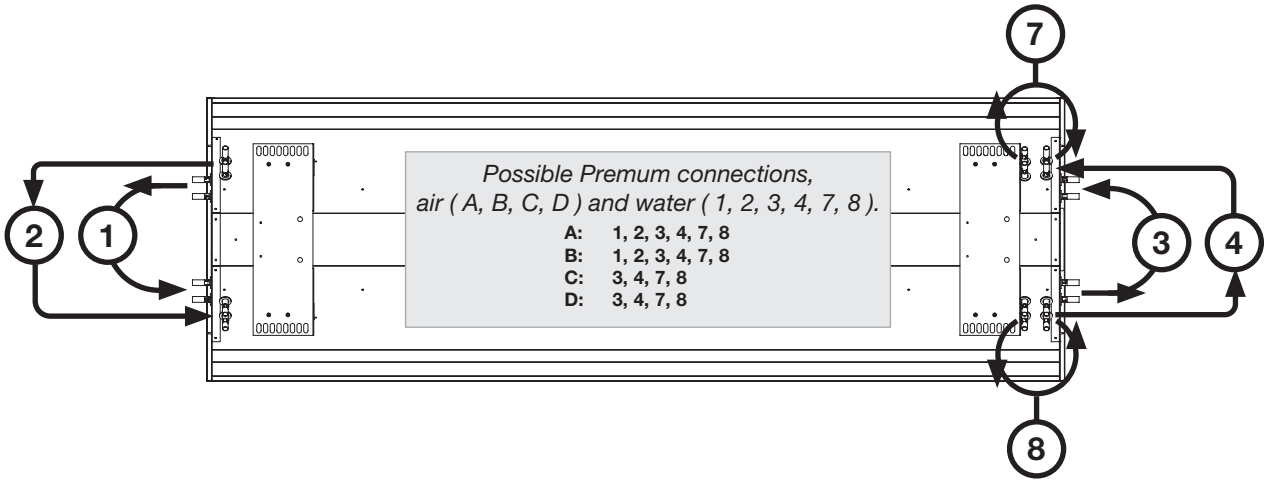


Figure 2. Possible connections, water cooling and heating.

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Active chilled beam Premum

Connection 1, 2, 3 or 4

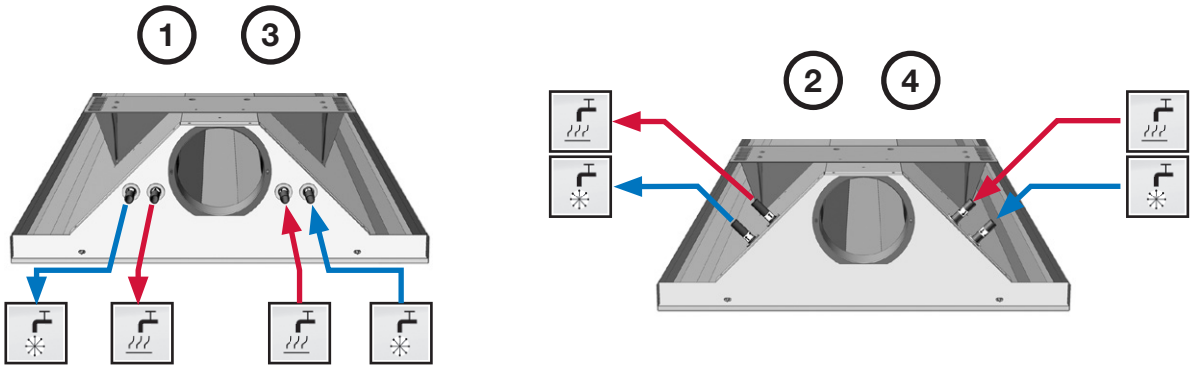
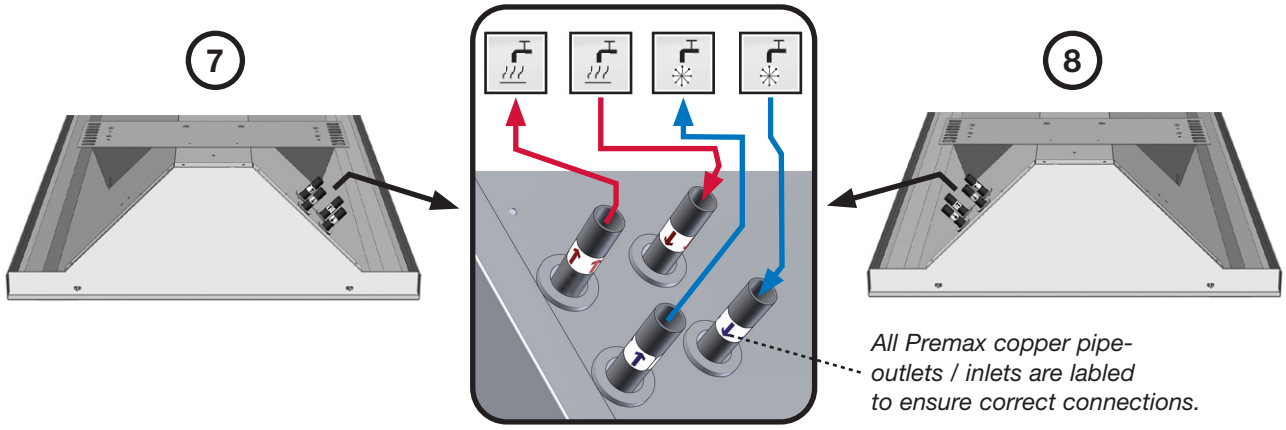


Figure 3. Placement of cooling and heating pipes (12 mm).

NB! When compression couplings are used, support sleeves must be applied.

Connection 7 or 8



Connection A **Connection B**

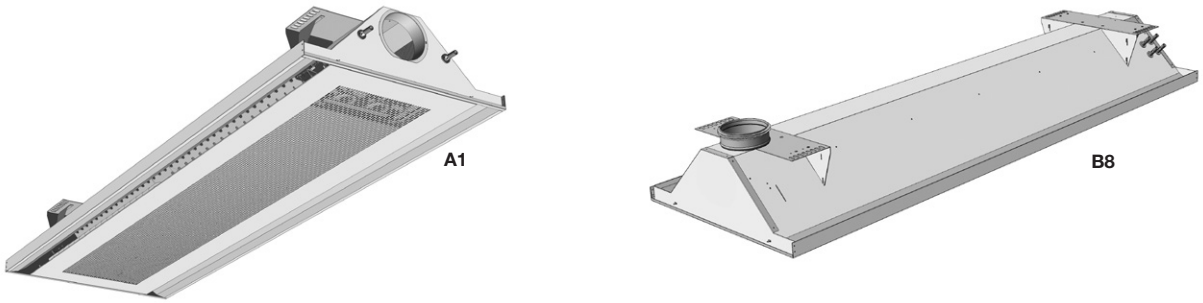


Figure 4. Examples of the most common Premum supply air A and B variants.
Go to next page to see overview of various water pipe connections.

Active chilled beam Premum

Valves & actuators

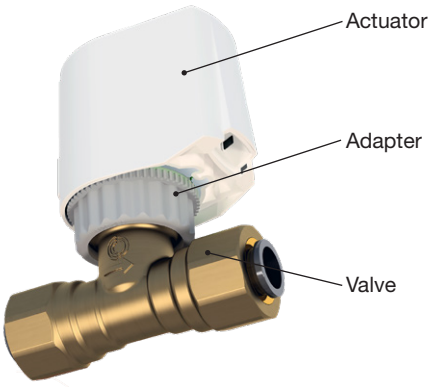


Figure 5. Control valve LinFlow-S with actuator mounted.

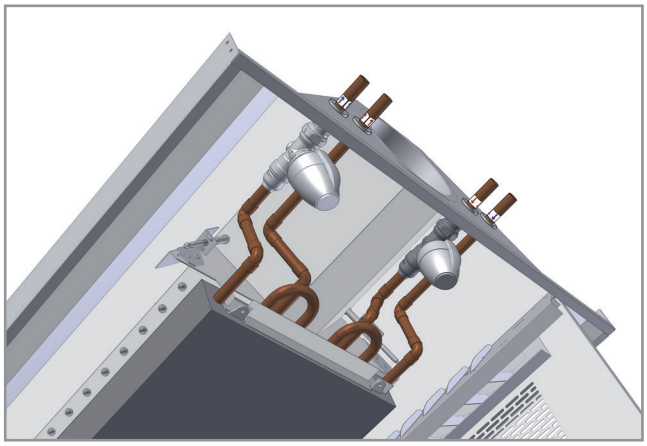
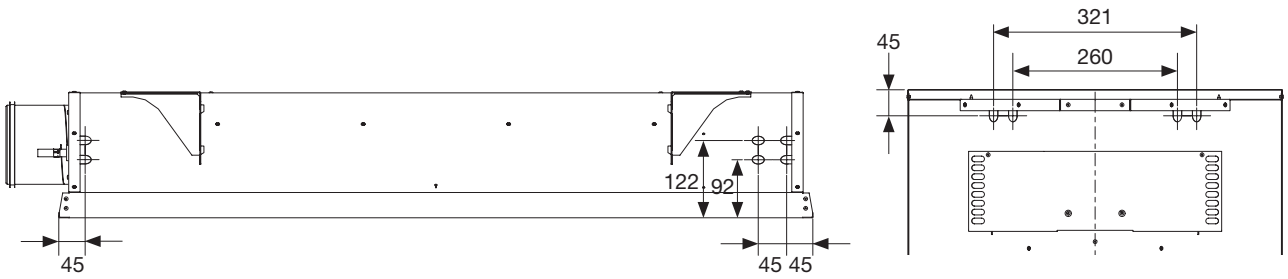


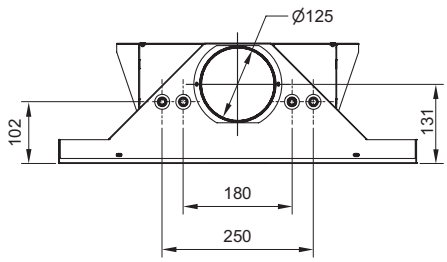
Figure 6. Illustration of how the valve and actuator is placed inside the chilled beam, A1 example, Premum (plus feature).

Dimensions

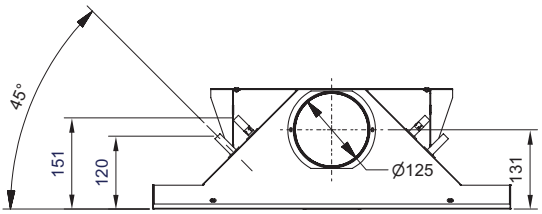
Examples below show Premum I-60 models with A air connection. For external dimensions, see next page.



Connection 1 or 3



Connection 2 or 4



Connection 7 or 8

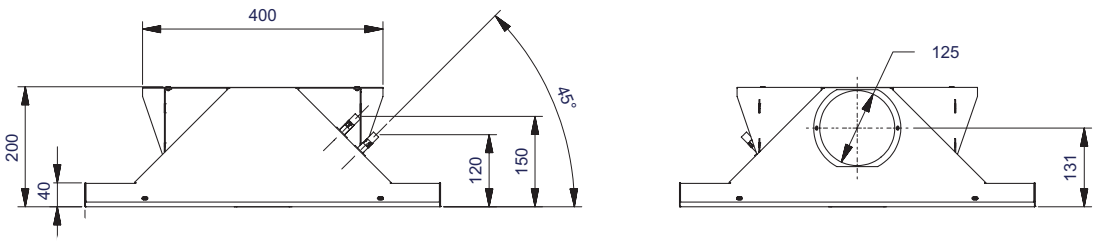
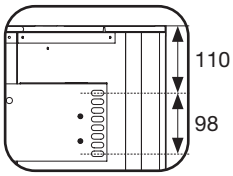


Figure 7. Premum I-60-A with possible water connections.

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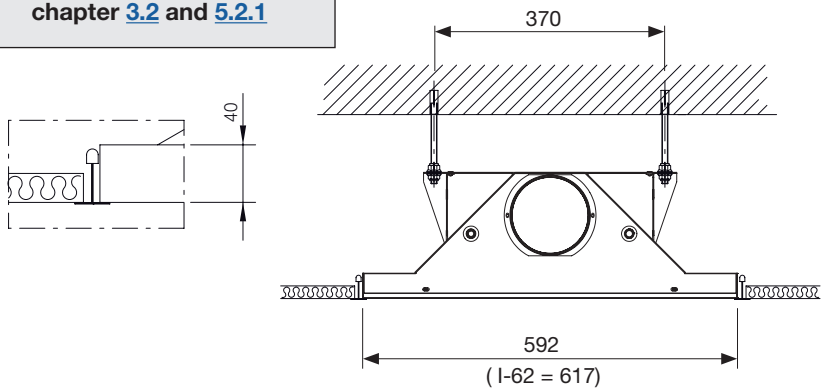
Active chilled beam Premum

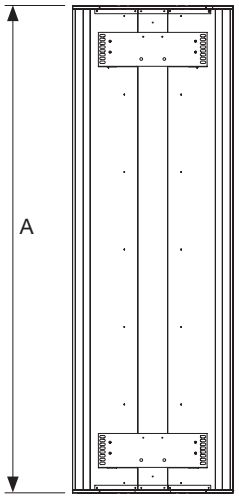
Suspension



Ceiling adaption
see installation instruction
chapter 3.2 and 5.2.1

Premum I-60 (I-62)

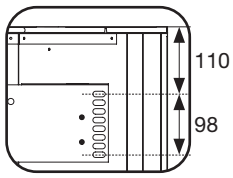




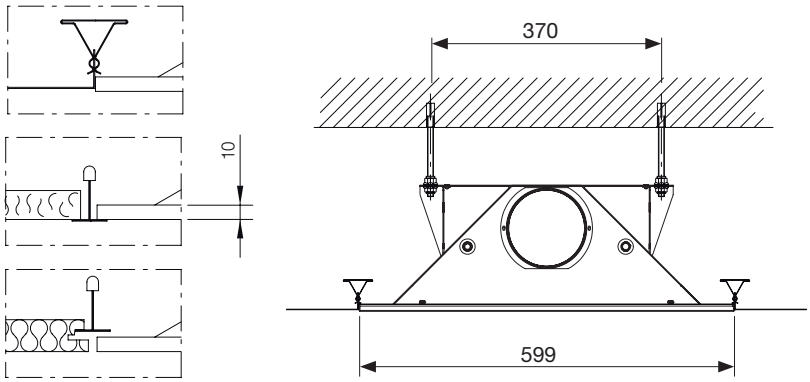
I-60: L = 1200 – 3600 mm (in steps of 100 mm); A = 1192 – 3592 mm (in steps of 100 mm).
I-62: L = 1200 – 3600 mm (in steps of 600 mm); A = 1242, 1867, 2492, 3117 and 3742 mm.

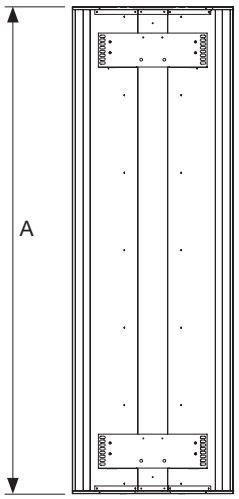
L = Nominal length (order length).

Figure 8. Premum I-60 suspension, dimensions. Suspension components are not supplied as part of the standard package.



Premum X-60





X-60: L = 1200 – 3600 mm (in steps of 600 mm); A = 1199, 1799, 2399, 2999, 3599 mm.

L = Nominal length (order length).

Figure 9. Premum X-60 suspension, dimensions. Suspension components are not supplied as part of the standard package.

Active chilled beam Premum

Dimensioning

The specific dimensioning of the active chilled beam can be easily done with our waterborne calculator in our online quick selection tool LindQST.
Calculate the Premum here.



Picture 7. LindQST - Indoor Climate Designer.

LindQST® helps you select the right waterborne products, e. g. active chilled beams, passive radiant chilled beams, radiant cooling- and heating panels and facade units and quickly finds the corresponding documentation.

In *Waterborne Documentation* you can easily find all available product documentation. Always in the latest version.

In *Waterborne Calculator* you can do a professional calculation based on your specific input data to finetune your choice or calculate different variants of the product. Smart warnings piont out if a set-up will not work.

In *Waterborne Selector* you can compare the proposed products according to your specific reguirements and select the one which fits best to your needs .

Not enough? With *Indoor Climate Designer* you can insert your selected waterborne product into your room and simulate the actual air distribution, optimise the placing in the ceiling taking into account the calculated air velocities and sound levels.

You can at anytime display your selection and calculations graphically. In addition, you can print or save all results and related documents for your documentation (incl. data sheets, dxf-files and room books).

With lindQST® you will easily find the most suitable product for your project.

It provides easy and quick access to the latest product information, technical specifications and assembly instructions on the internet, making it the ideal tool for installers, consultants and architects alike.
www.LindQST.com.

- Easy access to all current documentation.
- Fast design of waterborne products.
- Indoor Climate Designer: Graphical representation of the spatial situation in 2D / 3D and floor plans from AutoCAD®.
- Calculation of capacities, sound power levels, pressure losses and flow conditions.
- 3D particles or smoke show the air distribution in the room.
- Diagram showing the time course of the CO_2 concentration in the room.
- Room book generation and data sheet for individual rooms and outlets or entire projects.
- Project can be saved and exchanged in its own project area.
- Fast product selection waterborne products in accordance to Eurovent (chilled beams and facade units).

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Active chilled beam Premum

Dimensioning air velocities

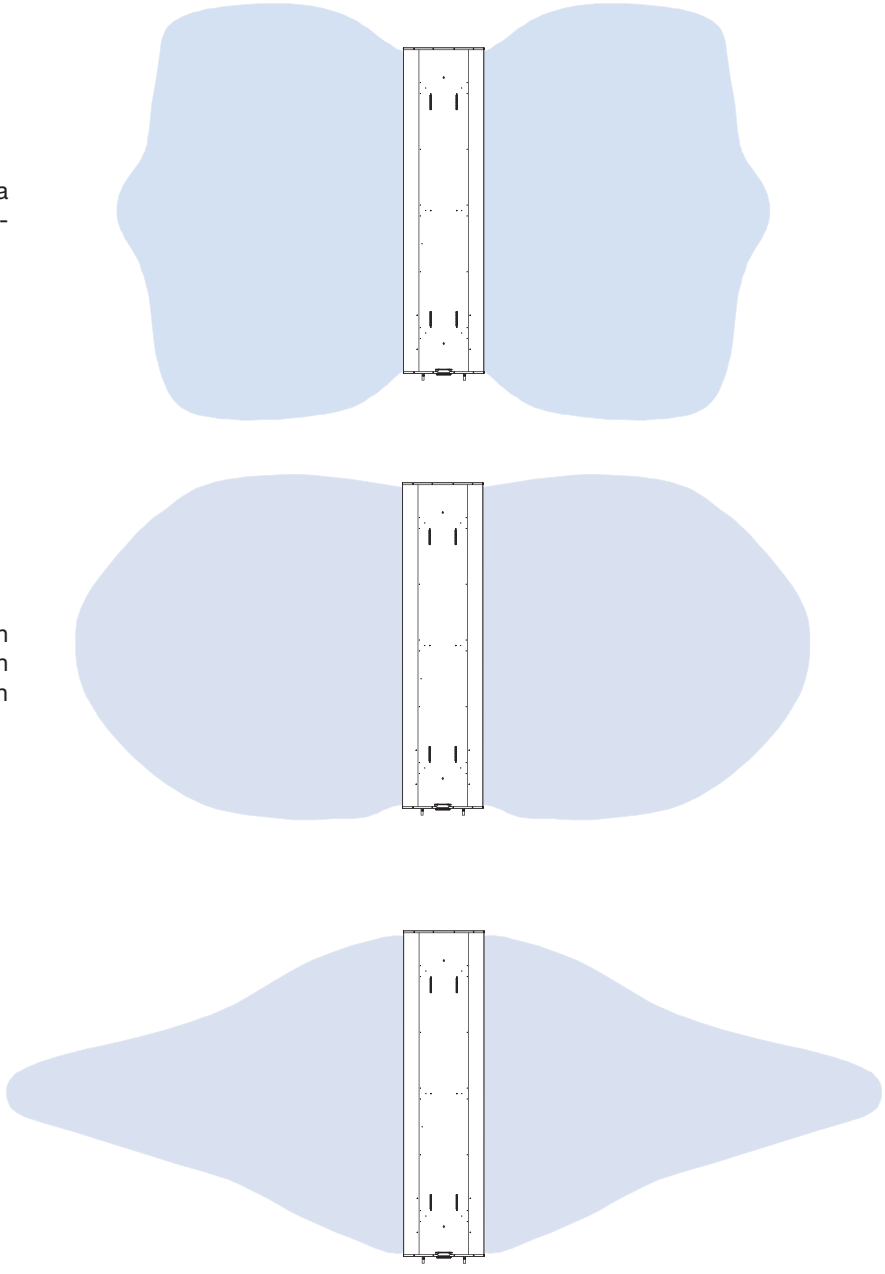
Air distribution patterns
Premum and other induction beams utilise the pressure of the supply air to cause the room air to circulate through the cooling battery. This enables a high cooling capacity, but also creates significant air movements, which often result in long throw lengths. This is why Premum is supplied as default with a short air distribution that is angled outwards (30° angled nozzles). It significantly reduces both airthrow lengths and air velocities compared to the conventional linear nozzle technology.

Depending on the room conditions, Premum is available also with a medium (16°) or a long (0°) distribution profile. Below is an example of how the different distribution profiles affect the airthrow length.
NB! With the plus feature AirGuide you can achieve the same air distribution patterns with an extra in flexibility (please check page 5 and 6 for further explanation).
NB! This is a principle only for visualizing the possible air distribution profile. To calculate the beam with your specific settings, please refer to the waterborne calculator or the indoor climate designer in www.lindQST.com.

Short air distribution
Premum is supplied as standard with a short air distribution that is angled outwards (30° divergent nozzles).

Medium air distribution
The medium air distribution pattern (16°) provides an airthrow in between the long and the short air distribution pattern.

Long air distribution
The long air distribution pattern (0°) is used when a long airthrow is needed. e. g. when the beam is placed centrally with long distances to the walls or several beams are installed in one line, to avoid overlapping air distribution pattern which will result in even longer airthrows.



Picture 8. Air distribution patterns

Active chilled beam Premum

Control

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



Designations

Product/Version:		Premum I or X
Type:		60, 62
Connection diam. water, [mm]:		12
Connection diam. air, [mm]:		125
Connection type:		A, B, C, D
Water:		1, 2, 3, 4, 7, 8
Length, [m]:	I-60 and X-60:	1.2 m - 3.6 m
	I-62:	1.2, 1.8, 2.4, 3.0, 3.6 m
Plus features:		See page 6
Angled Nozzles:		30° (default), 16°, 0°
AirGuide:		30°-10°

Order code

Product	Premum	I-60	12	125	A1	1.4	80	20

Type:
I-60, I-62
I = Integrated, lay-in
X-60
X = i.e. hidden T-bar, edge DS

Water connection:
12 mm

Air connection:
Ø125 mm

Connection type:
A1, A2, A3, A4, A7, A8, B1, B2, B3, B4, B7, B8, C3, C4, C7, C8, D3, D4, D7, D8

Product length:
I-60, X-60: 1.2 m - 3.6 m (In steps of 0.1 m)
I-62: 1.2 m - 3.6 m (in steps of 0.6 m)

Static nozzle pressure (Pa):

Air volume (l/s):

Programme text

Premum active chilled beam with adjustable airflow, for a given duct pressure. Air distribution must be adjustable between both sides of the beam and longitudinally, by a system like Lindab JetCone. The flow pattern must be fan-shaped through the use of angled nozzles. Water and air connections must be flexible and accessible from below.

Active chilled beams from Lindab	**Qty**
Product:	
Premum I-60-12-125-A2-1.8 m	40
Air quantity:	15 l/s
Nozzle pressure:	60 Pa

Plus features:
AirGuide
Regula Secura
Heating
Cooling control valve
Cooling actuator
Heating control valve
Heating actuator

Accessories:	
Regula Combi:	40
Product:	
Premum I-60-12-125-A1-3.0 m	10

Plus features:
AirGuide
Regula Combi
Regula Secura
Cooling control valve
Cooling actuator

Accessories:	
Tectite tool:	1

Lindab reserves the right to make changes without prior notice
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Most of us spend the majority of our time indoors. Indoor climate is crucial to how we feel, how productive we are and if we stay healthy.

We at Lindab have therefore made it our most important objective to contribute to an indoor climate that improves people's lives. We do this by developing energy-efficient ventilation solutions and durable building products. We also aim to contribute to a better climate for our planet by working in a way that is sustainable for both people and the environment.

Lindab | For a better climate