

Chilled beams

Polaris S

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Use

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

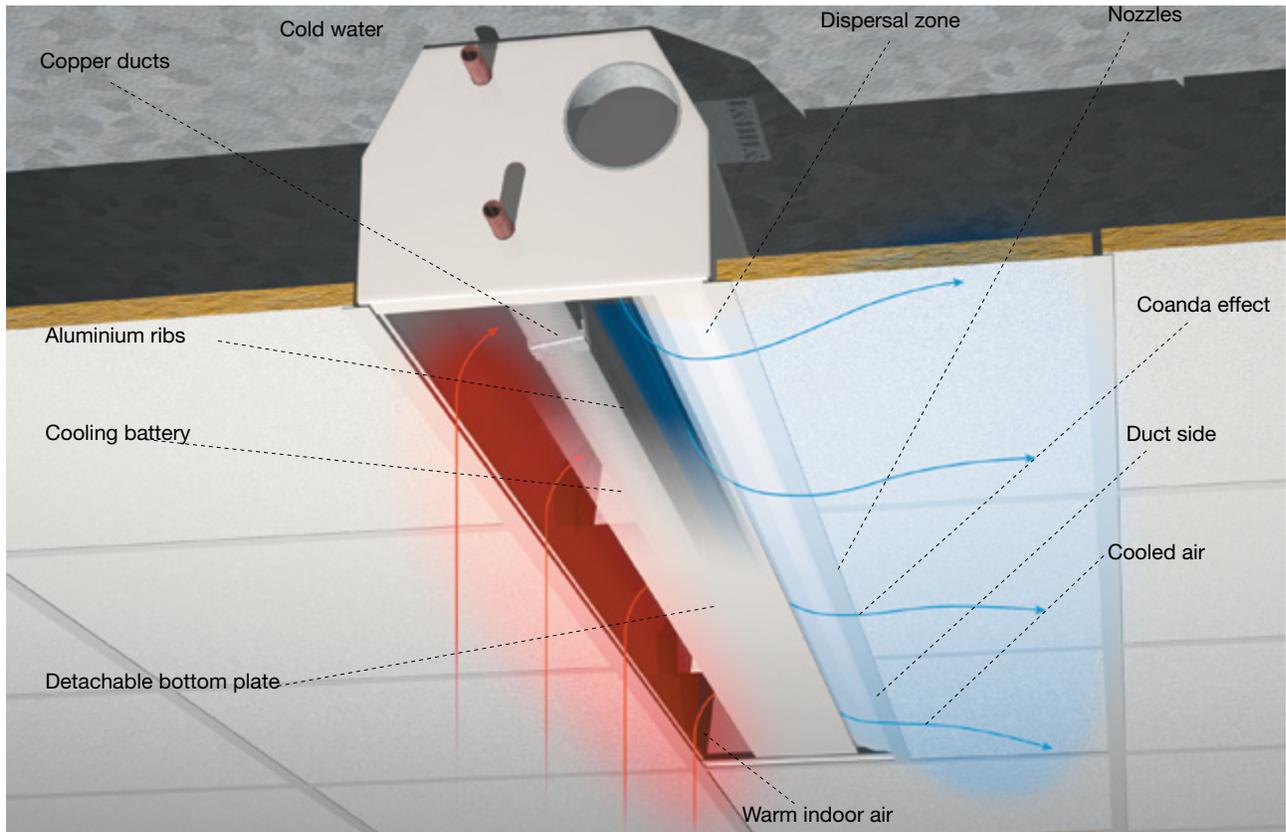


Key figures

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

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

Function

Powerful function with one-way air distribution

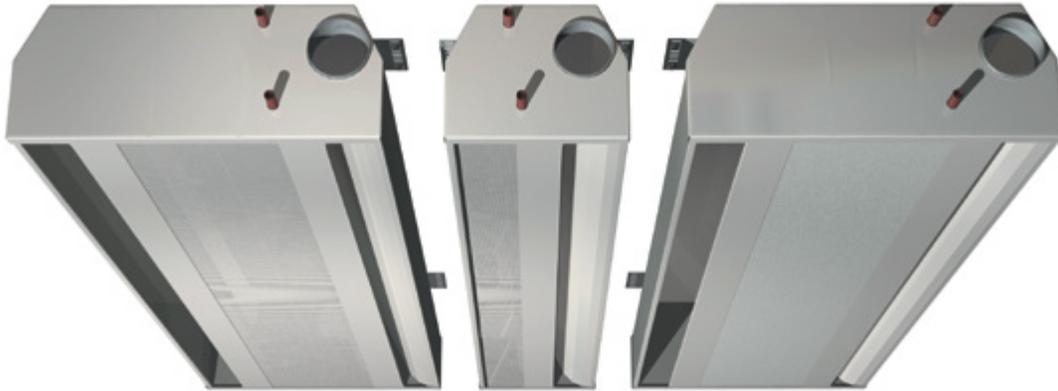
Lindab's supply air beam, Polaris S, is based on the induction principle (see picture 1). Ventilation air with a certain dynamic pressure is released through specially formed nozzles into a dispersal zone, thereby creating a low static pressure. This low pressure causes warm air from the room to be sucked 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.

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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.

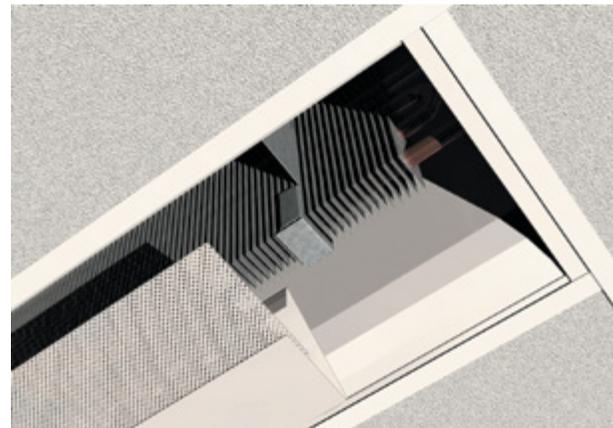
The water pipes are made of copper. Nevertheless, the water should be oxygen-free to prevent corrosion.

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.

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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

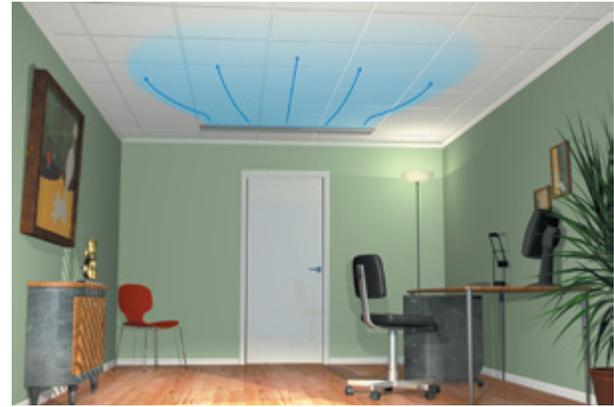
In this case, the cooled or heated air is spread down along the wall until it reaches the floor, where it is driven out into the room at a reduced speed. The heated air then rises and is ducted into the beam for further cooling or heating.

Placement at the rear or front edge of the room

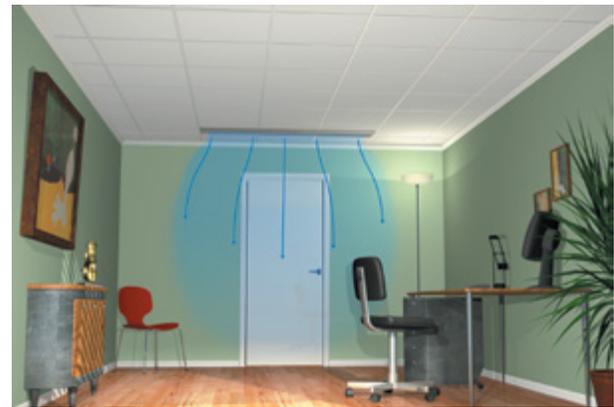
Placing a Polaris S at the rear or front edge of the room results in a very discreet installation. The ceiling area in the middle of the room is left free, which provides great freedom for the positioning of lights, for example. As the air in Polaris S can be directed either across the ceiling or down 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.

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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.

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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 Lindab's balancing damper.

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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 preinstalled.

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.

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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.

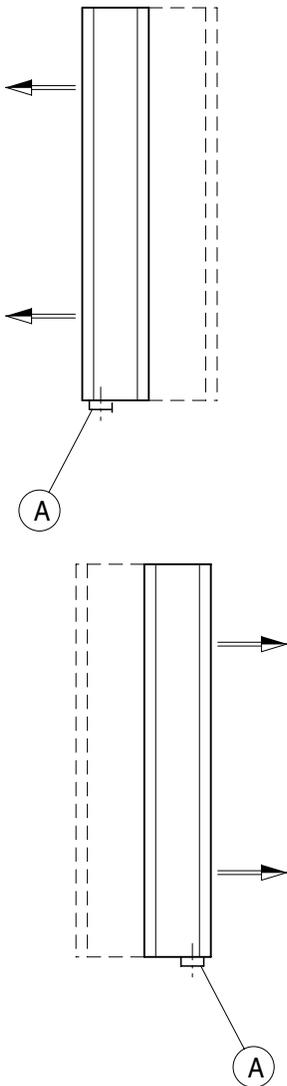
Polaris S is available with a large number of coupling

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 Lindab.

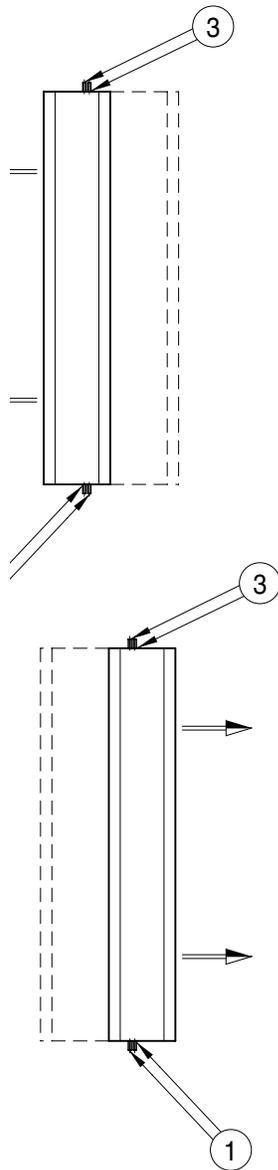
Step 1.

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.

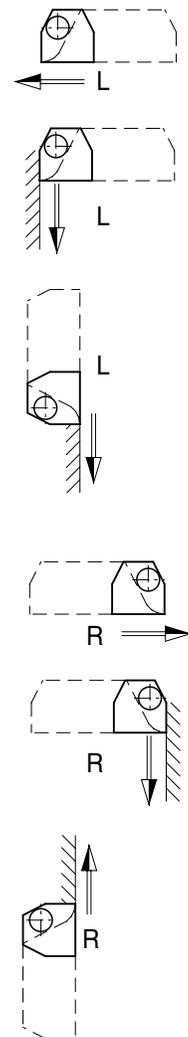


Figure 1. Coupling and connection options.

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Couplings & connections, (in)

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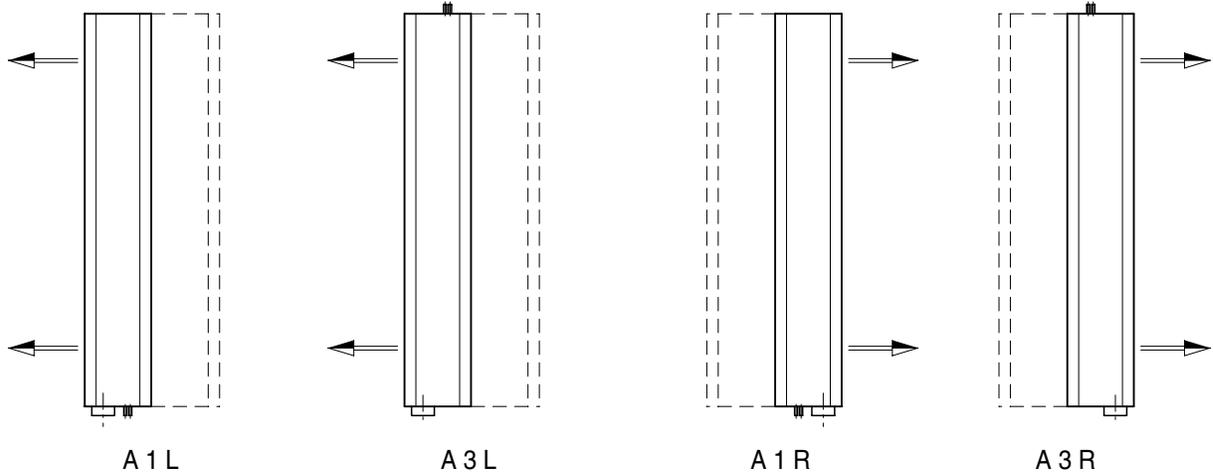


Figure 2. Examples of common coupling options. Type A1L therefore has air connection in the end piece, pipe in the same end piece and the air injection direction is L.

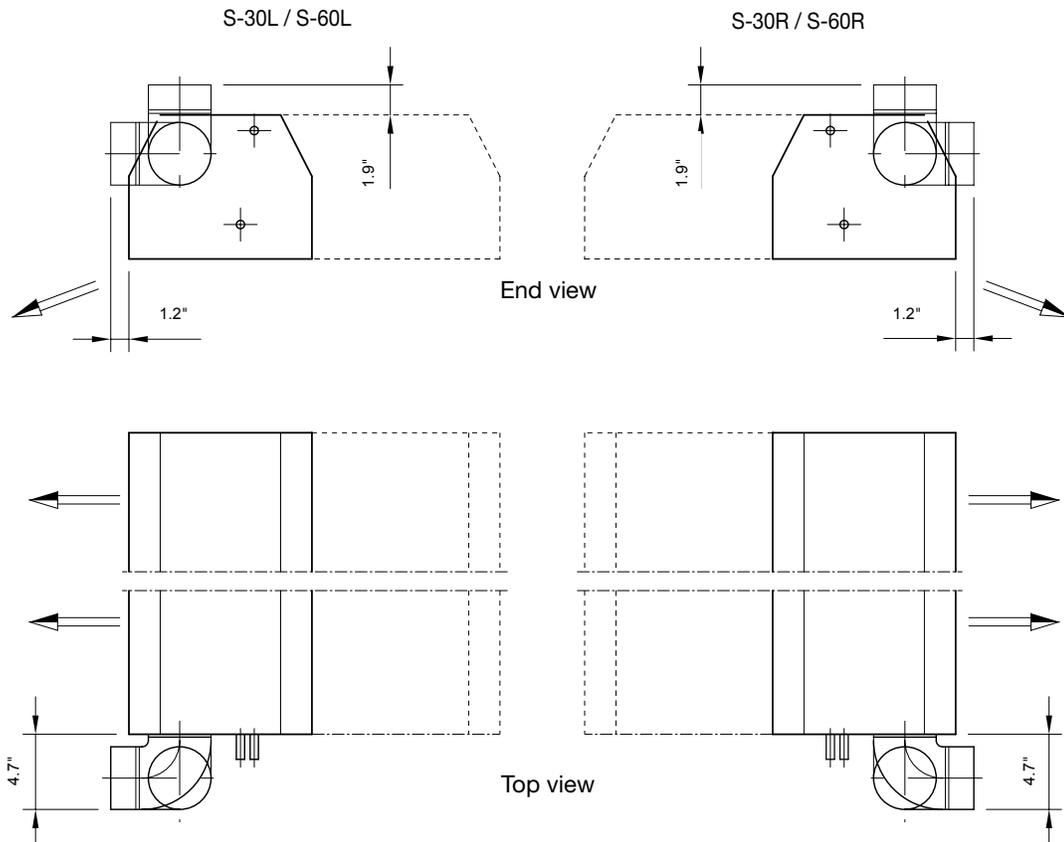


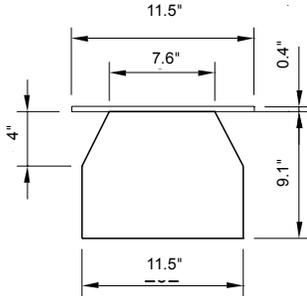
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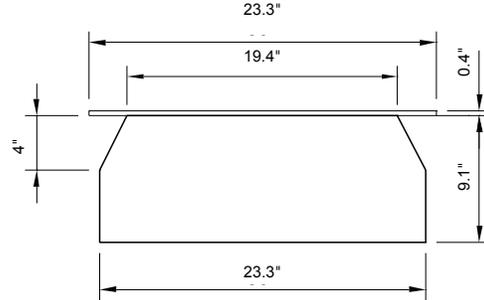
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Width & height, (in)

S - 30

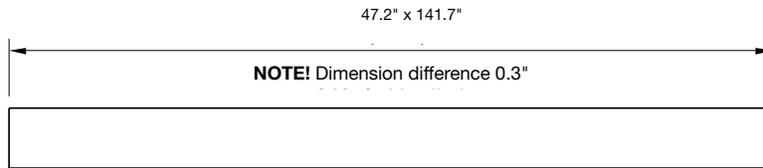


S - 60



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Length, in



Dimensions, in

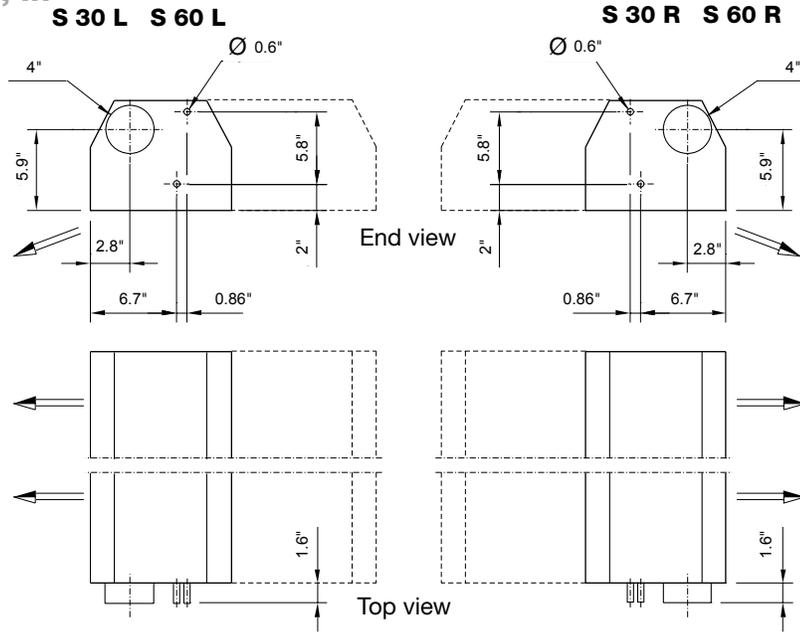


Figure 4. Polaris S - 30 and S - 60, dimensions.

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.

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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

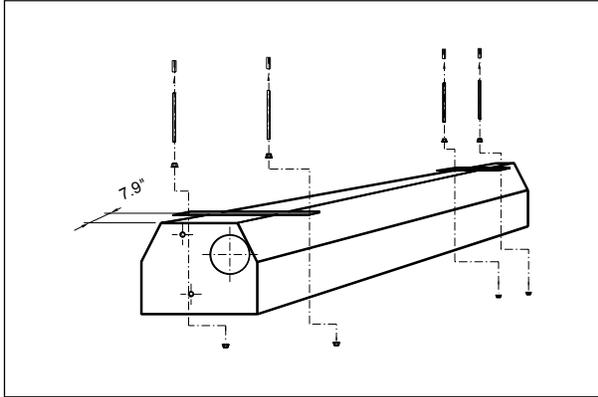


Figure 5. Polaris S-30 installation principle.

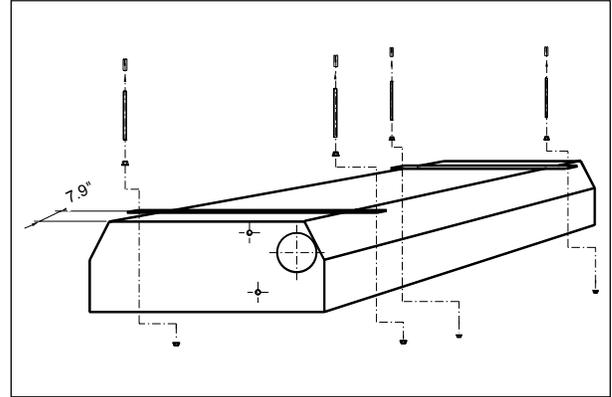


Figure 6. Polaris S-60 installation principle.

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

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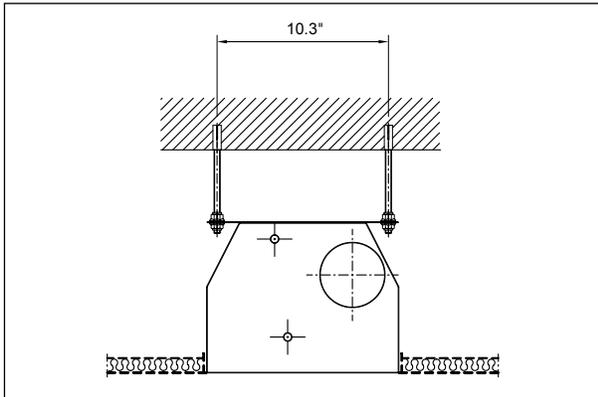


Figure 7. Polaris S-30 recessed mounted in a suspended ceiling.

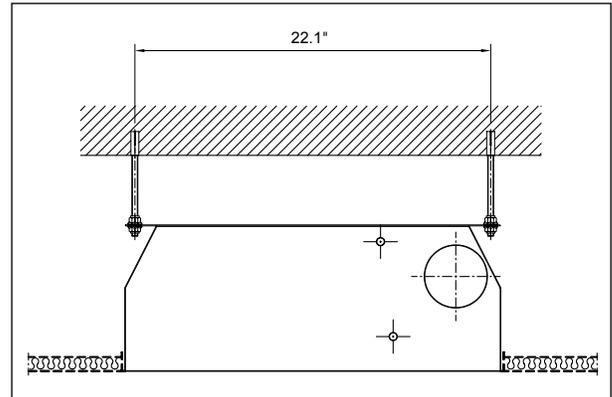


Figure 8. Polaris S-60 recessed mounted in a suspended ceiling.

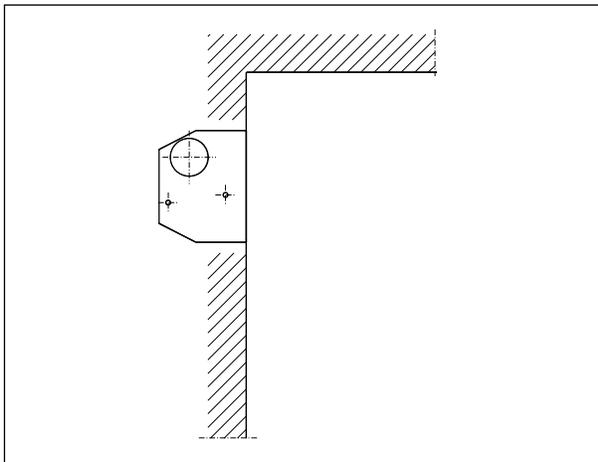


Figure 9. Principle for the wall installation of Polaris S-30.