

# Chilled beams

# Professor

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## Use

Lindab'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.

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## Worth noting

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

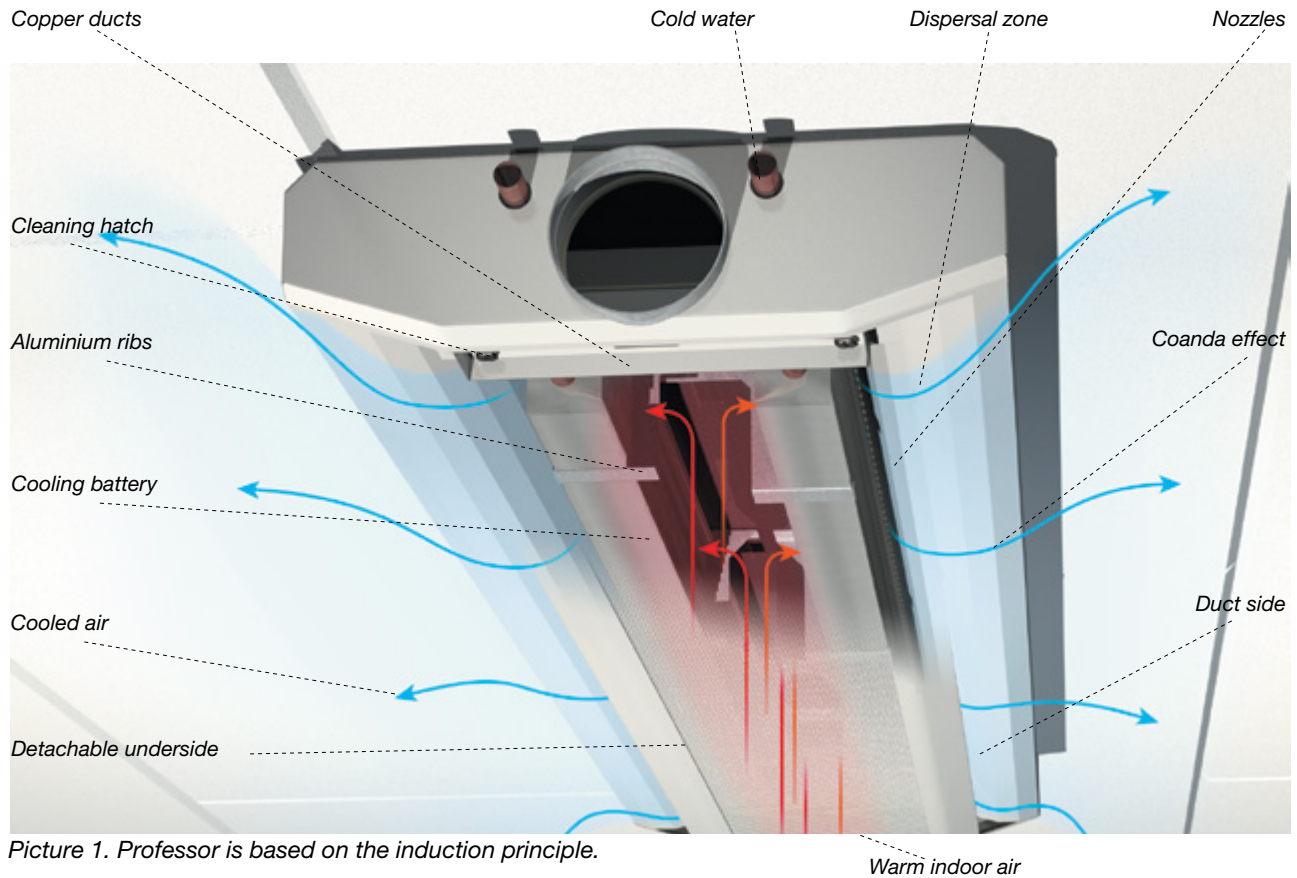


## Key figures

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

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Picture 1. Professor is based on the induction principle.

## Function

### Powerful function in small format

Lindab'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.

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## Construction

### Maximum accessibility

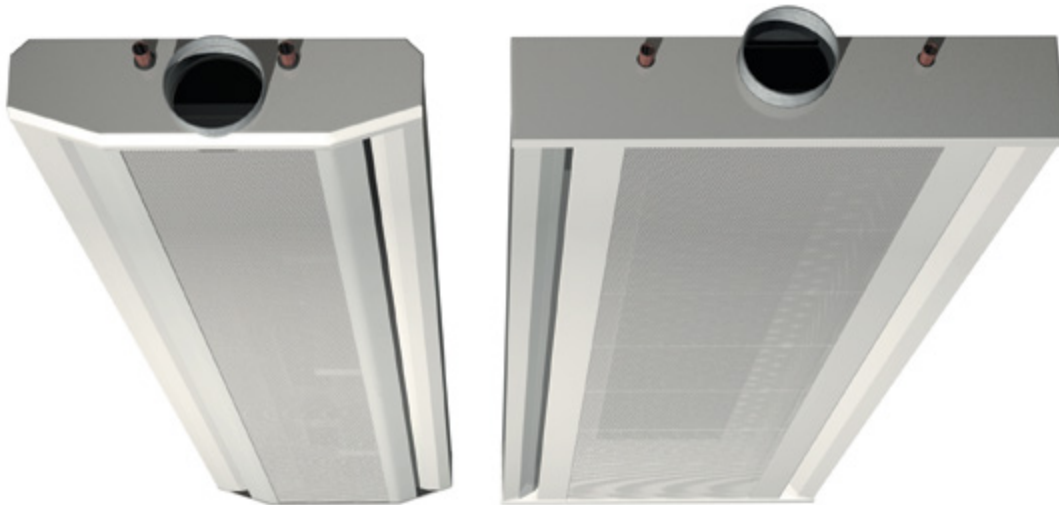
For best possible accessibility for cleaning, suspension, adjustment or maintenance, the whole underside of the Lindab Professor can be dismantled. Where the beam is equipped with built-in valves and control devices, these are also accessible for adjustment and maintenance from below. The beam is suspended 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, Lindab'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.

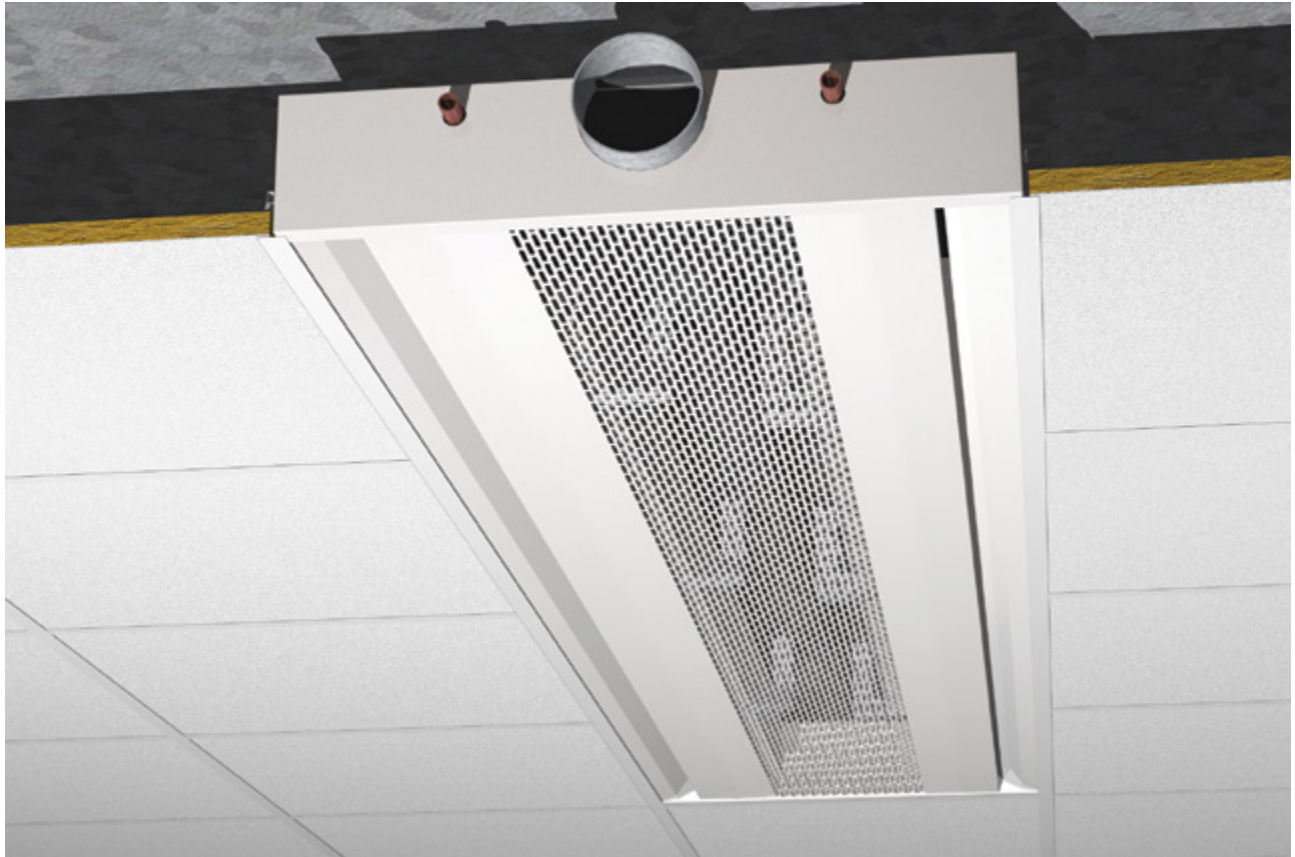


Picture 2. Professor F, for suspended installation or installation directly on to the ceiling.

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

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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.



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## Room environment

The ventilation principle for the Lindab 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 Lindab 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

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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.

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## 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™).

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**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 Lindab'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™.*

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## 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.

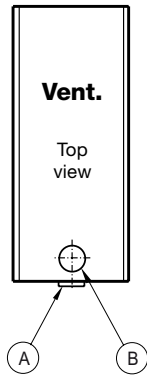
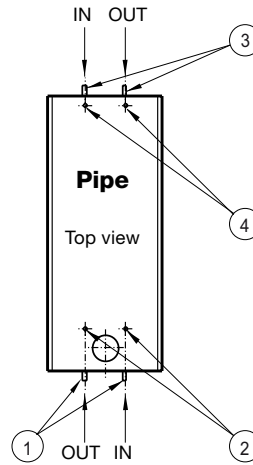


Figure 1. Coupling and connection options

### 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.

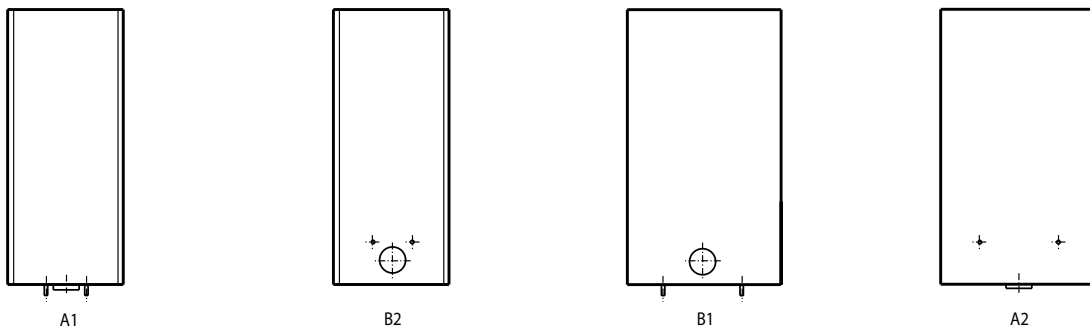


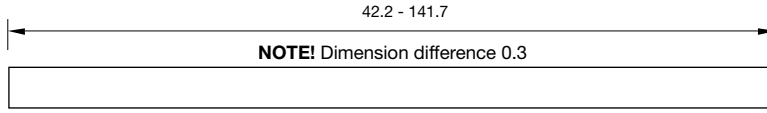
Figure 2. Professor's most common coupling options A1, A2, B1 and B2.

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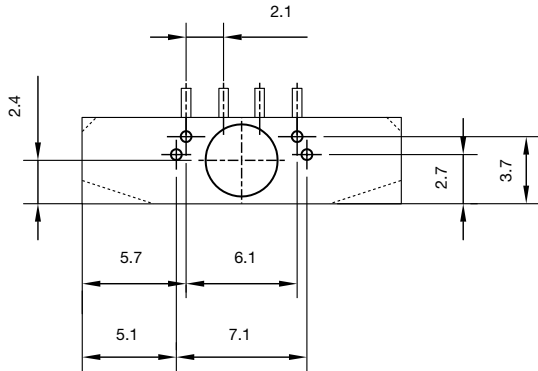
Length, (in)



Dimensions, (in)

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I, F 45



I, F 60

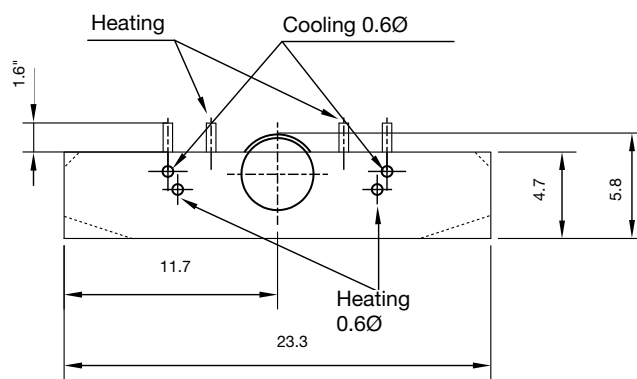
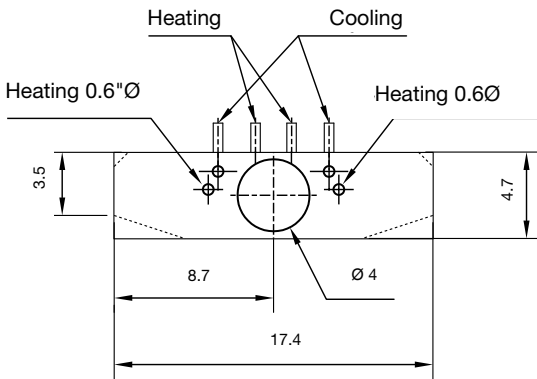
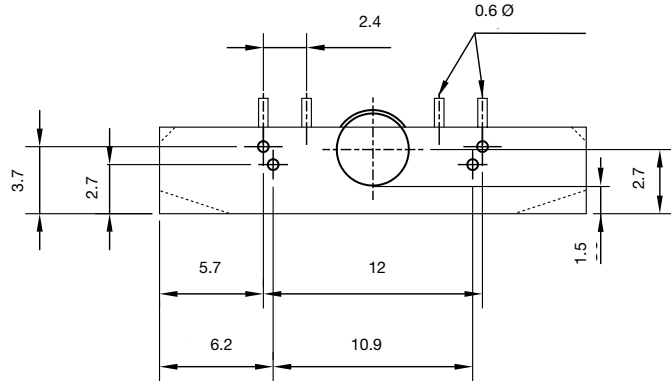
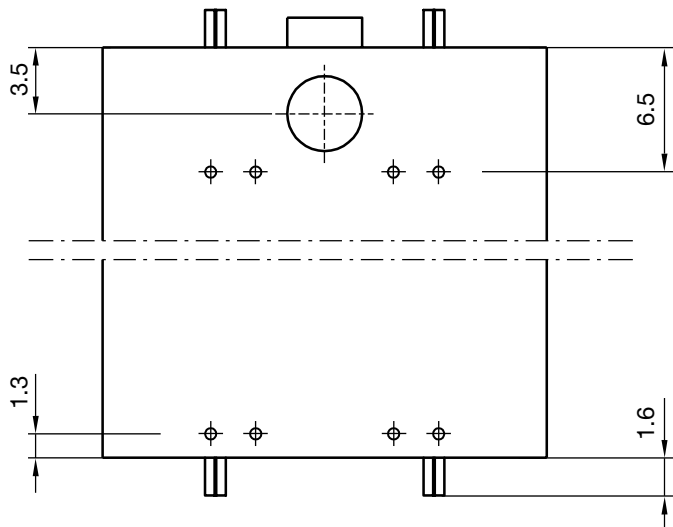


Figure 3. Professor I, F 45 dimensions (low connection).

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



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## Material data

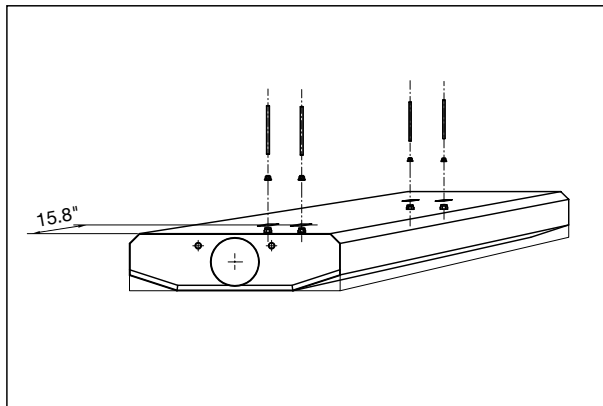
Type	Professor F 45, I 45	Professor F 60, I 60
Weight, lb/ft	11.5	12.5
Water content, cooling gal/ft	0.65	0.65
Water content, heating gal/ft	0.33	0.33
Copper pipes, quality	SS/EN 12449	SS/EN 12449
Pressure class	PN10	PN10

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

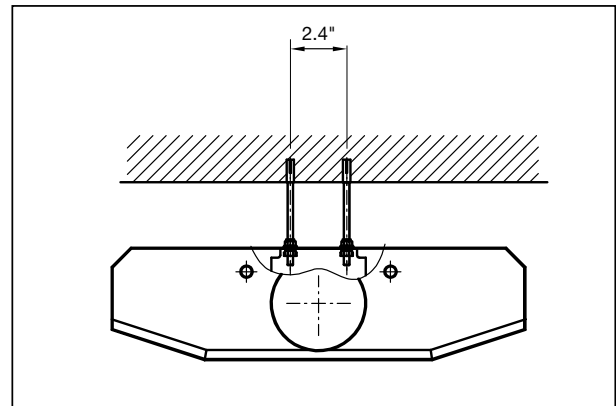
## Installation

### Installation examples

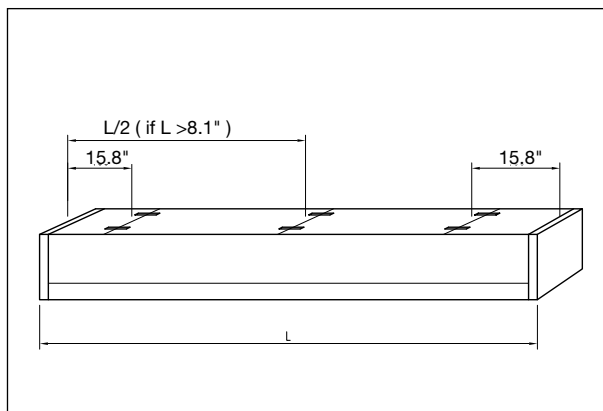
Professor I 60 is mounted recessed in a suspended ceiling. Professor F is usually mounted directly on to the ceiling or suspended from it.



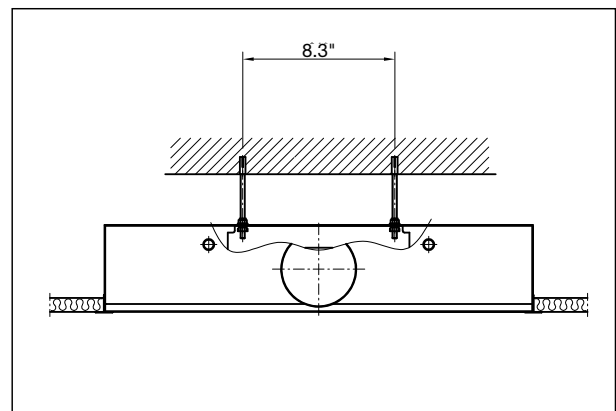
Picture 6. Professor's installation principle.



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.

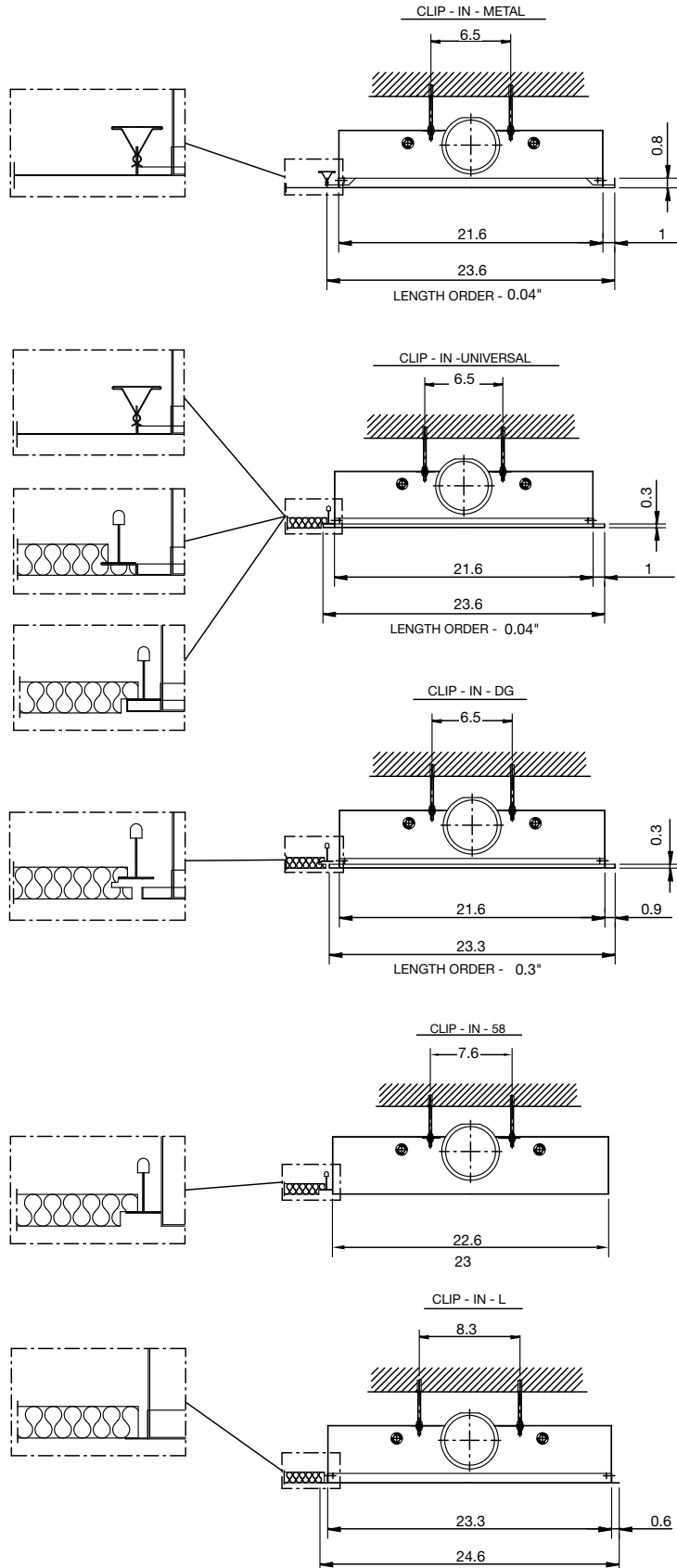


Picture 9. Professor I 60, recess mounted in a suspended ceiling.

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## Professor CLIP, (in)

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Figure 6. Clip-in for adapting to different types of suspended ceilings.