

FRB

Exposed passive chilled beam for suspended installation



QUICK FACTS

- FRB is a passive chilled beam for comfort cooling especially designed for visible/suspended installation in the room
- High cooling capacity, even when there is a large difference in temperature between the coolant supply and the return temperature
- A small, compact unit

Cooling capacity		
Size	P _x (BTU/hrft)	ΔT_{mk} (°F)
FRB	262	18

Length: From 75 to 154 in.
Width: 17 in.
Height: 5 in.

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Technical description

Advantages of FRB

- FRB is a very compact passive chilled beam. The low build-in height, plus the fact that water is used as an energy transfer medium, means that the system requires a minimum of space.
- The high performance of this chilled beam means that it maintains high cooling capacity even at low Δt_{mk} , thus making it possible to increase the temperature difference between the flow and return. This gives the product good operating properties and high output efficiency.
- FRB is specially designed for suspended installation. The softened form of the beam means that it blends into the room environments in a natural way.
- FRB is particularly suitable for areas where heating and ventilation have already been installed, and require supplementary cooling.
- The system has no moving parts, generates no sound and is maintenance free.
- Connection details and valves are easily covered by a neat connection cover. The cover is mounted after that the beam is hanged and connected.



Function

- Cooling

Application

Suitable for all types of room that are cooled with a water based system:

- Offices (cellular offices and open)
- Hotels
- Class rooms
- Conference rooms
- Computer rooms
- Restaurants
- Banks
- Shops

FRB

Installation

FRB is designed for suspended installation.

Connection dimensions:

Cooling (water): plain pipe ends or available 1/2" NPT.

Suspension:

The units are equipped with mounting brackets designed for the SYST MS M8 assembly set. The assembly sets are available in various variants to fit various suspended distances. The SYST MS M8 must be specified and ordered separately.

Standard product range held in stock

For particulars of the standard product range held in stock, visit www.swegon.com.

Range available on order

- Width: 17 in.
- Length: From 75 to 154 in increments of 12 in.
- Colour: RAL 9003 gloss value $30 \pm 6\%$.
- Design: With horizontal connection at the end-H or with the 12 in. connection area and internal connections-I.

Special models

Colour

FRB is available on request in optional colours.

Recommended limit values -Water

- | | |
|---|--|
| Max. recommended working pressure: | 230 PSI |
| Max. recommended test pressure when testing the completed installation: | 350 PSI |
| Min. cooling water flow: | .48 GPM |
| Temperate increase cooling water: | 3.6-9 °F |
| Min. supply temperature: | Should always be selected so that the system works without condensation. |

Recommended limit values ensures that any air in the system can be expelled at the minimum water flow rate per circuit.

Function

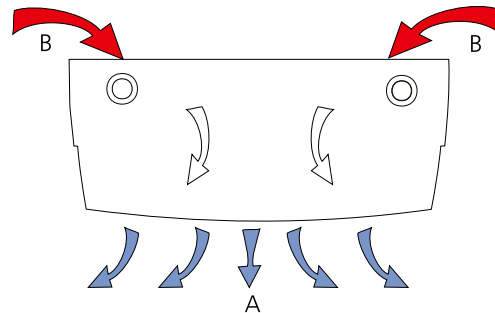


Figure 1. Cooling. A = chilled air
B = warm room air

Assembly

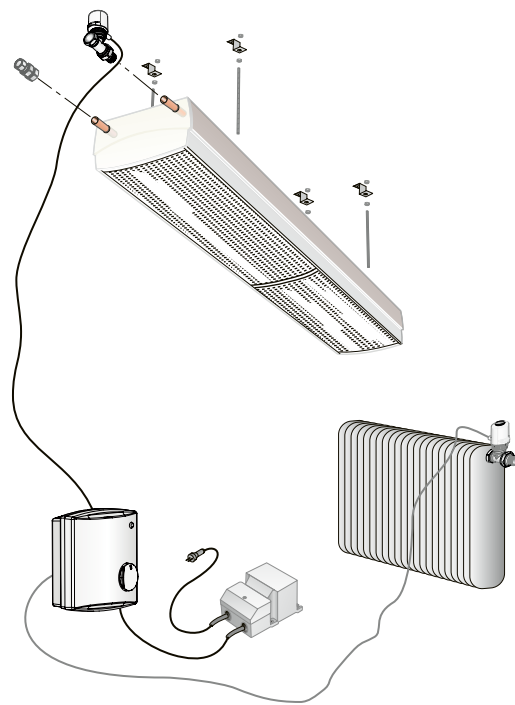


Figure 2. Assembly.
NB. For US and Canada market.
The Power feeding to the system shall be a Low Voltage class 2 circuit.

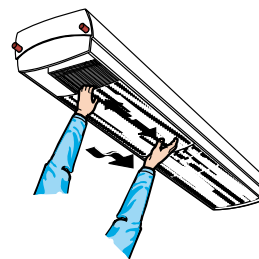


Figure 3. Maintenance, sliding lower section.

Accessories

Connection cover

The connection cover is fitted over the extended section of the chilled beam to conceal the pipe connections.

Flexible connection hose

Flexible hose with either quick connect or compression couplings.

SYST MS M8 assembly set

The assembly set for suspended installation consists of threaded rods of different length (8, 20, and 40 in.). Specify the length desired to meet site design requirements. The set also contains plastic sleeves to make the installation more attractive. The necessary ceiling brackets, nuts and washers are included in the supply.

Extended connection pipe

Pipe extension with compression ring coupling at one end for connection to the chilled beam. Supplied in pairs.

Accessories

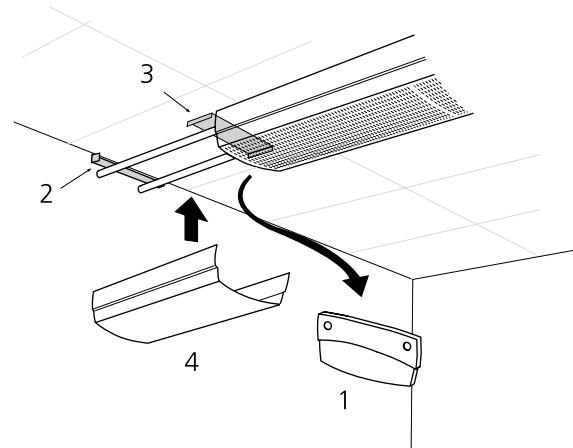


Figure 4. Cover for connection against a wall.

1. Dismount the plastic end cover of the beam.

2. Fasten the wall attachment to the wall.

3. Insert the attachment plate on the top of the beam.

4. Fit the cover into the wall attachment and to the beam. Lock the position of the cover with the attachment plate by pushing the plate back.

Technical Data

Cooling

The cooling capacities have been measured in conformance with EN 15116 Standard.

Detailed performance data is available online selection software Room Unit Design, available at www.swegon.com.

The screenshot displays the Swegon Room Unit Design software interface. The left panel shows the 'FRB' product configuration with fields for 'Position' (Distance to floor: 8.2 ft), 'Product Configuration' (Function: Waterborne cooling, Variant: 432, Size: 500 mm, Total length: 1000 mm), 'Cooling' (Room temperature: 75.2 °F, Ceiling calculation with: Water flow, Water temp. in: 55.2 °F, Water flow: 5.719 gpm, Water temp. out: 55.4 °F), and 'The room' (Name, Room type: Office room, Width: 16.6 ft, Height: 10.2 ft, Number of people: 2, Calling type: in a 400 mm T-bar system, Length: 16.6 ft). The right panel shows the 'Calculations' tab with a table of results:

Product calculation result	
Cooling capacity, total	85.8 BTU/h
Pressure drop, water cooling	0.175 psi
Room calculation result	
Aired floor	327 m²
Volume	1675 m³
Sound level room	1.02 dBA
Room air flow	4.73 m³/s
Exhaustion sound absorption area	0.75 m²

The following can be read in the Room Unit Design:

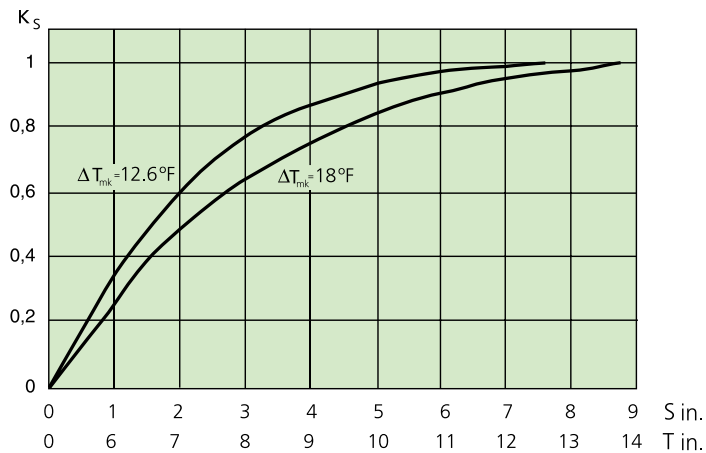
- The length of the climate beam (inches)
- The primary airflow (CFM)
- The noise level for an open damper, with ADC
- Nozzle pressure (inWG)
- Airborne cooling capacity (BTU)
- Waterborne cooling capacity (BTU)

N.B. The total cooling capacity is the sum of the airborne and waterborne cooling capacities.

Diagram 1. The relation between the circulation air openings and the output. The cooling capacity is corrected according to the size of the circulation openings as per the following $P = P_{\text{Room Unit Design}} \cdot K_s$.

For capacity, refer to Room Unit Design.

Diagram 1. FRB Reduction factor



S = Ceiling spacing

T = Total installation height including circulation air gap

K_s = Effect reduction factor

The ceiling spacing is valid when there is circulation air from two sides. When there is circulation air only from one side the same effect reduction factor is applied if the ceiling spacing is increased 1.5 times.

Circulation air openings

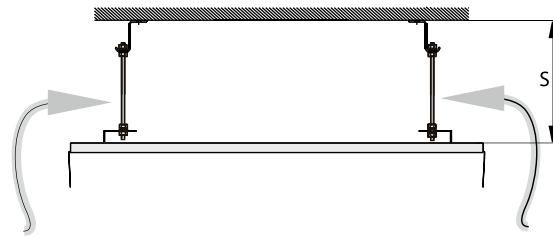


Figure 5. Circulation air openings. With circulation air measurement from one side only the opening "S" is increased by 1.5 times.

Dimensions

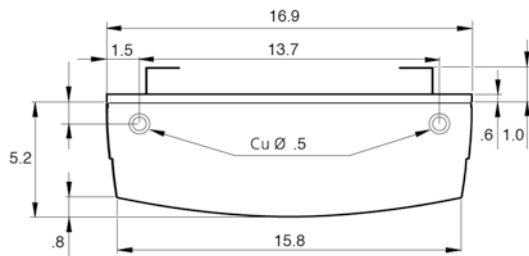


Figure 6. FRB, end view.

Length FRB

Nominal size FRB (m) :	47, 59, 71, 83, 94, 106, 118, 130, 142 and 154 inches
Length FRB	Nominal - .5 in. (+.2/-0.08)
Size of lower section's subdivision $L_u = L/2$	

Weight

Weight per foot	
Dry weight	4.9 lbs/ft
Weight, water-filled	5.4 lbs/ft

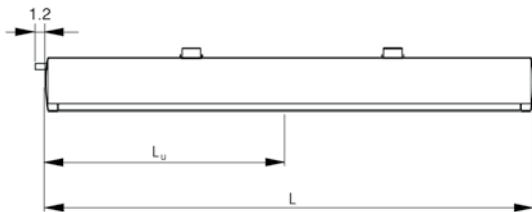


Figure 7. Connection -H, side view.

L = length FRB

L_u = length of lower section's subdivision

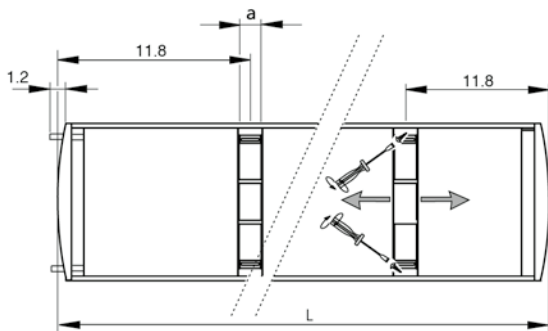


Figure 8. Horizontal connection at the end -H, top view.

a = adjustment allowance suspension fittings 1.7 in.

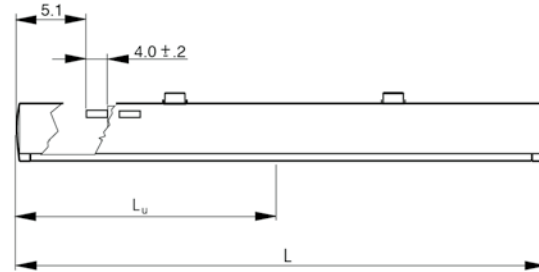


Figure 9. Connection -I, side view.

L = length FRB

L_u = length of lower section's subdivision

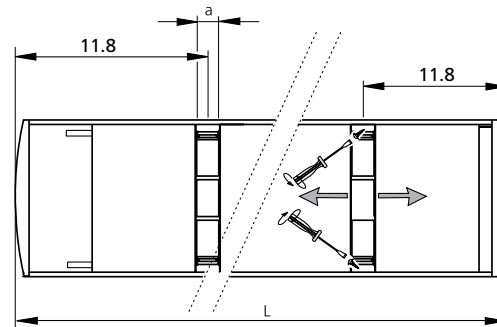


Figure 10. Connection -I, top view.

a = adjustment allowance suspension fittings 1.7 in.

Installation measurements

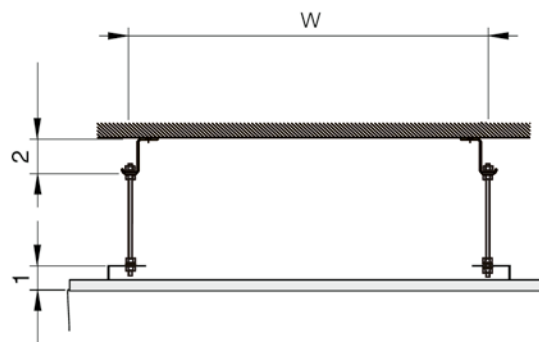


Figure 11. Assembly fittings SYST MS.

W = 12.9 in.

Limits of contract

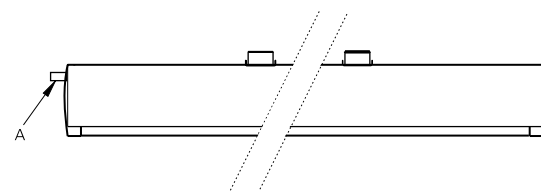


Figure 12. Connection, side view.

A = cooling: the plumbing contractor makes connections to pipe.

Specification

Cooling system type FRB for cooling.

The units are supplied enameled in Swegon white standard colour RAL 9003 gloss value $30 \pm 6\%$.

Limits of contract

Swegon limits of contract are at the connection points for water (in accordance with the **Figure 12** under Dimensions - Limits of contract/connection points). At these connection points the plumbing contractor connects to plain pipe ends, fills the system, vents and carries out pressure testing.

The units are supplied exclusive of assembly kits. These are to be ordered separately.

Product

FRB	c-	430-	aaa-	b
Version:				
Size:				
430 mm = 17 in.				
Length:				
47, 59, 71, 83, 94, 106, 118, 130, 142, 154 in.				
Connection:				
H = horizontal connection outside the end				
I = connection section, inside				

Accessories

Connection cover	FRB c-	T-KA	430-	bbb
Version				
Type:				
Size:				
430				
Length:				
5, 12, 20 and 28 in.				

Loose endplates	FRBT GL	aa-	430
UH = without hole			
MH = with hole			
Size: 430			

Extension pipe, 2	SYST FR	aaa
Length: 12 or 17 in.		

Assembly set	SYST MS M8	aaaa-	b-	RAL9003
For suspended installation				
Length drop rod:				
8, 20, 40 in.				
1 = only the drop rod				
2 = double drop rods with tread lock				

Flexible connection hose (1)	SYST FH F1	aaa	0.5
Clamping ring coupling against pipe on both ends			
Length: 12, 20, 28 in.			
Dimension (Ø) 0.5 in.			

Flexible connection hose (1)	SYST FH F20	aaa	0.5
Quick-fit coupling (push-on) against pipe on both ends			
Length: 11, 19, 27 in.			
Dimension (Ø) 0.5 in.			

Flexible connection hose (1)	SYST FH F30	aaa	0.5
Quick-fit coupling (push-on) against pipe on one end, 1/2-inch NPT sleeve nut on the other end			
Length: 8, 16, 24 in.			
Dimension (Ø) 0.5 in.			