Swegon **PACIFIC** HC

Integrated chilled beam

PACIFIC HC CHILLED BEAM

- The PACIFIC HC is a high performance chilled beam for installation in false ceilings.
- Built-in flexibility, designed to meet the needs of today and tomorrow.
- The modular design offers great freedom of choice for configuring its arrangement to meet current needs.
- Primary air, cooling and heating

KEY FIGURES

Primary airflow:	Typical 25-250 CFM (up to 330CFM)
Pressure range:	Typical 0,5 inWG (up to 0,75 inWG
Cooling capacity:	Up to 12 000 Btuh
Heating capacity:	Water: Up to 15 000 Btuh
Length:	Min. 47 in/ Max 120 in*
Widths:	Min. 23,4 in / Max 23,7 in*
Heights:	10,7 in
Air connections:	Ø 5 in
	Ø 6 in
	Ø 8 in

*Lengths and widths are matched to suit different types of false ceilings.

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Contents

Figure 1. PACIFIC HC

Technical description

Operation

The PACIFIC HC is an active chilled beam with two-way air distribution. The unit does not contain a fan of its own but is driven by the pressure and flow generated by a centrally located air handling unit, which means low sound level and excellent comfort in the room.

The PACIFIC HC is designed for dry systems, i.e. without condensation and therefore does not require any condensate drainage system or any filter. The minimum number of moving parts and lack of filter guarantees very little need for maintenance.

Induction principle

The PACIFIC HC chilled beam operates according to the induction principle. A centrally located air handling unit distributes primary air via the duct system into the plenum of the unit and creates excess pressure. The excess pressure in the plenum forces the primary air through the nozzles at relatively high velocity. When the primary air is distributed at high velocity through the nozzles, negative pressure is created in the space above the built-in heat exchanger (coil). The negative pressure draws (induces) the room air up through the heat exchanger where the air is treated as required.

If cooling is required, the room control equipment opens the cooling circuit valve and chilled water circulates through the cooling circuit of the heat exchanger. The induced air is chilled and is mixed with the primary air before it is discharged into the room.

If heating is required, the heating circuit valve opens instead and hot water circulates in the heat exchanger and the induced air is heated before it is mixed with the primary air and is discharged into the room. This is applicable for PACIFIC HC with 4 pipe coil.

If neither cooling nor heating is required, then the induced air passes through the heat exchanger without being treated.

The ratio between the primary air and the induced air varies depending on the magnitude of the excess pressure and the airflow rate of the primary air. This relationship is also called the degree of induction or induction ratio.

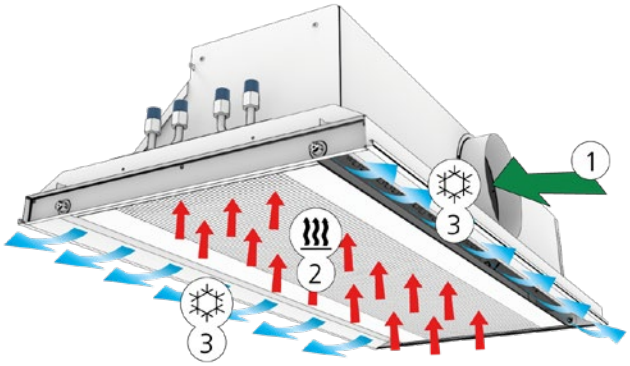


Figure 2. Cooling operation.

1 = Primary air

2 = Induced room air

3 = Primary air mixed with chilled room air

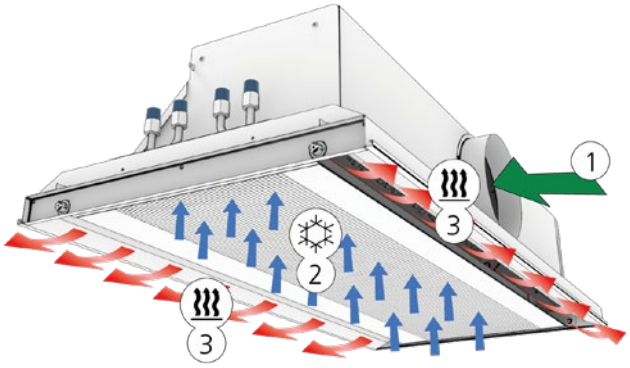


Figure 3. Heating operation.

1 = Primary air

2 = Induced room air

3 = Primary air mixed with heated room air

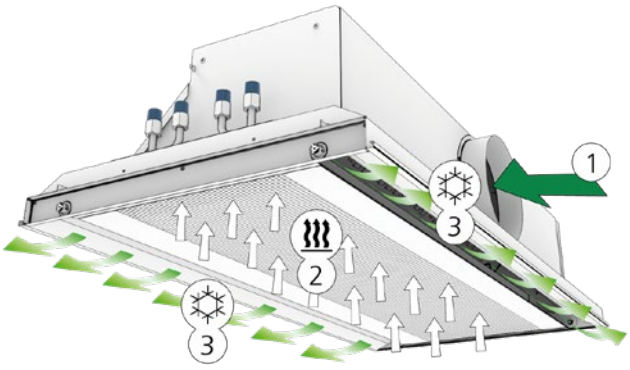


Figure 4. Neutral operation.

1 = Primary air

2 = Induced room air

3 = Primary air mixed with untreated room air

Range of Application

- Offices and conference rooms
- Classrooms
- Hotels
- Restaurants
- Hospitals
- Shops
- Shopping centers

Certified

The Swegon PACIFIC HC is Eurovent certified, which is your guarantee that all specified data has been confirmed by tests and has been validated. This includes data provided in Swegon's selection software, ProSelect Web.

Capacity we take responsibility for

Swegon PACIFIC HC has been developed for generating high cooling and heating capacity without compromising comfort. The outlet of the unit is designed to handle large pressure and flow ranges while maintaining the Coanda effect. The result is that the discharged air is kept near the ceiling, has time to mix with the room air and its velocity decreases before it reaches the occupied zone. This provides an excellent indoor climate with low air velocities.

Flexibility

Modern office buildings make ever stricter demands on adaptability to various needs. A layout designed from the beginning as an open-plan office may in the next phase need to be partitioned into smaller rooms. By carefully planning the cooling, heating and ventilation installations from the beginning, the costs for future operational changes or needs can be drastically reduced. Swegon PACIFIC HC is developed for maximum flexibility throughout its life.

Since different buildings involve different demands on performance as well as physical measurements, the Swegon PACIFIC HC is designed so that you can configure it to meet different needs. The unit is divided into two modules: Capacity module and Design module.

The capacity modules come in four different lengths. The appropriate length is
determined by capacity and flexibility requirements.

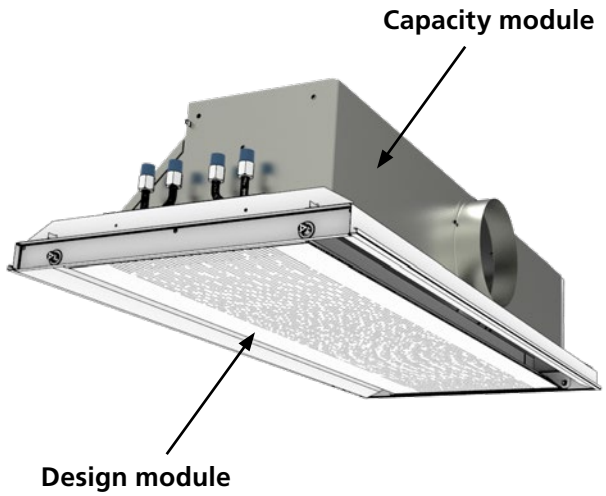


Figure 5. Capacity and design module

The design module serves as the interface to the current false ceiling system.

- T-section grid systems, Imperial (USA)
  24 in center-to-center
- T-section grid systems, 23.6 in center-to-center
- Gypsum ceiling (requires separate accessories). Contact Swegon.

Figure 6. Design module.

The face plate of the design module is hinged and can be swung out from either side to a 90-degree open position. This completely exposes the coil for cleaning. Safety cords secure the face plate and ensure that it cannot fall down.

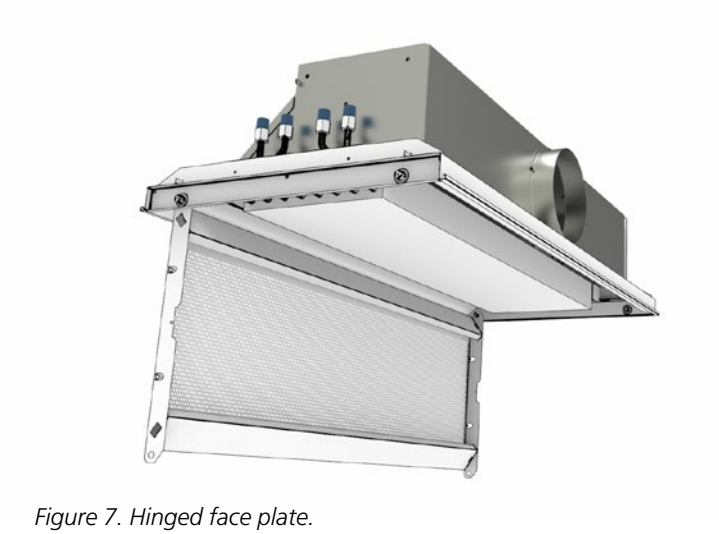


Figure 7. Hinged face plate.

In certain cases it could be advantageous to select a design module that is extra long in relation to the capacity module. One typical case is when the beam is installed in a gypsum ceiling and there is a need for inspecting the valves. By employing a design module that is longer than the capacity module you get built-in access to water connections and controls. The inactive section of the design module is covered to avoid acoustic disturbance and to conceal the space above the false ceiling from occupants of the room.

Figur 8. Built-in access panel using shorter capacity module.

Installation

The PACIFIC HC is designed for installation flush-mounted.

- T-section grid systems with IP units (USA)
  Width: 23.70 inches
  Lengths: 47, 70.6, 94.3 and 117.9 in
- T-section grid systems with to 23.6 in c–c and gypsum ceilings:
  Width: 23.4 in
  Lengths: 47, 70.6, 94.3 and 117.9 in

Connection dimensions

Cooling (water):	1/2" NPT threaded
Heating (water):	1/2" NPT threaded
Air:	Insertion joint, 5, 6 or 8 in nominal diameter

Suspension:

The PACIFIC HC is supplied with four mounting brackets and self-tapping screws packaged separately and supplied with each unit. The mounting brackets can be located at any position along the entire long side of the unit for maximum
adjustability. The pre-punched holes in each mounting bracket simplify the fastening work. The mounting brackets are designed to be turned in any optional direction depending on the type of suspension system selected. Turned inward, the mounting brackets offer simple installation by means of mounting strips. Turned outward, the mounting brackets work at their best for suspending the beams by means of threaded rods. Threaded rods must be ordered separately and are available in a variety of lengths. Mounting strips are by others.

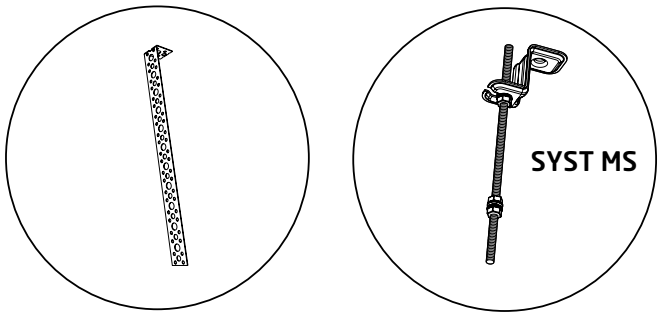


Figure 9. Optional mounting strips (L) and threaded rods (R).

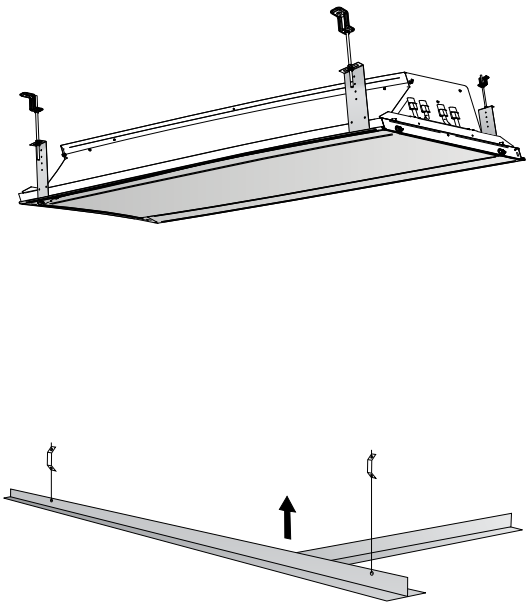


Figure 10. Installation of PACIFIC HC, here suspended by means of threaded rods.

See the PACIFIC HC Installation, Commissioning & Maintenance document for more details.

Figure 11. Example with straight, horizontal air connection.

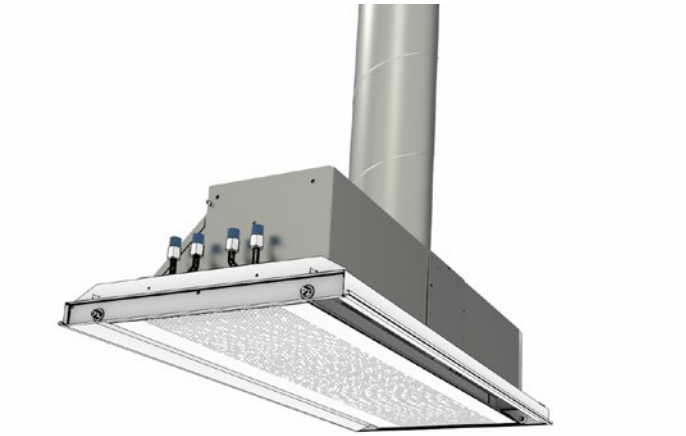


Figure 12. Example with top air connection.

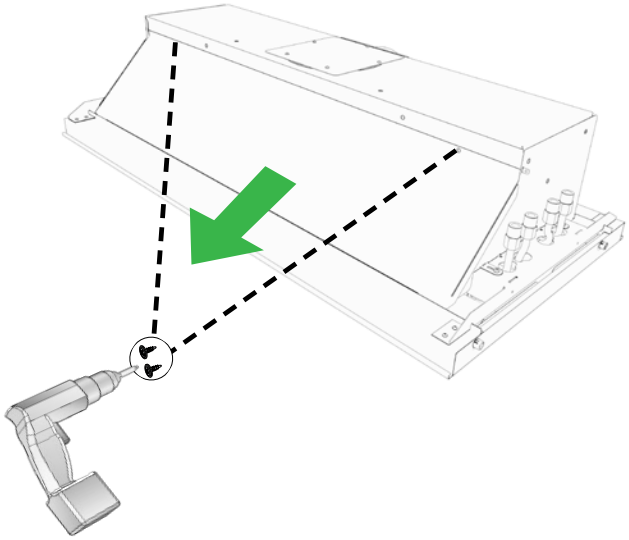


Figure 13. Inspection hatch

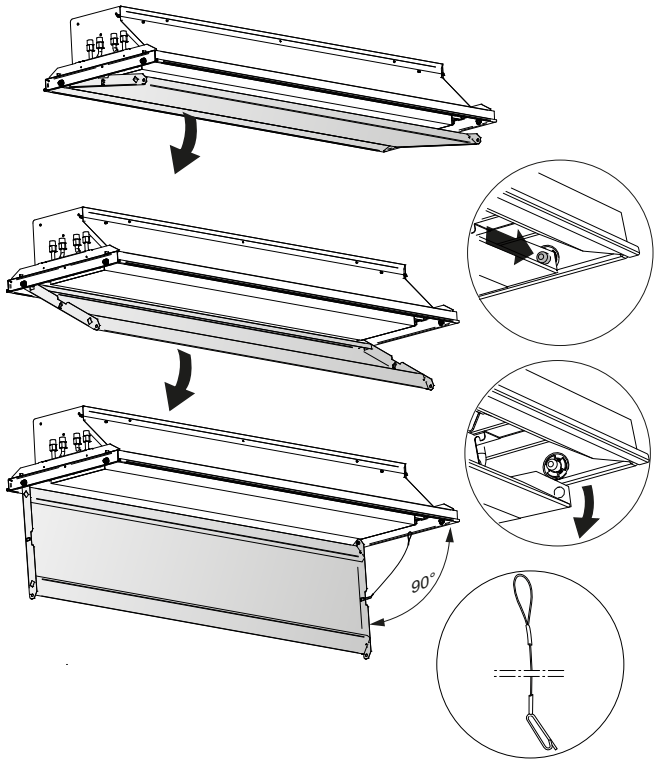


Figure 14. Simple opening of the face plate from its hinges on either long side.

Accessories

Condensation sensor WCD2

The detector operates at the dew point temperature rather than a fixed relative humidity value.

The dew-point is calculated from a temperature compensated RH element and an extremely accurate sensor element that is bound to the metal plate on the detector.

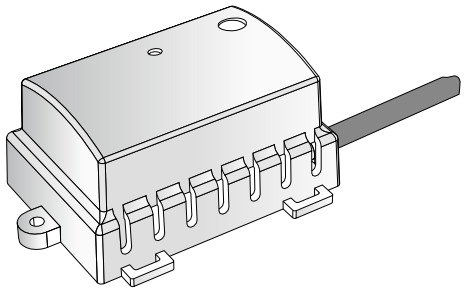


Figure 15. WCD2

Selection

ProSelect Web is Swegon's chilled beam selection program. With only a few basic inputs you can easily calculate cooling and heating capacity. The program also presents recommended minimal distance between unit/wall (as well as between unit/unit) dimensions, sound data, pressure data, customized printouts and schedule generation. Capacity values in ProSelect Web are Eurovent certified.

Cooling

When chilled water circulates through the coil, induced air is cooled as it passes through the coil, then mixed with primary air and is distributed into the room.

Heating

When hot water circulates in the tube circuit, the induced air is heated up in the coil, and is then mixed with the primary air and is distributed to the room. The inlet flow temperature of the heating water should be kept as low as possible to minimize the temperature difference between the air at ceiling level and at floor level. The temperature stratification in the room will be negligible if the inlet flow temperature is kept at 104°F or lower. If the inlet flow temperature is up to the recommended max temperature (140°F), the stratification will be perceptible even if it normally is within the prescribed range.

In the majority of cases, the system will heat the room air to a satisfactory temperature. In order to achieve good operating temperature, other factors must be taken into account. The following factors are typical in this respect: Window dimensions, the U factor of the windows, the orientation of the room, the location of the occupants, etc. The quality and dimensions of the windows are also important with regard to possible cold down drafts. Windows available today are usually so well insulated that cold down drafts do not arise. Cold down drafts are especially likely to occur in the renovation of old buildings if the planner decides to keep the existing windows.

The cooling/heating capacity of the primary air
The following formula can be used for calculating the cooling/heating capacity of the primary air:

$$P_l = q_l \times 1.2 \times \Delta T_l$$

P_l = cooling/heating capacity of the primary air (W)

q_l = the primary airflow (l/s)

ΔT_l = Temperature differential between the temperature of the primary air and the room temperature (K)

Recommended limit values-water

Max. recommended operating pressure:	232 PSI
Max. recommended test pressure:	348 PSI
Min. cooling water flow*	
Capacity module: L=43,5 in ;67,1 in:	0,48 GPM
Min. cooling water flow*	
Capacity module: L=90,8 in ;114,4 in:	0,96 GPM
Min. permissible heating water flow 2-pipe:*	0,21 GPM
Min. permissible heating water flow 4-pipe:*	0,42 GPM
Increase in temperature, cooling water:	3,6-9°F
Decrease in temperature, heating water:	9-18°F
Min. supply flow temperature:	Should always be sized to avoid condensation
Max. permissible inlet flow temperature:	140°F

Recommended limit values-air

Max recommended inlet pressure:	0,75 inWG
Min. recommended inlet pressure:	0,2 inWG

Comfort and commissioning functions

The ADC (Anti Draught Control) and nozzle stips are optional featureres.

ADC

ADC consists of a number of sections with adjustable fins arranged in the outlet of the unit. With a simple grip of the hand, the fins can be set to an appropriate angle to direct the discharge of air and in this way create the desired air distribution pattern. The setting for ADC from factory is straight.

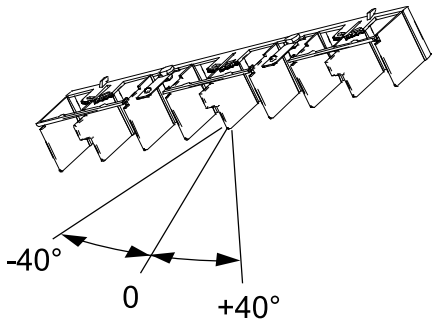


Figure 16. Detailed illustration of ADC.

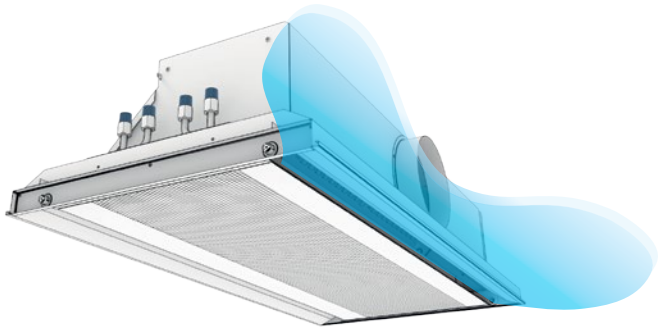


Figure 17. ADC set to the V-shape setting.

Nozzle strips (Option)

Nozzle strips

Swegon's unique adjustable nozzle strips can be added to LF and HF nozzle plates.

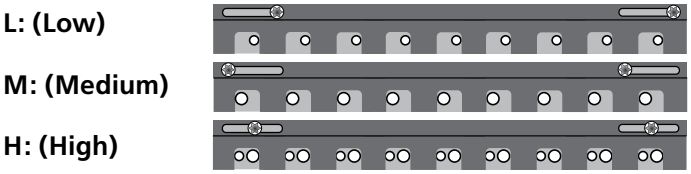
The most suitable airflow variant is selected depending on current airflow needs and future needs to possibly increase or decrease the airflow. The number of nozzle strips varies depending on the length of the capacity module.

The three different airflow variants of nozzle strips can also be set to three different positions:

- L = Low flow
- M = Medium flow
- H = High flow

Configuration

Examples of the three different nozzle settings.



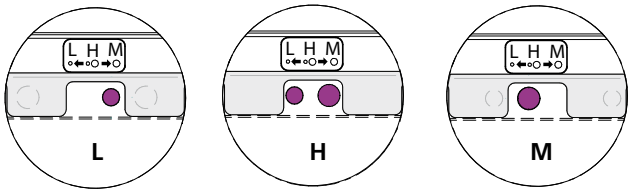


Figure 18. VariFlow nozzle strip adjusted in three positions. L, M and H.

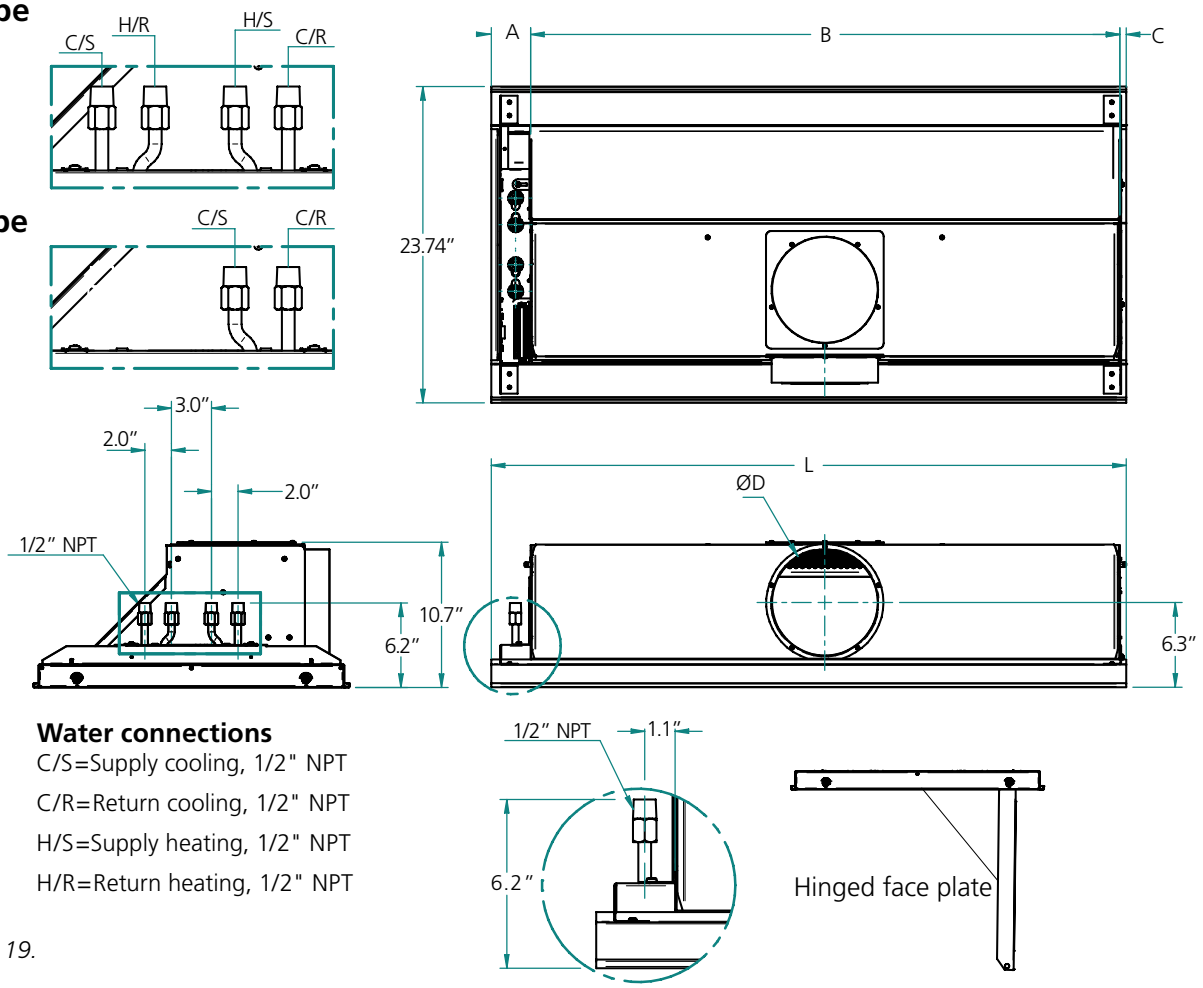
Table 1. Number of VariFlow nozzle strips per capacity module

Length of the capacity module (in)	Number of nozzle strips
43.5	6
67.1	8
90,8	12
114,4	14

Dimensions

4-Pipe

2-Pipe



Water connections

C/S=Supply cooling, 1/2" NPT

C/R=Return cooling, 1/2" NPT

H/S=Supply heating, 1/2" NPT

H/R=Return heating, 1/2" NPT

Figure 19.

	L - Unit Lenht			
Nominal Length FT	4′	6′	8′	10′
Order Code	1213	1823	2433	3043
Actual Length IN (")	47.8	71.8	95.8	119.8
	B - Coil Lenht			
Nominal Length	4′	6′	8′	10′
Order Code	1100	1700	2300	2900
Actual Length	43.5	67.1	90.8	114.4
A, IN (")	3.8	4.2	4.5	4.9
C, IN (")	0.47			
D, IN (")	5", 6", 8"			
	Availability, L - Unit Lenht			
Nominal Length	4′	6′	8′	10′
4′	✓	✓		
6′		✓	✓	
8′			✓	✓
10′				✓

Weight table, lbs

		A	B	A	B	C
Unit length *	Coil length **	Dry weight 2-pipe	Weight of cool water	Dry weight 4-pipe	Weight of hot water	Weight of hot water
4′	4′	9,84	0,95	9,98	0,70	0,24
6′	4′	5,60		5,66		
6′	6′	14,01	1,41	14,20	1,07	0,36
8′	6′	7,44		7,53		
8′	8′	18,19	1,45	18,41	1,43	0,48
10′	8′	9,38		9,48		
10′	10′	22,31	1,81	22,63	1,78	0,60

*Unit length corresponds to length of appearance module
**Coil length corresponds to length of capacity module
For shipping weight, use column A
Operating weight, 4-pipe cooling and heating, add columns A+B+C
Operating weight, 2-pipe cooling only, add columns A + B

Dimensions

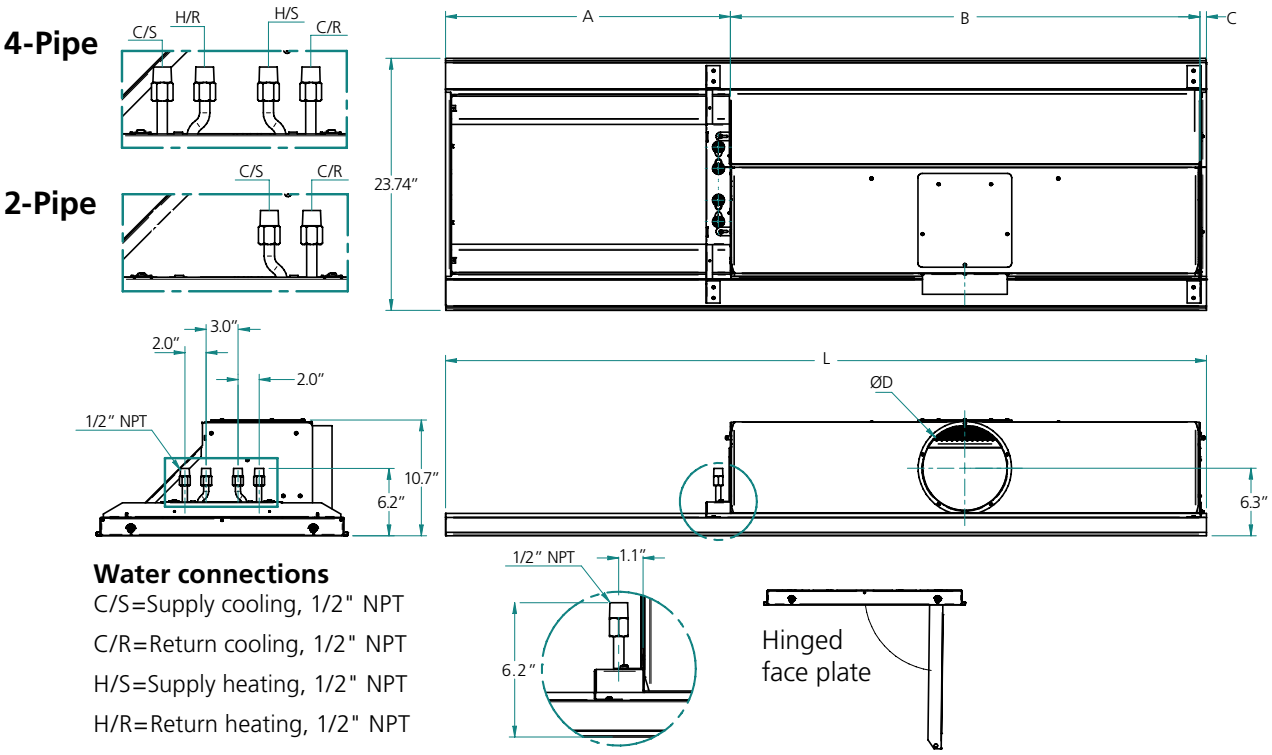


Figure 20.

	L - Unit Lenht			
Nominal Length FT	4′	6′	8′	10′
Order Code	1213	1823	2433	3043
Actual Length IN (")	47.8	71.8	95.8	119.8
	C - Coil Lenht			
Nominal Length	4′	6′	8′	10′
Order Code	1100	1700	2300	2900
Actual Length	43.5	67.1	90.8	114.4
A, IN (")	3.8	4.2	4.5	4.9
C, IN (")	0.47			
D, IN (")	5", 6", 8"			
	Availability, L - Unit Lenht			
Nominal Length	4′	6′	8′	10′
4′	✓	✓		
6′		✓	✓	
8′			✓	✓
10′				✓

Weight table, lbs

		A	B	A	B	C
Unit length *	Coil length **	Dry weight 2-pipe	Weight of cool water	Dry weight 4-pipe	Weight of hot water	Weight of hot water
4′	4′	9,84	0,95	9,98	0,70	0,24
6′	4′	5,60		5,66		
6′	6′	14,01	1,41	14,20	1,07	0,36
8′	6′	7,44		7,53		
8′	8′	18,19	1,45	18,41	1,43	0,48
10′	8′	9,38		9,48		
10′	10′	22,31	1,81	22,63	1,78	0,60

*Unit length corresponds to length of appearance module
**Coil length corresponds to length of capacity module
For shipping weight, use column A
Operating weight, 4-pipe cooling and heating, add columns A+B+C
Operating weight, 2-pipe cooling only, add columns A + B

Ordering key

Swegon's PACIFIC HC chilled beam for integrated installation in false ceilings, for cooling, heating and ventilation

T-section grid systems with 24 in center-to-center

PACIFIC HC	a	aaaa	bbb	c	dd	e
Version:						
Design module Length: 1213, 1823, 2433, 3043						
Capacity module Length: 1100, 1700, 2300, 2900						
A = Cooling B = Cooling and waterborne heating						
Airflow variant: LF = Low flow MF = Medium flow HF = High flow XF = Extra flow						
Connection, air: 125, 150, 200 (5, 6, 8 in.)						

Use this chart as a guide only and use previous page as measure translation table.

Actual ordering codes are generated automatically by ProSelect Web.