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# Chilled beams overview

EHG offers a complete range of indoor climate solutions which, apart from the waterborne climate systems, also include a large range of air-borne indoor climate systems.

In combination or separately, the two product areas create the optimum conditions for an indoor climate solution, customized according to the current requirements and desires for comfort.

Thanks to our many years of experience with waterborne indoor climate systems, we have been able to collect extensive documentation. Our experience with the products is supported by our laboratory in Farum, on the outskirts of Copenhagen, which offers possibilities to conduct full-scale testing.

The waterborne products allow the provision of relatively high cooling effects compared to conventional air-borne ventilation systems, without simultaneously causing drafts in the occupied zone.

The water-borne indoor climate systems can moreover be adapted to individual requirements. The active chilled beam Pilot (for more information, refer to Chapter 4) is one of the most recent examples of this.

Pilot is the result of complex research adapted to everyday use.

Pilot can be adjusted in four points and the adjustments can be done with the bottom plate still in place. This allows easy adjustment of the airflow and pressure. The slot opening on both sides of the beam can be adjusted with regard to both the width and length, thereby allowing very good control of the distribution patterns in the room. The simple adjustment, combined with the flexible water and air connections, allows you to include the beam in the drawings during the initial stages of the project, even before the final conditions are determined.

With the Waterborne Indoor Climate System product program, therefore, you obtain a large number of high-quality water-borne indoor climate solutions. They are all designed with the sole purpose of ensuring a pleasant and comfortable indoor climate. The simple and discrete design allows flexible integration in virtually all suspended ceiling solutions.



## Chilled air systems without individual balancing dampers

When using induction-type supply air beams, the primary air (ventilation air) works as a motor. The primary air generates a secondary airflow through the beam's cooling battery, where the room air is cooled.

This process depends on the pressure and flow of the primary air and means that both a higher pressure and a higher flow increases the cooling capacity.

The supply air that is to be distributed through the beam normally uses the available pressure at the beam's connection point, i.e. 20 to 40 iwg.

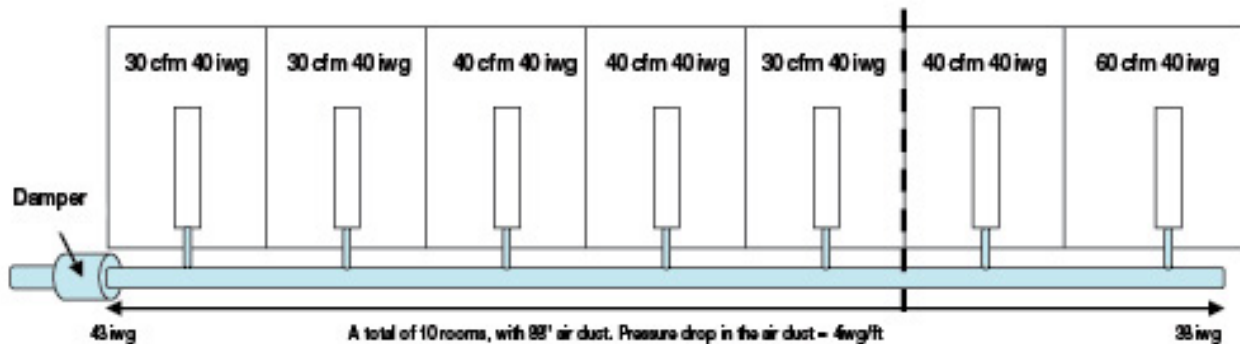
Since the relation between the pressure drop in the duct and the beam is quadratic relative to the flow changes, the flow is not affected appreciably in the event of minor changes in pressure.

By dimensioning the ventilation system, so that the bulk of the total pressure drop for both duct and beam is over the beam, the system can regulate itself, thereby making dampers redundant.

This leads to simplified planning, installation, adjustment and maintenance. The beams are normally supplied pre-set for the right pressure and flow.

### Example 1.

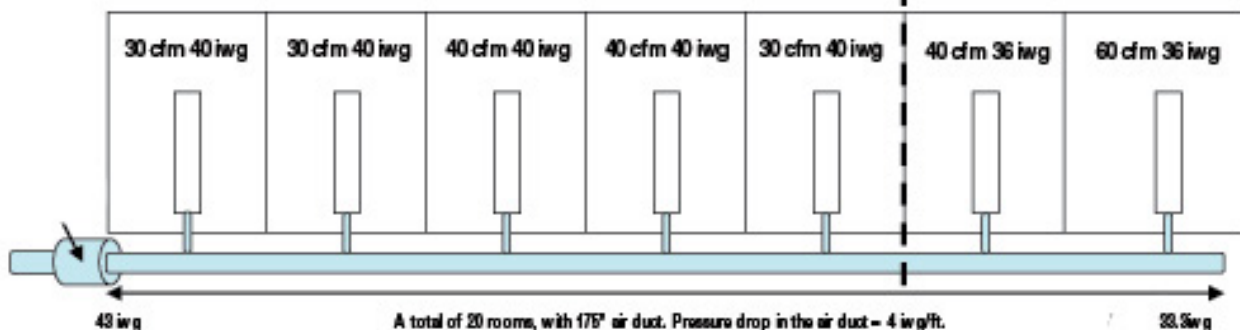
All the beams are ordered for the same duct pressure as the difference between available duct pressure and beam operating pressure is  $\pm 10\%$ .



The airflow in the first room is 132.8 cfm (+3%), the airflow in the last room is 61.8 cfm (-3 %).

### Example 2.

The beams are divided in 2 groups, with 10 beams per group, where the first group is ordered for 40 iwg and the second for 36 iwg. The difference between available duct pressure and beam operating pressure in each group is  $\pm 10\%$ .



The airflow in the first room is 32.8 cfm (+3%), the airflow in the last room is 61.2 cfm (-4%).

# Chilled beams overview

## Featured models

The remainder of this catalog describes our chilled beam product line. **They are listed in alphabetical order. Please note, all of these beams are active beams with the exception of the Carat model.**

- Architect
- Carat
- Celo
- Plafond
- Plexus
- Podium
- Polaris I/S
- Premum/Premax
- Professor

## A note on measuring

Measurements have been converted from metric and rounded to the nearest 0.1 inch.



*Lunchroom*



*Office*



## Use

EHG's supply air beam Architect provides great freedom of choice in design. A large number of predefined design solutions can be easily applied, in terms of technology, to create customised design solutions with great flexibility, but without affecting the function and performance. One of the advantages is that planning can be done without having to decide on a design. It is also simple to renew the design, if necessary in the future.

Architect is equipped with divergent nozzles to ensure a draft-free indoor climate.

Architect can be equipped with the following features: cooling, heating, ventilation, Drypac™ condensation protection, Secura condensation guard, built-in valves and actuators and built-in lighting.

## Installation

Architect is a supply air beam for visible installation, which can be mounted on to the ceiling, a wall or suspended. Architect can be supplied with horizontal or vertical connections.

## Worth noting

Architect provides great architectonic freedom and has small dimensions, which results in a wide range of applications for the product. EHG's supply air beams are Eurovent-certified and tested according to EN-15116, EN-14518.



## Key figures

Length: 47" – 142"  
Width: 14" – 19"  
Height: 4" – 6"  
Capacity: Cooling effect of up to 5,540 BTU  
Air quantity of up to 138 cfm

## Design

### **Form and technology working together, without affecting one another.**

The Architect concept is unique. The shape and appearance of the product can be varied without any adverse effect on the technology. A unique Architect form can be created for each individual environment. Architect is based on the same technology, irrespective of the model you choose; what distinguishes the models is the design and shape of the product. EHG offers seven different standard designs, products that should appeal to different tastes and suit different interior environments.

The Architect models make it possible to use different perforations and geometric shapes in the products. The perforations can be slots, or round or oval shapes. The standard perforation is called Slot; other variants can be ordered as plus features. As long as it is technologically possible, your imagination is the only limit to the shapes and models that can be created (see picture 1).

## From idea to reality

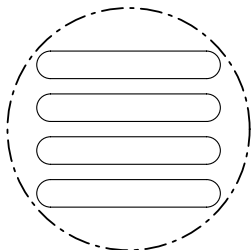
The technical design of Architect, with its extremely small dimensions, allows you to change its look easily so as to match different interiors. The design and shape, of course, must be within certain basic technical limits for the supply air beam to function properly.



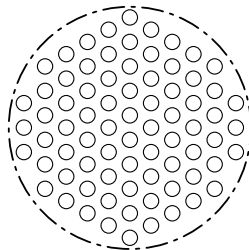
*Picture 1. Example of how different types of perforations can be used. The model on the far left is the standard design for Architect Moon. The other perforations can be ordered as plus features.*

## Design options

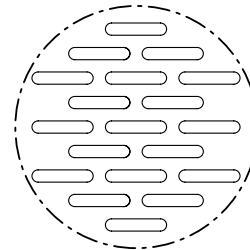
8



Line, 0.4" x 2.4"



Dot, Ø 0.2"



Slot, 0.2" x 0.8" standard

Picture 2. Perforation line, dot and slot.

Beam model	Perforation, in	Open area*, %	Width, perforated surface, in
Architect Oval	Slot 0.2" x 0.8"	50	0.1" x 4.6"
	Line 0.4" x 2.4"	33	0.1" x 5.4"
	Dot Ø 0.2"	33	13.4"
Architect Wave	Slot 0.2" x 0.8"	50	9.1"
Architect Moon/ Wing	Slot 0.2" x 0.8"	50	0.1" x 4.6"
	Slot 0.2" x 0.8"	33	13.4"
	Line 0.4" x 2.4"	33	13"
	Dot Ø 0.2"	33	13.4"
Architect Square	Slot 0.2" x 0.8"	50	0.1" x 4.6"
	Slot 0.2" x 0.8"	33	13"
	Line 0.4" x 2.4"	33	0.1" x 5.4"
Architect Facet	Slot 0.2" x 0.8"	50	0.1" x 52 + 6.7"
	Line 0.4" x 2.4"	33	0.2" x 2.4"

\* % of perforated surface

Table 1. Architect's perforation options.



# Chilled beams

# Architect

## Design options



*Architect Wave*



*Architect Oval*



*Architect Square*



*Architect Box*



*Architect Facet*



*Architect Wing*

*Picture 3. Architect provides great freedom of choice in design. Architect Moon is shown on Picture 1, 4, 6, 7 and 8.*

## Function

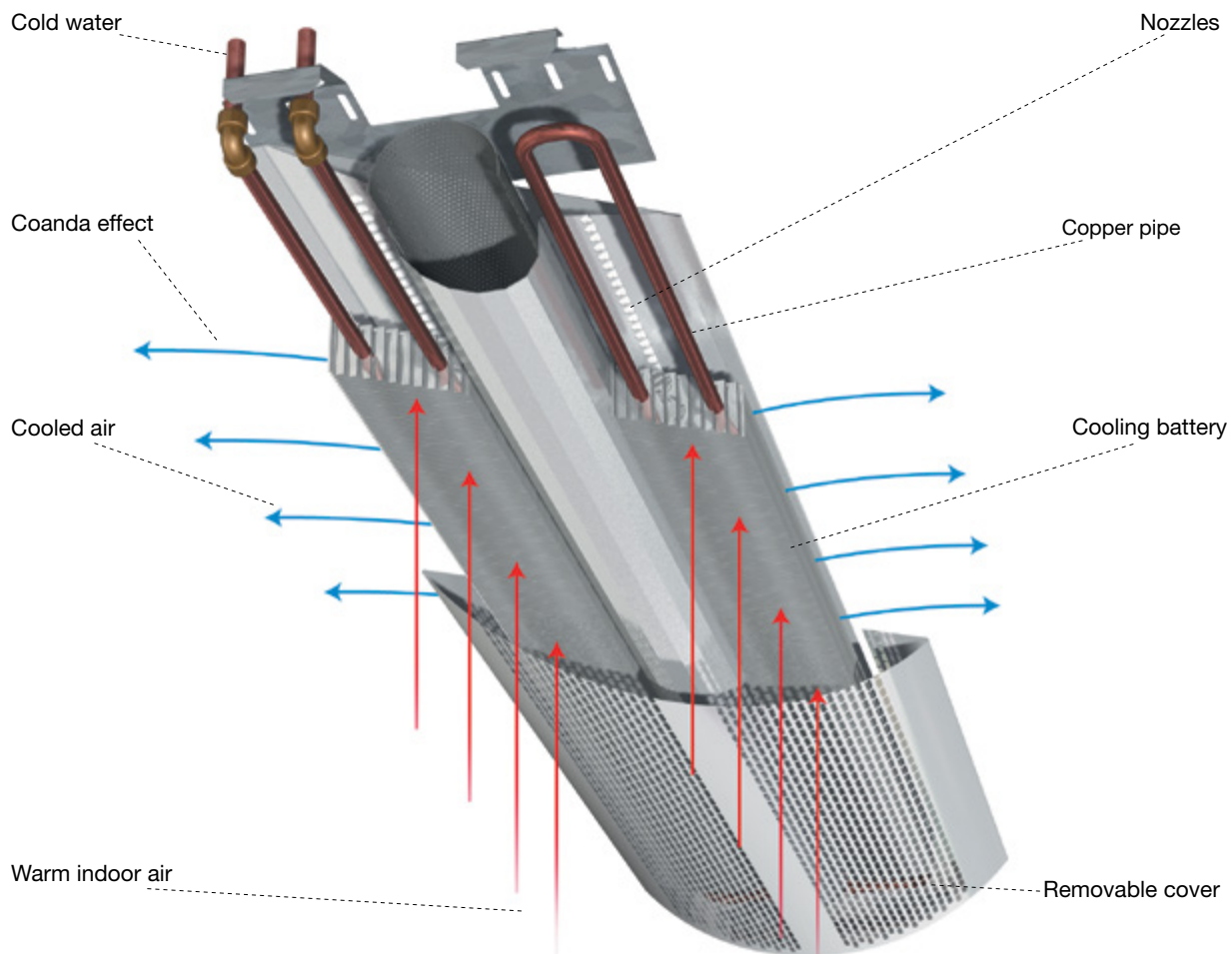
### Powerful function in an extremely small format

Architect is based on the induction principle. Ventilation air with a given dynamic pressure is discharged through specially formed nozzles into a dispersal zone, thereby creating a low static pressure. The low static pressure causes the warm air from the room to be drawn 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 pipes 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 goes further to a central cooling unit (see picture 4).

Despite the product's small external dimensions, the design allows for large volumes of air and extremely efficient cooling. The nozzles, which discharge the ventilation air, are designed to obtain the Coanda effect. Due to the design, the air starts to adhere to the duct in the nozzle, which means that the Coanda effect is maintained close to the ceiling. Since the air is directed slightly upwards, this important aero-technical function is also achieved in the suspended models.

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

A heating function can also be obtained from an additional heating pipe in the battery.



Picture 4. An

## Installation examples

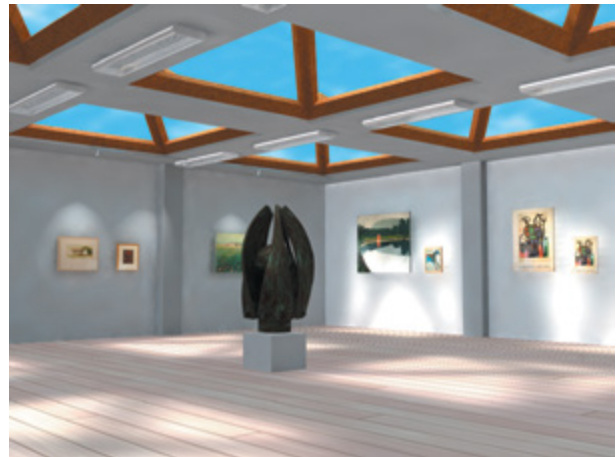
### Productive indoor climate in different interiors

The principle behind Architect is that the cooled or heated air spreads along the ceiling. Through induction, the air from the room is drawn back into the central part of the beam, to be cooled or heated. This feature keeps the room well ventilated. Architect is equipped with angled nozzles that distribute the air over a wide area. This results in considerably lower air velocities in the room than with traditional nozzle technology.

Architect's flexible shape and appearance allows the supply air beams to be fitted easily in to a variety of interiors and to appeal to different styles and tastes. This chapter includes several different suggestions for interiors. When installed with a horizontal air and water connection, the cover of the product can be extended to conceal the connection pipes. The cover can be manufactured in lengths of up to 147".

Where the installation is directly on to the ceiling, the smallest separation between the beam and the nearest wall is 4" for all models except Architect Box, which requires 20". For suspended installation, if the beam is placed less than 40" from the wall, some of the air from the side facing the wall will flow back over the beam and in towards the room.

The technology used in Architect also enables installation on to the wall. Pictures 6 and 7 show several different wall installations. The technology and function work regardless of whether the installation is vertical or horizontal. If vertical installation is required, this should be specified in the product specification.



Picture 5. Architect Moon installed on a ceiling.



Picture 6. Architect Moon installed vertically on a wall.



Picture 7. Architect Moon installed horizontally on a wall.

# Chilled beams

# Architect

## Installation examples

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Picture 8. Architect Moon in a restaurant environment.



Picture 9. Architect Facet in a waiting room / lobby.



Picture 10. Architect Win in a conference room.

## Data

## Variants

Architect is available for direct installation on to a ceiling, a wall or suspended.

**Lengths:** Architect is available in lengths from 47" – 142" in steps of 4".

**Water connection:** The water connection is horizontal or vertical, with outer diameter of 0.6".

**Air connection:** The air connection is horizontal or vertical, Ø4" or Ø5".

**Design:** Architect can be supplied in different shapes and with different cover perforations (see table 1). Where a design or a perforation is required, which differs from the standard models, please contact EHG.

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

**Surface treatment:** Architect is manufactured as standard from enamelled sheet metal, color white, RAL 9010.

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

## Plus features

Factory preinstalled.

**Heating:** A heating function can also be obtained by an additional heating pipe in the battery. Available for connection options A1, A2, B1 and B2.

**Drypac™:** Anti-condensation treated cooling batteries, which enable water temperatures below the dew point without dripping.

**Wall installation:** Architect can also be mounted horizontally or vertically on to a wall. Contact EHG for more detailed 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 147". The extended underside also includes wall or ceiling attachments.

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

**Color:** For special colors and other surface finishes, for example, galvanized and powder coating. Contact EHG for more information.

**Lighting:** The product can be equipped with type-approved light fittings.

**Air vent:** Air vents are not supplied as part of the standard package, but they can be ordered to be pre-installed.

## Accessories

Delivered separately.

**Cover plate: It is delivered in two versions. With ceiling attachment or with attachment for both ceiling and wall (see figures 13 to 14).**

## Color

Architect is available as standard in white, RAL 9010, gloss value 30. Other colors may be ordered specially.

Cooling effect, Architect

## Drypac™, condensation protection

All Architect models can be ordered with the Drypac™ plus feature, condensation protection consisting of perlite (volcanic stone) that is applied to the fin surfaces. Drypac™ has properties that enable it to function at a supply temperature 39.2° F below the dew point, for continuous operation, and 41 to 46.4° F below the dew point for limited. Drypac™ provides both an increased effect output and increased security against condensation drips. At a working temperature above the dew point, output is reduced by 17%, but when the working temperature is below the dew point, there is no reduction in output. This means that the effect is highest when the need is greatest.

*For more information about Drypac™, refer to the chapter Drypac™.*

## Couplings & connections

Architect is supplied in lengths from 47" – 142", in steps of 4". The connection dimension is 0.6" for the water and Ø4" or Ø5" for the air for Architect Moon, Wing and Facet.

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

## Examples of designations

### Step 1.

Indicate the position for the ventilation connection.

### Step 2.

Indicate the position for the pipe connection.

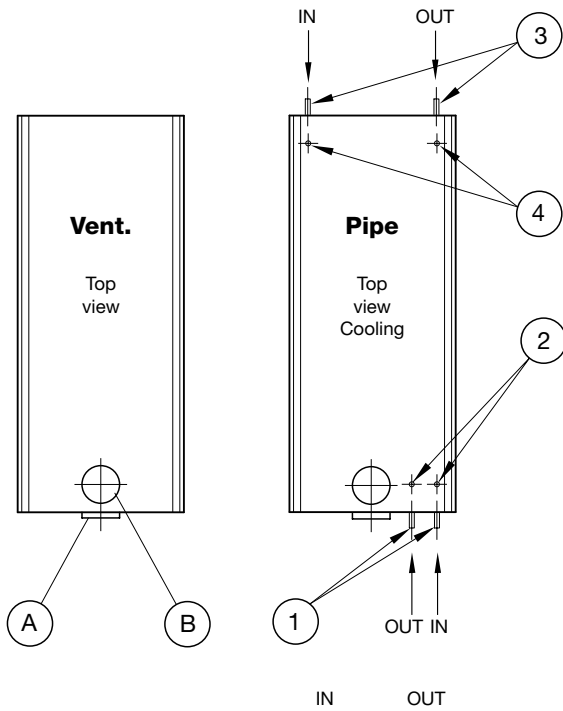


Figure 1. Coupling and connection options.

Below are examples of common coupling options: Type A1 has a horizontal air connection at the end, and a horizontal pipe connection at the same end of the beam.

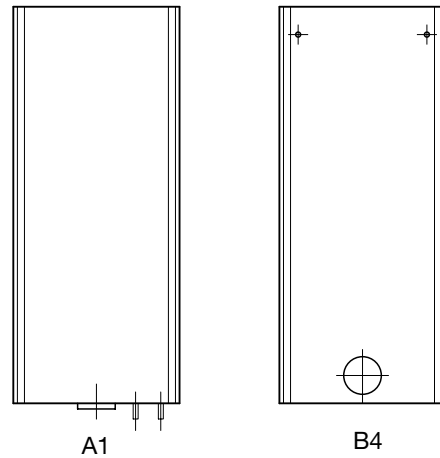
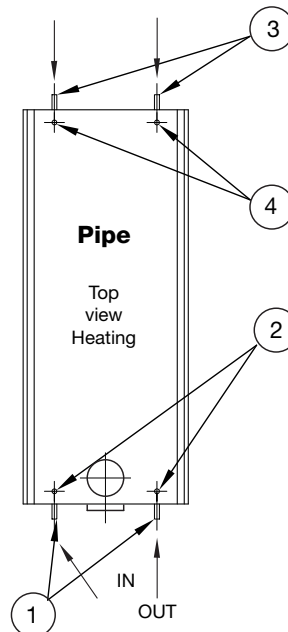


Figure 2. Coupling options A1 and B4.



### Connection dimensions, 4"Ø cooling (in)

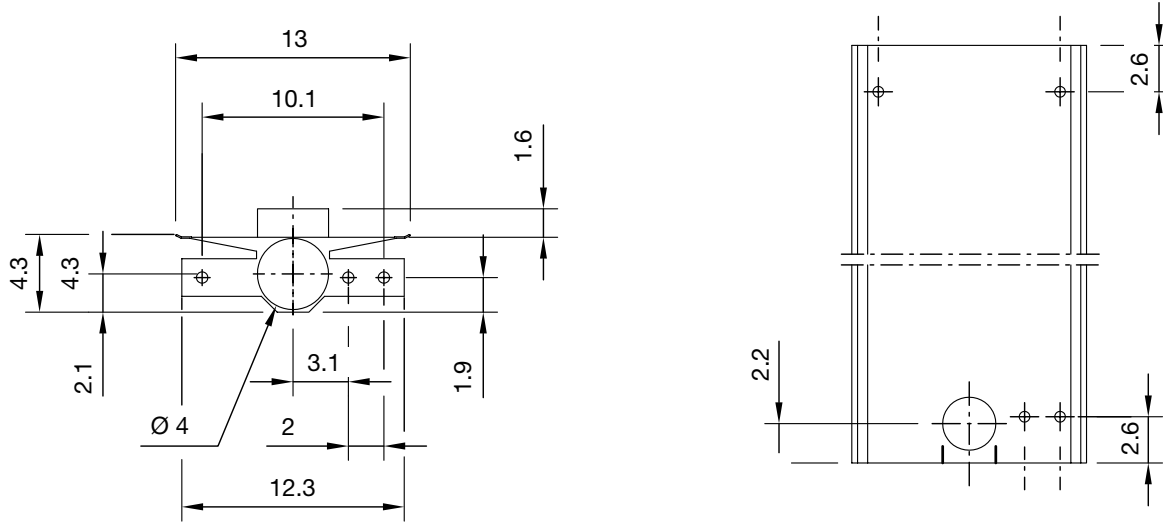


Figure 3. Architect 4"Ø, cooling. Dimensions for the parts. Total width and length for the respective models vary (see table 15).

### Connection dimensions, 4"Ø heating (in)

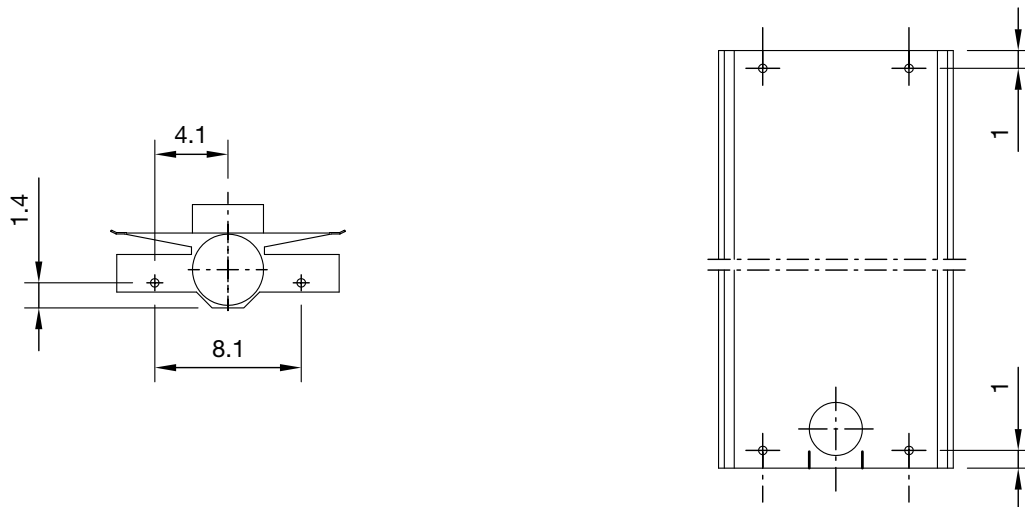


Figure 4. Architect 4"Ø, heating. Dimensions for the parts. Total width and length for the respective models vary (see table 15).

## Suspension, 4"Ø connection (in)

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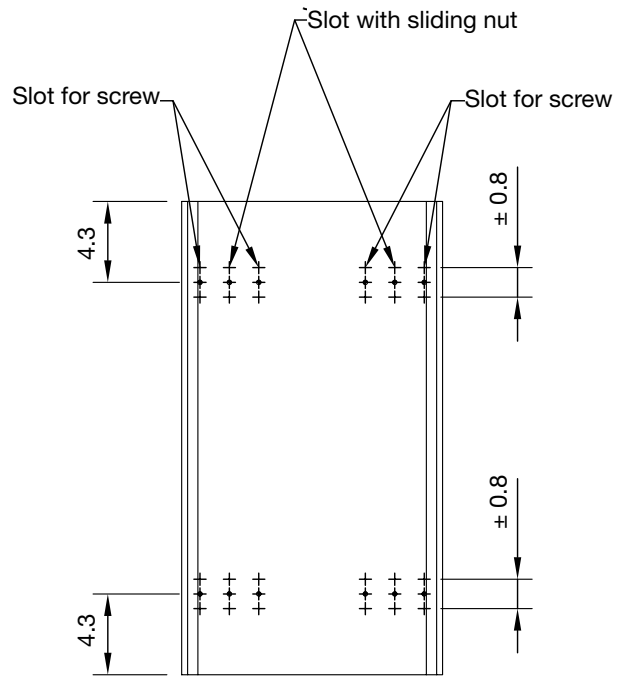
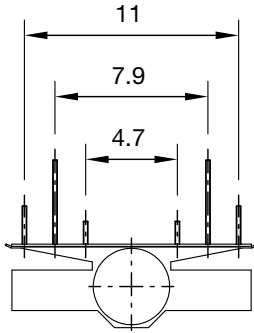


Table 5. Architect 4"Ø, suspension / dimensions.



### Connection dimensions, 5"Ø cooling (in)

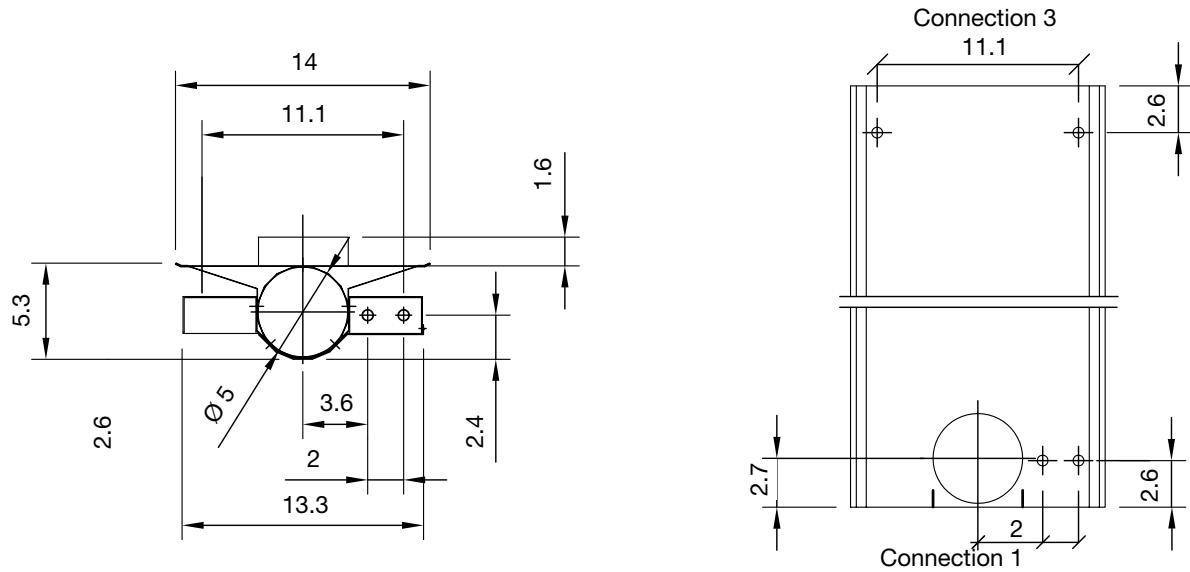


Figure 6. Architect 5"Ø, cooling. Dimensions for the parts. Total width and length for the respective models vary (see table 15).

### Connection dimensions, 5"Ø heating (in)

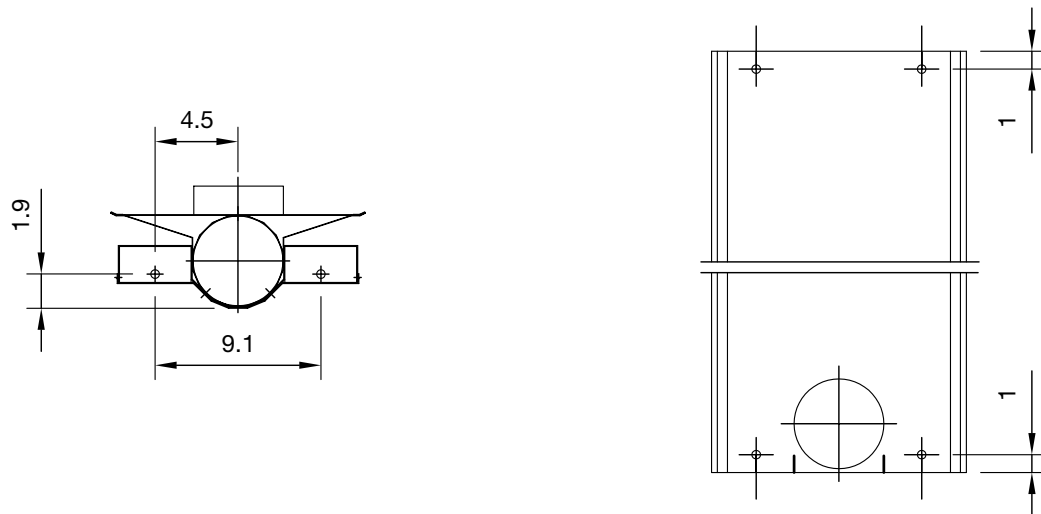


Figure 7. Architect 5"Ø, heating. Dimensions for the parts. Total width and length for the respective models vary (see table 15).

# Chilled beams

# Architect

## Suspension, 5"Ø connection (in)

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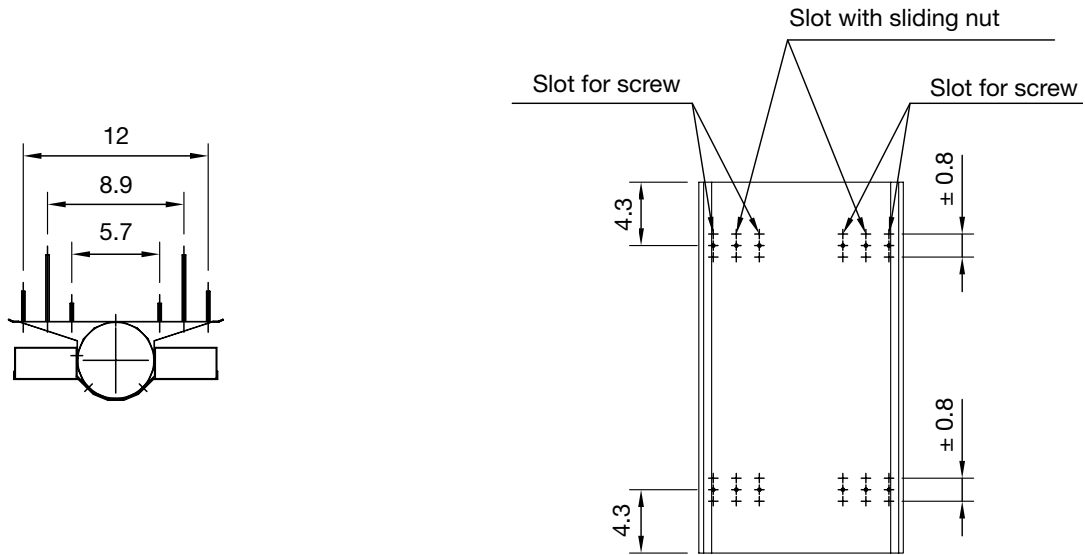


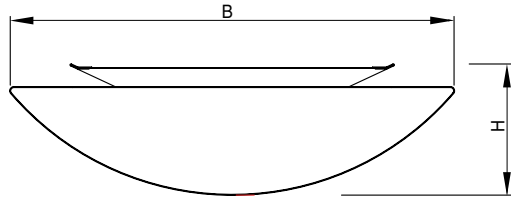
Figure 8. Architect 5"Ø, suspension / dimensions.

	<b>Architect 4"Ø / 5"Ø</b>
Weight, kg	10.5
Water content, cooling l/m	0.65
Water content, heating l/m	0.33
Copper pipes, quality	SS/EN 12449
Pressure class	PN10

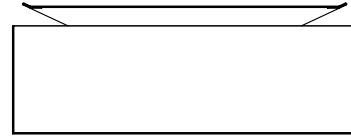
# Chilled beams

# Architect

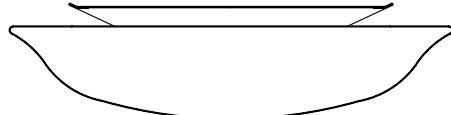
## Dimensions, weight & water content



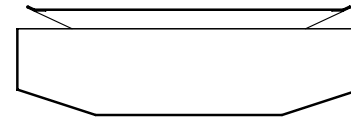
Architect Moon



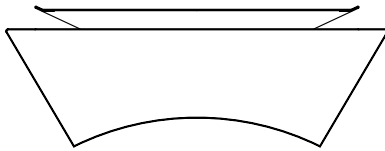
Architect Box



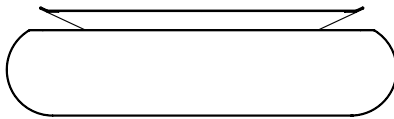
Architect Wing



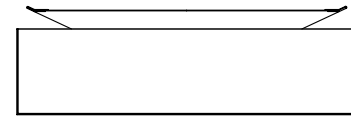
Architect Facet



Architect Wave



Architect Oval



Architect Square

Figure 9. Architect's different versions.

Model	Ø	Width, in	Height, in	Product length undersize, in	Weight, lb/ft	Water content, gal/in
Moon	4	17.8	5.2	0*	7.1	0.05
Moon	5	19.3	5.9	0*	7.1	0.05
Wing	4	17.8	4.7	0*	7.1	0.05
Wave	4	15.3	5.6	0*	7.1	0.05
Oval	4	15.7	4.4	0*	7.1	0.05
Oval	5	17.6	5.4	0*	7.1	0.05
Box	4	13.8	5.2	- 0.3**	7.1	0.05
Facet	4	13.8	4.4	- 0.3**	7.1	0.05
Facet	5	14.8	5.4	- 0.3**	7.1	0.05
Square	4	13.8	4.4	- 0.3**	7.1	0.05

\* The outer cover extends 0.2" beyond the end edges on each side. \*\* The end edges are folded over the cover.

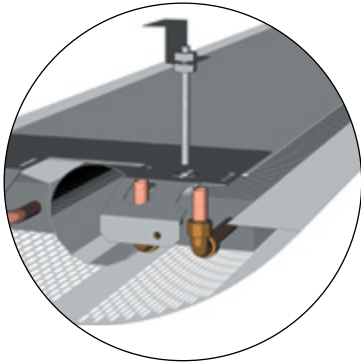
Table 15. Dimensions, weight and water content of the outer cover. Architect's total length is the ordered length minus undersize.

# Chilled beams

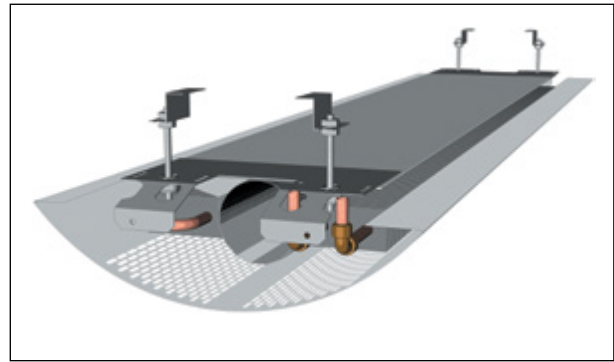
# Architect

## Installation examples

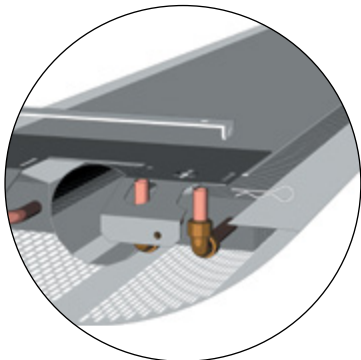
Architect is usually installed on to the ceiling or suspended from it. Pictures 11 and 13 show the beam during installation. Pictures 12 and 14 show a complete installation.



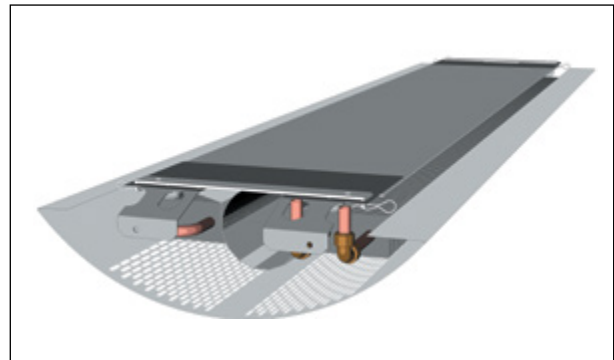
Picture 11. Suspension with screws or threaded rods.



Picture 12. Architect installed with threaded rods that are screwed into a nut that can slide lengthwise in the beam.



Picture 13. Suspension with brackets.



Picture 14. Architect installed with cotter pins that are inserted into brackets attached to the ceiling.

# Chilled beams

# Architect

## Extended cover / Cover

For installation with horizontal air and water connections, the connection pipes can be concealed, using one of four alternative options, depending on the placement and attachment options.

### Options:

- 1.- Extended cover with wall attachments (see fig. 11).  
Maximum length: 147".
- 2.- Extended cover with ceiling attachments (see fig. 12).  
Maximum length: 147".
- 3.- Cover with ceiling attachments (see fig. 13).

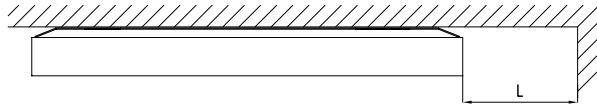


Figure 10. Ordered length.

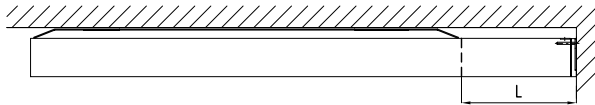


Figure 11. Extended cover with wall attachments.

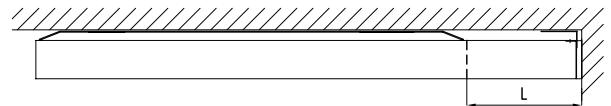


Figure 12. Extended cover with ceiling attachments.

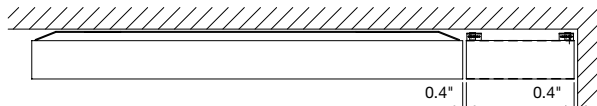


Figure 13. Cover with ceiling attachments.



## Use

EHG's chilled beam Carat supplies cooling with a low air velocity to the room below.

It offers many possibilities and great flexibility. For example, it is possible to paint Carat any color you want.

## Installation

Carat is installed suspended or above a perforated suspended ceiling.

Carat can be supplied with different connection options, depending on whether the passive beam is to be installed individually or in series.

## Worth noting

The radiation quotient of Carat is as high as 35%, which results in low air velocities when the beam is placed above a perforated suspended ceiling. A low air velocity ensures good indoor climate and eliminates the risk of draft problems.

EHG's chilled beams are Eurovent-certified and tested according to EN-15116, EN-14518.



## Key figures

Length:	47.2" – 236.2"
Width:	12.2"(31), 17.3"(44), 22.5"(58), 27.8"(71), and 33"(84)
Product height:	5.8"
Capacity:	Cooling effect of 3,336 BTU

## Radiation exchange in chilled beams creates no air movement

### Function

As cold water passes through the chilled beam, the warm air from the room is cooled on the cold surface of the beam. The cooled air (which has a higher density) then streams through the chilled beam and down into the room (see Picture 2). This leads to air circulation in the room, where warm air from the room is continually replaced by cooled air. The cold surfaces of the beam also absorb heat radiation from warmer surrounding surfaces.

The high radiation quotient leads to direct heat exchange between the cold surfaces of the beam and the warm surfaces in the room. The radiation quotient for Carat is approximately 35% of the total emitted cooling effect. This is a high quotient compared to conventional finned battery beams which have a radiation quotient of approximately 5%.

Direct heat exchange, through a high quotient of radiation to the room surfaces, and a high cooling effect, even at lower room temperatures, allows a large amount of cold to be stored efficiently in the building structure during low-load periods. The overall result is that Carat gives off more cooling energy during a 24-hour period than a finned battery beam. This means that a lower room temperature can be achieved.

### Optimal design

### Construction

Carat is a chilled beam that absorbs heat by both radiation and convection. By optimizing the beam's radiation quotient, output has been increased by 50% compared to finned battery beams, without increasing the risk for drafts.

Carat is based on a method that is unique in the world: in a cold-rolling process, the copper pipe is connected by metallurgical bonding to a gilled aluminium sheet. The energy transfer between the cooling surface and the water circuit is made more efficient, which results in a high cooling effect per surface unit. The technology for the metallurgical bonding of copper and aluminium renders galvanic corrosion impossible.

Carat is available in widths from 12.2" to 33". The length can vary from 47.2" – 236.2" .

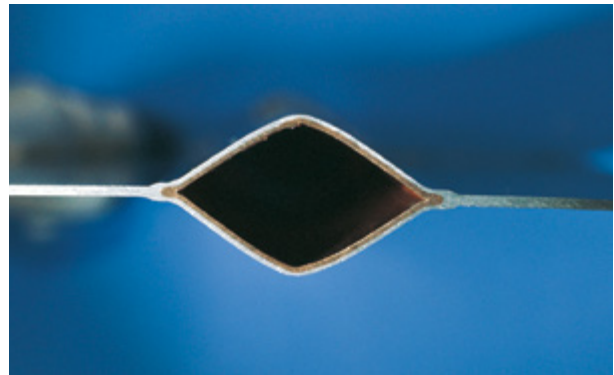
Carat provides a high cooling effect per surface unit, which leads to resource-efficiency and a low weight for the product. Carat is made of 100% recyclable materials.

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

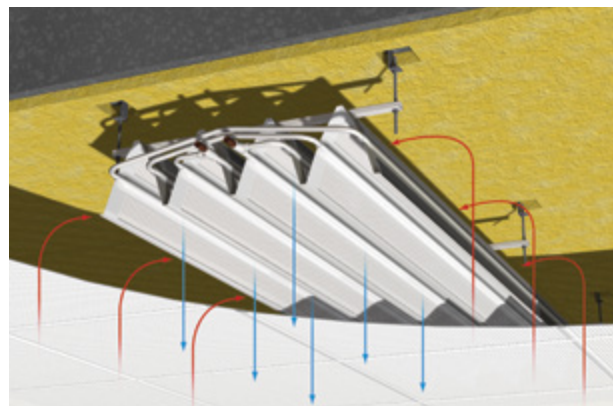
### Easy to clean

### Hygiene

Carat's surface area is four times smaller than that of a corresponding finned battery beam with the same performance. All parts of the product are accessible for cleaning and inspection. These qualities, together with the relatively strong aluminium plate, make Carat easy to wipe and clean.



Picture 1. Cross-section of EHG's unique strips. The rhomboid shape provides an efficient heat-transfer surface.



Picture 2. How Carat works.

# Chilled beams

# Carat

## Versions

**Installation:** Carat is mounted horizontally.

**Lengths:** Carat is available in lengths from 47.2" – 236.2", in steps of 4".

**Water connection:** Carat is available with a variety of connection sizes, 0.4", 0.5", 0.6", 0.9", and 1.1", depending on the product's width and connection options.

**Surface treatment:** Carat is powder-coated; the standard color is white, RAL 9010.

**Color:** Carat can be coated in a variety of special colors (see picture 3).



Picture 3. Carat with black coating, a plus feature.



### Versions



Picture 4. Carat -31



Picture 5. Carat -44



Picture 6. Carat -58




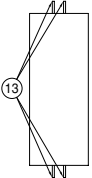
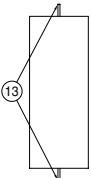
Picture 7. Carat -71

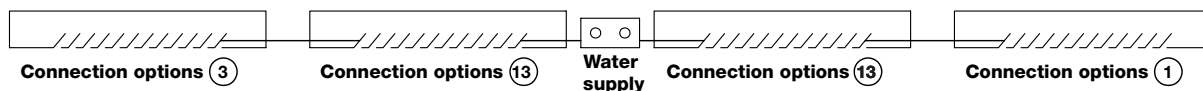


Picture 8. Carat -84

## Couplings & connections

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Coupling options	Model	Nominal Diameter (in)	Minimum flow (gpm)	
	Carat -31	0.4 0.5	0.24 0.48	
	Carat -44	0.4 0.6	0.24 0.71	
	Carat -58	0.4 0.5 0.6	0.24 0.48 0.95	
	Carat -71	0.4 0.6	0.24 1.19	
	Carat -84	0.4 0.5 0.6 0.9	0.24 0.48 0.71 1.43	
		Carat -31	0.5	0.48
		Carat -44	0.6	0.71
		Carat -58	0.6	0.95
		Carat -71	0.6	1.19
		Carat -84	0.9	1.43
		Carat -31	0.6	0.95
		Carat -44	0.9	1.43
		Carat -58	0.9	1.90
		Carat -71	0.9	2.38
		Carat -84	1.1	2.85



Due to of the beam's "gills", its surface structure looks different, depending on the direction from which it is viewed. If units connected in series are to have the same appearance, the connection point should be oriented in the same direction throughout the room. Note! Connection option 13 can be turned in both directions.

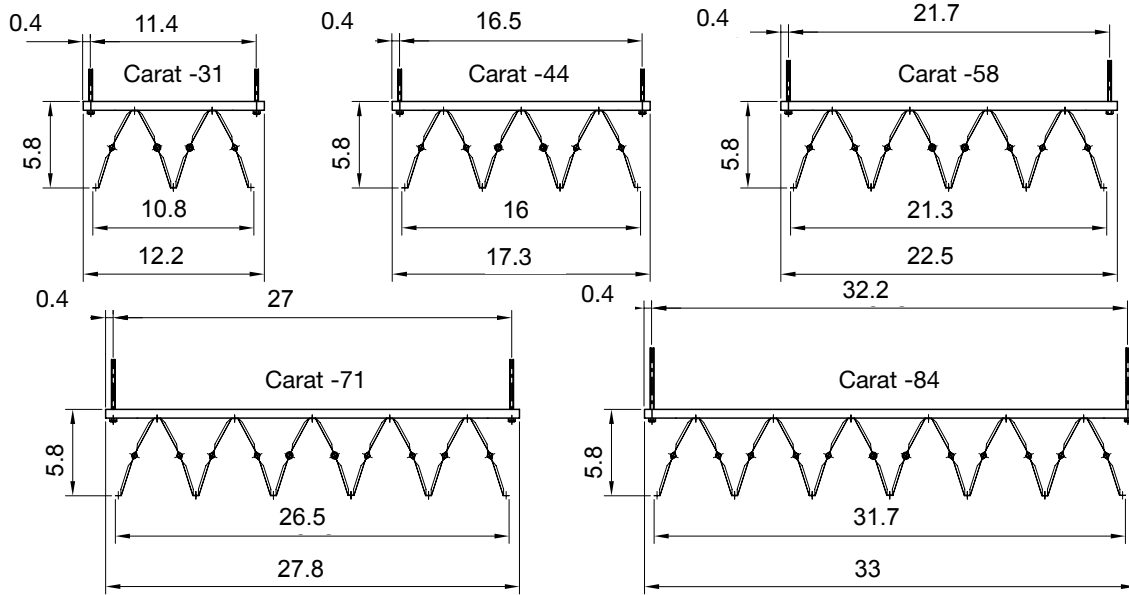
Table 3. Carat's couplings & connections.

## Weight & water content

	Carat 31	Carat 44	Carat 58	Carat 71	Carat 84
Weight, [lb/ft]	1.2	1.8	2.3	3.0	3.5
Water content, [gal/ft]	0.096	0.036	0.06	0.07	0.08

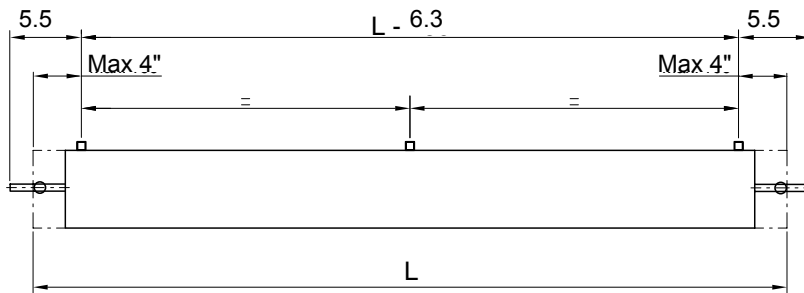
Table 4. Carat's weight & water content.

### Carat's width & height, (in)



### Length, (in)

As standard, Carat is available in lengths from 70" – 236", in steps of 4".



3 × 2 suspension points for lengths > 120".

### Connection dimensions, (in)

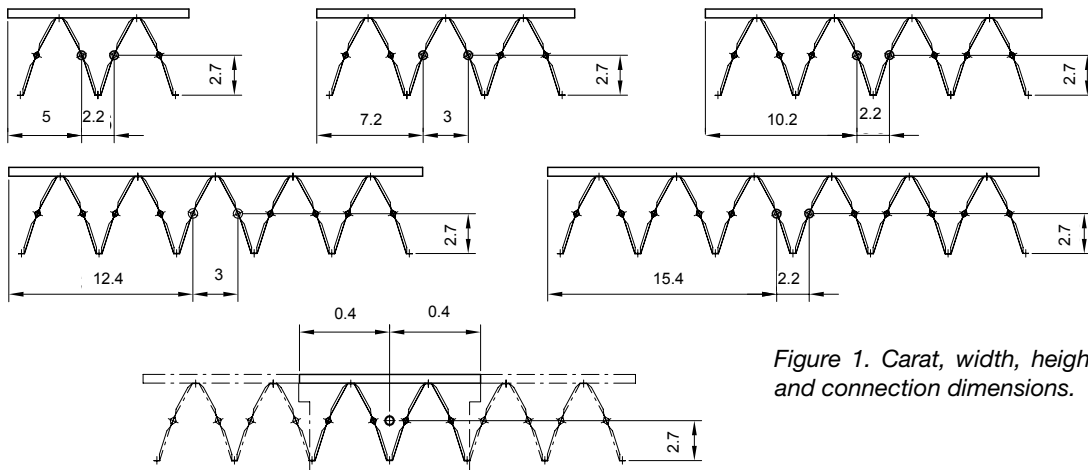


Figure 1. Carat, width, height, length and connection dimensions.

## Installation examples

Carat has a wide range of applications and can be installed in offices, exhibition halls and industrial premises or warehouses. Carat is suitable for both visible and hidden installation. Hidden installation above a perforated suspended ceiling is the most common in an office environment. During installation, it is important that the separation between the unit and the ceiling be large enough. Otherwise, the output can be reduced because of insufficient air intake. The minimum acceptable distance varies depending on the width of the unit. Table 5 and figures 2 to 4 list the minimum installation dimensions that are required for each model so as to avoid a reduction in Carat's efficiency. If the minimum installation dimensions are not met, the cooling effect of Carat must be reduced in accordance with diagram 4.

Carat is light, and this makes the unit easy to handle during installation. There are two suspension options for Carat. Carat can be installed using either a suspended wire or a threaded rod. Both the suspended wire and the threaded rod are easy to adjust, so as to achieve the necessary measurement between the product and the ceiling.

Model	A (in)	B (in)	C (in)
Carat -31	1.8	7.6	9.1
Carat -44	2.2	8.0	9.9
Carat -58	2.8	8.5	10.5
Carat -71	3.3	9.1	11.9
Carat -84	4.1	9.9	12.7

Table 5. Minimum installation dimensions, required by the respective models, to avoid a reduction in Carat's efficiency.

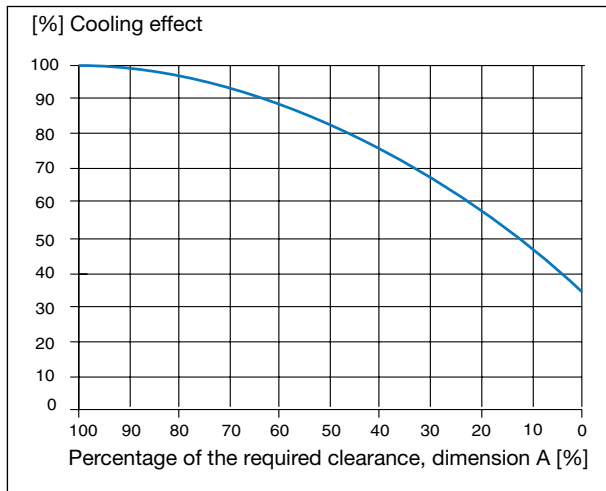
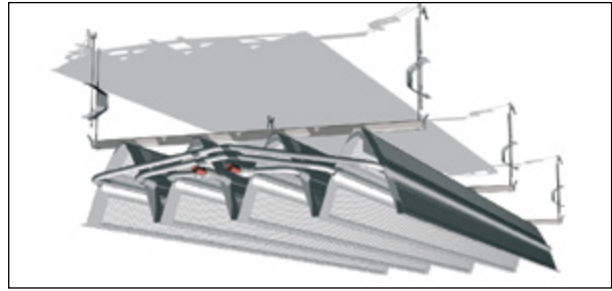
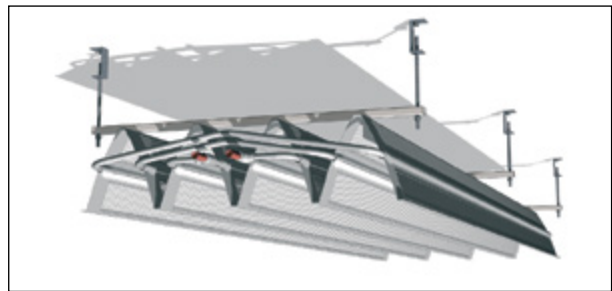


Diagram 4. Reduction of the cooling effect when dimension A is reduced.



Picture 8. Installation of Carat with a suspended wire.



Picture 9. Installation of Carat with a threaded rod.

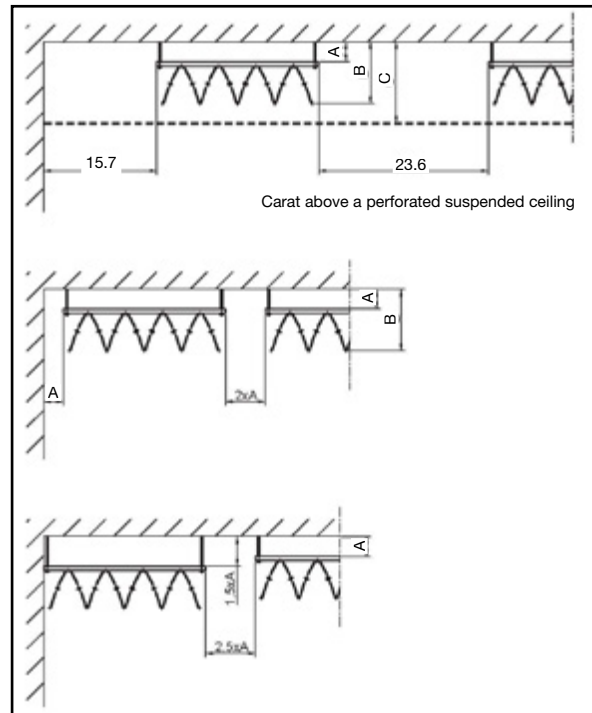


Figure 2-4. Installation dimensions for Carat.

**Note:** To achieve low air velocities as per diagram 3, the distance between the beams should be at least 23.6".



## Use

EHG has developed a supply air beam, Celo, which can be installed above a suspended ceiling.

Thus, you can conceal the ventilation and cooling features and create an unbroken ceiling without visible technical installations. The Celo concept has been developed together with Ecophon, which provides acoustic ceilings adapted for the system.

## Installation

Celo is installed above the suspended ceiling. The system requires open slits in the suspended ceiling for the cooled air to exit and for the intake of warm air from the room to the chilled beam.

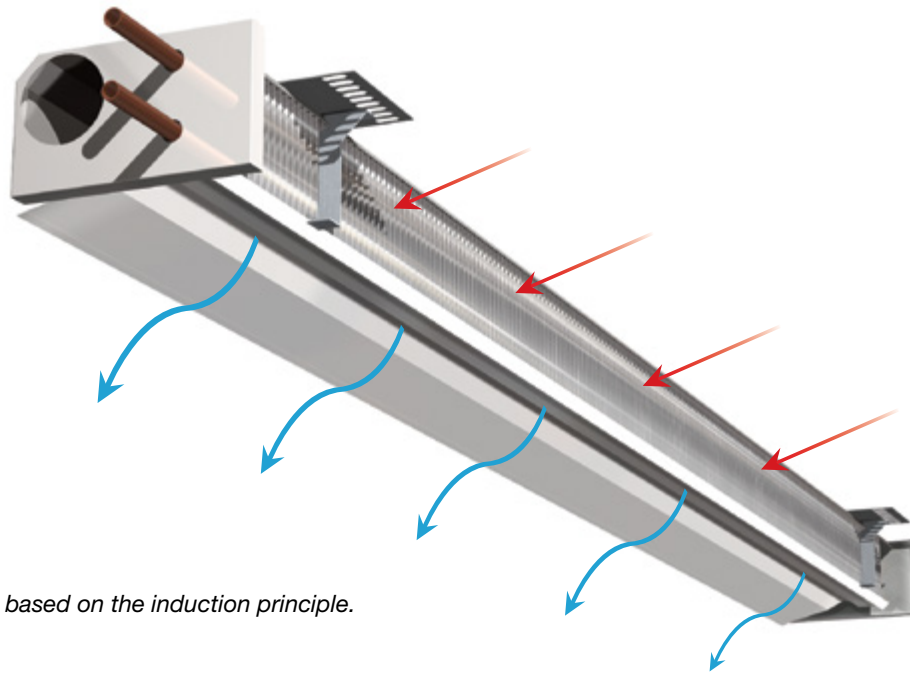
## Worth noting

Celo is based on a unique technology in which the cooled air is carried down through an outlet slit in the suspended ceiling, then along the wall and down towards the floor. The cooled air has a fan-shaped distribution, which ensures low air velocities in the occupied area. EHG's supply air beams are Eurovent-certified and tested according to EN-15116 and EN-14518.



## Key figures

Capacity: Cooling effect of up to 2,370 BTU  
Air quantity of up to 42 cfm



Picture 1. Celo is based on the induction principle.

## Function

Patent-applied-for technology guarantees a good indoor climate.

Celo consists of a supply air beam (see picture 1), which is placed above a suspended ceiling. Celo's technological solution is based on a unique technology (patent applied for), where the air is carried down through an outlet slit in the suspended ceiling, then along the wall and down towards the floor (see picture 2). The air has a fan-shaped distribution and all together, this ensures low air velocities in the occupied area.

The technology, where the clean cooled air is driven slowly down the wall towards the floor and where the exhaust unit is placed above the suspended ceiling, ensures good air-change efficiency in the room.

## Construction

Celo is equipped with a vertical battery and a lateral air duct. There is an air connector on each end of the beam, and one of these is used for connecting the air. A cleaning hatch, with a handle, is placed on the unused connection. The cleaning hatch provides access to the beam's air duct for cleaning and inspection. The product is supplied with factory-preset airflow and nozzle pressure.

The air is supplied to the room through Coanda nozzles placed along the air duct. The outermost nozzles have a

sideways angle of 30°, an angle that decreases the closer the nozzles are to the center. This creates a fan-shaped distribution pattern.

The nozzles are accessible for plugging from below, if you wish to change the pressure and flow pattern at a later time.

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



Picture 2. Celo's technical solution is based on a unique technology, patent applied for, where the cooled air is carried down through an outlet slit in the suspended ceiling, then along the wall and down towards the floor.

# Chilled beams

# Celo

## Concealed installations

Celo makes it easy to create a beautiful unbroken ceiling (see picture 3). Celo provides great freedom when designing a suspended ceiling (see Picture 4). The choice is between a wall-to-wall suspended ceiling with slits and a suspended island installation.

Supply air beams, exhaust air units, ventilation ducts and electrical installations are all placed above the suspended ceiling.

## Simple installation and service

Installation of the Celo supply air beam is simple. Careful adjustment of the suspended ceiling is not required. When the installation engineer has finished installing the beam, the ceiling installer takes over; basically, the only thing he has to do is fit the ceiling.

Since the suspended ceiling panels can be easily dismantled, the supply air beams and the other technical installations are easily accessible for maintenance and service.

The many years of experience with conventional chilled beam systems, where the air is drawn through slits in the suspended ceiling and then brought back through a supply air beam placed at the center of the room, prove that there is good hygiene above the suspended ceiling. The big difference with Celo is that the supply air beam is not visible!



Picture 3. Celo makes it easy to create a beautiful unbroken ceiling.



Picture 4. Celo provides great freedom for the design of the suspended ceiling.

## Data

### Variants

Celo is installed above a suspended ceiling.

**Lengths:** Celo is available in lengths from 47.2" - 141.7", in steps of 12".

**Water connection:** The water connection is horizontal 0.60".

**Air connection:** The air connection is horizontal 3"Ø.

**Nozzle angle:** The standard angle of the nozzles is 30°.

**Surface treatment:** Celo is manufactured as standard from enameled sheet metal, color white, RAL 9010.

**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 the product. Where a damper is desired, you can order a balancing damper.

### Plus features

Factory preinstalled.

**Drypac™:** Anti-condensation-treated cooling batteries that enable water temperatures below the dew point without condensation drips.

**Valves and actuators:** Valves and actuators are fitted externally.

**Air vent:** An air vent is mounted on the return side of the connection pipe on the exterior of the product.

### Accessories

Delivered separately.

**Suspension wires:** Suspension wires and Z-bars can be supplied for ceiling installation, 4 suspension points.

**Threaded rods:** Threaded rods can be supplied for installation in the ceiling. 4 suspension points.

## Cooling effect, Celo

### Drypac™, condensation protection

Drypac™ is a condensation protection consisting of Perlite (volcanic stone), which is applied to the fin surfaces. Drypac™ has properties, which allow a feed temperature that is 39.2° F below the dew point, for continuous operation, and 41 to 46.4° F below dew point for limited periods. Drypac™ provides both an increased effect output and increased security against condensation drips. At a working temperature above the dew point, the output is reduced by 17 % but when the working temperature is below the dew point, there is no reduction in output. This means that the effect is highest when the need is greatest.



# Chilled beams

Celo

## Couplings & connections

Celo is supplied in lengths from 47.2" - 141.7" in steps of 12". The connection dimension for the water is o.d. 0.6" and for the air 3"Ø.

## Designations

Figure 2 shows the different coupling options for Celo. Type A1 has a horizontal air connection at the end and a horizontal pipe connection at the same end of the beam.

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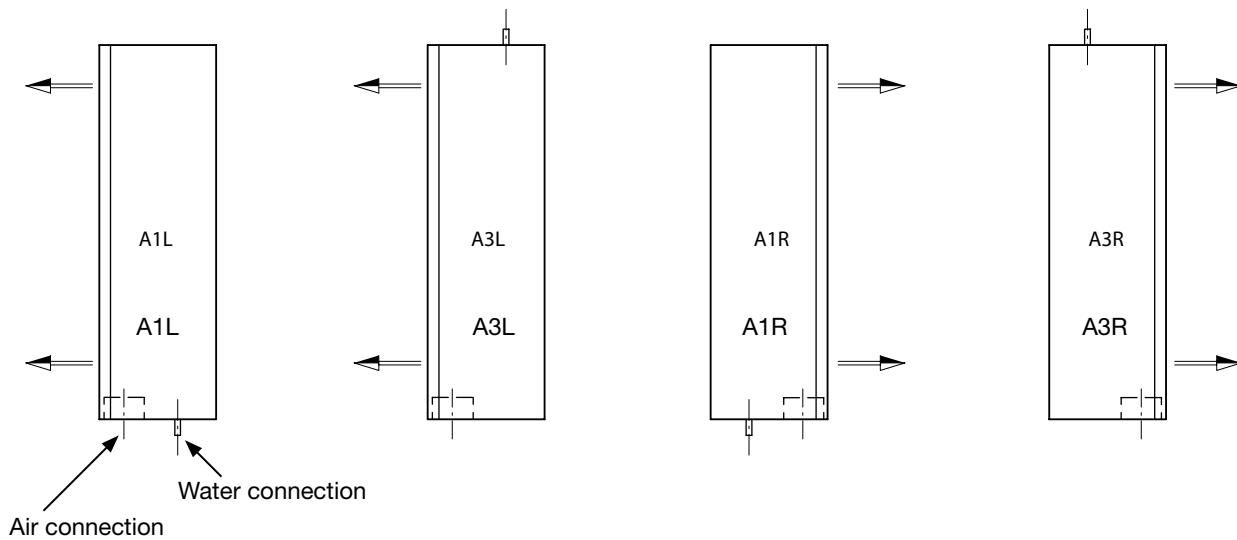
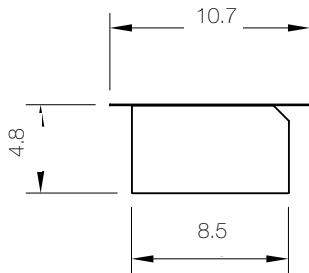
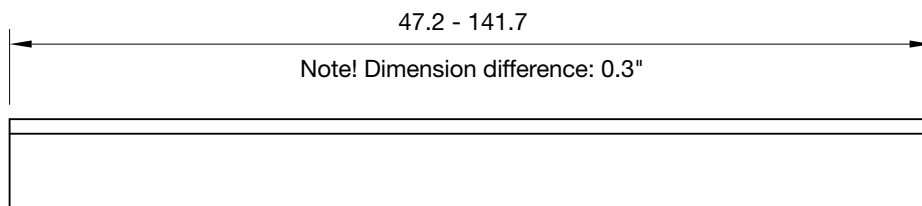


Figure 2. Celo has four different coupling options, A1L, A3L, A1R and A3R.

## Width & height, (in)



## Length, (in)



## Connection dimensions, (in)

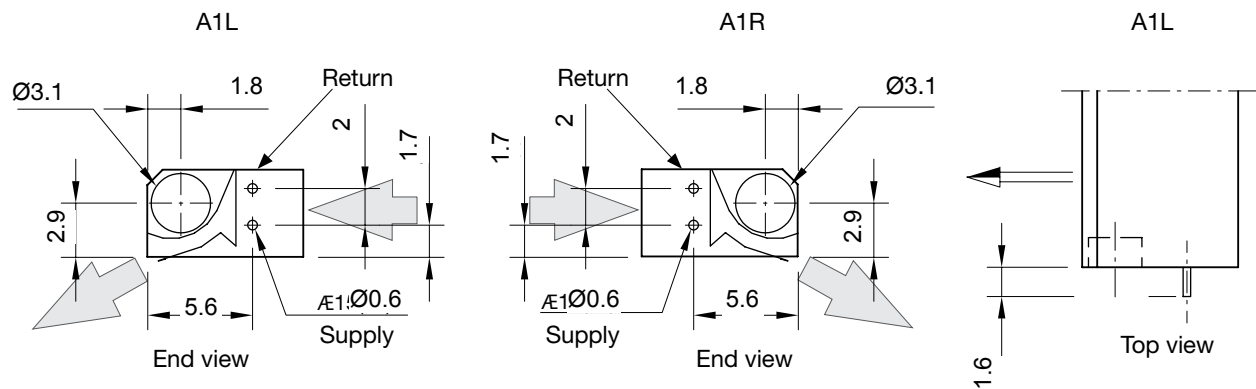


Figure 3. Celo, width, height and connection dimensions.

## Weight & water content

Weight, lb/ft	4.4
Water content, gal/ft	0.03

Table 7. Celo, weight & water content.

## Installation

Celo is installed above the suspended ceiling. The beam is attached to the ceiling joist with suspended wires, threaded rods or screws. Installation components can be ordered as accessories. All dimensions are in inch.

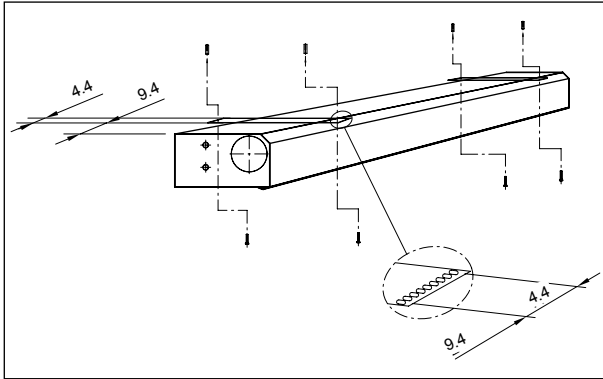


Figure 3. Dimensions for fixing points.

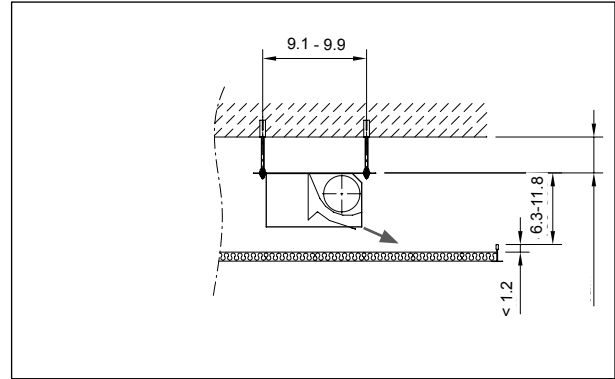


Figure 4. Dimensions for suspended installation. Suspended island installation.

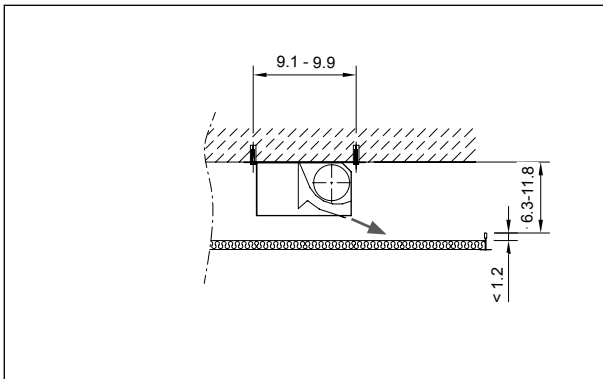


Figure 5. Measurement for installation on to a ceiling joist. Suspended island installation.

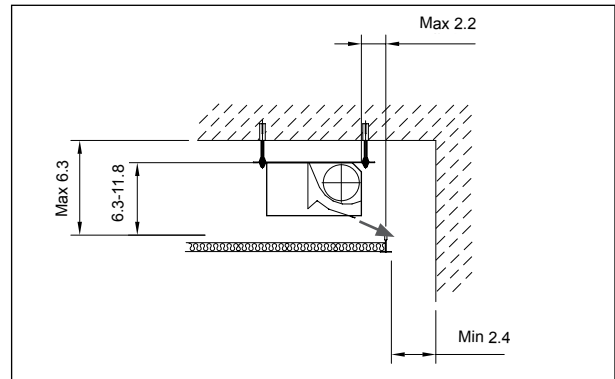


Figure 6. Dimensions for installation, outlet along the wall.

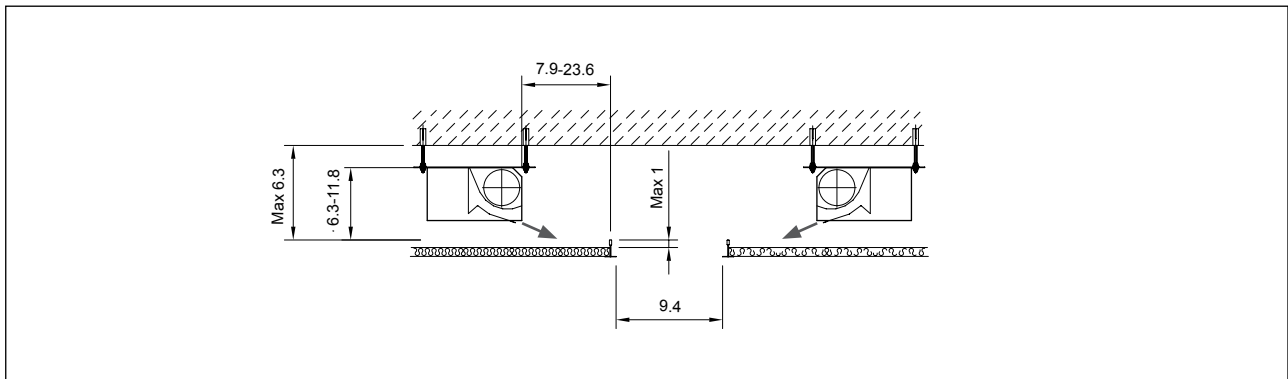


Figure 7. Dimensions for suspended island installation. The maximum dimension of 1" is between the upper edge of the suspended ceiling and the highest point of the ceiling that can interfere with the air current.

\* The dimension is between the upper edge of the beam and the highest point of the ceiling that can interfere with the air current.

## Installation examples

### Wall-to-wall suspended ceiling with slits

To achieve a sufficiently high water flow according to the effect diagram when shorter units are used, it is often necessary to have two Celo beams connected in series.

When the water circuit is connected in series, the same water flow goes through both beams.

This results in a water flow through the beam that is twice as large as the flow in parallel-coupled beams, at the same temperature difference (supply/return) and cooling effect.

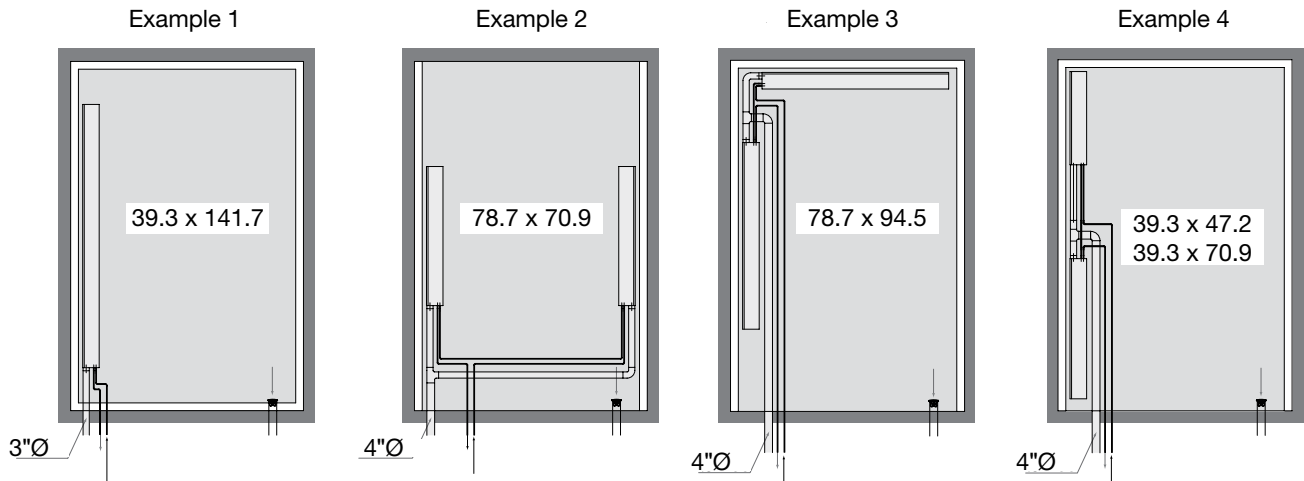


Figure 8. Four examples of how Celo beams can be placed in combination with different slits in the suspended ceiling, including suitable water and air connection.

**NB!** Each supply air beam has an air connection of 3"Ø. Each supply air beam has a maximum air volume to fulfil the desired noise levels. Two beams cope with a greater total air volume.

To avoid increased air velocities, the distance from end to end should be greater than 47.2" (see figure 8, example 4). EHG's control valves can be used as exhaust air units.

### Suspended island installation

Celo can also be installed in a suspended island. The picture below shows examples of this.

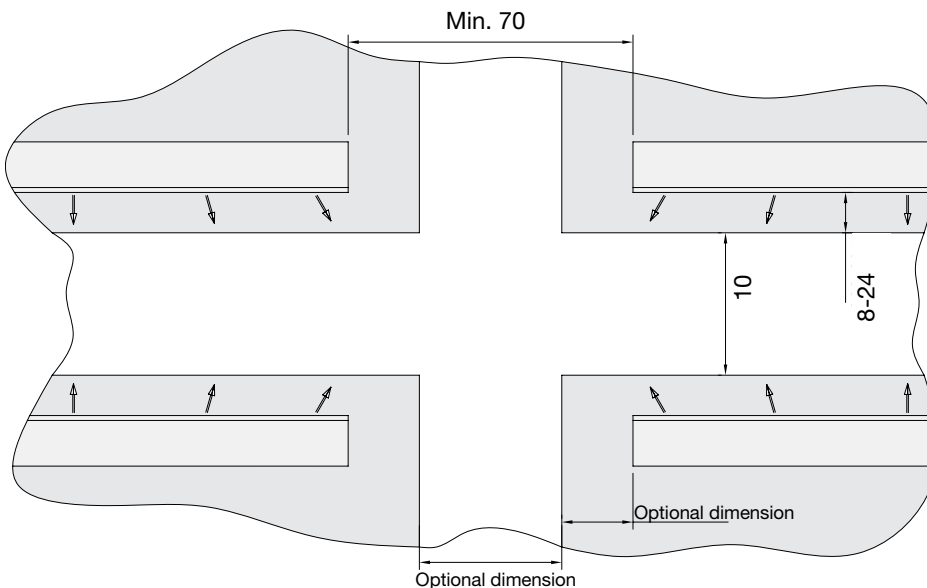


Figure 9. The picture shows four corners where suspended ceiling islands meet.

All dimensions are shown in inches.



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 Drypac™ condensation protection or Regula Secura condensation guard. EHG's supply air beams are Eurovent-certified and tested according to EN-15116 and EN-14518.



## Key figures

Length: 47.2" - 141.7"  
Size: Plafond B has the format 12.6" × 11.9".  
Plafond C has the format 9.4" × 9.1".  
Plafond D has the format 14.1" × 11.9".  
Capacity: Cooling effect of up to 4,535 BTU  
Air quantity of up to 85 cfm

## 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 effect. 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.

## 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. 141.7".

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.



Picture 2. Plafond B (top), Plafond C (middle) and Plafond D (bottom).

# Chilled beams

# 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 4).

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 EHG 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 3. Battery and air duct are accessible for maintenance and cleaning.



Picture 4. Plafond D with air injection across the wall.



Picture 5. Plafond C with air injection across the ceiling.



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

## Data

### Versions

**Size:** Plafond is available in three different designs:  
Plafond B has the format 12.6" x 11.9"  
Plafond C has the format 9.4" x 9.1"  
Plafond D has the format 14.1" x 11.9"

**Lengths:** Plafond is available in lengths from 47.2" - 141.7" in steps of 4".

**Water connection:** The water connection is horizontal or vertical, with outer diameter of 0.6".

**Air connection:** The air connection can be rotated into a horizontal or vertical position, 4"Ø.

**Design:** The perforations in the front plate are available in two versions, Slot and Dot. Slot is the standard perforation supplied.

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

**Surface treatment:** Plafond is manufactured as standard from enamelled sheet metal, color white, RAL 9010.

**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.

### Plus features

Factory preinstalled.

**Heating:** There is a heating option by way of an additional heating pipe in the battery.

**Drypac™:** Anti-condensation treated cooling batteries that enable water temperatures below the dew point without drips.

**Air vent:** Air vents are installed on the return side of the connection pipe.

**Color:** Special colors and other surface finishes, e.g. galvanised and powder coating. Please contact EHG for more information.

### Accessories

**Side covers:** Available in lengths of up to 141.7". Supplied non-perforated.

### Cooling effect

#### Drypac™ condensation protection

Drypac™ is a condensation protection consisting of Perlite (volcanic stone), which is applied to the fin surfaces. Drypac™ has properties that enable it to work with a supply temperature that is 39.2° F below the dew point, for continuous operation, and 41 to 46.4° F below the dew point for limited periods. Drypac™ provides both an increased effect output and increased security against condensation drips. At a working temperature above the dew point, output is reduced by 17 % but when the working temperature is below the dew point, there is no reduction in output. This means that the effect is highest when the need is greatest.



# Chilled beams

# Plafond

## Couplings & connections

Plafond is supplied in lengths from 47.2" to 141.7" in steps of 4". The connection dimension is 0.6" o.d. for the water and 4" 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:

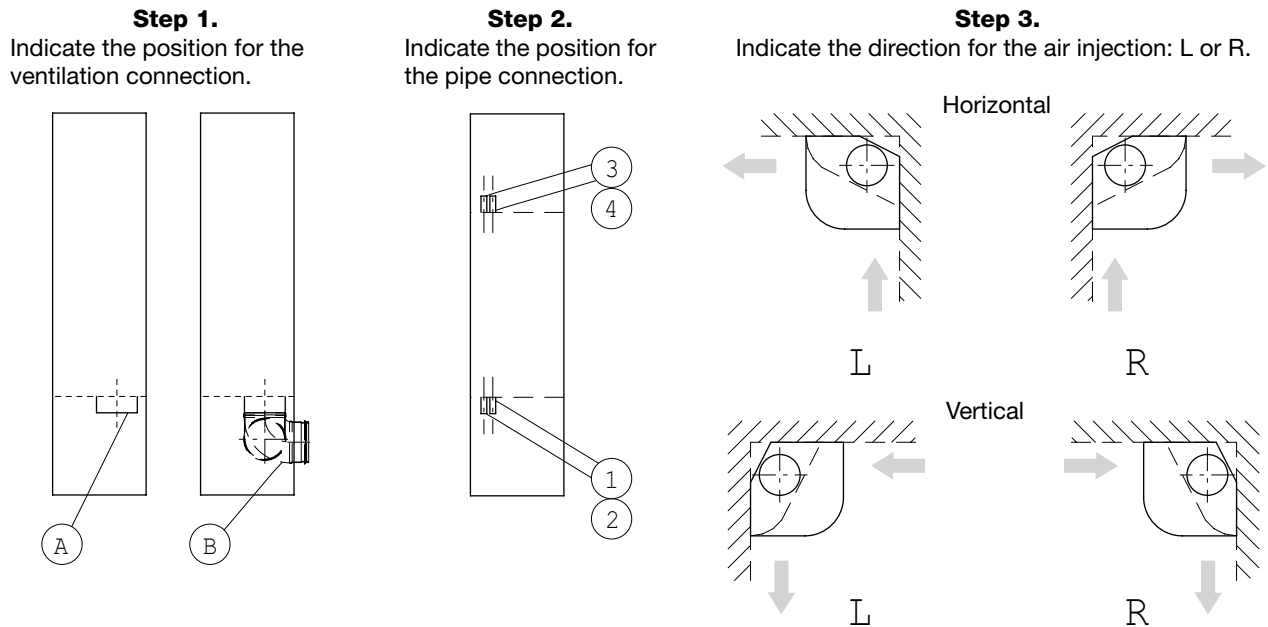


Figure 1 Connections 2 and 4 are vertical and are provided with elbow couplings.

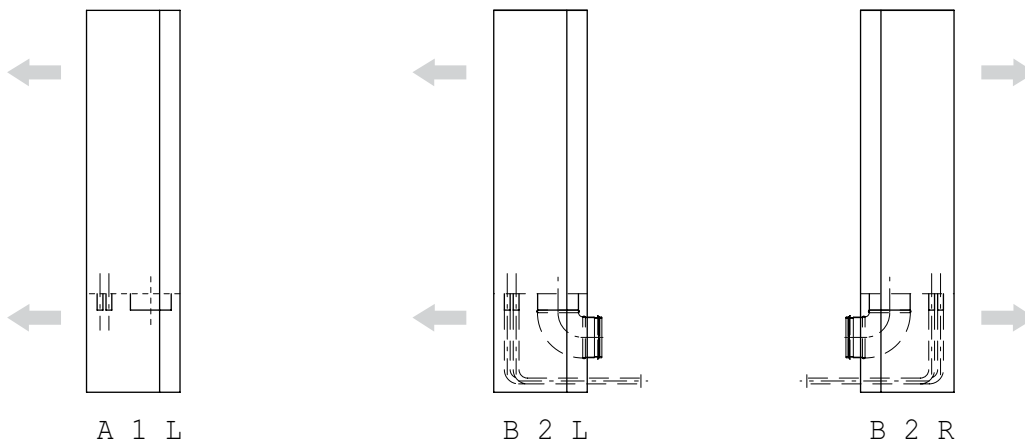


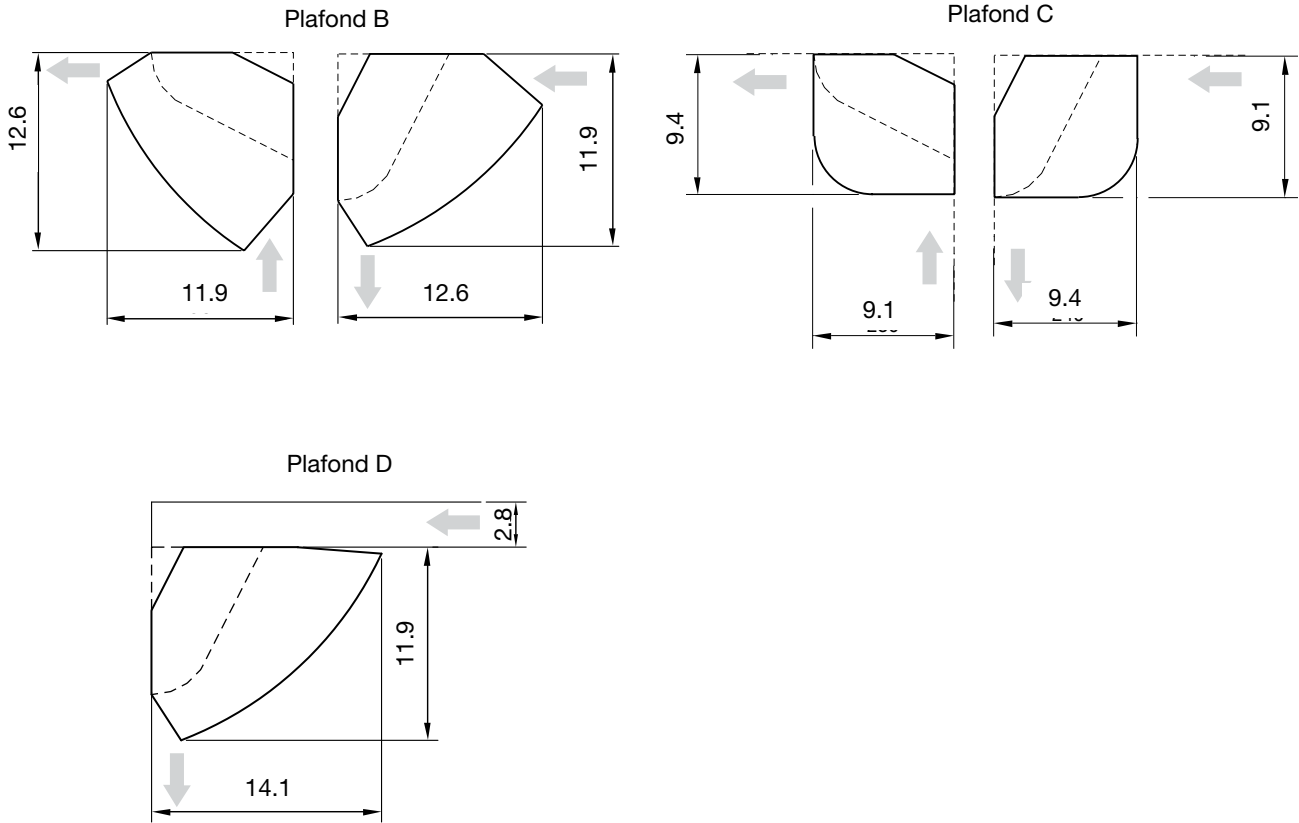
Figure 2. Examples of standard coupling options, horizontal air injection. Type A1L, therefore, has the air connection on the end piece, pipe on the same end piece and the direction of air injection L.

# Chilled beams

# Plafond

Width & height, (in)

42



Length, in

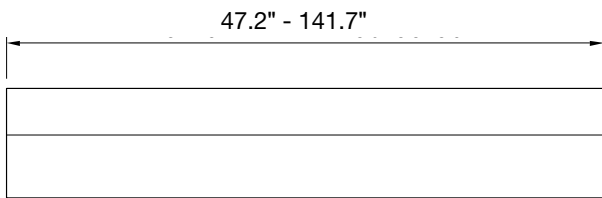
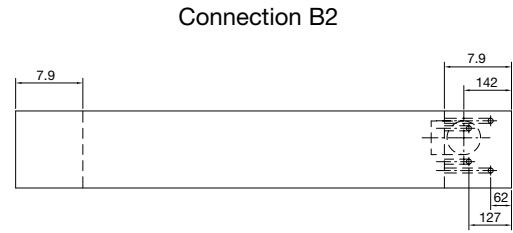
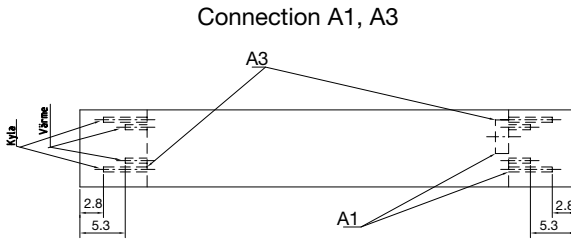


Figure 3. Plafond B, C and D, width, height and length.

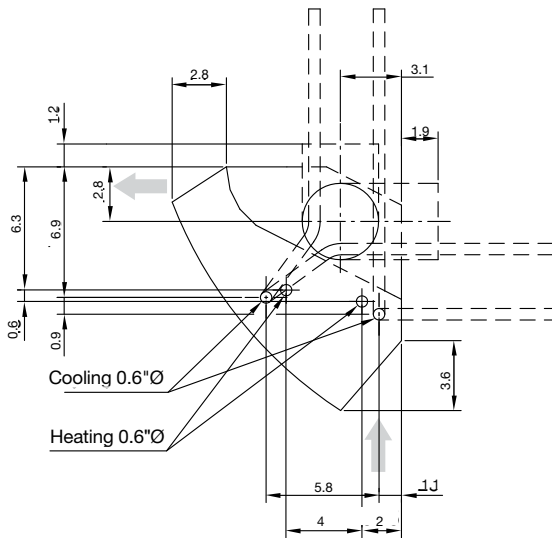
# Chilled beams

# Plafond

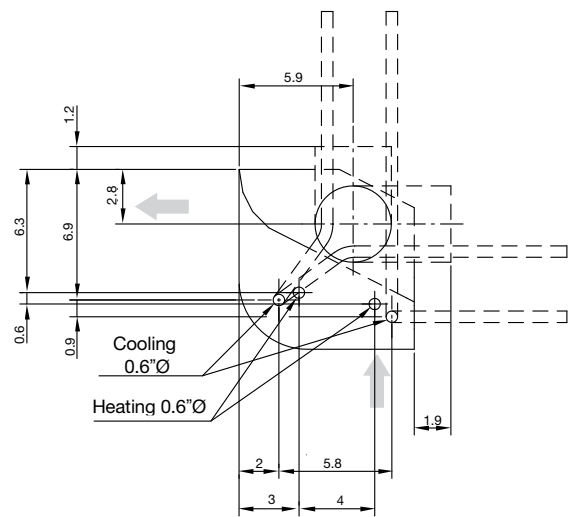
## Dimensions, (in)



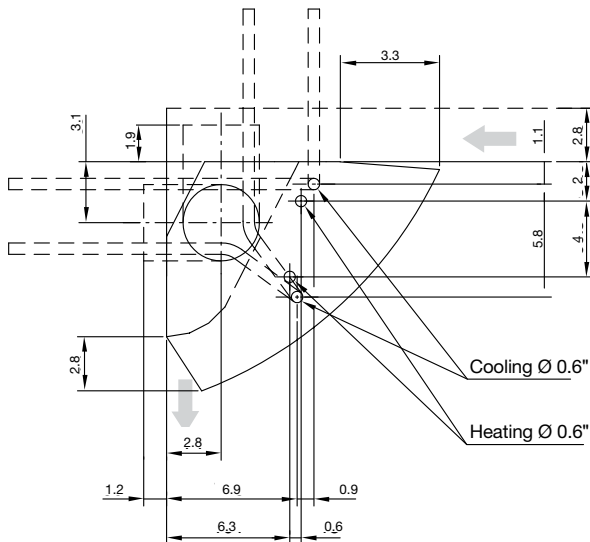
Plafond B



Plafond C



Plafond D



## Weight and water volume

	Plafond
Weight, lb/ft	7.8
Water content, cooling gal/ft	0.05
Water content, heating gal/ft	0.03
Copper pipes, quality	SS/EN 12449
Pressure class	PN10

Table 8. Plafond, weight and water volume.

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

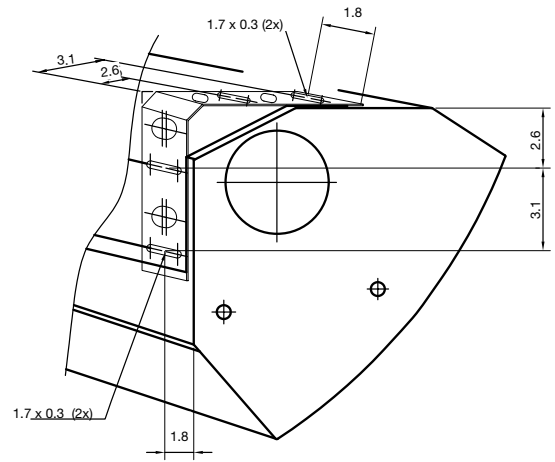
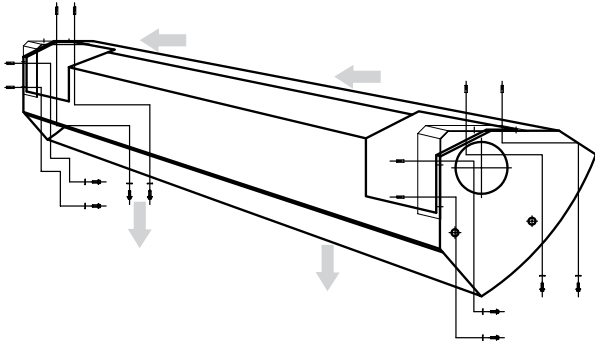
# Chilled beams

# Plafond

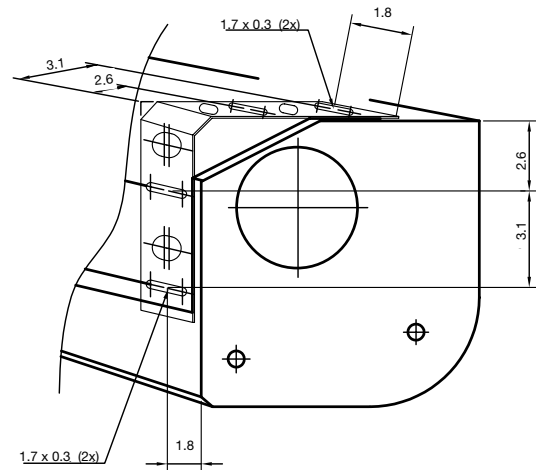
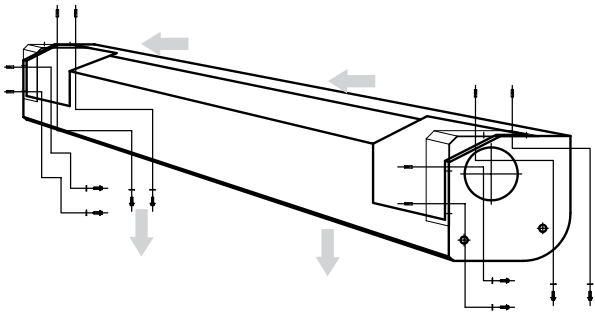
## Suspension, (in)

44

Plafond B



Plafond C



Plafond D

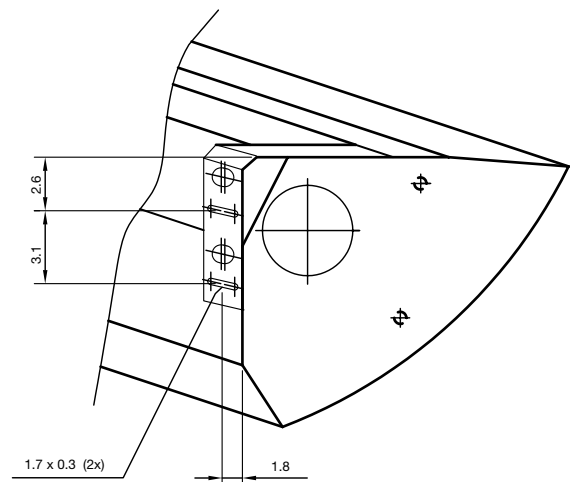
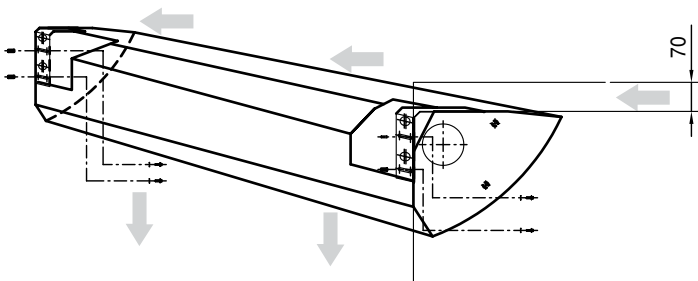


Figure 5. Plafond B, C and D.



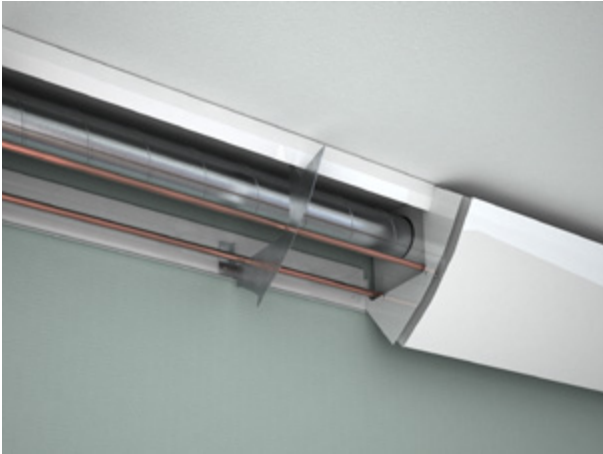
# Chilled beams

# Plafond

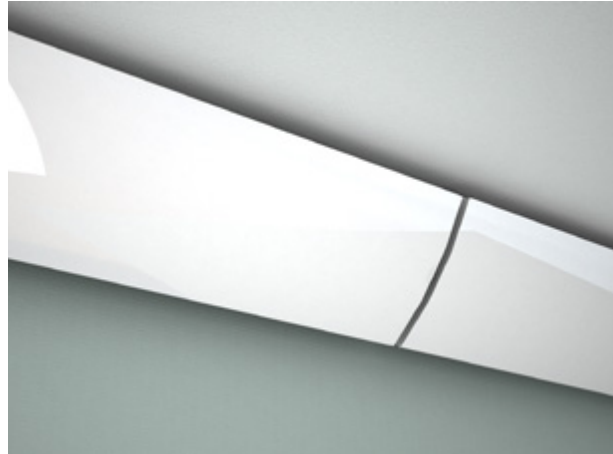
## Installation of side covers

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 (0.8") is recommended between the beam and the side cover to indicate the different parts.

46



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.

## Use

EHG's comfort unit Plexus gives many placement possibilities since it fits into either a 24" x 24" or a 48" x 24" plenum.

Plexus is provided with fixed lamellas which controls the primary air into non-parallel jets in a 360 degree air pattern. The 360 degree air pattern results in shorter air throws (30%) and a draft free indoor climate. Plexus can be used for both cooling, heating and ventilation. Plexus can be equipped with the functions Drypac™ condensation protection, Regula Secura condensation guard, down fold battery for better accessibility, and pre-mounted valves and actuators. The possibilities are many and the flexibility large.

## Installation

Plexus is provided in both an integrated and a free hanging model. Plexus I are mounted integrated into false ceiling there the comfort unit is placed above the standard T-bars. Plexus X is mounted integrated into false ceilings there the comfort unit is placed into hidden bars, for example edge DS. Plexus Y and Z are for mounting into false ceiling system edge E. Plexus F is mounted free hanging or close to the ceiling. Plexus can be delivered with horizontal or vertical air connection and with horizontal water connection.

## Worth noting

By the adaption to ceiling tile dimensions the Plexus beam easily can be mounted into modern buildings.

Because of Plexus 360 degree air pattern and the resulting shorter air throws many Plexus beams can be mounted into same room without creating any draft problems.

The air volume can easily be adjusted with EHG's JetCone system, which creates a great flexibility.

EHGs active beams and comfort unit Plexus are Eurovent certified and tested according to EN-15116, EN-14518.



## Key figures

Length: 24" alternative 48"  
Width: 24"  
Height: 9"  
Capacity: Cooling effect of up to 3,410 BTU (Plexus 60)  
Air quantity of up to 25 cfm, 32 iwg (Plexus 60)  
Cooling effect of up to 5,115 BTU Plexus 120)  
Air quantity of up to 45 l/s, 32 iwg (Plexus 120)



*Plexus. 360° - Naturally.*

Plexus integrates both cooling and heating functions from the climate beams together with the supply air terminals technique. Unique for the Plexus is that the air is supplied in a 360° air pattern instead of a traditional 4 way pattern. This feature allows approximately 30% shorter air throws.

# Chilled beams

# Plexus

## Function

Plexus works by the induction principle. The supply air is let in by induction jet nozzles and then controlled by fixed deflectors into a 360° sunflower shaped pattern.

The heated room air which is inducted through the cooling battery/coil is 4-5 times larger than the supplied primary air. The battery/coil consists of aluminium grilles fitted onto cu-tubes where the cooled water runs through and thereby absorbs the rooms heated air, it is then let to a central cooling machine.

## Hygiene

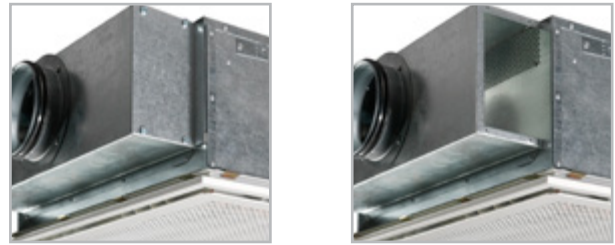
Plexus can as an option even be delivered with a partially down fold battery to ease access for cleaning all parts of the unit.



*The battery is recessed and access to the whole comfort unit is given. When you open the inspection panel, free access is given to the bigger parts of the product as well as the air duct system.*

## Cleaning hatch

Plexus comes as standard with an inspection and cleaning hatch, through this you can easily access the unit and ducts.



*When the hatch is opened an easy access to the ducts is created.*

## Construction

Plexus is developed and constructed to reach shortest possible air velocities in the comfort zone.

This is achieved by the fixed deflectors which let the air spread into a 360° around the beam. Plexus is a comfort unit and is very compact in its design but still delivers optimal effects and easy access for cleaning and inspection.

The water pipes are made of copper. The water flowing through the beam should always be free from oxygen to guarantee that corrosion does not occur.

## Heating

Plexus can, as an extra option, be equipped with EHG's patented heating solution. By placing the heating coil in the end of the battery, instead of in the middle as normally on chilled beams, even better mixing ventilation is received and the vertical gradient will be distinguishably reduced. By placing the heating coil closest to for example a window, the down drafts will be reduced and the primary cooling source becomes eliminated fast and effective.

## Adjustment JetCone



Plexus is delivered as standard with EHG's JetCone air volume adjustment system. JetCone makes Plexus to a very flexible product with possibility of adjusting air diffusion, air volume and air pressure (without any need of any tools). Adjustment is made by setting the four adjustment regulators into different positions. The adjustment is done without any tools, which makes it very fast and easy to adjust the air diffusion, 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 required data.

To offer the best flexibility concerning the ventilation air volume, Plexus 60 can be ordered in four different types S (standard) and L (low), M (medium) and H (high).

The different types results in that Plexus receives different operating ranges for minimum and maximum air volume. By limiting the operating ranges in different configurations, you can with our JetCone adjustment system easily obtain a very accurate adjustment to requested air volume.

Type S is EHG's standard type which have a variable air volume capacity which covers the most common demands. In configuration L, M and H we have combined the JetCone system with traditional nozzles to be able to offer three predefined operating ranges. These operating ranges is overlapping each other to be able to give a very accurate regulation. Type L is predefined to the same operating range such as S, while M and H have a operating range which gives higher air volumes. The big advantage is that L, M and H easily can be re-configured and replace each other.

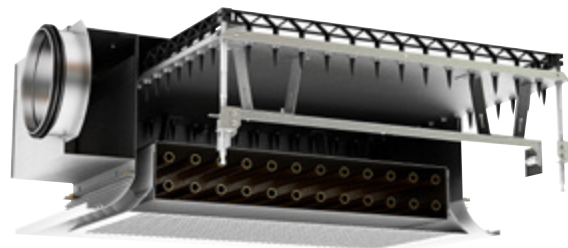
The difference between type L, M, H and type S is that type S can handle a higher nozzle pressure with low sound levels and gives a little bit higher capacities at those operating circumstances. Diagram 2 and 3 shows the capacity for the different types. Diagram 10 and 12 shows the minimum and maximum air volume, and the sound level at the specific operating point.

Plexus 120 is only available in standard type (S).



## Example

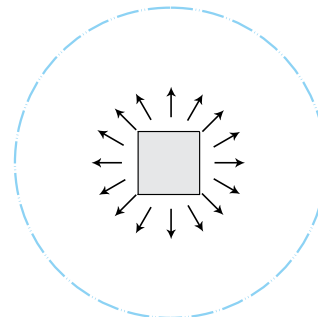
Today one person is sitting in a cell office. The company is making an expansion and employes one more person, who should be placed in the same room. The air volume then needs to be adjusted to cover the fresh air requirement for two persons instead of one person. The air volume is adjusted by modifying the position of the adjustment point and the requested result is given. If it is requested to direct the air diffusion in a certain way this is also possible to do. With the JetCone adjustment system it is possible to get an asymmetric air pattern.



## Optimal Diffusion Pattern *EHG's Jet-Cone system.*

As the air is not supplied in parallel rays (stream), but in a sun shaped 360° pattern. The air rays (stream) never collide with the result of longer throws. Plexus has 30% shorter throws than similar products.

The significant shorter throw makes it possible to place the comfort units closer together and thereby it is possible to supply much more cooling effect to the room.



*With Plexus you create all conditions for lower air velocities in the occupied zone which result in a climate without drafts in the most natural way.*

## Data

## Versions

### Plexus 60

Plexus 60 is a squared comfort unit, with perforated face plate, and is as standard prepared for ventilation and cooling.

The perforated face plate is fitted in the height of the recessed ceiling, to give an aesthetic and complete integration in the ceiling.

Plexus 60 is delivered preset for a certain flow at a certain pressure, which contributes to a fast and easy start of the ventilation system.

If needed the optimal 360° diffusion pattern can be adjusted.

Plexus 60 is available in four different air volume configurations, S (standard), L (low), M (medium) and H (high). The configuration refers to the opportunity of changing the air volume in the beam, for further information see diagram 9 and 11.

Plexus I have a 23.4" x 23.4" face plate and fits into the T24/Lay in ceiling systems 23.6" x 23.6".

Plexus X have a 23.6" x 23.6" face plate and fits into i.e. hidden T-bar, clip-in and similar ceiling systems.

Plexus Y have a 22.6" x 22.6" face plate and fits into the T24 ceiling system edge E.

Plexus Z have a 23" x 23" face plate and fits into the T15 ceiling system edge E.

### Plexus 120

Plexus 120 is a rectangular comfort unit, with perforated face plate, and is as standard prepared for ventilation and cooling.

The perforated face plate is fitted in the height of the recessed ceiling, to give an aesthetic and complete integration in the ceiling.

Plexus 120 is delivered preset for a certain flow at a certain pressure, which contributes to a fast and easy start of the ventilation system.

If needed the optimal 360° diffusion pattern can be adjusted.

Plexus I have a 47" x 23.4" face plate and fits into the T24/Lay in ceiling systems 48" x 23.6".

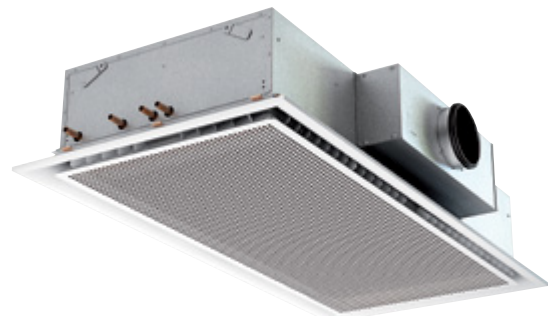
Plexus X have a 47" x 23.6" face plate and fits into f.x. hidden T-bar, clip-in and similar ceiling systems.

Plexus Y have a 46" X 22.6" face plate and fits into the T24 ceiling system edge E.

Plexus Z have a 46.6" x 23" face plate and fits into the T15 ceiling system edge E.



*Plexus 23.6" x 23.6", integration in recessed ceilings.*



*Plexus 47.2" x 23.6", integration in recessed ceilings.*

# Chilled beams

# Plexus

## Plexus F

Plexus F could either be a squared (F 60) or rectangular (F 120) comfort unit, with perforated face plate, and is as standard prepared for ventilation and cooling.

Plexus F are free hanging units with a face plate like the other models.

Plexus F are delivered preset for a certain flow at a certain pressure, which contributes to a fast and easy start of the ventilation system.

If needed the optimal 360° diffusion pattern can be adjusted.

Plexus F 60 is available in four different air volume configurations, S (standard), L (low), M (medium) and H (high). The configuration refers to the opportunity of changing the air volume in the beam, for further information see diagram 10 and 12.



*Plexus F 60*

# Chilled beams

# Plexus

## Plus features

Factory pre-installed.

**Heating:** The product can be equipped with a water circuit in the battery to provide a heating function.

**Drypac™:** The batteries can be equipped with an anti-condensation surface layer, which ensures increased protection against condensation or increased power output.

**Adaptation for suspended ceilings:** The product can be adapted to most types of suspended ceilings offered on the market.

**Special size:** Plexus is also available for ceiling type 24.6" x 24.6" (62), 26.6" x 26.6" (67) and 24" x 24" (U) with model name i. e. Plexus IS 62 and Plexus IS 67.

**Down fold battery:** Requires connection with flex hose. Battery runs down about 8" at the other end.

**Special model:** Plexus can also be delivered for ventilation only (without cooling battery).

## Accessories

Delivered separately.

## Color

As standard, Plexus is powder-coated in white, RAL 9010, gloss value 30. Other colors can be ordered specially.

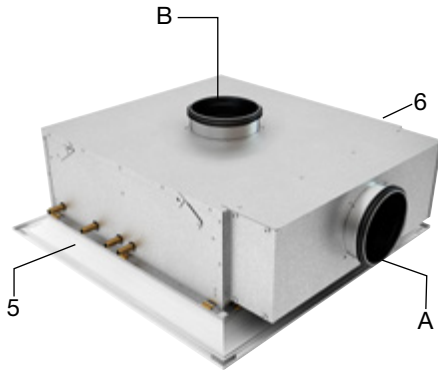
# Chilled beams

# Plexus

## Connections

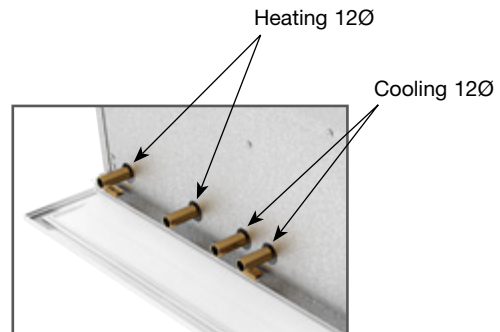
### Plexus 60

Water connection 0.5"Ø. Supply air connection 5"Ø (A) alternatively S 5"Ø (B), L/M/H 6.3"Ø (B).



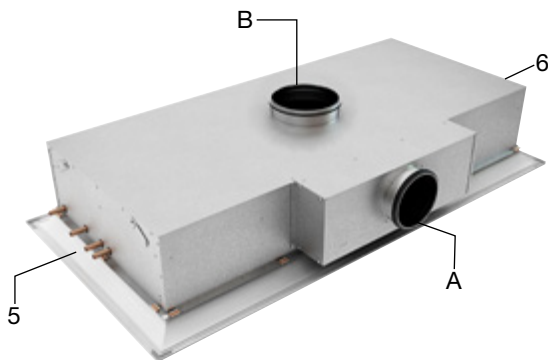
### Example of water connections

To the left some connection alternatives are shown. Alternative A5, has horizontally connection for ventilation and water connection from left, seen in the direction of airflow. When plus feature heating is chosen the heating connections are placed in opposite side, to the left for connection 5 and to the right for connection 6, looking into the ventilation connection. For air connection type B is the heating connections placed such as for A, and the picture illustrate, to the left for B5 and right for B6.



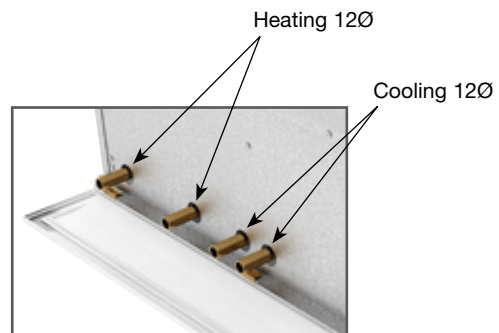
### Plexus 120

Water connection 0.5"Ø. Supply air connection 5"Ø (A) alternatively 6.3"Ø (B).



### Example of water connections

To the left some connection alternatives are shown. Alternative A5, has horizontally connection for ventilation and water connection from left, seen in the direction of airflow. When plus feature heating is chosen the heating connections are placed in opposite side, to the left for connection 5 and to the right for connection 6, looking into the ventilation connection. For air connection type B is the heating connections placed such as for A, and the picture illustrate, to the left for B5 and right for B6.



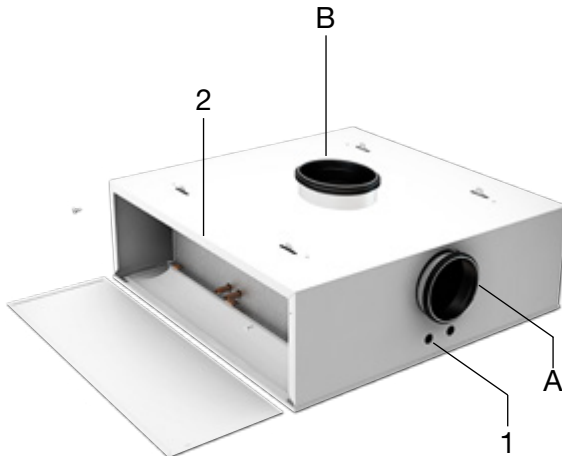
# Chilled beams

# Plexus

## Connections

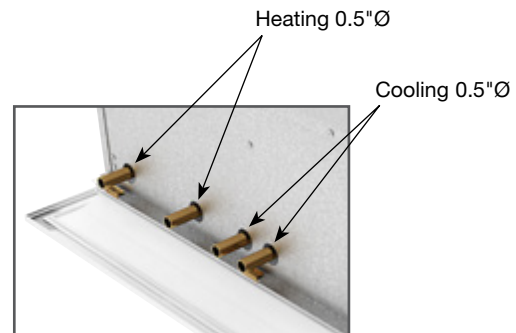
### Plexus F 60

Water connection 0.5"Ø. Supply air connection 5"Ø (A) alternatively S 5"Ø (B), L/M/H 6.3"Ø (B).



### Example of Water Connections

The drawing to the left shows connection possibilities A1, A5, B1 and B5 for Plexus F. A is for horizontal and B is for vertical air connection.

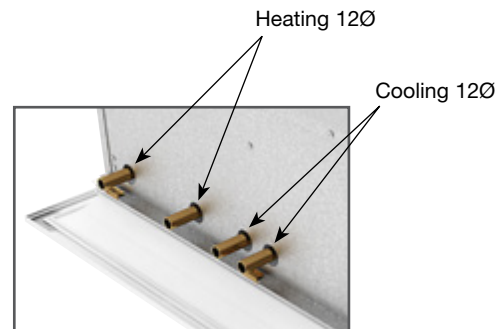


### Plexus F 120

Water connection 0.5"Ø . Supply air connection 5"Ø (A) alternatively 6.3"Ø (B).

### Example of Water Connections

The drawing to the left shows connection possibilities A1, A5, B1 and B5 for Plexus F. A is for horizontal and B is for vertical air connection.

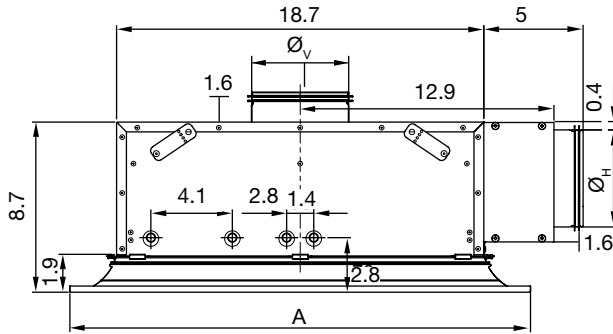


# Chilled beams

# Plexus

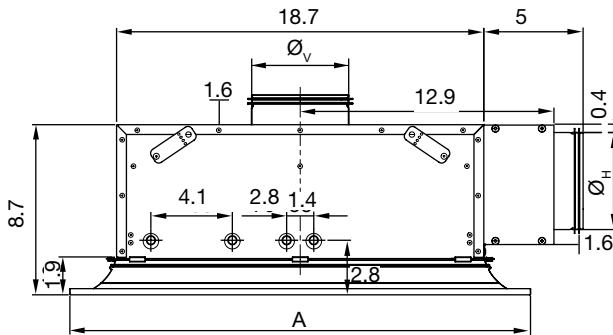
## Dimensions, (in)

### Plexus 60



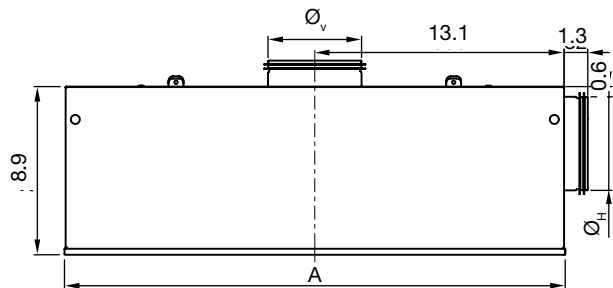
Weight 25.57 lbs (excl. water)  
Water volume 0.26 gal

### Plexus 120



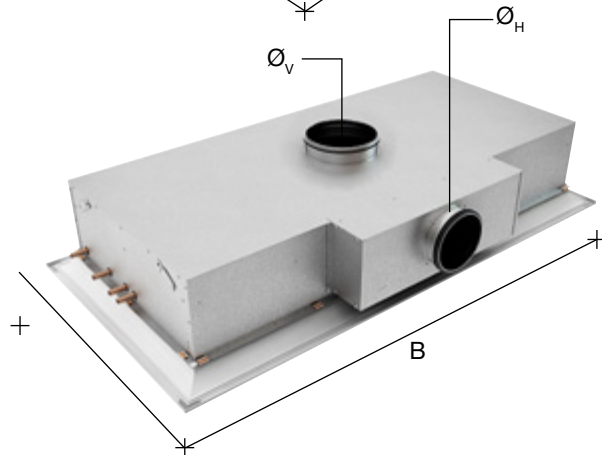
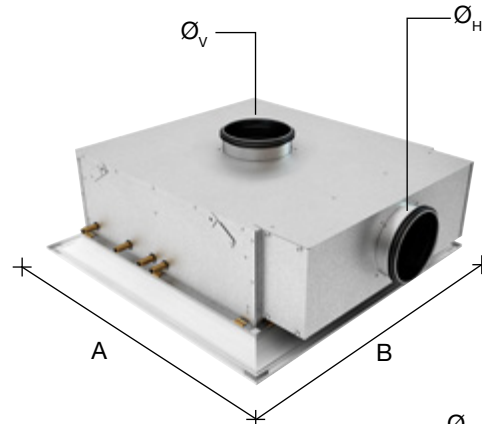
Weight 47.18 lbs (excl. water)  
Water volume 0.66 gal

### Plexus F



F 60 Weight 38 lbs (excl. water) - Water volume 0.26 gal  
F 120 Weight 70 lbs (excl. water) - Water volume 0.67 gal

## Dimensions Plexus



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Type	A	B	Ø <sub>H</sub>	Ø <sub>V</sub>
I (S, L, M, H) 60	23.4	23.4	5	5/6.3
X (S, L, M, H) 60	23.6	23.6	5	5/6.3
U (S, L, M, H) 60	23.6	23.6	5	5/6.3
Y (S, L, M, H) 60	22.6	22.6	5	5/6.3
Z (S, L, M, H) 60	23	23	5	5/6.3
F 60	26.3	26.3	5	5/6.3
I (S, L, M, H) 62	24.4	24.4	5	5/6.3
I (S, L, M, H) 67	26.3	26.3	5	5/6.3
I S 120	23.4	47	5	6.3
X S 120	23.6	47.2	5	6.3
Y S 120	22.6	46.2	5	6.3
Z S 120	23	46.6	5	6.3
U S 120*	23.6	47.6	5	6.3
F 120	26.3	50	5	6.3
I S 122	24.4	49	5	6.3

Plexus 60 in config. S has Ø<sub>V</sub> 5" and L/M/H Ø<sub>V</sub> 6.3"

\* Plexus U 120 is for 2' x 2' ceiling system



## Use

EHG's supply air beam Podium is the lightest supply air beam available on the market.

Podium is mounted on the ceiling and supplies cooling through natural convection and radiation, which results in a draft-free climate.

35% of the cooling supplied by Podium comes from radiation and the rest from convection. Compared to a conventional beam, Podium provides a significantly higher cooling effect at lower room temperatures.

Podium offers many possibilities and great flexibility; for example, you can have Podium coated in any color you want.

## Installation

Podium is installed either suspended or recessed in a ceiling.

Podium can be delivered with different connection alternatives. The connection dimensions depend on if the chilled beams are to be installed individually or in series.

## Worth noting

Podium is the lightest supply air beam available on the market, a beam 236.2" long, with a width of 20.9" and a weight of only 28.8 kg. Podium has flat and easily accessible surfaces, which helps maintain a good indoor hygiene. Furthermore, the height of Podium is only 5.1", which contributes to its great freedom of placement. EHG's supply air beams are Eurovent-certified and tested according to EN-15116 and EN-14518.



## Key figures

Length: 47.2" - 236.2"  
Width: 6.7", 13.8", 20.9"  
Height: 5.1"  
Capacity: Cooling effect of up to 2955 BTU  
Air quantity of up to 85 cfm



## Function

Podium has two functions, in part a supply air terminal, and in part a chilled beam. The supply air is fed and distributed inside the supply air beam. The air then passes through the gills on the bottom of the beam and ventilates the room. With its design, Podium scores a very high air-change efficiency value. Tests show that the supply air beam has an air-change efficiency of 64%, which is high compared to other methods of supplying air.

When cold-water passes through Podium, both the warm air from the room and the supply air is cooled on the beam's cold surfaces. A considerable mixing of warm room air takes place inside the supply air beam, which means that the temperature of the supply air released from the beam rises. The mixed air then streams through the supply air beam and down into the room. This leads to air circulation in the room, where warm air from the room is continually replaced by cooler air.

There are two decisive factors characterising Podium.

1. Low draft risk: Compared to other brands, EHG's world-patented technology provides direct heat exchange between the cold surfaces of the beam and the warm surfaces of the room via low-temperature radiation. The radiation quotient for Podium is approx. 30 to 35 % of the total effect. This is a high radiation quotient compared to conventional beams with finned batteries, and this means that the convective share of the cooling effect is lower with Podium. With a given airflow, this results in a higher supply air temperature after the air has passed through the beam. This means that the risk of drafts under the beam is low.

2. Flexible placement: The supply air is fed to the room from the bottom of the beam. This results in a low draft risk. The design also allows the units to be installed at a distance of only 11.8" from each other. Conventional supply air beams normally require a significantly greater separation. This means that Podium offers increased flexibility and freedom of choice with regard to size, number and placement of beams, walls and other fittings in the room.

## Design

The Podium's design is based on EHG's world-patented method of metallurgically bonding copper and aluminium. The aluminium plate that constitutes the cooling fin is also metallurgically bonded to the copper pipe that transports the cold water. The shape of the copper pipe allows the easy creation of turbulent currents. This, together with the contact between the copper and the aluminium, boosts to the maximum the energy transport from the cooling surfaces to the cooling water.

The metallurgical bond between the copper and the aluminium also eliminates any risk of galvanic corrosion that could possibly be caused by condensation on the surfaces. The supply air can also be fed via a damper, which is supplied as an optional accessory.

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



Picture 1. Podium 17, 35 and 53.

# Chilled beams

# Podium

## Versions

**Size:** Podium is produced in three different widths - 6.7" (model 17), 13.8" (model 35), 20.9" (model 53)- all of which have a height of 5.1".

**Lengths:** Podium is available in lengths from 70.9" to 236.2" in steps of 4".

**Water connection:** Podium can be supplied with four connections, depending on the width of the product – 0.4", 0.5", 0.6", and 0.9". This is to allow adjustment of the pressure drop and thus to ensure turbulent flow in different dimensioning cases. The heating pipes always have plain ends, o.d. 0.4".

**Air connection:** 4"Ø.

**Surface treatment:** Podium is powder-coated as standard in RAL 9010.

## Plus features

Factory preinstalled.

**Color:** Podium can be coated in different special colors.

**Hygiene cover:** A cover that prevents the formation of air currents in the space above the suspended ceiling. Available only for Podium 53 with an increased width of 23.4".

## Accessories

Delivered separately.

**Control:** Refer to the chapter Regula.

**Damper:** Ø 4"

**Wall connection option:** Connection cover to conceal visible piping to a wall, or between beams (see figure 1). The cover plate, however, provides access to the pipe fittings and damper. Indicate the length when you place your order.

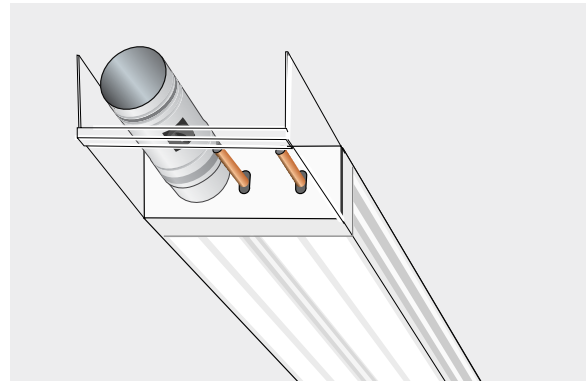


Figure 1. Podium 35 with connection cover.

## Installation examples

Podium can be installed in two different ways. Suspended or recess mounted in a suspended ceiling (see figures 2 to 5).

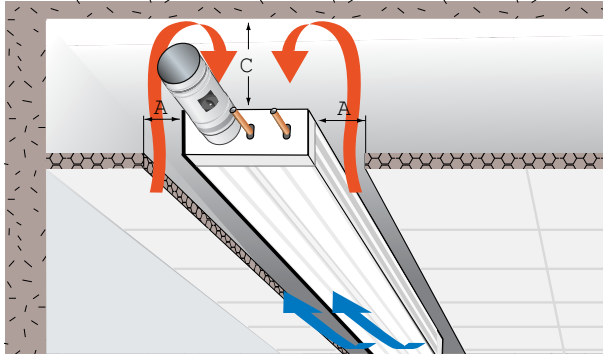


Figure 2. Installation dimensions when the room air reaches Podium from both sides.

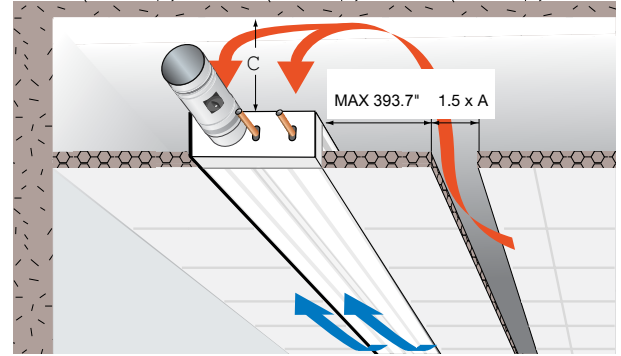


Figure 3. Installation dimensions when the room air only reaches Podium from one side.

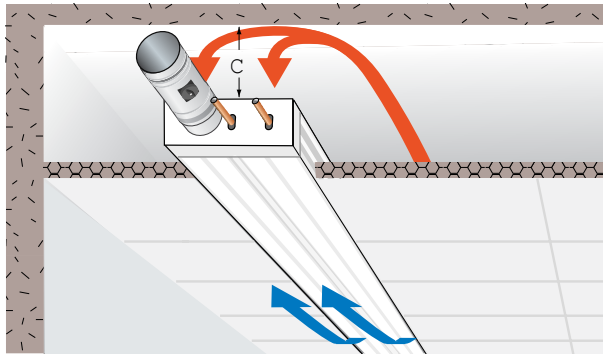


Figure 4. Installation dimensions when the room air reaches Podium from another opening in the suspended ceiling.

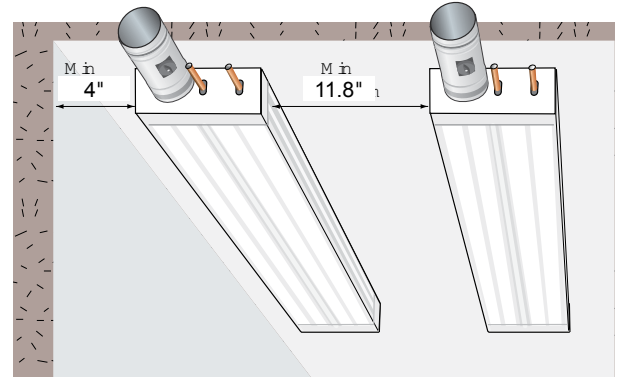


Figure 5. Minimum dimensions when two Podium beams are installed close to one another or near a wall.

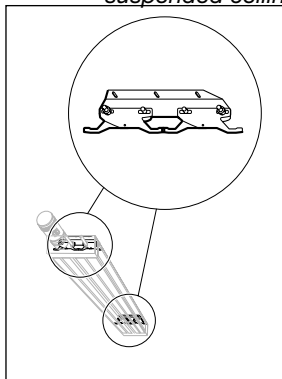


Figure 6. Installation directly on to the ceiling.

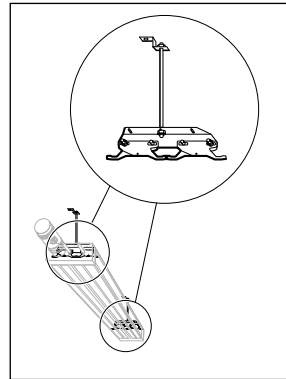


Figure 7. Suspended installation.

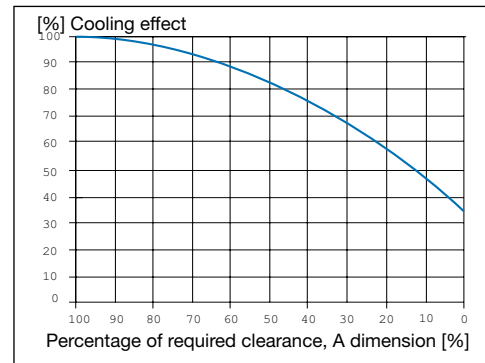


Diagram 3. Cooling effect with a reduced gap between the suspended ceiling and the supply air beam.

Installation dimensions						
	A			C		
Model	17	35	53	17	35	53
Figure 1 (in)	2.0	2.8	4	2.4	2.4	3.1
Figure 2 (in)	3.0	4.1	5.9	3.5	3.5	4.7
Figure 3	3.1 in <sup>2</sup>	4.3 in <sup>2</sup>	5.9 in <sup>2</sup>			
	Free opening area per in of Podium					

Table 8. Podium 17, 35 & 53 dimensions and installation.

# Chilled beams

# Podium

## Couplings & connections

Model 7		Model 14		Model 21	
Coupling options	Connection diameter	Coupling options	Connection diameter	Coupling options	Connection diameter
A1	.4 .5	A1	.4 .5 .6	A1	.5 .6 .9
A2	.4 .5	A2	.4 .5 .6	A2	.5 .6 .9
A3	.4 .5	A3	.4 .5 .6	A3	.5 .6 .9
A4	.4 .5	A4	.4 .5 .6	A4	.5 .6 .9
B1	.4 .5	A13	.4 .5 .6	A13	.9
B2	.4 .5	A14	.4 .5 .6	A14	.9
B3	.4 .5	A23	.6	A23	.9
B4	.4 .5	A24	.6	A24	.9
		B1	.6	B1	.5 .6 .9
		B2	.6	B2	.5 .6 .9
		B3	.4 .5 .6	B3	.5 .6 .9
		B4	.4 .5 .6	B4	.5 .6 .9
		B13	.4 .5 .6	B13	.9
		B14	.6	B14	.9
		B23	.6	B23	.9
		B24	.6	B24	.9
			.6		
<p>Podium from the side</p>			<p>Because of the beam's "gills", its surface structure looks different, depending on the direction from which it is viewed. If products connected in series are to have the same appearance, the connection point should be oriented in the same way throughout the room. Note! Connection options 3 and 24 can be turned in both directions.</p>		

Table 9. Podium 17, 35 and 54 are supplied in lengths from 70.9" - 236.2" in steps of 4". The connection dimension for the water is 0.4", 0.5", 0.6", and 0.9", and 4" for the air.

**NOTE!** Coupling should be with compression couplings, press couplings or Tectite.

## Couplings & connections




Model 17	Model 14	Model 21
		
Water connection: plain Cu, pipe o.d., in 0.4" 0.5"	Water connection: plain Cu, pipe o.d., in 0.4" 0.5" 0.6"	Water connection: plain Cu, pipe o.d., in 0.5" 0.6" 0.9"
Supply air connection: Spiral duct, Ø in 4"	Supply air connection: Spiral duct, Ø in 4"	Supply air connection: Spiral duct, Ø in 4"

Table 10. Overview of connection dimensions for water and supply air, Podium 17, 35 & 53.

# Chilled beams

# Podium

## Width & height, (in)

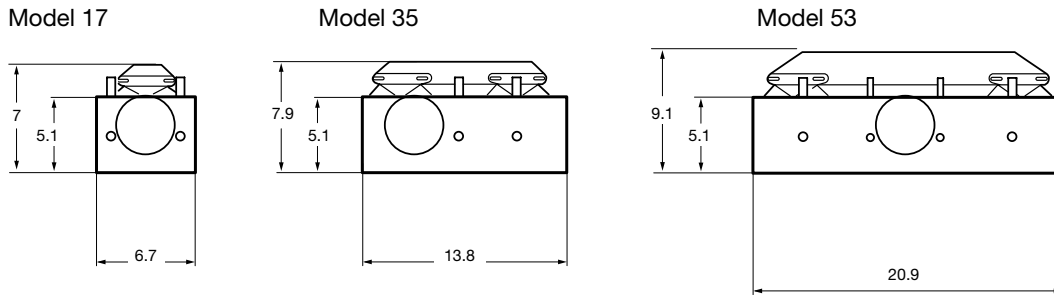


Figure 9. Podium 17, 35 and 53 are manufactured in three different widths and one height.

## Length, in

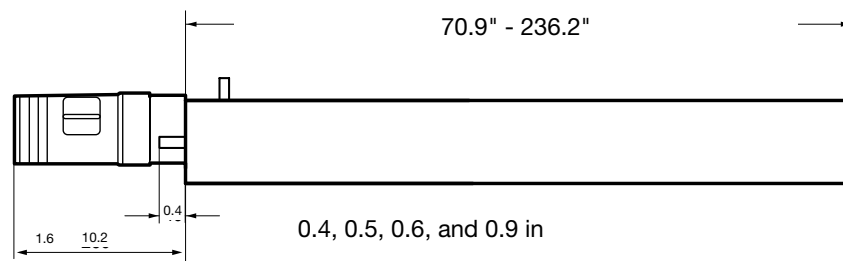


Figure 10. Podium 17, 35 and 53 are produced as standard in lengths from 70.9" - 236.2" in steps of 4". Actual dimensions are -0.3" in order to fit a standard T-support.

## Dimensions, in

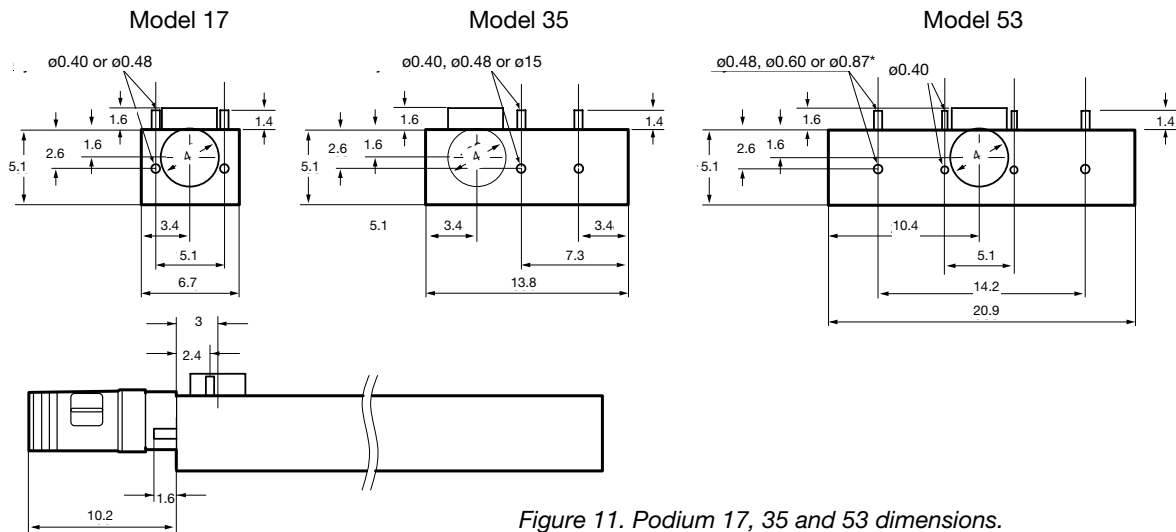


Figure 11. Podium 17, 35 and 53 dimensions.

## Weight and water volume

	Podium 17	Podium 35	Podium 53
Weight, lb/ft	1.1	2.2	3.2
Water content, gal/ft	0.02	0.04	0.06
Copper pipes, quality	EN 12735-2 CU-DHP	EN 12735-2 CU-DHP	EN 12735-2 CU-DHP
Pressure class	PN10	PN10	PN10

Table 11. Podium 17, 35 & 53 weight and water volume.



## Use

EHG's supply air beam Polaris I has a large cooling capacity and can therefore be used to advantage in rooms with substantial cooling requirements.

In terms of appearance, Polaris I looks similar to Professor. Polaris/Professor can therefore be used in alternation in the same room and thus provide an architectonically uniform appearance in the room.

Polaris I is equipped with divergent nozzles, which results in a draft-free indoor climate.

Polaris I can be used for cooling, heating and ventilation. Polaris I can be supplied with the following features, Drypac™ condensation protection, Regula Secura condensation guard, built-in valves and actuators, built-in exhaust air valve, etc. The product offers many possibilities and great flexibility.

## Installation

Polaris I is available for integrated installation. Polaris I is installed as an integral part of a suspended ceiling, where

the beam is mounted on a standard T-support.

Polaris I can be supplied with horizontal and vertical connections.

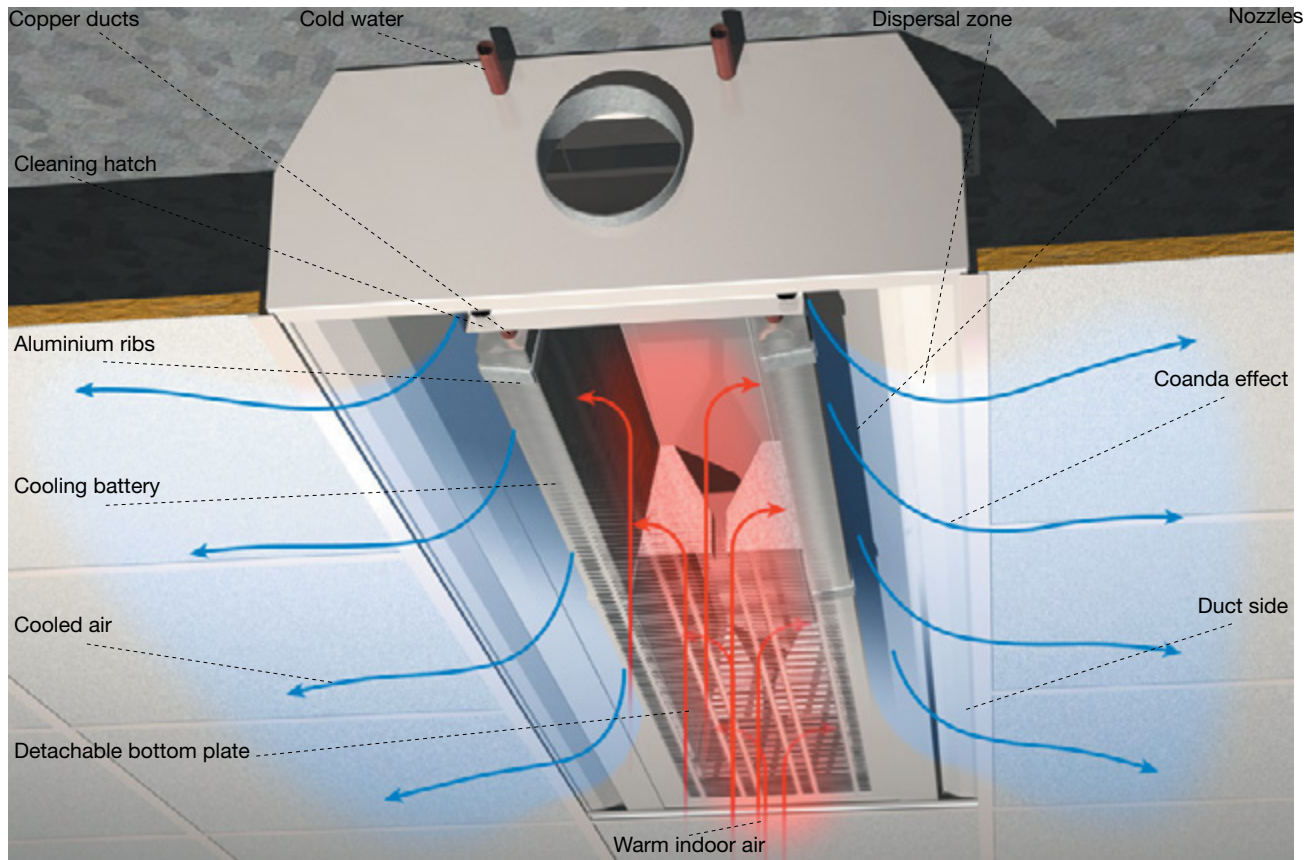
## Worth noting

Polaris I is equipped with two large cooling batteries that provide a large cooling capacity. In a room with substantial cooling requirements, 200-270 BTU/ft<sup>2</sup>, Polaris I can be used to provide the necessary cooling effect. EHG's supply air beams are Eurovent-certified and tested according to EN-15116 and EN-14518.



## Key figures

Length: 47.2" - 141.7"  
Width: 23.3"  
Height: 9.1"  
Capacity: Cooling effect of up to 8,350 BTU  
Air quantity of up 85 cfm  
(2 x 4" connection)



Picture 1. Polaris I is based on the induction principle.

## Function

### Powerful function on minimum space

EHG's supply air beam, Polaris I, 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 into the ventilation air passing through the battery (see picture 1). The volume of 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 pipes 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 then on to a central cooling unit. Despite the product's small external dimensions, the construction makes it possible to achieve a high cooling effect.

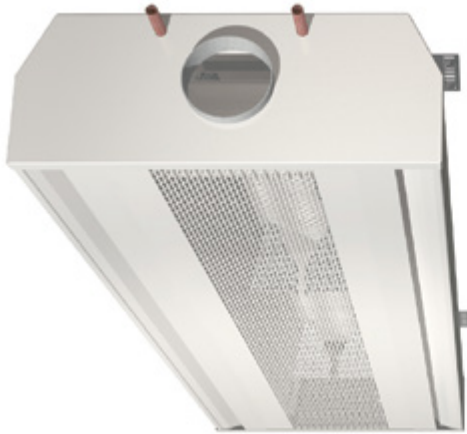
The nozzles releasing the ventilation air are designed to maintain the Coanda effect, i.e. the adhesive capacity of the air in the duct, in the nozzles. The air then follows the side of the duct towards the ceiling. The side of the beam is shaped so as to transfer the Coanda effect on to the ceiling of the room.

If both heating and cooling are required, there is an extra pipe in the battery, which heats the room.



# Chilled beams

# Polaris I



Picture 2. Polaris I 5"ø single air connection



Picture 3. Polaris I 0.08" x 14" double air connection

## Construction

### Maximum accessibility

For best possible accessibility for cleaning, suspension, adjustment or maintenance, the whole underneath of the Polaris I can be removed. Where the beam is equipped with built-in valves and control devices, these are also accessible for adjustment and maintenance from below. The product can be supplied in a version where the volume of air can be varied on both sides. This is achieved by different plugging of the Coanda nozzles. If required, it is also possible to plug one part of the beam completely. We have succeeded in making the product so compact, by using double vertical batteries and double air ducts (see Picture 3). If other pressures and flow patterns are required, EHG's Coanda nozzles are easily accessible from below for plugging.

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

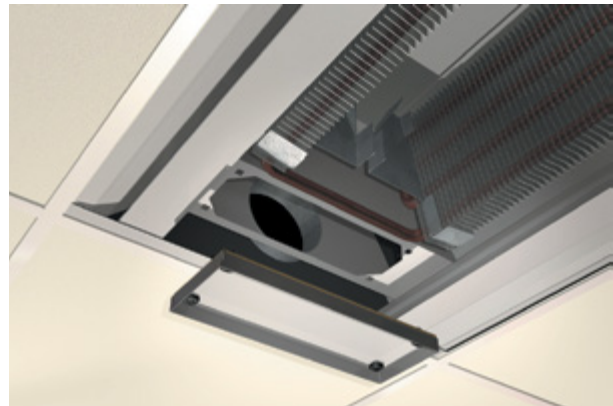
### Hygiene

### Everything is accessible from below

The requirement for all parts of the beam to be easy to clean is met by the removable underside. Polaris I with a single air connection is also supplied with a removable hatch, on the distribution duct, for cleaning and making adjustments (see Picture 4). By loosening the hatch, you can clean both the inlet duct system and the beam's side ducts from the inside. Polaris I with double air connection has a removable cleaning hatch on the end-piece of the product. The vertical batteries are accessible from three sides and thus can

be cleaned thoroughly. The same applies to the Coanda nozzles, which can be easily cleaned from below.

All of this allows the product to be cleaned thoroughly. With the Polaris I, with single air connection, this is possible without access to the short sides of the product, which may thus be positioned directly against a wall.



Picture 4. Cleaning and making adjustments.

## Climate units

### Cooling, heating, ventilation and control

The large capacity of the product allows it to meet the room's need for cooling, ventilation and heating, while occupying a very small area of the ceiling. In a normal-size office, a unit 47.2" long is often sufficient! Since the product is supplied with a factory-preset airflow, at a certain air pressure, installation is quick and easy. 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.

Polaris I can also be supplied with built-in valves and actuators for cooling and heating.

### Room environment

The Polaris' ventilation principle is that the cooled or heated air is spread across the ceiling until it reaches the walls where it is driven down into the room (see Picture 6). The heated air is then absorbed from the room and fed to the beam for further cooling or heating. In this way,

the room is kept well ventilated. In some cases, conventional supply air beams, which spread the air linearly, can create high air velocities, as the air stream becomes compressed and concentrated towards the centre. To reduce air velocities, the air distribution in Polaris I is angled outwards. The outer nozzles point slightly outwards, which leads to air velocities lower significantly than with conventional supply air beams with a linear outlet.

By using double air ducts, we have made use of all the volume in the beam. The beam can therefore cope with large volumes of air while keeping its noise low, despite its small external dimensions.

Regarding the noise, the nozzles are shaped like an inverted trumpet, i.e. somewhat negatively directed at the outlet, which also leads to very low noise from the nozzle. The structure of the product, with a distribution channel towards the double side ducts, means that the product's sound attenuation is good and that cross-noise in the ventilation system and between rooms is low.

### Design

The underside can have different appearances, either transverse slots or round or square perforations.



## Data

### Variants

**Size:** Polaris I is 23.3" wide and 9.4" high (incl. fixings).

**Lengths:** Polaris I is available in lengths from 47.2" - 141.7" in steps of 4".

**Water connection:** The cooling water connection is available in o.d. 0.6" or 0.9". Both horizontal and vertical connection are available as part of the standard package. The connection for the heating pipes is o.d. 0.6".

**Air connection:** The single air connection has a dimension of 5"Ø. Both horizontal and vertical connections are available as standard. Polaris I with double air connection uses two 4"Ø, horizontal connectors.

**Design:** Polaris I is available with different types of bottom plates. The bottom plate is perforated with Slot 0.2" x 0.8" as standard, but other surfaces are also available.

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

**Anti-crosstalk hood:** It is included in the standard package, to prevent noise spreading to adjoining rooms, but also if there is a requirement for the room air not to come into contact with the space above the suspended ceiling.

**Surface treatment:** Polaris I is manufactured as standard from enamelled sheet metal, color white, RAL 9010.

**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 required, you can order a balancing damper.

## Plus features

Factory preinstalled.

**Heating:** Polaris I can be supplied with a heating feature. An additional coil in the battery heats the room.

**Drypac™:** Anti-condensation treated cooling batteries that enable water temperatures below the dew point without dripping.

**Integrated valve and actuator:** A control valve, with variable Kv value, and an actuator can be preinstalled in the product.

**Air vent:** Air vents are not supplied as part of the standard package but it is possible to order them to be pre-installed.

**Adaptation to suspended ceiling:** The product can be adapted to most types of suspended ceilings offered on the market.

**Exhaust valve:** The product can be provided with an exhaust valve.

## Cooling effect, Polaris I

### Drypac™, condensation protection

All Polaris I models can be ordered with Drypac™ plus, a condensation protection consisting of perlite (volcanic stone) that is applied to the fin surfaces. Drypac™ has properties that enable it to work with a supply temperature that is 39.2° F below the dew point, for continuous operation, and 41 to 46.4° F below the dew point for limited periods. Drypac™ provides both an increased effect output and increased security against condensation drips. At a working temperature above the dew point, the output is reduced by 17% but when the working temperature is below the dew point, there is no reduction in output. This means that the effect is highest when the need is greatest.

## Couplings & connections

Polaris I is supplied in lengths from 47" - 142" in steps of 4". The connection dimension for the water is o.d. 0.60" or 0.87", and 5" (single) and 4" (double) for the air.

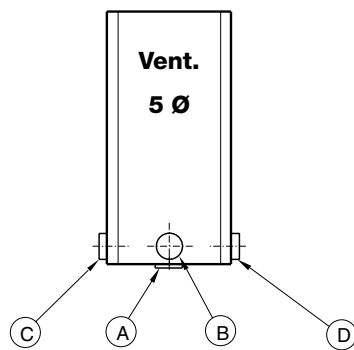
Polaris I is available with a large number of coupling

options. This is how to find the designation for the coupling option you require for Polaris I.

**Note:** Connections C and D have a higher noise value than is indicated in the quick selection charts, please check with EHG.

### Step 1.

Indicate the position for the ventilation connection.



### Step 2.

Indicate the position for the pipe connection.

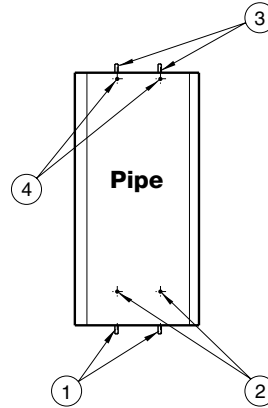
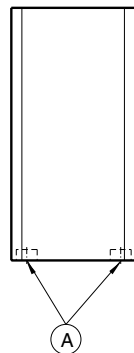
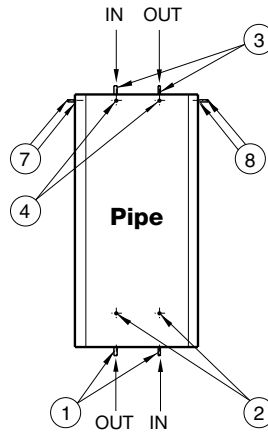


Figure 1. Coupling and connection options.

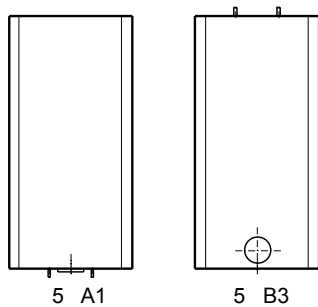


Figure 2. Coupling options A1 and B3, 5"Ø air connection.

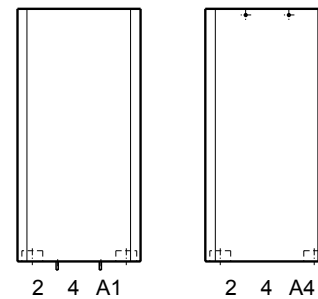
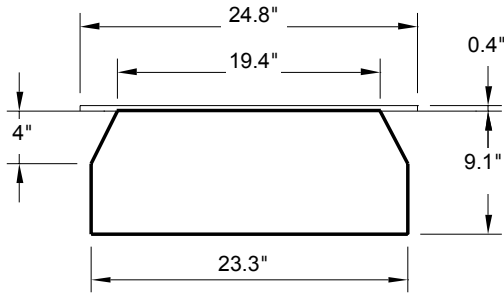


Figure 3. Coupling options A1 and A4, 4"Ø air connection.

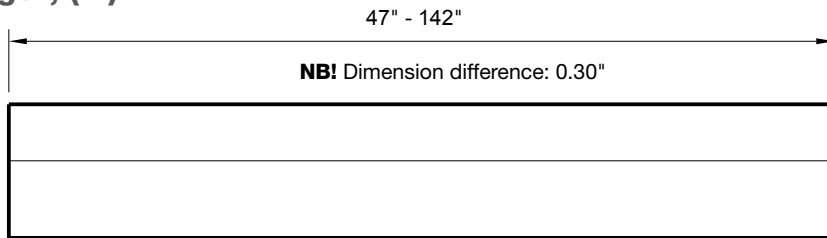
# Chilled beams

# Polaris I

### Width & height, (in)

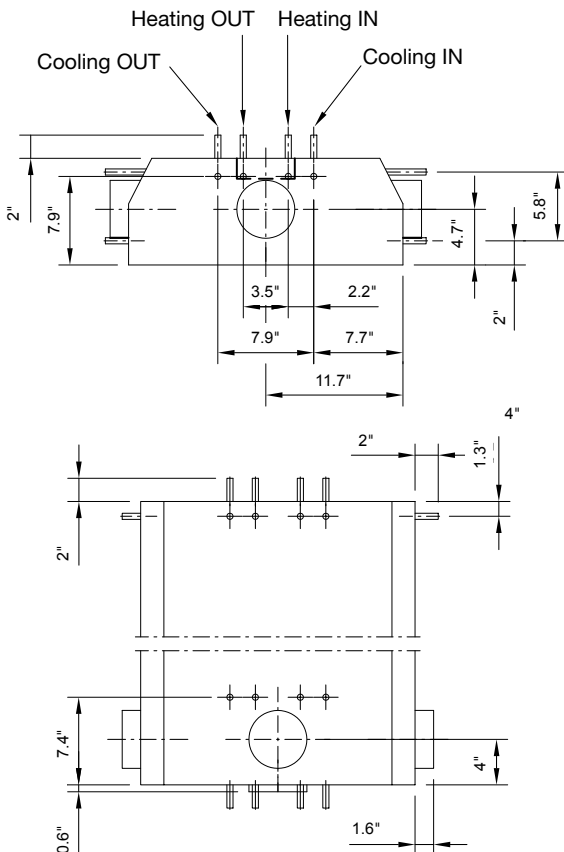


### Length, (in)



### Dimensions, (in)

#### 50



#### Vent. 0.08 x 40

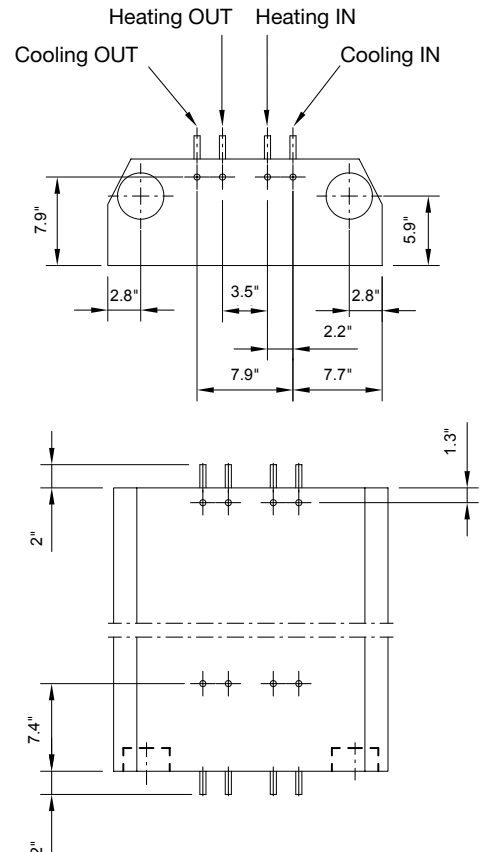


Figure 4. Polaris I 60 2 5"Ø, dimensions.

Figure 5. Polaris I 60 2 x 4", dimensions.

## Weight and water volume

	Polaris I 60
Weight, lb/ft	10
Water content, cooling gal/ft	0.11
Water content, heating gal/ft	0.05
Copper pipes, quality	SS/EN 12449
Pressure class	PN10

Table 16. Polaris I 60, weight and water volume.

## Installation examples

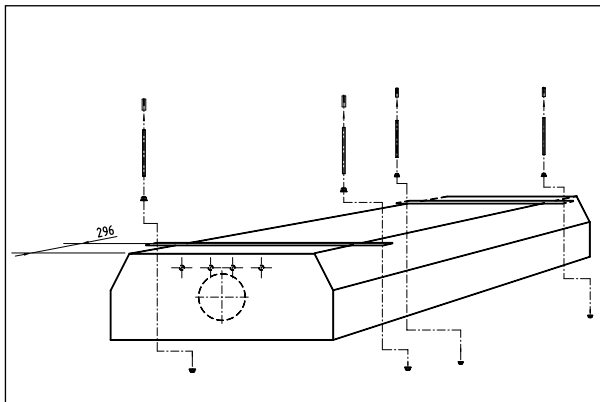


Figure 6. Polaris I 60 installation principle.

**Note.** Beams longer than 102.4", come with a suspension bracket in the middle.

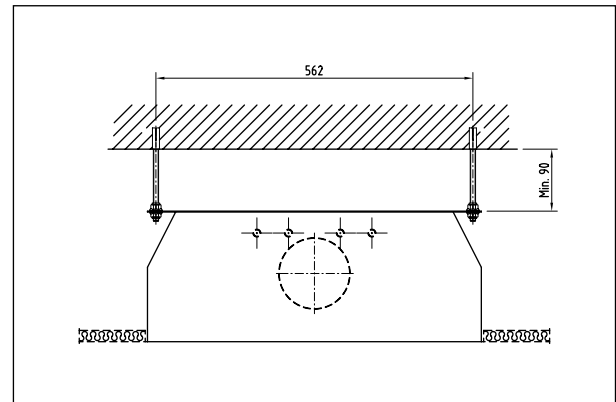


Figure 7. Polaris I 60 recessed in a suspended ceiling.



## Use

EHG's supply air beam Polaris S has a large cooling capacity, uses one-way air injection and can therefore be used to advantage in rooms with small spaces and substantial cooling requirements.

In terms of appearance, Polaris S in width 60 looks similar to Polaris I and Professor. Polaris/Professor can therefore be used alternately in the same room to provide an architectonic uniform appearance in the room. Polaris S is equipped with divergent nozzles, which results in a draft-free indoor climate.

Polaris S can be used for cooling, heating and ventilation. Polaris S can be provided with Drypac™ condensation protection, The product offers many possibilities and great flexibility.

## Installation

Polaris S is available for integrated installation. Polaris S is installed as an integral part of a suspended ceiling,

where the beam is mounted on a standard T-support. Polaris S can be supplied with horizontal and vertical connections.

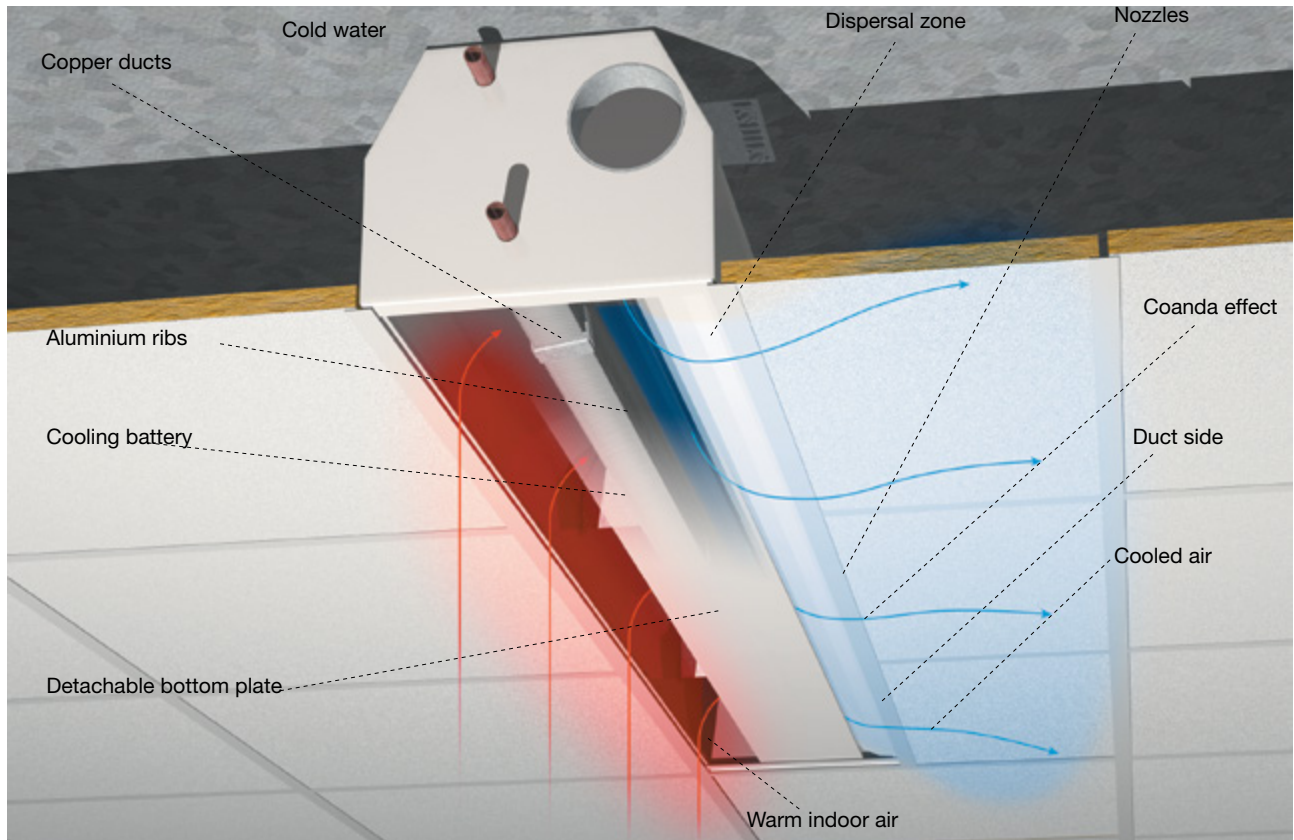
## Worth noting

Polaris S is equipped with a large cooling battery, in one side of the beam, which provides a large cooling capacity through one-way air injection. EHG's supply air beams are Eurovent-certified and tested according to EN-15116, EN-14518.



## Key figures

Length: 47.2" - 141.7"  
Width: 11.5" in total. 23.3"  
Height: 9.1"  
Capacity: Cooling effect of up to 4,740 BTU  
Air quantity of up to 85 cfm



Picture 1. Polaris S is based on the induction principle.

## Function

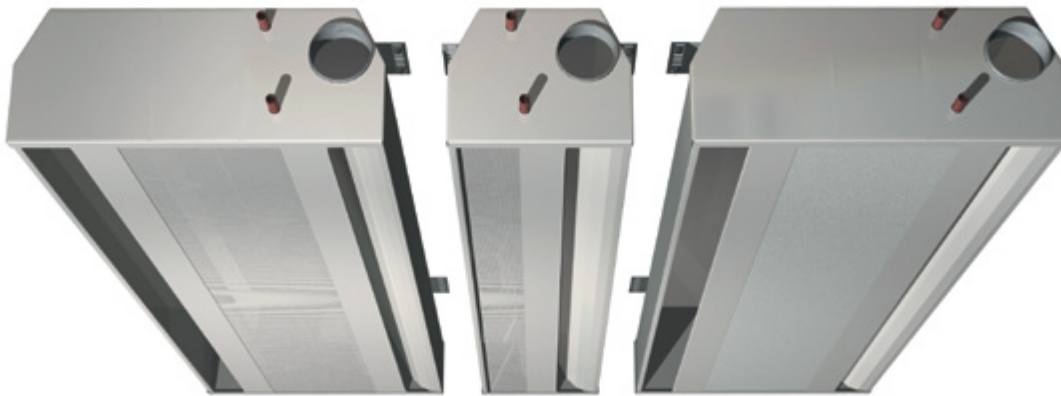
### Powerful function with one-way air distribution

EHG's supply air beam, Polaris S, is based on the induction principle (see picture 1). 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 into the ventilation air passing through the battery. The volume of 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 pipes filled with cold running water. The heat of the room is absorbed through the aluminium ribs and then transferred through the copper pipe into the water circuit and then on to a central cooling unit. Despite the small external dimensions of the product, the construction makes it possible to achieve a high cooling effect.

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 on to the ceiling. The side of the beam is shaped so as to transfer the Coanda effect to the ceiling of the room.

If both heating and cooling are required, there is an extra pipe in the battery, which heats the room.





Picture 2. From left to right: Polaris S-60, Polaris S-30 and Polaris S-60 with fitted acoustic ceiling tiles

## Construction

### Compact and flexible

Polaris S is equipped with a vertical battery and a lateral air duct. This makes it possible to make the product only 11.8" wide, while retaining a very high cooling effect.

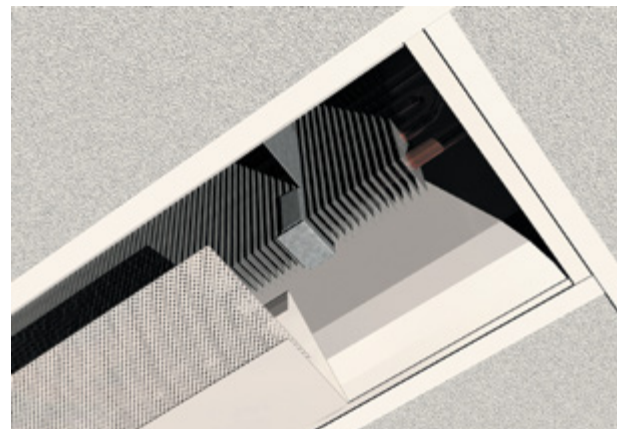
The product is fitted with a hood on the top, which isolates the circulating room air from the suspended ceiling. The hood also protects against noise transfer through the beam. For the best possible accessibility for cleaning, suspension, adjustment or maintenance, the whole bottom of the Polaris S can be removed. The product is supplied with a factory-preset airflow and air pressure drop. The air is supplied to the room through Coanda nozzles placed along the air duct. In terms of noise, the nozzles are shaped like an inverted trumpet, i.e. somewhat negatively directed at the outlet, which also leads to very low noise. The nozzles are easily accessible from below for plugging, if you wish to change the pressure and flow pattern at a later time. Polaris S is supplied in widths of 11.8"-23.6" (see picture 2). The dimensions of the wider model are suited for installation in a suspended ceiling. This helps the product blend in the suspended ceiling.

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

### Hygiene

#### Accessibility from below

The requirement for all parts of the beam to be easy to clean is met by the removable bottom (see picture 3). The vertical battery is accessible from three sides and thus can be cleaned thoroughly. The same applies to the Coanda nozzles, which can easily be cleaned from below. Where the beam is equipped with built-in valves and control devices, these are also accessible from below. The air duct is cleaned through the removable cleaning hatch in the end-piece of the product (see picture 4). All of this allows thorough cleaning of the product.



Picture 3. Loosening the bottom plate makes the battery easily accessible.



Picture 4. The air duct is cleaned through the cleaning hatch on the end-piece.

## Room environment

### Flexible ventilation principle

The Polaris S ventilation principle can be designed in many different ways. Depending on the room conditions and the desired function, the product can be placed along corridor walls, side walls or frontages. The air can be directed out across the ceiling and down along the wall. This leads to very high flexibility regarding the selection of the ventilation principle in each room. In some cases, conventional supply air beams, which spread the air in linearly, can create high air velocities, because the air stream becomes compressed and concentrated towards the center. To reduce air velocities, Polaris S has a fan-shaped distribution pattern as standard. The outer nozzles point slightly outwards, which leads to air velocities significantly lower than with conventional supply air beams with a linear outlet.

#### Air injection across ceiling

In this case, the cooled or heated air is spread across the ceiling until it reaches the walls where it is driven down into the room.

The heated air is then absorbed from the room and fed to the beam for continued cooling or heating.

#### Air injection across wall

In this case, the cooled or heated air is spread down along the wall until it reaches the floor, where it is driven out into the room at a reduced speed. The heated air then rises and is ducted into the beam for further cooling or heating.

#### Placement at the rear or front edge of the room

Placing a Polaris S at the rear or front edge of the room results in a very discreet ceiling installation. The ceiling area in the middle of the room is left free, which provides great freedom for the positioning of lights, for example. As the air in Polaris S can be directed either across the ceiling or down along the wall, high air velocities in the occupied area can be avoided. At the same time, there are possibilities for coordinating the product's function with the air movements generated by the room's internal heat sources.



Picture 5. Polaris S-30 installed at the ceiling's rear edge, with air injection across the ceiling.



Picture 6. Polaris S-30 installed at the rear edge, with air injection along the wall.

## Data

### Variants

**Size:** The Polaris S is either 11.5" (model "30") or 23.3" (model "60"). The height is 9.4" (incl. fixings).

**Lengths:** Polaris S is available in lengths from 47.2" - 141.7" in steps of 4".

**Water connection:** The cooling water connection is available in o.d. 0.6". Both horizontal and vertical connections are available as part of the standard package. The connection for the heating pipes is o.d. 0.6".

**Air connection:** Available in 4"Ø; both horizontal and vertical connections are available as standard.

**Design:** Polaris S is available with different types of bottom plates. The bottom plate is perforated with Slot 0.2" x 0.8" as standard, but other surfaces are also available.

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

**Anti-crosstalk hood:** It is included in the standard package to prevent the spread noise to adjoining rooms, but also when there is a requirement for the room air not to come into contact with the space above the suspended ceiling.

**Surface treatment:** Polaris S is manufactured as standard from enamelled sheet metal, colored white, RAL 9010.

**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 EHG's balancing damper.

## Plus features

Factory preinstalled.

**Heating:** Polaris S can be supplied with a heating function. An additional coil in the battery heats the room.

**Drypac™:** Anti-condensation treated cooling batteries that enable water temperatures below the dew point without dripping. Refer to the chapter Drypac™.

**Integrated valve and actuator:** A control valve, with variable Kv value, and an actuator can be preinstalled in the product.

**Air vent:** Air vents are not supplied as part of the standard package but it is possible to order to have them pre-installed.

**Adaptation to suspended ceiling:** The product can be adapted to most types of suspended ceilings available on the market.

## Cooling effect, Polaris S

### Drypac™, condensation protection

All Polaris S models can be ordered with the Drypac™ plus feature, condensation protection consisting of perlite (volcanic stone) that is applied to the fin surfaces. Drypac™ has properties that enable it to work with a supply temperature that is 39.2° F below the dew point, for continuous operation, and 41 to 46.4° F below the dew point for limited periods. Drypac™ provides both an increased effect and increased security against condensation drips. At a working temperature above the dew point, the output is reduced by 17% but when the working temperature is below the dew point, there is no reduction in output. This means that the effect is highest when the need is greatest.

# Chilled beams

# Polaris S

## Couplings & connections

Polaris S Supplied in lengths from 47.2" - 141.7" in steps of 4". The connection dimension for the water is o.d. 0.6" or 0.9", and 5" (single) and 4" (double) for the air.

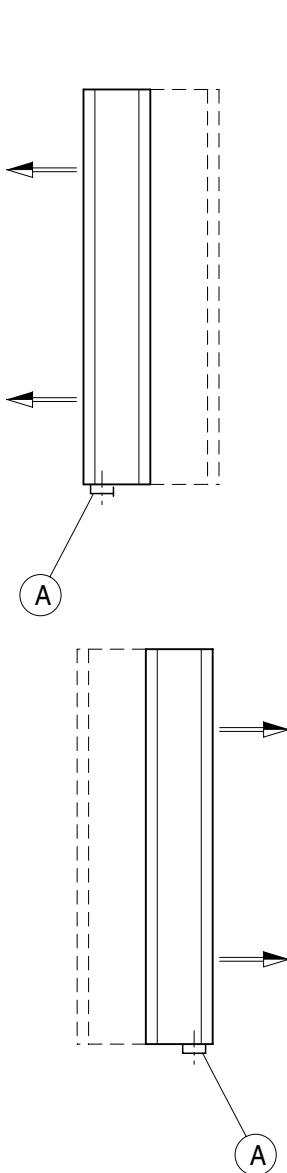
Polaris S is available with a large number of coupling

options. This is how to find the designation for the coupling option you require for Polaris S.

**Note:** Connections C and D have a higher noise value than indicated in the quick selection charts, please check with EHG.

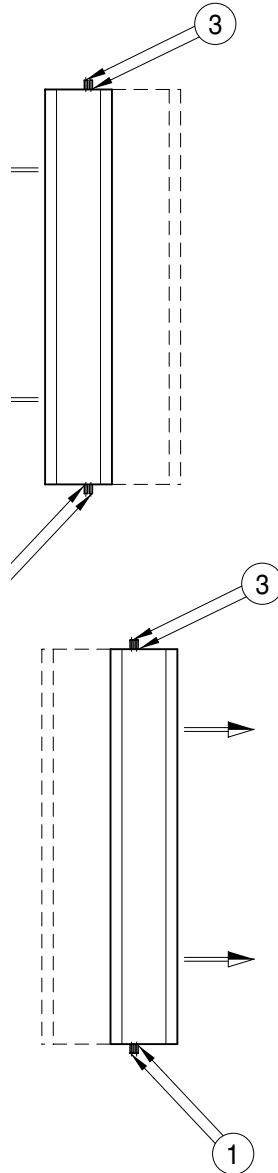
### Step 1.

Indicate the position for the ventilation connection.



### Step 2.

Indicate the position for the pipe connection.



### Step 3.

Indicate the direction of air injection: L or R.

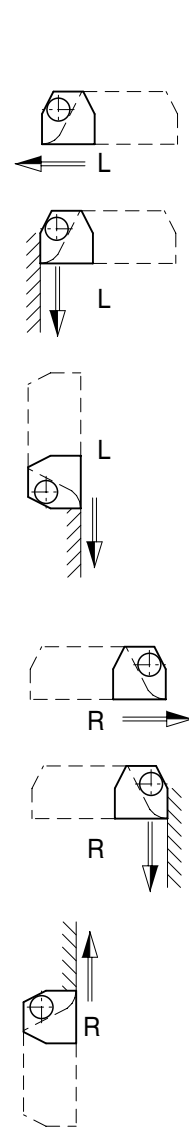


Figure 1. Coupling and connection options.

## Couplings & connections, (in)

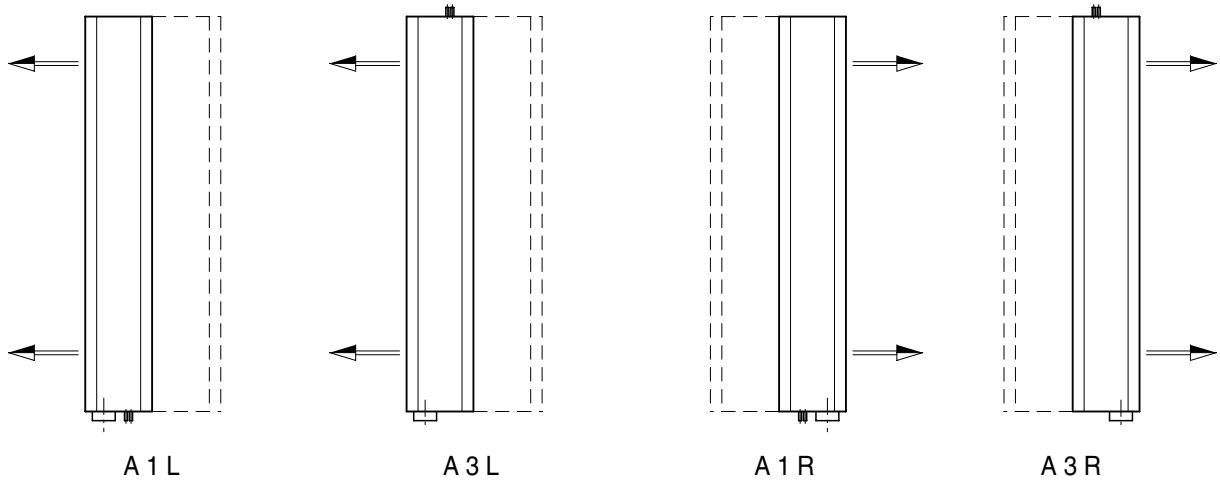


Figure 2. Examples of common coupling options. Type A1L therefore has air connection in the end piece, pipe in the same end piece and the air injection direction is L.

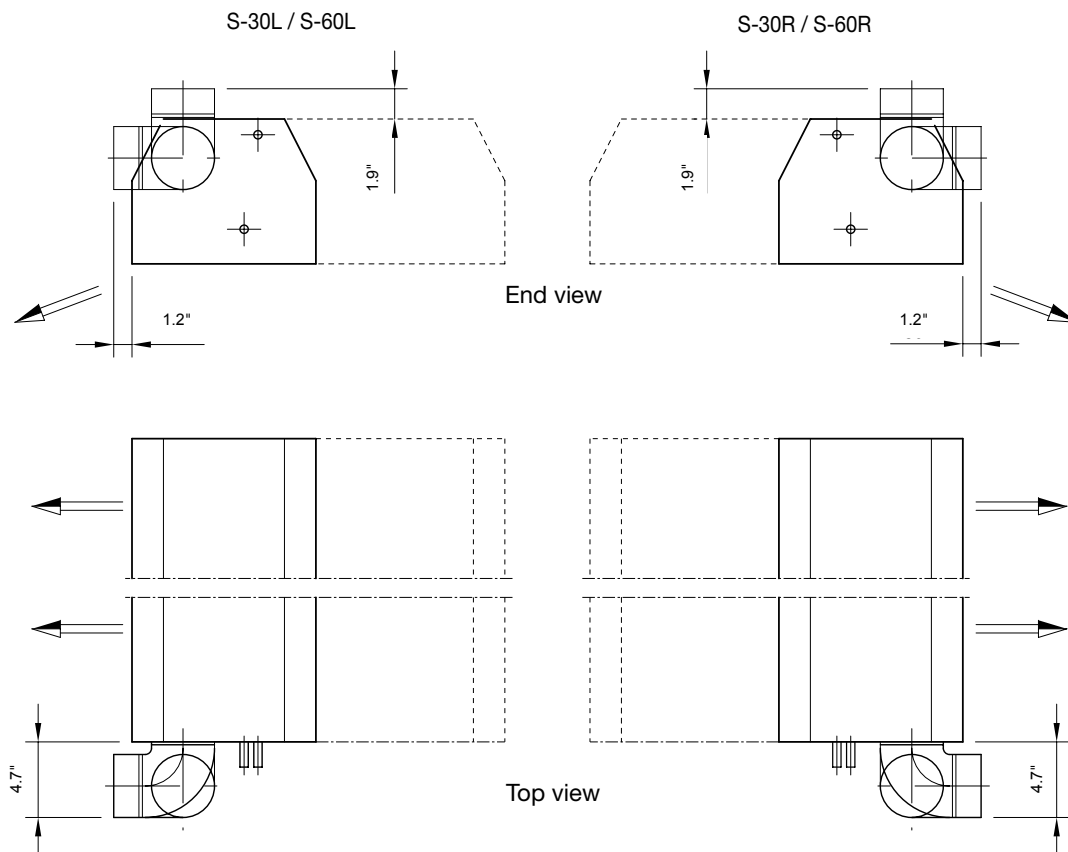
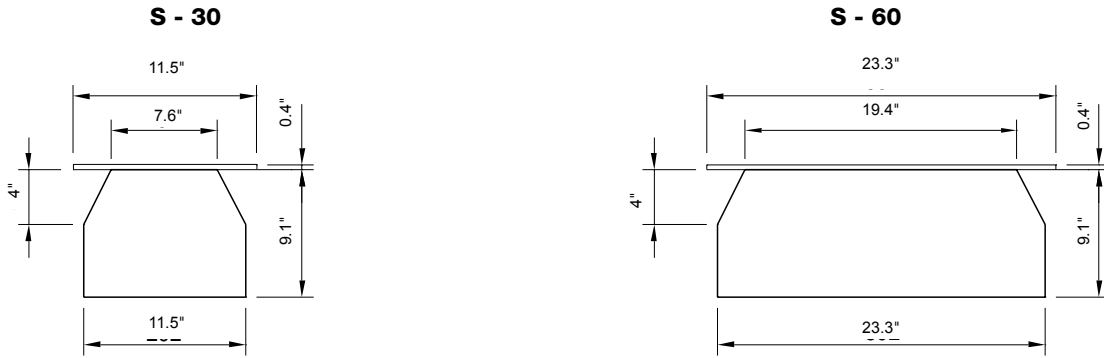
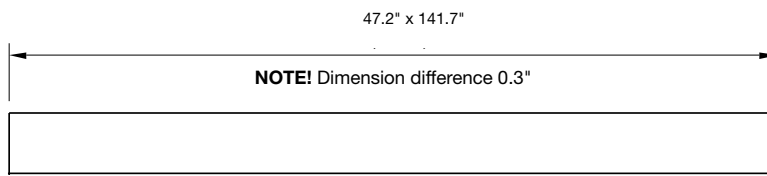


Figure 3. Examples of common coupling options. Type A1L therefore has air connection in the end piece, pipe in the same end piece and the air injection direction is L.

### Width & height, (in)



### Length, in



### Dimensions, in

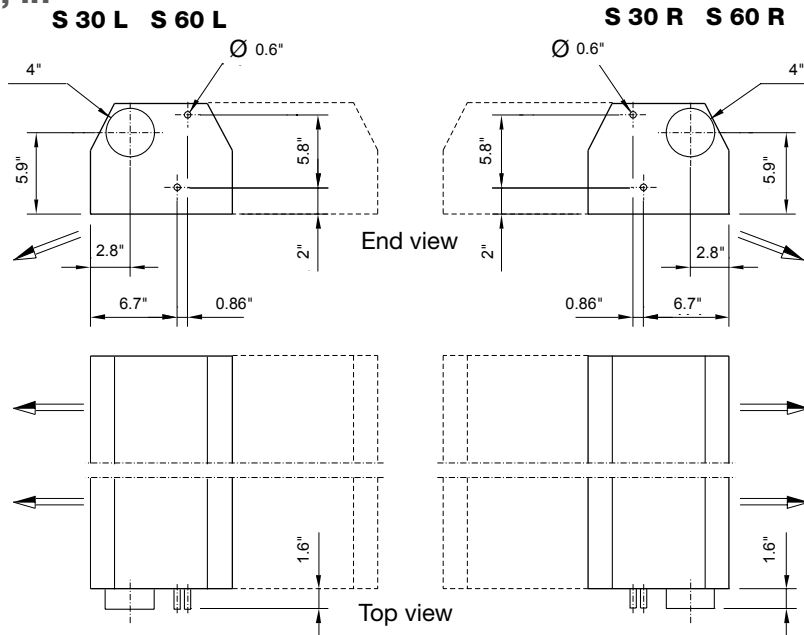


Figure 4. Polaris S - 30 and S - 60, dimensions.

### Weight and water volume

	Polaris S 30	Polaris S 60
Weight, lb/ft	8	8.8
Water content, cooling gal/ft	0.05	0.05
Water content, heating gal/ft	0.03	0.03
Copper pipes, quality	SS/EN 12449	SS/EN 12449
Pressure class	PN10	PN10

Table 9. Polaris S 60, weight and water volume.

## Installation examples

Polaris S is installed recessed in a suspended ceiling. The product can also be built into a wall, which may then require specially adapted components for the installation

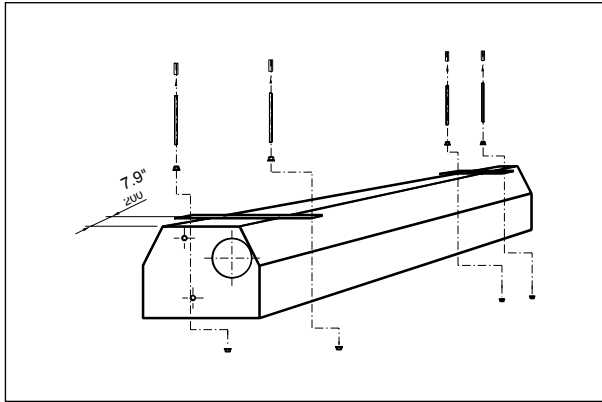


Figure 5. Polaris S-30 installation principle.

**Note.** Beams longer than 102.4", come with a suspension bracket in the middle.

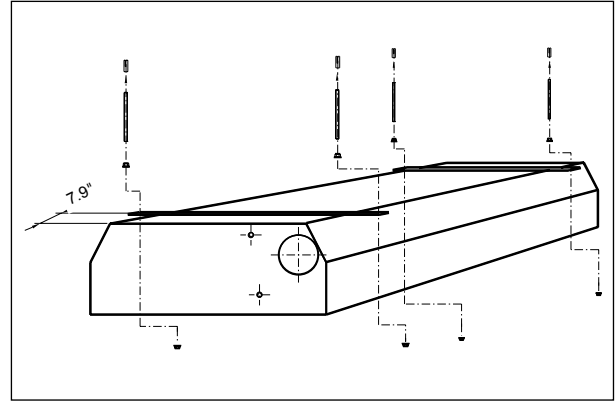


Figure 6. Polaris S-60 installation principle.

**Note.** Beams longer than 102.4", come with a suspension bracket in the middle.

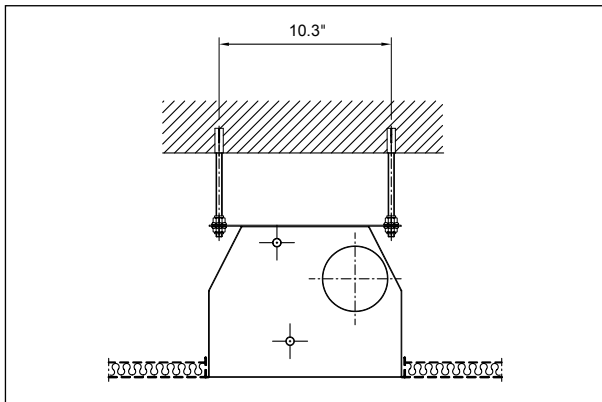


Figure 7. Polaris S-30 recessed mounted in a suspended ceiling.

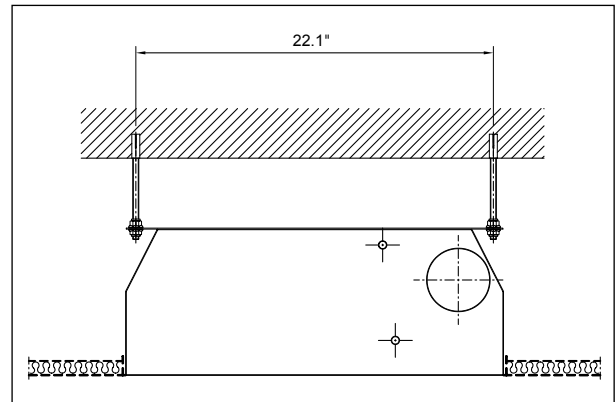


Figure 8. Polaris S-60 recessed mounted in a suspended ceiling.

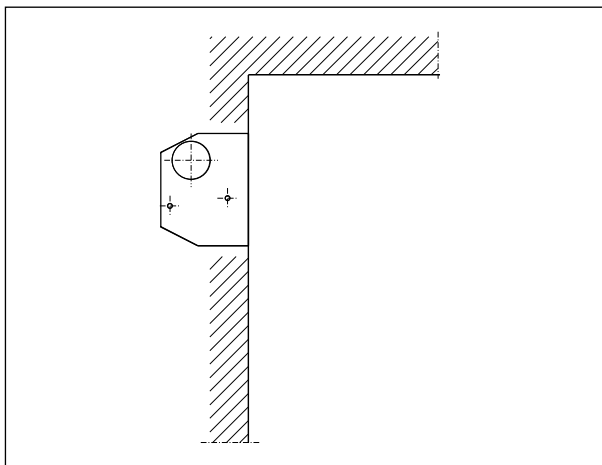


Figure 9. Principle for the wall installation of Polaris S-30.



## Use

EHG's high performance supply air beam Premax can be used for cooling, heating and ventilation.

## Installation

Premax I-60 is installed into a lay-in ceiling, and can be suspended by hangers or threaded rods.

As standard Premax is delivered for a 24" x 24" T24 false ceiling. Premax can also be delivered with a variety of different clip-in options, making the beam suitable for other types of false ceilings.

## Worth noting

Premax is EHG's most efficient performing supply air beam for high cooling demands.

Premax also features the EHG 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. And with the new adjustable Air-Guide system, altering the flow pattern is simpler than ever.

EHG's supply air beams are Eurovent-certified and tested according to EN-15116, EN-14518.



## Key figures

Length:	I-60 and X-60: 47.2", 70.9", 94.5" and 118.1" I-62: 49.2", 73.8", 98.4" and 123"
Width:	I-60: 23.3" I-62: 24.3" X-60: 23.6"
Height:	7.9"



## High performance and optimum function

Despite the product's small external dimensions, the construction makes it possible to achieve a high cooling effect. Premax is EHG's highest performing supply air beam designed to meet extra high cooling demands.

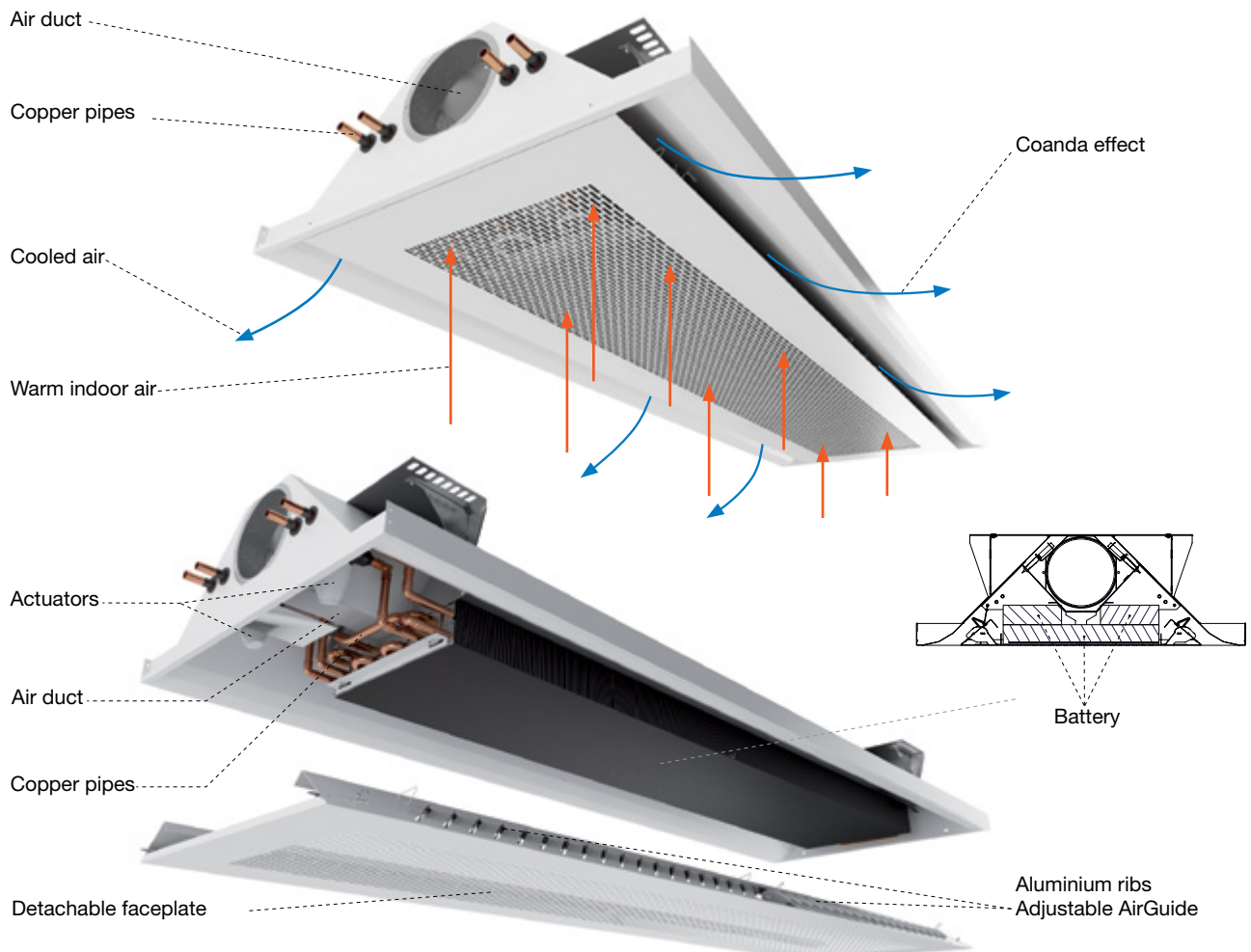
Premax is based on the induction principle. Ventilation air is released through the nozzles into a dispersal zone, thereby creating a low static pressure. The low pressure causes the warm air from the room to be induced into the ventilation air through the battery. The volume of the warm indoor air is two to seven times that of 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.

Premax can be delivered with an exhaust air valve, upon request.

## JetCone and AirGuide

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 distribution pattern along the side of the beam. All thanks to our patented JetCone system. Furthermore, it is possible to change the air flow pattern, by using the patent pending EHG AirGuide system. The EHG AirGuide system consists of four individual rows of deflectors, each with two adjusting points. By changing the setting of the deflectors, the air flow is guided into the desired flow pattern.

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. Premax is based on the induction principle.

# Chilled beams

# Premax

## Hygiene

### Everything is accessible for service

The Premax faceplate is simple to lower or remove. The face plate 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).

## Construction

### Premax is power

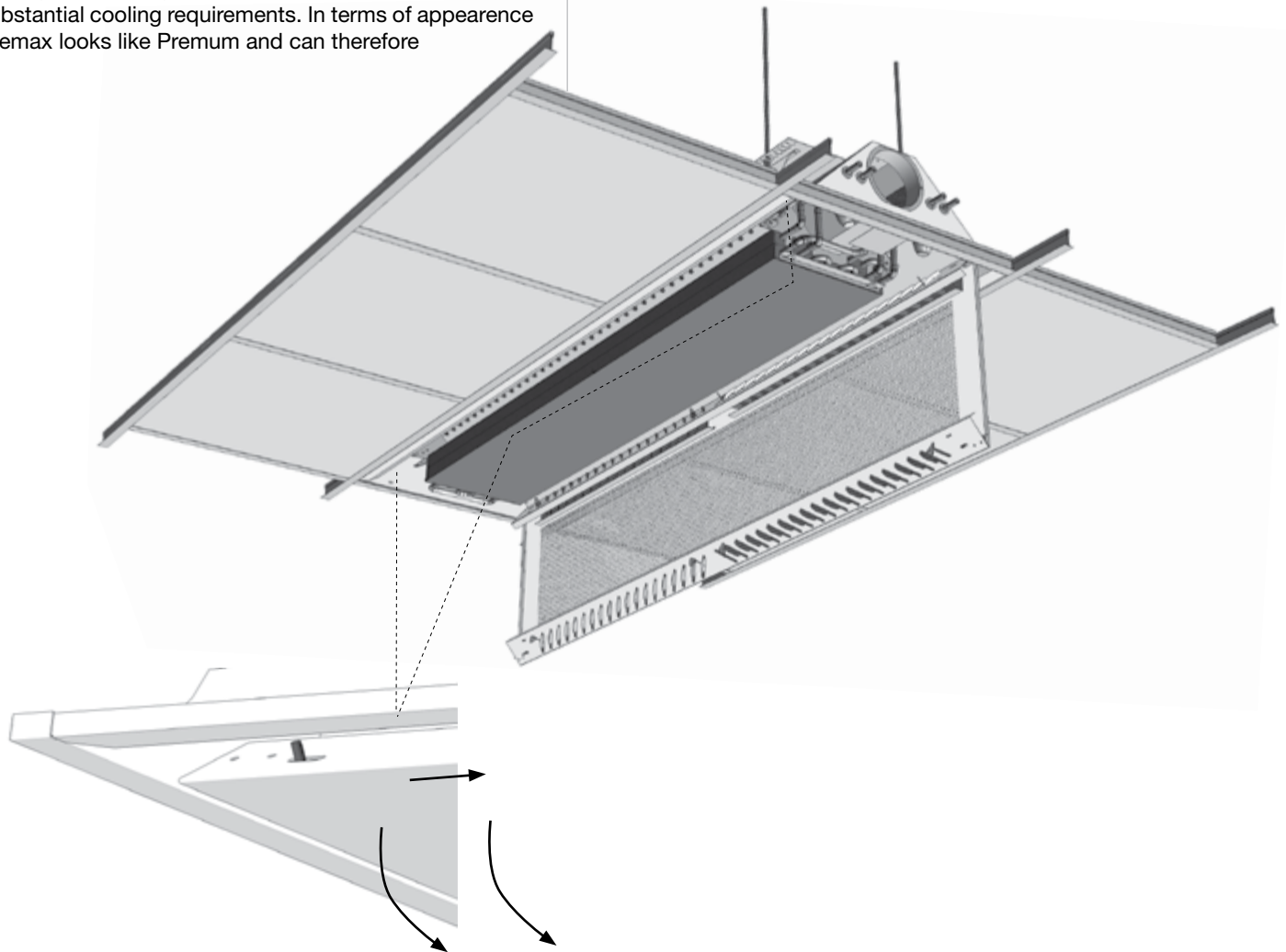
Premax is EHG's high performing supply air beam, giving the highest cooling capacity to be used in rooms with substantial cooling requirements. In terms of appearance Premax looks like Premum and can therefore

preferable be used in alternation with Premum beams and thus provide an architecturally uniform appearance in the room.

Premax is developed and designed to achieve a high degree of flexibility. The flexibility allows air patterns, airflows and air pressures to be changed for different situations. Adjustment and maintenance is easily carried out from below.

It is easy to set the initial settings and adjust the air pattern, air flow and air pressure by using the JetCone and AirGuide system.

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



Picture 2. When the faceplate is lowered or removed, the battery is accessible from below.

# Chilled beams

## Initial settings

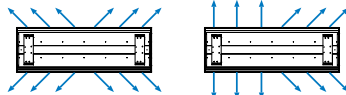
### Adjustment JetCone

Premax is delivered as standard with EHG's JetCone air volume adjustment system. The JetCone System makes Premax 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 diffusion, 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.

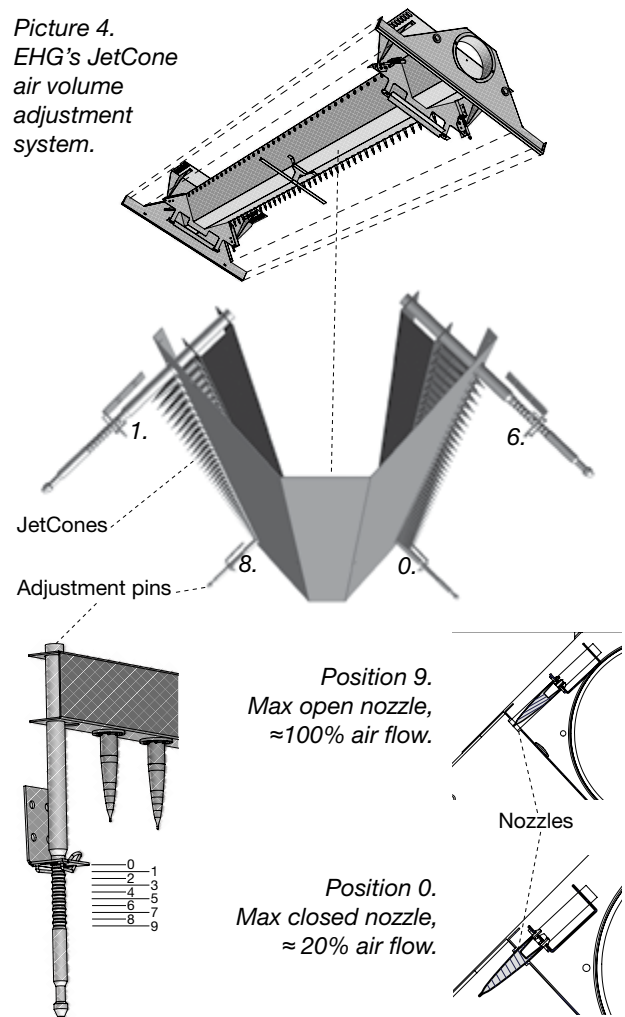
### Adjustment AirGuide deflector

The EHG AirGuide system also offers tool-free adjustment. 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.

Picture 3.



Picture 4.  
EHG's JetCone  
air volume  
adjustment  
system.



*Example:* A number of Premax 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 Premax 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 visit [www.lindqst.com](http://www.lindqst.com).



Picture 5. A separate office is to be fitted into the room. If the climate is to be optimal, the air volume and air distribution need to be adjusted for the Premax beam that will be built into the new room.

# Chilled beams

# Premax

## Data

### Versions

Premax I-60 is installed as an integral part of a false ceiling, where the beam is fitted on top of a standard T24 supportbar. Premax can also be delivered with various Clip-in options, making the beam suitable for different types of false ceilings.

**Lengths:** Premax is available in fixed lengths:

I-60 and X-60: 47.2", 70.9", 94.5" and 118.1"

I-62: 49.2", 73.8", 98.4" and 123"

**Water connection:** The cooling water connections for Premax are made of 0.47" to 0.59" (Optional), copper pipes. Heating pipes are 0.47".

**Air connection:** Premax is supplied with a EHG NPU-5 coupling for EHG G-3® ducts.

**Design:** Premax is supplied as standard with a Slot perforation, with 50% open area. Other perforation patterns are also available.

**Surface treatment:** Premax is supplied as standard in enamelled sheet metal, color white, RAL 9010, gloss 30.

## Plus features

Factory preinstalled.

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

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

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

**Factory settings:** Presetting of pressure (Pa) and air flow (l/s).

**Exhaust air valve:** Premax can be delivered with build in exhaust.

## Accessories

Delivered separately.

**Suspension components:** 4 threaded rods (23" to 40") for all beam lengths.

## Color

Premax is available as standard in white, RAL 9010, gloss value 30. Other colors may be ordered specially.

# Chilled beams

## Ventilation connections

# Premax

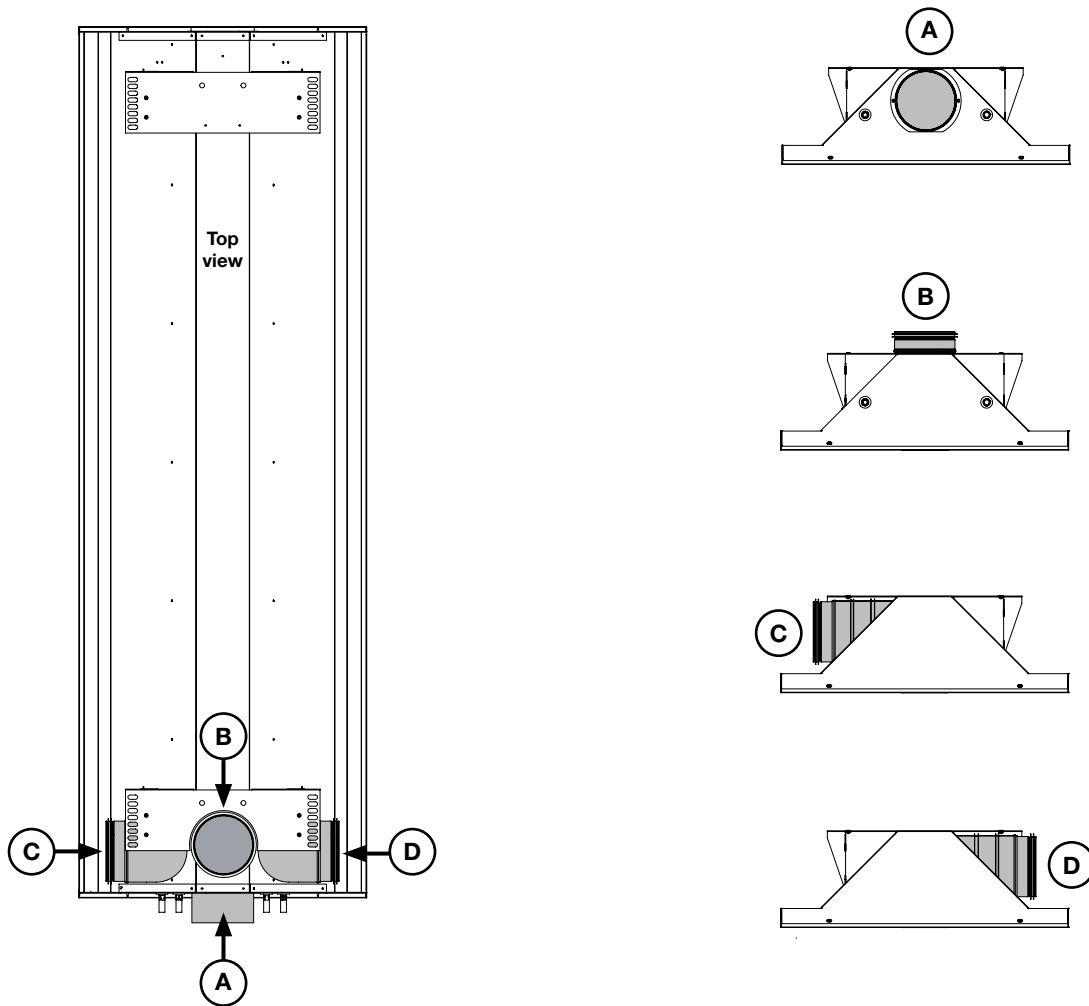


Figure 1. For A connection, Premax is delivered with EHG's standard nipple (NPU-5).  
For B, C, and D connection, EHG's elbow piece (BU 90°) is included.

### Connection A



### Connection B

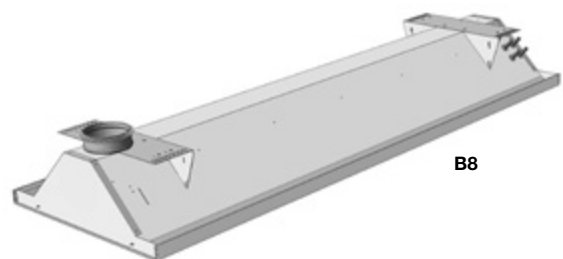


Figure 2. Examples of the most common Premax supply air A and B variants.  
Go to next page to see overview of various water pipe connections.

# Chilled beams

# Premax

## Water connections

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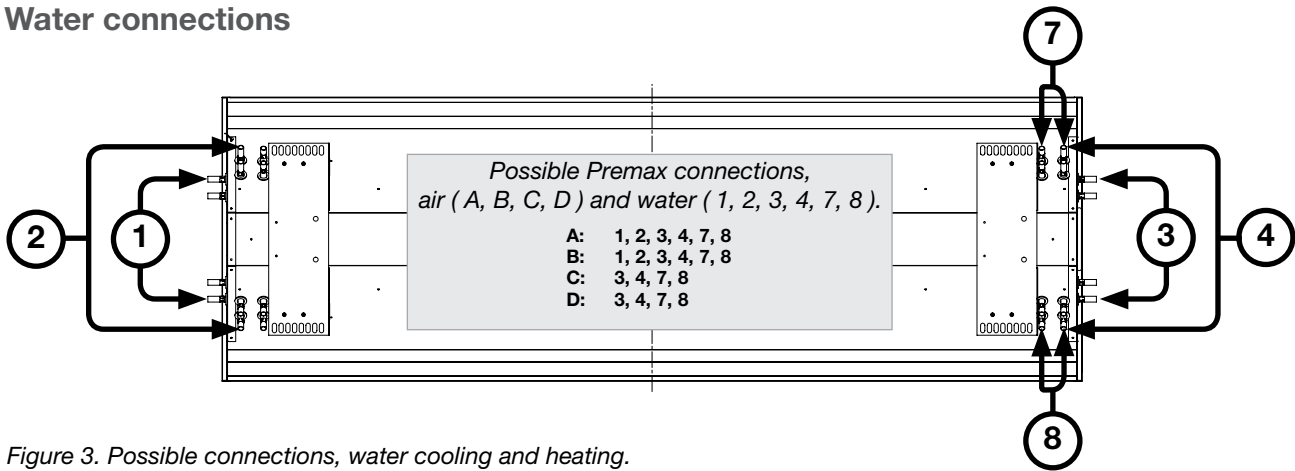


Figure 3. Possible connections, water cooling and heating.

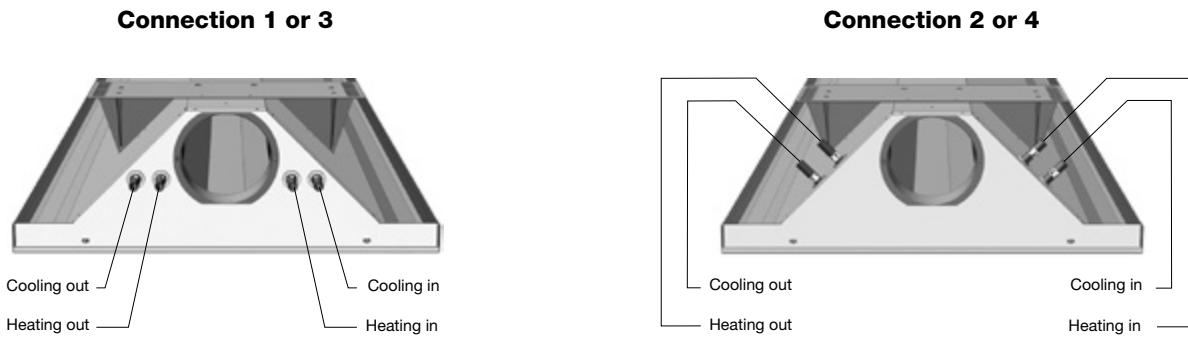


Figure 4. Placement of cooling and heating pipes. Heating (0.5"). Cooling (0.5" or 0.6").

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

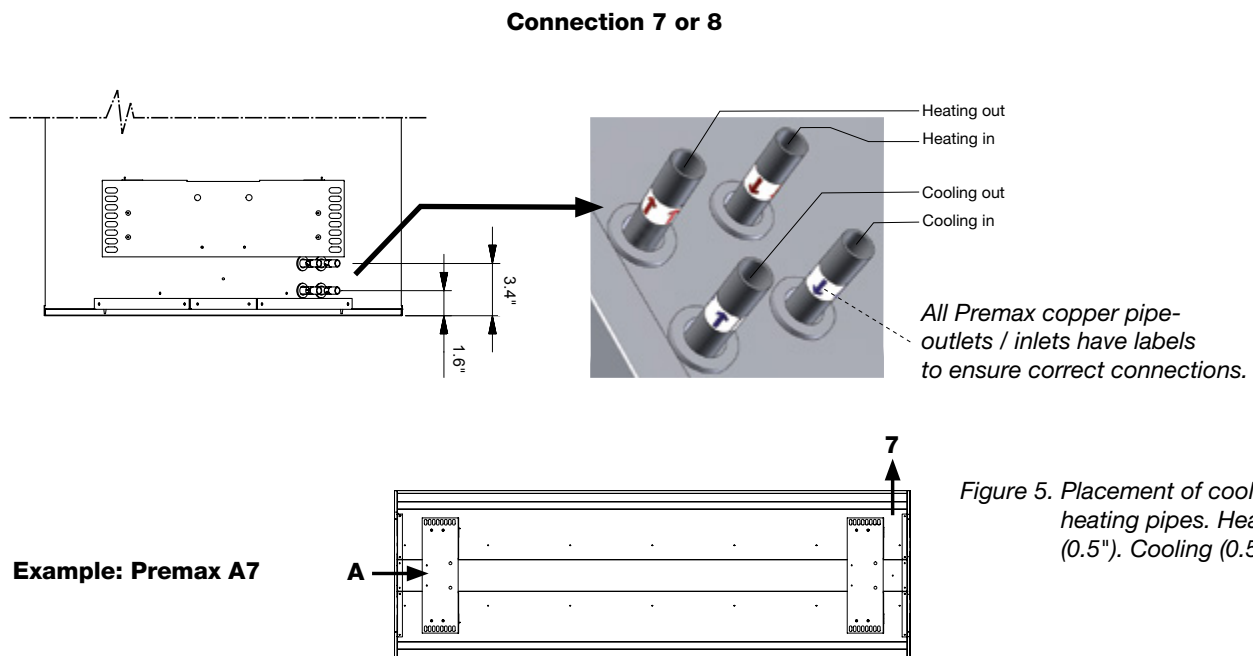


Figure 5. Placement of cooling and heating pipes. Heating (0.5"). Cooling (0.5" or 0.6").

# Chilled beams

# Premax

## Valves & actuators

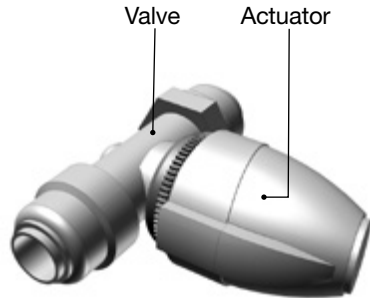


Figure 6. Valve with actuator mounted.

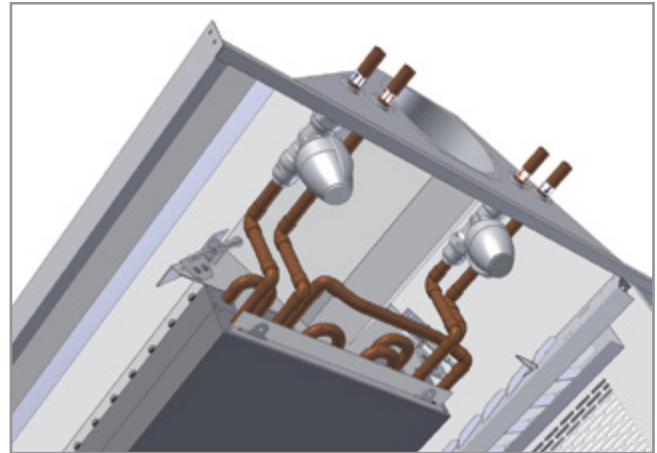


Figure 7. Illustration of how the valve and actuator is placed inside the chilled beam, A1 example, Premax.

## Dimensions

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

5"

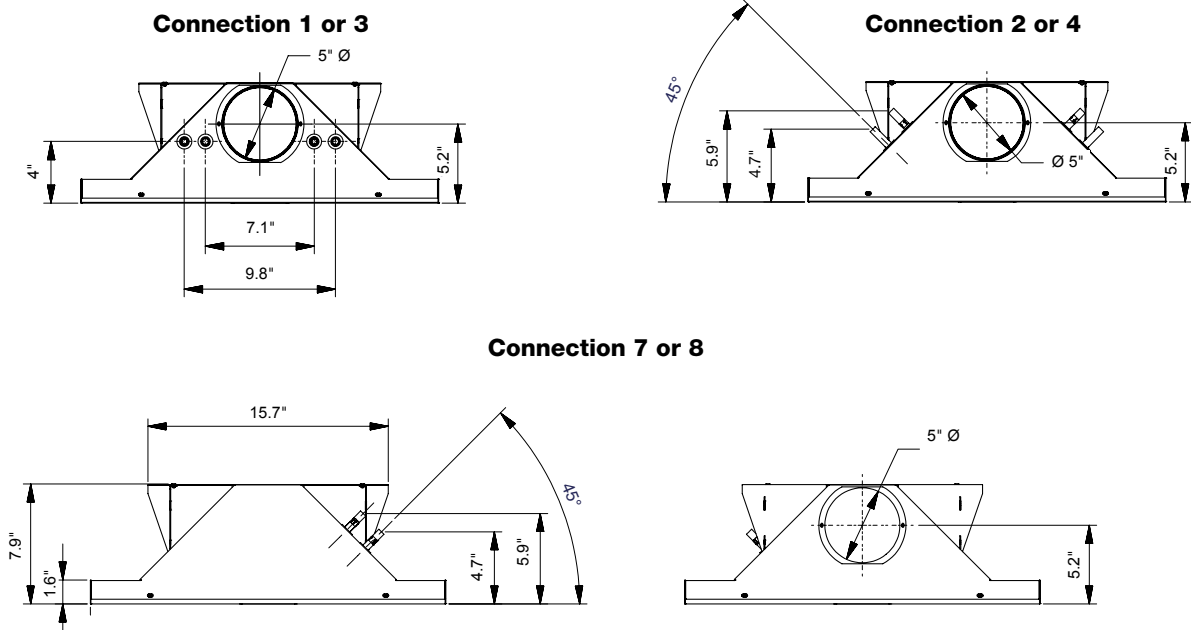


Figure 8. Premax I-60-A with possible water connections.

## Weight and water volume

	Premax
Weight, lb/ft	12
Water content, cooling, gal/ft	0.05
Water content, heating, gal/ft	0.02
Copper pipes, quality	EN 12735-2 CU-DHP
Pressure class	PN10

Table 4. Premax's weight and water volume.

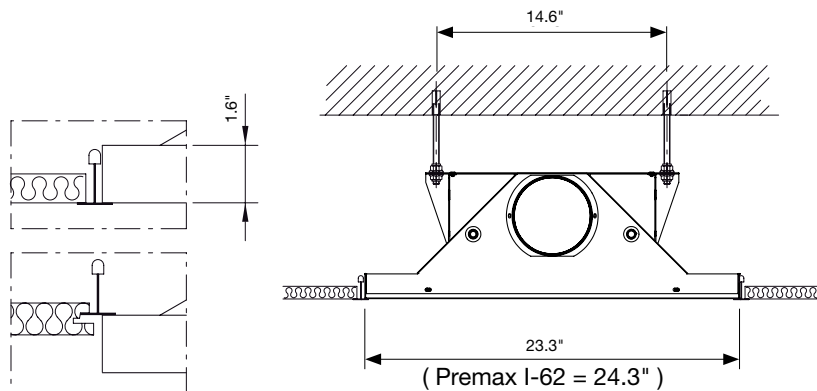
# Chilled beams

# Premax

## Suspension

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### Premax I-60



$l_n$  = standard: 47.2, 70.9, 94.5, 118.1 in.

$l_n$  = I-62 : 49.2, 73.8, 98.4, 123 in.

Length of Premax I-60 / I-62 =  $l_n - 0.3$ "

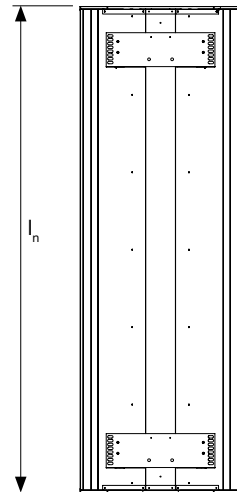
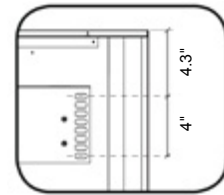
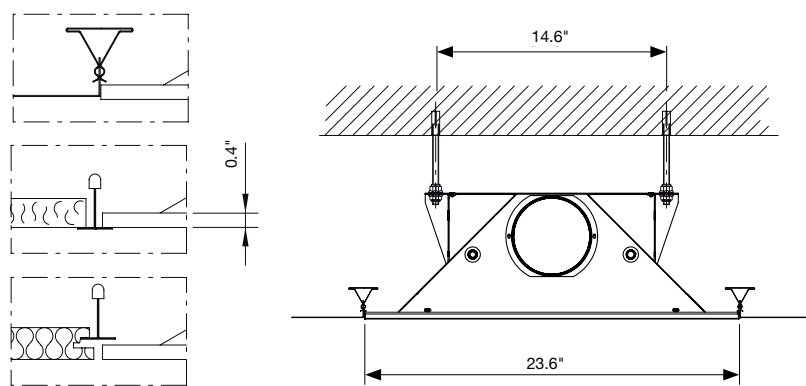


Figure 9. Premax I-60 suspension, dimensions. Suspension components are not supplied as part of the standard package.

### Premax X-60



$l_n$  = standard 47.2, 70.9, 94.5, 118.1 in.

Length of Premax X-60 =  $l_n - 0.04$ "

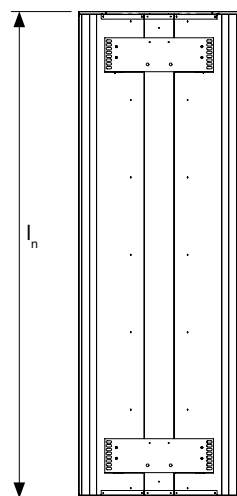
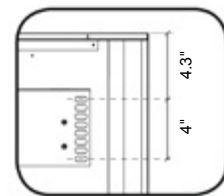


Figure 10. Premax X-60 suspension, dimensions. Suspension components are not supplied as part of the standard package.





## Use

EHG's supply air beam Premum can be used for cooling, heating and ventilation.

## 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 24" x 24" lay-in 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 EHG 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. And with the new adjustable AirGuide system, altering the flow pattern is simpler than ever.

The Premum chilled beam is fully integratable with the EHG eHybrid solution and together they provide an optimal energy efficient solution

EHG's supply air beams are Eurovent-certified and tested according to EN-15116, EN-14518.



## Key figures

- Length: I-60 and X-60: 47.2" - 118.1"  
I-62: 49.2" - 123"  
min. steps of 4"
- Width: 23.3" (I-60),  
25.4" (I-62)  
and 23.6" (X-60)
- Height: 7.9"

## Optimal functions

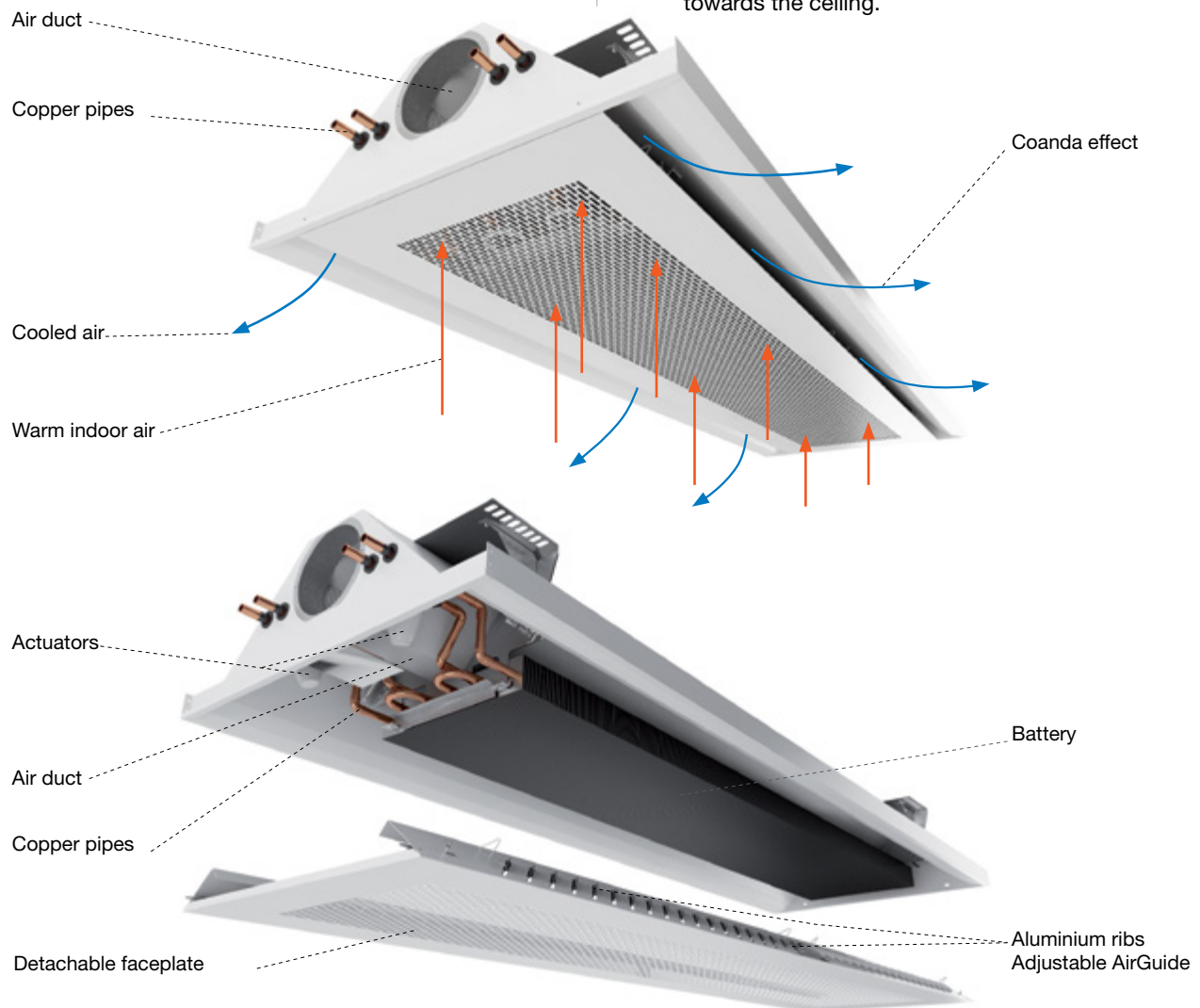
Premum is based on the induction principle. Ventilation air is released through the nozzles into a dispersal zone, thereby creating a low static pressure. The low pressure causes the warm air from the room to be induced into the ventilation air through the battery. The volume of the recirculated indoor 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, upon request.

## JetCone and AirGuide

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. Furthermore, it is possible to change the air flow pattern, by using the patent pending EHG AirGuide system. The EHG AirGuide system consist of four individual rows of deflectors, each with two adjusting points. By changing the setting of the deflectors, the air flow is guided into the desired flow pattern.

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.

# Chilled beams

# 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).

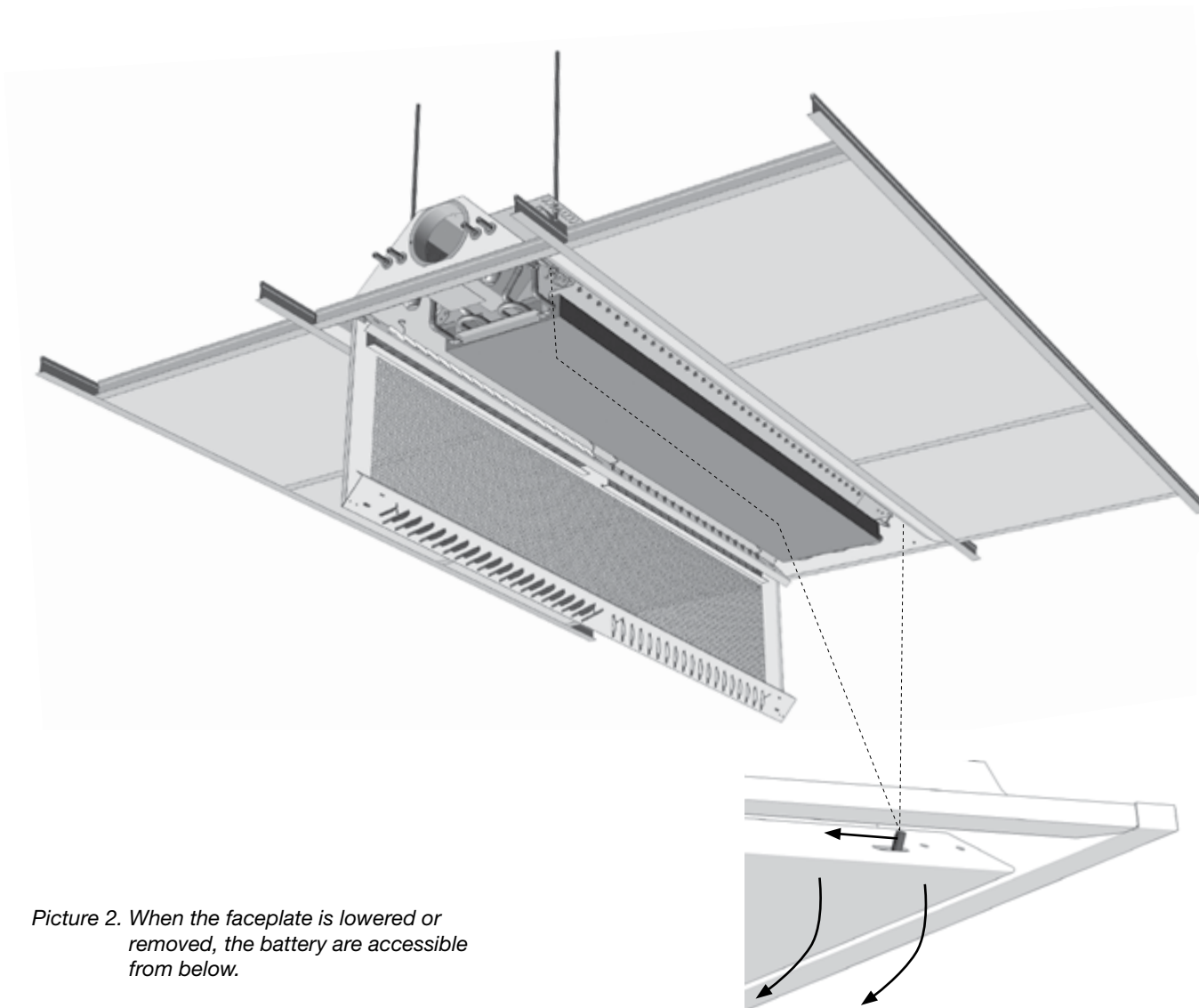
## Construction

### Premum is flexible

Premum is developed and designed to achieve a high degree of flexibility. The flexibility allows air pattern, air flow and air pressure to be changed simply for different situations from below for adjustment and maintenance.

It is easy to set the initial settings and adjust the air pattern, airflow and air pressure by using the JetCone and AirGuide systems.

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



Picture 2. When the faceplate is lowered or removed, the battery are accessible from below.

# Chilled beams

# Premum

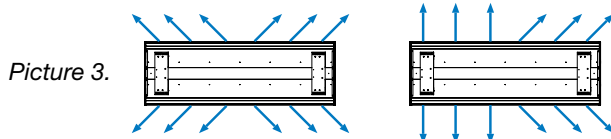
## Initial settings

## Adjustment JetCone

Premum is delivered as standard with EHG'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.

## Adjustment AirGuide deflector

The EHG AirGuide system also offers tool-free adjustment. 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.

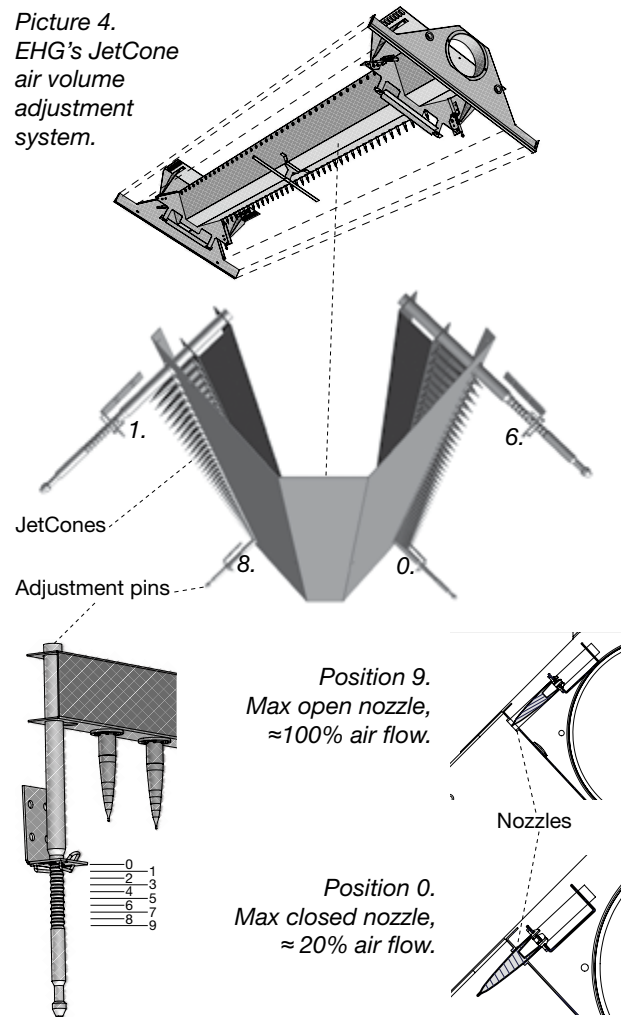


*Example:* A number of Premum beams are installed in an open-plan office. A separate office is to be fitted into the room. If the climate is to be optimal, the air volume and air distribution needs to be adjusted on the Premum beam that will be built into the new room (see picture 5). If the air has 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](http://www.lindqst.com).



Picture 5. 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.

Picture 4. EHG's JetCone air volume adjustment system.



# Chilled beams

# Premum

## Data

### Versions

Premum I 60 is installed as an integrated part of a false ceiling, where the beam is fitted on top of a standard lay-in support bar. Premum can also be delivered with various Clip-in options, making the beam suitable for different types of false ceilings.

**Lengths:** Premum is available in lengths from:

I-60 and X-60: 47.2" - 118.1" in steps of 4"

I-62: 49.2" - 123" in steps of 4"

**Water connection:** The water connections for Premum are made of 0.5" copper pipes.

**Air connection:** Premum is supplied with a EHG NPU-5 for EHG G-3® ducts.

**Design:** Premum is supplied as standard with a Slot perforation, with 50% open area. Other perforation patterns are also available.

**Surface treatment:** Premum is supplied as standard in enamelled sheet metal, color white, RAL 9010, gloss 30.

## Plus features

Factory preinstalled.

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

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

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

**Factory settings:** Presetting of pressure (Pa) and air flow (l/s).

**Exhaust air valve:** Premum can be delivered with build in exhaust.

## Accessories

Delivered separately.

**Suspension components:** 4 threaded rods (24" - 48"), or MHS hangers (24" - 48"), for all beam lengths.

## Color

Premum is available as standard in white, RAL 9010, gloss value 30. Other colors may be ordered specially.

# Chilled beams

# Premum

## Ventilation connections

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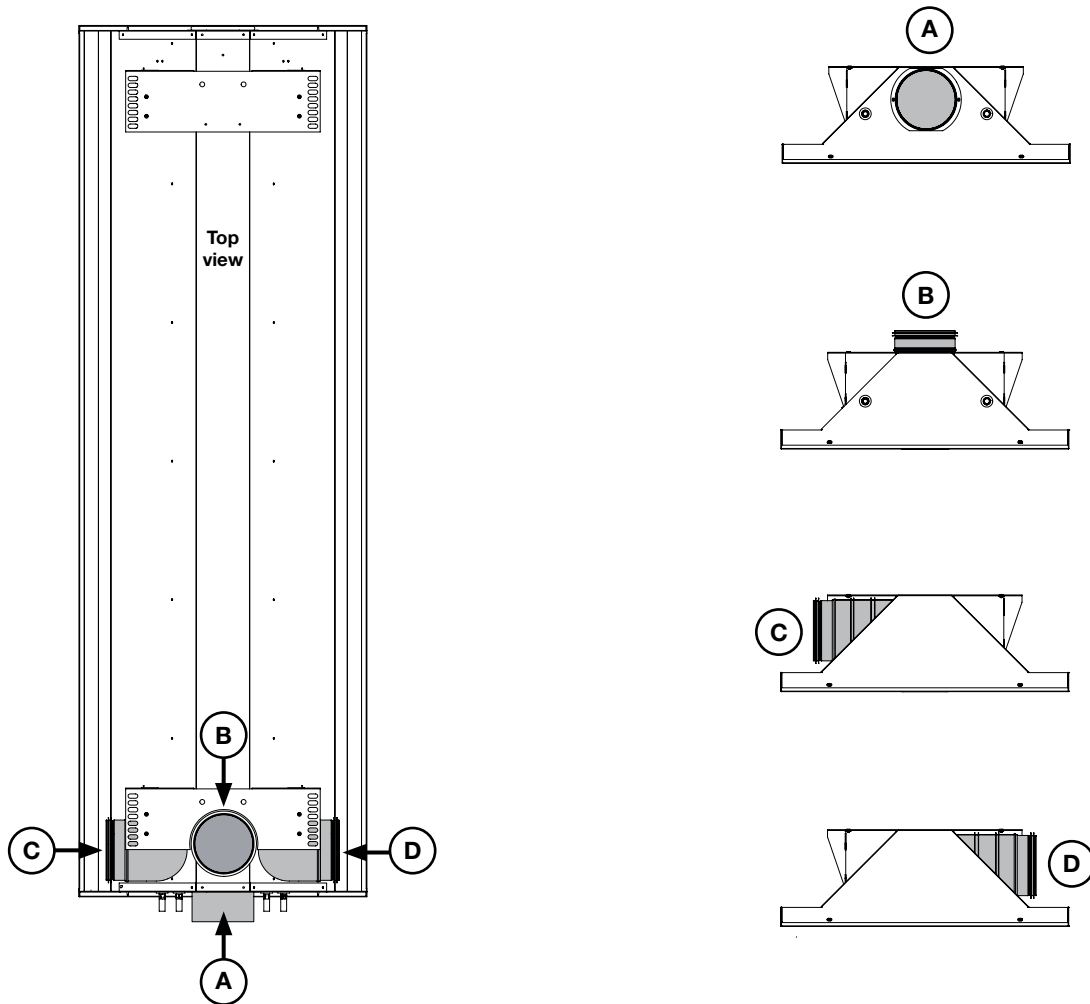


Figure 1. For A connection, Premum is delivered with EHG's standard nipple (NPU-5). For B, C, and D connection, EHG's elbow piece (BU 90°) is included.

### Connection A



### Connection B

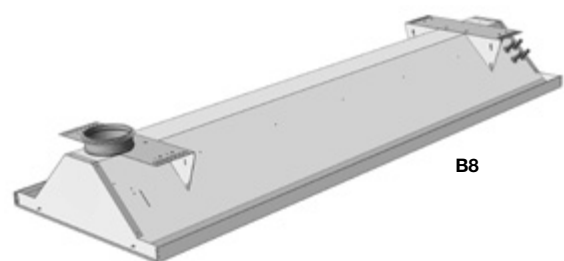


Figure 2. Examples of the most common Premum supply air A and B variants. Go to next page to see overview of various water pipe connections.

# Chilled beams

# Premum

## Water connections

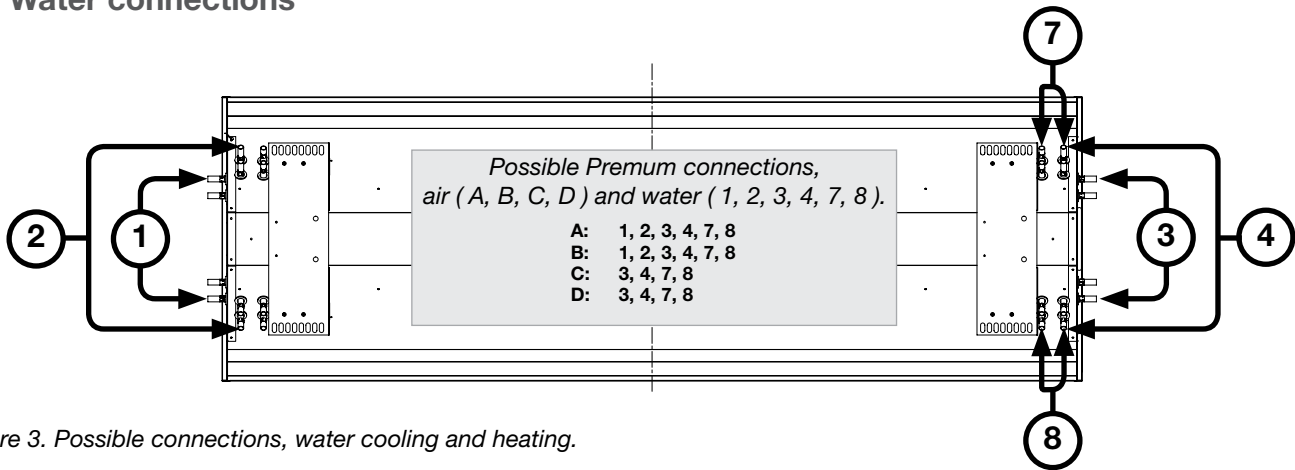


Figure 3. Possible connections, water cooling and heating.

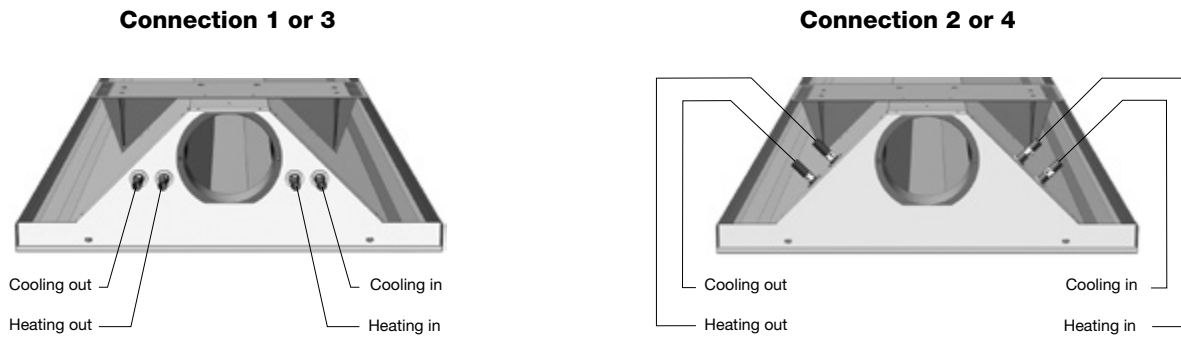
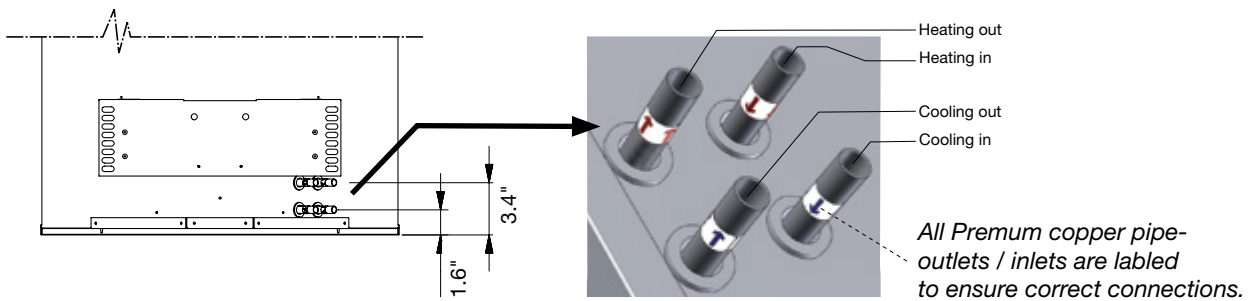


Figure 4. Placement of cooling and heating pipes (0.5"). **Note:** When compression couplings are used, support sleeves must be applied.

### Connection 7 or 8



### Example: Premum A7

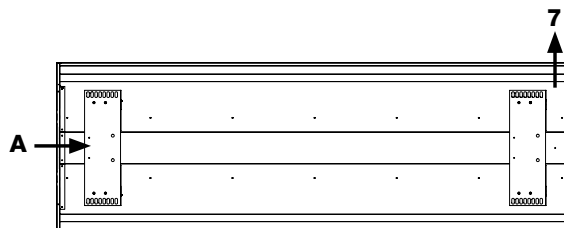


Figure 5. Placement of cooling and heating pipes (0.5").

# Chilled beams

# Premum

## Valves & actuators

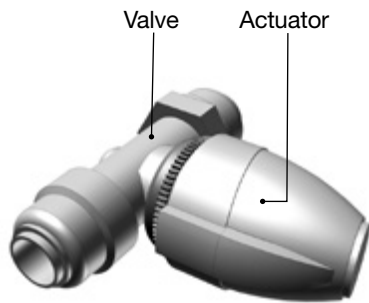


Figure 6. Valve with actuator mounted.

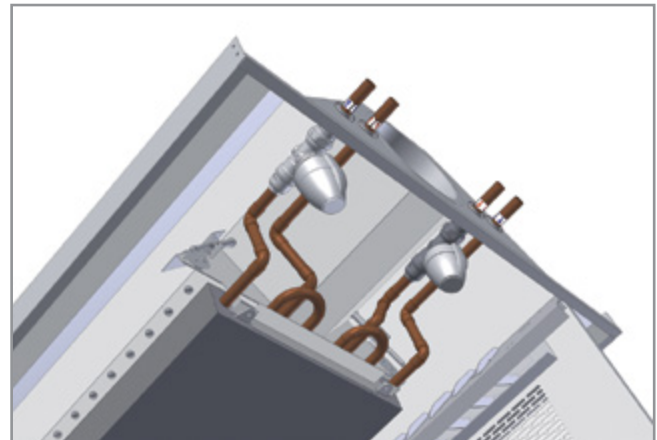
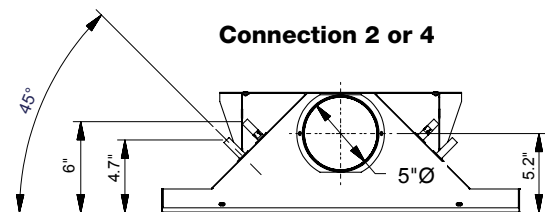
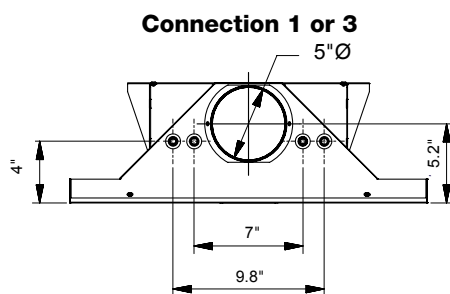


Figure 7. Illustration of how the valve and actuator is placed inside the chilled beam, A1 example, Premum.

## Dimensions, (in)

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



### Connection 7 or 8

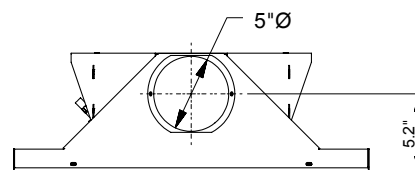
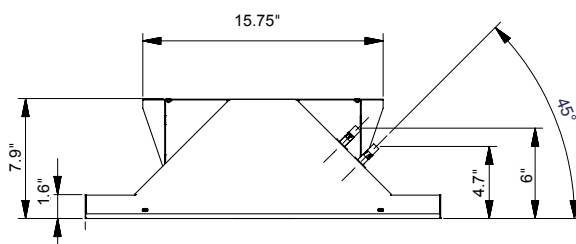


Figure 8. Premum I-60-A with possible water connections.

## Weight and water volume

	Premum
Weight, lb/ft	10
Water content, cooling, gal/ft	0.06
Water content, heating, gal/ft	0.02
Copper pipes, quality	SS/EN 12449
Pressure class	PN10

Table 4. Premum's weight and water volume.

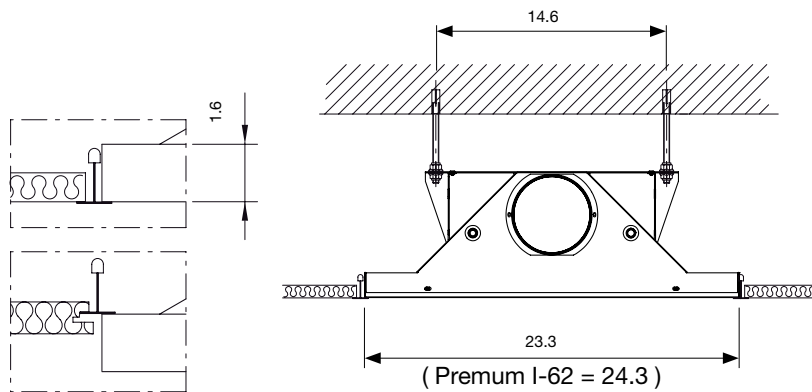


# Chilled beams

# Premum

## Suspension

### Premum I-60



$l_n = 47.2" - 118.1"$  in steps of 4".  
 I-62  $l_n = 49.2" - 123"$  in steps of 4".  
 Length of Premum I-60 / I-62 =  $l_n - 0.3"$ .

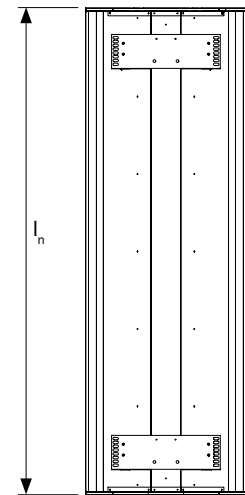
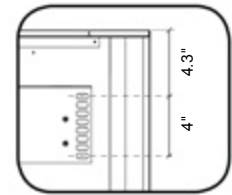
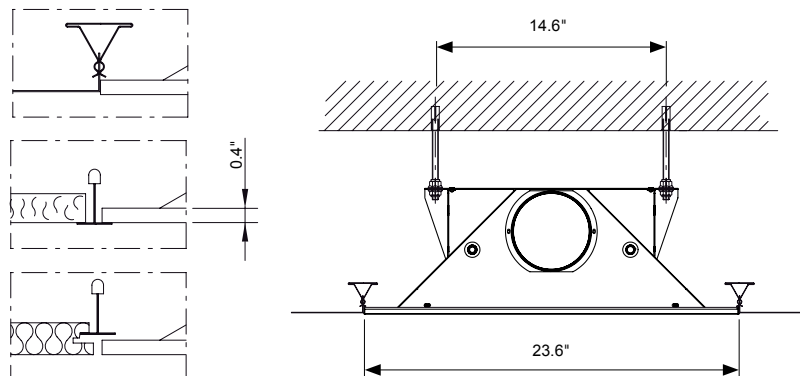


Figure 9. Premum I-60 suspension, dimensions. Suspension components are not supplied as part of the standard package.

### Premum X-60



$l_n = 47.2" - 118.1"$  in steps of 4".  
 Length of Premum X-60 =  $l_n - 0.04"$ .

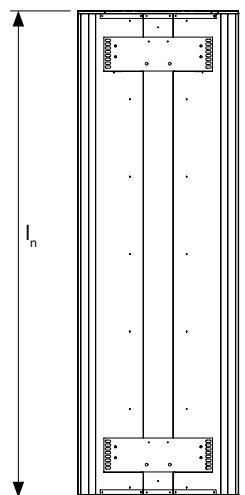
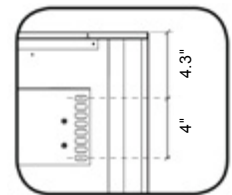


Figure 10. Premum X-60 suspension, dimensions. Suspension components are not supplied as part of the standard package.



## Use

EHG's supply air beam Professor provides great freedom for the installation, as its inset height is low, only 4.7".

Professor is equipped with divergent nozzles, which provides a draft-free indoor climate.

Professor can be used for cooling, heating and ventilation. Professor can be furnished with the following features: cooling, heating, ventilation, Drypac™ condensation protection, built-in valves and actuators, built-in lighting, built-in exhaust air valve, etc. It offers many possibilities and great flexibility.

## Installation

Professor is available for both recessed and suspended installation.

Professor-I is installed as an integral part of a suspended ceiling, where the beam is mounted on top of a standard T-shaped support.

Professor -F is installed suspended.

Professor can be supplied with horizontal and vertical connections.

## Worth noting

Due to its very low height of 4.7", the beam can be mounted in cramped spaces, which leads to great flexibility. EHG's supply air beams are Eurovent-certified and tested according to EN-15116, EN-14518.



## Key figures

Length: 47.2" - 141.7"

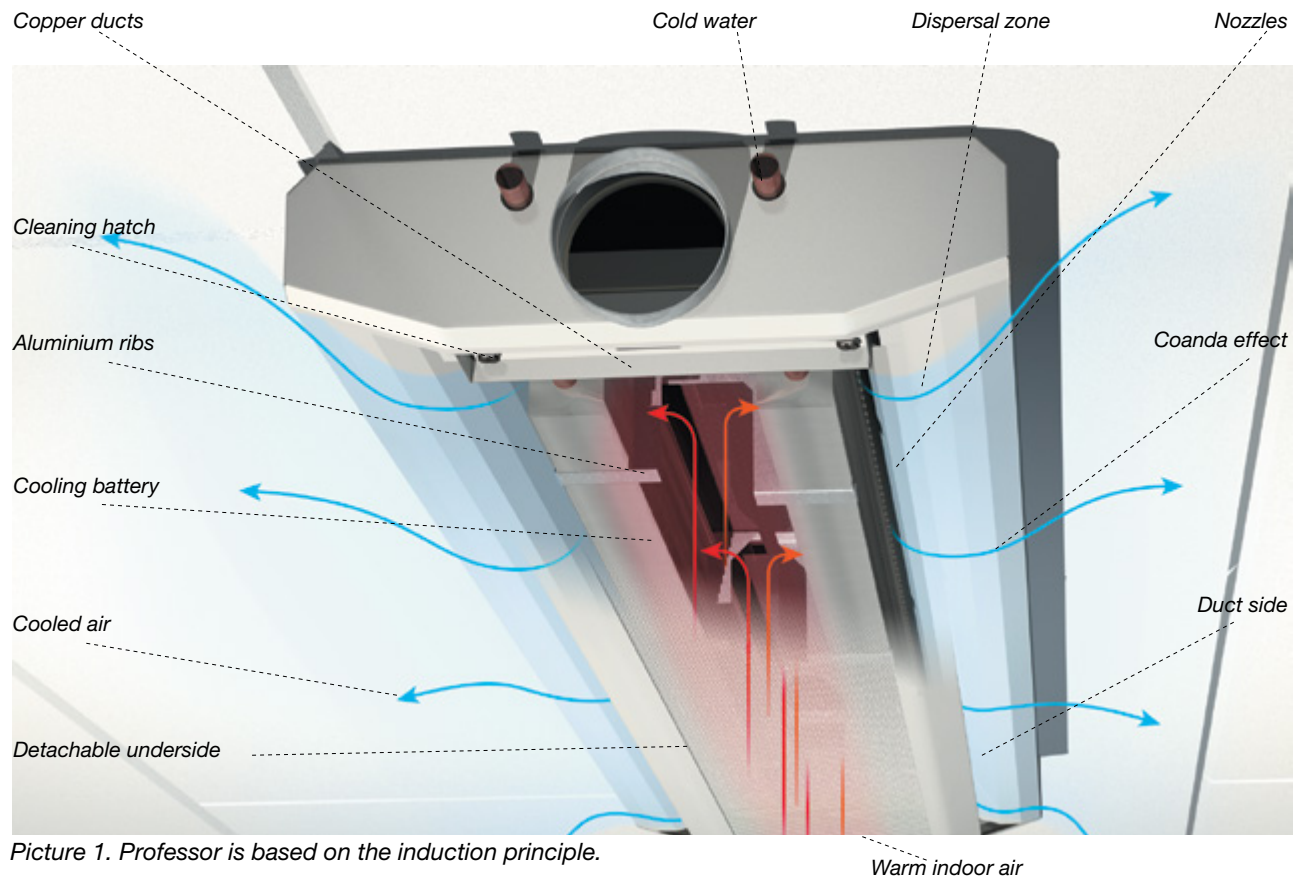
Width: 17.4" (45) in total. 23.3" (60)

Height: 4.7"

Capacity: Cooling effect of up to 4,740 BTU  
Air quantity of up to 85 cfm

# Chilled beams

# Professor



Picture 1. Professor is based on the induction principle.

## Function

### Powerful function in small format

EHG's supply air beam, Professor, is based on the induction principle. Ventilation air at a given dynamic pressure is released through specially formed nozzles into a dispersal zone, thereby creating a low static pressure. This low pressure causes the warm air from the room to be induced into the ventilation air 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 transferred through the copper pipe to the water circuit, and then goes further to a central cooling unit, (see Picture 1). Despite the small external dimensions of the product, the construction makes it possible to achieve a high cooling effect. The nozzles discharging the ventilation air are designed to maintain the Coanda effect, i.e. the adhesive capacity of the air in the duct, with a start in the nozzles. The air then follows the side of the duct towards the ceiling. The side of the beam is shaped so as to maintain the Coanda effect across the ceiling of the room.

Since the air leaves the beam only 3" below the ceiling,

it has also been possible to achieve this function in the suspended models. Where both heating and cooling are required, there is an extra tube in the battery, which heats the room.

## Hygiene

### Everything is accessible from below

The requirement for all parts of the beam to be easy to clean has been met by the removable underside and the detachable cleaning and adjustment hatch. By loosening the hatch, you can clean both the incoming duct system, and the beam's side ducts, from the inside. The vertical batteries are accessible from three sides and thus can be cleaned thoroughly. The same applies to the Coanda nozzles, which can be easily cleaned from below. Thus, you can clean the product thoroughly access to the short sides of the product, which can thus be positioned directly against a wall.

# Chilled beams

# Professor

## Construction

### Maximum accessibility

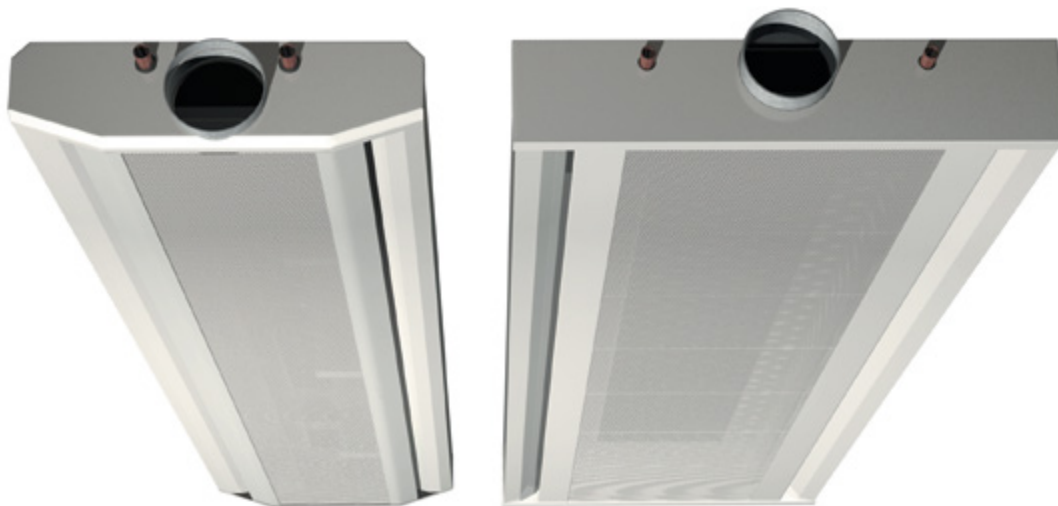
For best possible accessibility for cleaning, suspension, adjustment or maintenance, the whole underside of the EHG Professor can be dismantled. Where the beam is equipped with built-in valves and control devices, these are also accessible for adjustment and maintenance from below. The beam is suspended and adjusted before the underside is put in place. The product can be ordered so the volume of air can be varied on both sides. This is achieved by using different plugs on the Coanda nozzles.

We have succeeded in making the product so compact, by using double vertical batteries and double ducts. If other pressures and flow patterns are required, EHG's Coanda nozzles are easily accessible, and can be plugged from below.

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

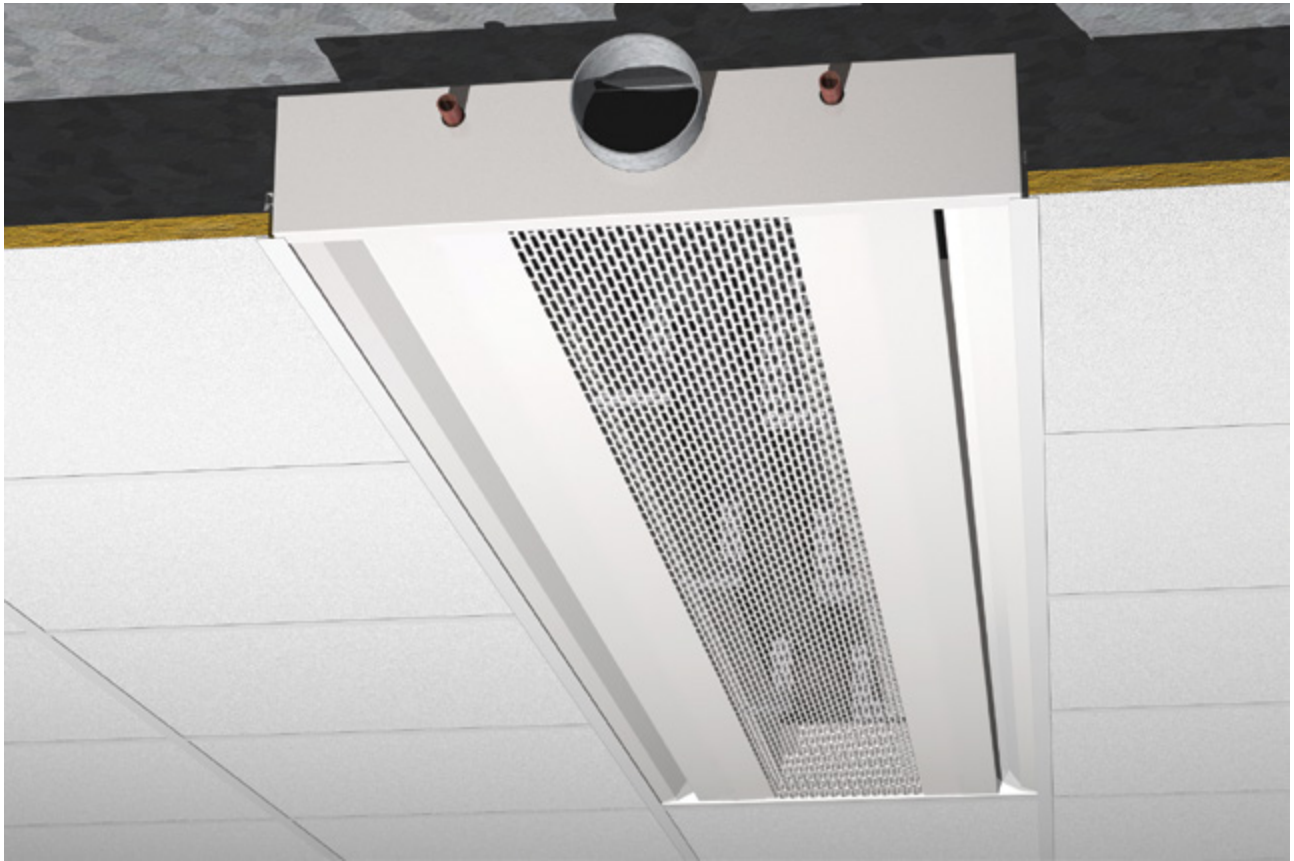
NB! When the airflow is adjusted, the maximum airflow at a given pressure is limited by the number of nozzles. You should consider your future needs and possibly choose a Professor with more plugged nozzles as early as when you place your order.

The construction is patented; all tests are conducted according to European standard EN 15116. Professor is certified by Eurovent.



Picture 2. Professor F, for suspended installation or installation directly on to the ceiling.

Picture 3. Professor I, for recessed installation in suspended ceiling.



Picture 4. Professor I-60 with underside, Slot (default).

## Design

### With many possibilities

High priority has been given to the desire for a compact product with an inset low height. The height of the beam is only 4.7". The underside can have different appearances, either with transverse slots (slot, see picture 4) or round perforations (dot). The default is Slot. Lighting can be integrated into the 23.6"-wide version, without changing anything in the beam's construction, apart from the underside.

# Chilled beams

# Professor

## Room environment

The ventilation principle for the EHG Professor is that the cooled or heated air is spread across the ceiling until it reaches the walls where it is driven, to a certain extent, down into the room. The heated air is then absorbed from the space below the beam for further cooling or heating. In this way, the room is well ventilated. Conventional supply air beams, which spread the air linearly, can create high air velocities, as the air stream becomes compressed and concentrated towards the centre. To reduce air velocities, the air distribution in the EHG Professor is angled outwards. The nozzles are successively directed outwards to ensure the optimum distribution and a short throw. The air velocities created, using this technology, are significantly lower than those for conventional supply air beams with linear outlet.

Through extensive studies, we have achieved the optimum distribution so as to minimize air velocities.

By using double air ducts, we have made use of all the volume of the beam. Therefore, the product can handle

large volumes of air while keeping its own noise low, despite its small external dimensions.

As regards noise, the nozzles are shaped like an inverted trumpet, i.e. somewhat negatively directed at the outlet, which also leads to very low noise from the nozzle. The structure of the product, with a distribution channel to the double side ducts and a sound absorber on each end of the ducts, means that the internal sound dampening of the product is very good and that cross-noise in the ventilation system and between rooms is low.

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Picture 5. Professor F-45 placed in an office environment.

## Data

## Variants

The Professor's width is either 17.4" (model 45) or 23.3" (model 60). Its height is 4.7", with a low air duct, and 5.7" with a high air duct (for recessed installation in a suspended ceiling and with the air connection above the supporting structure).

**Lengths:** Professor is available in lengths from 47.2" to 141.7" in steps of 4".

**Water connection:** Available in o.d. 0.6". Both horizontal and vertical connections available in the standard package.

**Air connection:** Available in 4"Ø. Both horizontal and vertical connections available in the standard package.

**Design:** Professor is available with different types of underside. As standard, it is fitted with longitudinal slots (Slot), but round perforations (Dot) are also available.

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

**Anti-cross-noise hood:** This is included in the standard package to prevent the spread of noise to adjoining rooms, and also where there is a requirement for the room air not to come into contact with the space above the suspended ceiling.

**Surface treatment:** Professor is manufactured as standard from enamelled sheet metal, color white, RAL 9010.

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

## Plus features

Factory preinstalled.

**Heating:** The product can be equipped with an additional water circuit in the batteries to provide a heating function.

**Drypac™:** The batteries can be equipped with an anti-condensation surface layer, which ensures increased protection against condensation or increased power output (refer to chapter Drypac™).

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

**Lighting:** The product can be equipped with type-approved light fittings (only applies to model 60). Refer to seek EHG's assistance.

**Adaptation for suspended ceilings:** The product can be adapted to most types of suspended ceilings offered on the market.

**Air vent:** Air vents are not supplied as part of the standard package, but they can be ordered for pre-installation.

**Exhaust valve:** The product can be provided with an exhaust valve.

**Special dimensions:** Professor I-60 is available with a width of 24.6".

## Cooling effect, Professor

### Drypac™, condensation protection

All Professor models can be ordered with the Drypac™ plus feature, condensation protection consisting of perlite (volcanic stone) that is applied to the fin surfaces. Drypac™ has properties that enable it to operate at a supply temperature 4°C below the dew point, for continuous operation, and 5 to 8° C below the dew point for limited periods. Drypac™ provides both an increased effect as well as increased security against condensation drips. At working temperatures above the dew point, the output is reduced by 17%. When the working temperature is below the dew point, there is no reduction in output. This means that the highest effect is obtained when the need is greatest.

*For more information about Drypac™, refer to the chapter Drypac™.*

# Chilled beams

# Professor

## Couplings & connections

Professor is supplied in lengths from 47.2" to 141.7" in steps of 4". The connection size is 0.6" for the water and for the air 4".

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

### Step 1.

Indicate the position of the ventilation connection.

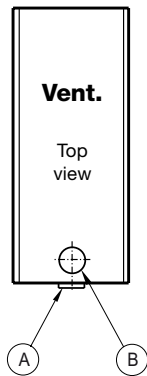
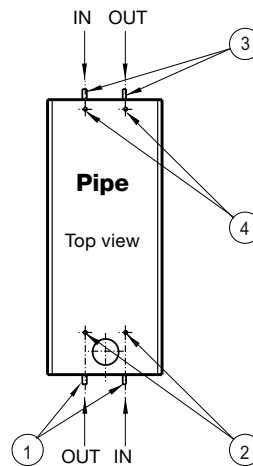


Figure 1. Coupling and connection options

### Step 2.

Indicate the position of the pipe connection.



Feed is always the connection on the right, when looking at the pipes

## Examples of designations

Below are examples of common coupling options: Type A1 has a horizontal air connection and a horizontal pipe connection at the same end of the beam.

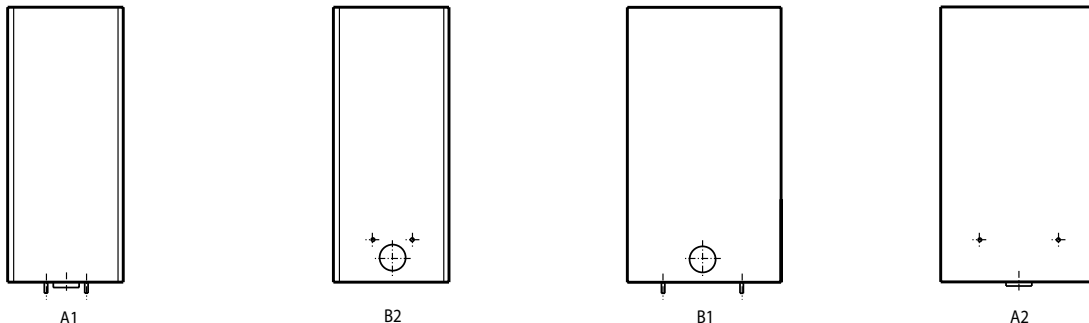


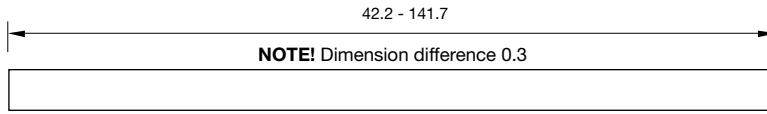
Figure 2. Professor's most common coupling options A1, A2, B1 and B2.



# Chilled beams

# Professor

Length, (in)



Dimensions, (in)

I, F 45

I, F 60

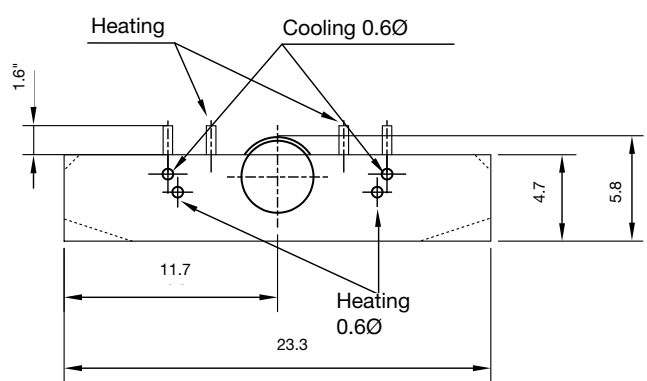
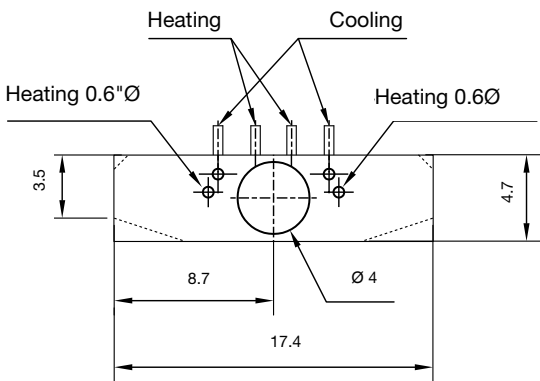
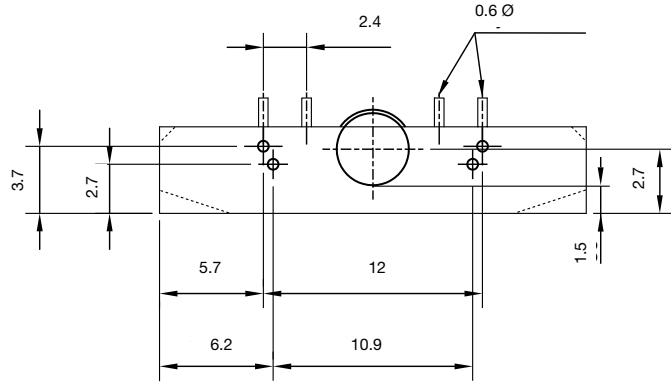
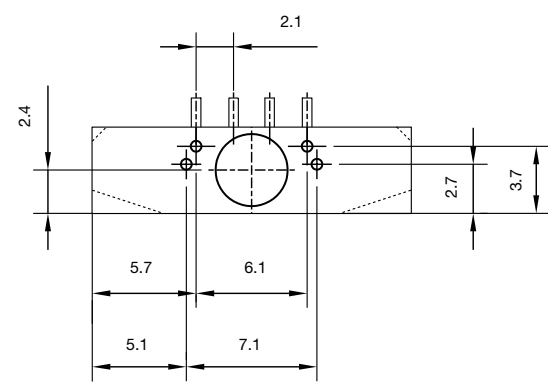
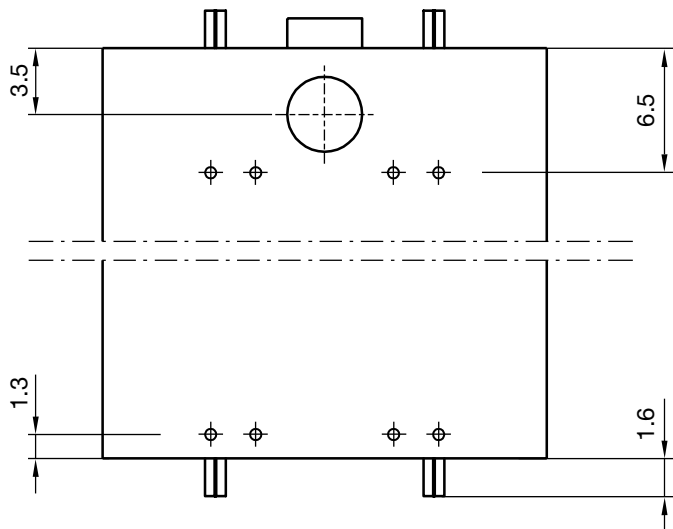


Figure 3. Professor I, F 45 dimensions (low connection).

Figure 4. Professor I, F 60 dimensions (high connection).

**Notice!** All Professor models can be delivered either with, low or high air connection.



Note. The coolant's feed is on the right side, as viewed from the connection  
Figure 5. Professor F 45, F 60, I 45, I 60

## Material data

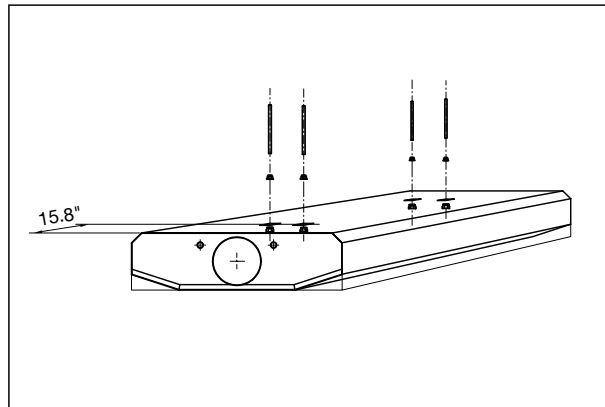
Type	Professor F 45, I 45	Professor F 60, I 60
Weight, lb/ft	11.5	12.5
Water content, cooling gal/ft	0.65	0.65
Water content, heating gal/ft	0.33	0.33
Copper pipes, quality	SS/EN 12449	SS/EN 12449
Pressure class	PN10	PN10

Table 9. Professor F 45 and I 60, material data.

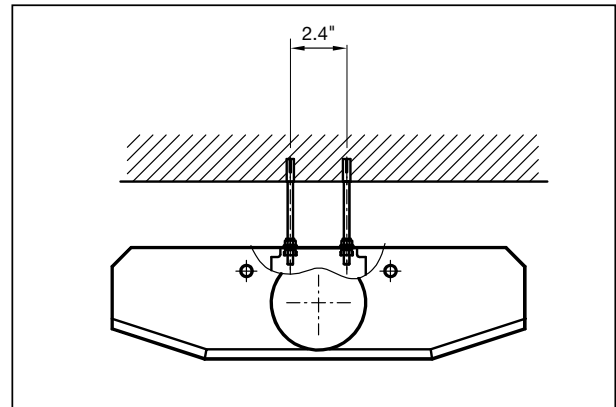
## Installation

### Installation examples

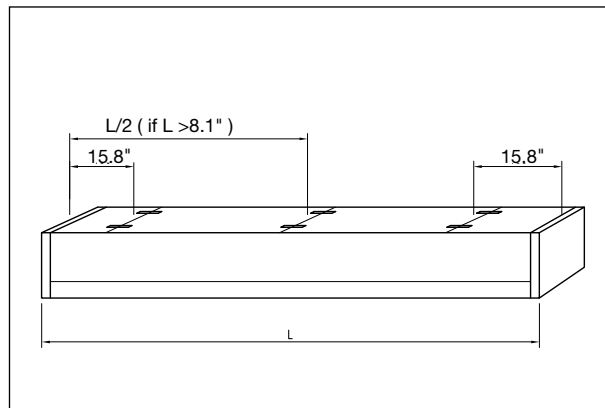
Professor I 60 is mounted recessed in a suspended ceiling. Professor F is usually mounted directly on to the ceiling or suspended from it.



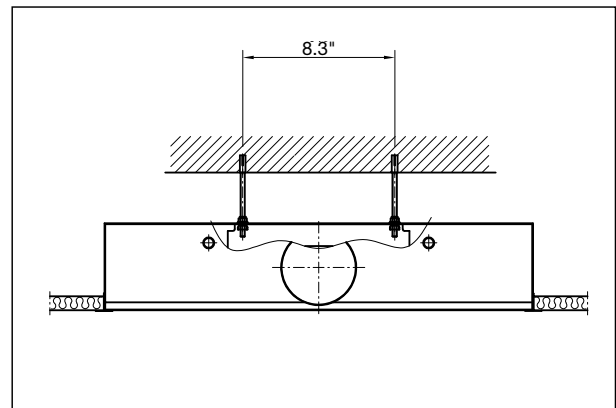
Picture 6. Professor's installation principle.



Picture 7. Professor F 45, mounted directly on to a ceiling, with the option to install subsequently a suspended ceiling where the product will be totally integrated.



Picture 8. Position of the suspension points for Professor I 60.

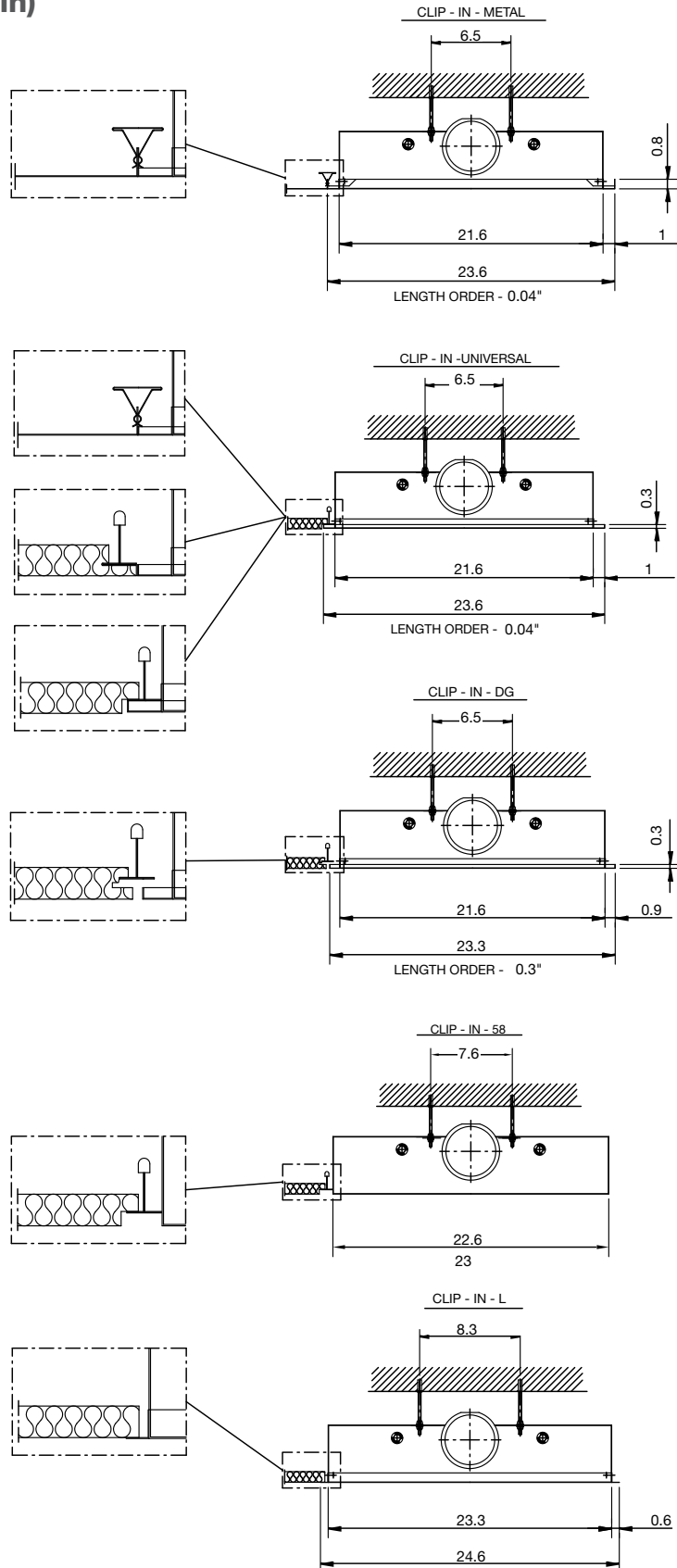


Picture 9. Professor I 60, recess mounted in a suspended ceiling.

# Chilled beams

# Professor

## Professor CLIP, (in)





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www.ehgduct.com | Phone: 877-482-2344 | Fax: 757.488.4502 |