

Closed Active Chilled Beams

Models GB-30 and GB 60



AIR IN MOTION

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Closed Active Chilled Beams

Introduction Model GB 30

Introduction

The closed active beam GB-30 (300mm wide) is designed to provide sensible cooling, ventilation and also heating if necessary. The GB-30 is available in standard modular total beam lengths of 600, 900, 1200, 1500, 1800, 2100, 2400, 2700, and 2950 are offered so that the beam is suitable for many applications including offices, hotels, retail shops, bank halls, hospitals.

The benefits of this beam include;

- Free cooling (Supply water 14 -18 °C).
- Low noise.
- Easy set up with static pressure.
- Minimal primary fresh air.
- Linear capacity control utilising Variable Air Volume.
- Dummy sections to order.
- Choice of perforated face panel.
- Can be either 4 pipe (heating and cooling) or 2 pipe (cooling only).
- Simple installation using integral hanging rail and mounting brackets.
- Suitable for all ceilings, T-bar, recessed or surface mounting.



Description

The GB-30 closed active beam has a nominal width of 300mm and provides a 2 way opposite horizontal air pattern. A choice of perforated steel faceplate is available, from either a circular Ø 4.1mm (51% open) or a square 6mm (44% open) mesh.

The standard colour finish is RAL 9010 white, alternative RAL colours by request. The beam is supplied in various standard modular total lengths to suit the application.

Other special lengths are also available by request.

The overall height is 250mm including the plenum box, although inactive beams are 160mm and dummy beams are only 70mm. Plenum boxes are normally supplied unlined with a Ø 125mm spigot, but alternatively may also be supplied with 6mm melamine internal lining as an optional extra. When the primary air is >130 m³/h (36 l/s), the plenum will be provided with 2 spigots of Ø 125mm. A heat exchanger with aluminium fins and four separate Ø 12mm copper pipes are fitted into the beam casing (four pipes only when heating and cooling). These pipes have plain tails and are suitable for compression fittings.

Operation

The GB-30 closed active beam is used to cool or heat room air. Active beams contain a supply air plenum. Primary fresh air is supplied directly into the plenum where it is forced through induction nozzles. Air leaving the nozzles at high velocity pulls secondary room air through the heat exchanger, from below the beam, using the induction effect. The mixture of the primary supply air and induced secondary air enters the room, through the longitudinal slots along both sides of the beam, with a horizontal air pattern.

The chilled beam system is a dry-cooling system and therefore, to avoid condensation, the inlet water temperature for the beam should always be above the primary air dew point temperature. If windows can be opened then the water flow to the beams should be disabled to avoid condensation.

If for some reason the room air has become too humid, the water circulation must be switched off with the primary fresh air ventilation still running. After the building has dehumidified, the water circulation can be restarted.

The principle method for individual room temperature control is by regulating water flow ON/Off, this method of continuous air movement and fresh primary air provide optimal comfort. Capacity may also be controlled by using variable air volume units for the primary air. By zoning the chilled beams, the diversity resulting from VAV control allows for a reduction of the primary air supply.

Typical water temperatures required are 14-18°C for cooling and 35-50°C for heating, which allows for large amount of free cooling with the use of a heat pump system or by the use of ground source energy.

Maximum operating water pressure is 6 bar at 90 °C and 7 bar at 20°C

Primary air: 16-20°C (summer) and 18-21°C (winter) is typical, primary air dew point should always 1-2°C below the cold water supply temperature to allow for dehumidification.

Optimal minimum plenum pressure of the primary air is 100 Pa. Minimum primary air plenum pressure is 50 Pa.

Dehumidification of the primary air from the main air-handling unit is used to control humidity levels and to avoid condensation.

Due to the aerodynamic design of the nozzles it allows greater levels of primary air to be introduced into the beam, creating high secondary cooling. Which is particularly useful for higher air volume applications.

Standard sizes:

600mm
900mm
1200mm
1500mm
1800mm
2100mm
2400mm
2700mm
2950mm

Product specification

Material

Beam casing from steel with a choice of perforated front panel from either circular Ø 4.1mm (51% free area) or square 6mm (44% free area) mesh. Heat exchanger coil has aluminium fins and Ø 12mm copper pipes. Galvanised sheet steel plenum box.

Construction

Beam casing is formed from a single sheet with end plates mechanically joined to the casing, having a perforated front panel. The plenum box section has a Ø125mm circular spigot with end plates mechanically joined and sealed to the beam casing.

Plenum box with pressure measuring point behind front panel (optional).

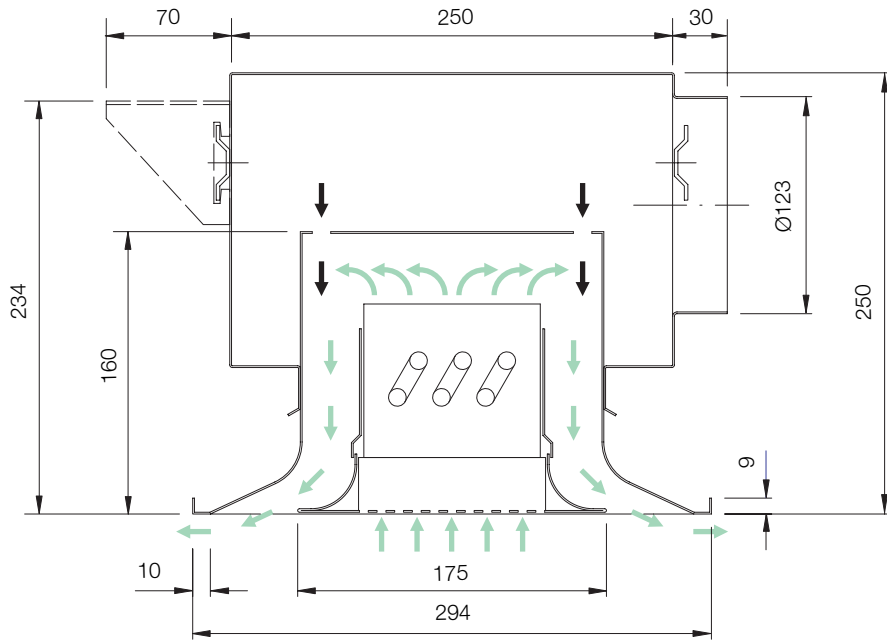
Installation

Provision for fixing by drop rod or wire using preformed lugs with a sliding rail arrangement. Suitable for T-Bar, surface or recessed ceiling systems. Heat exchanger coil, Ø12mm copper pipes have plain tails suitable for compression fittings.

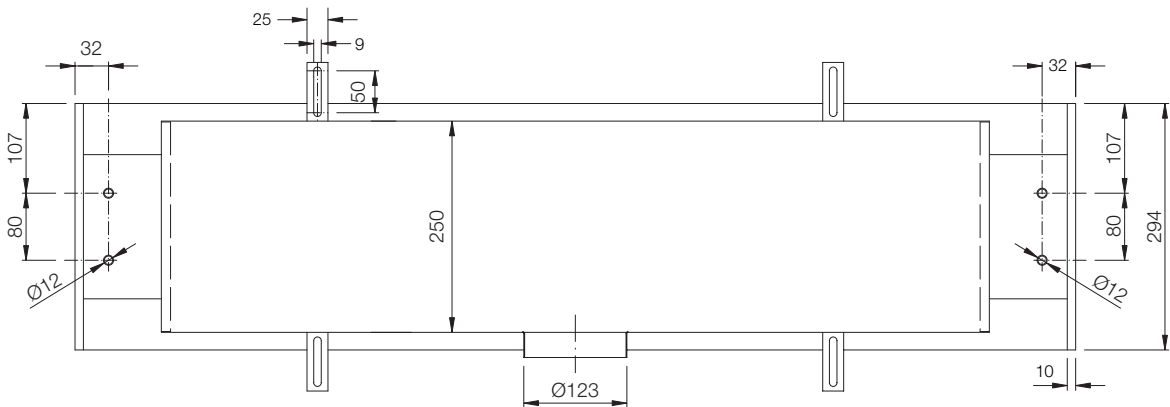
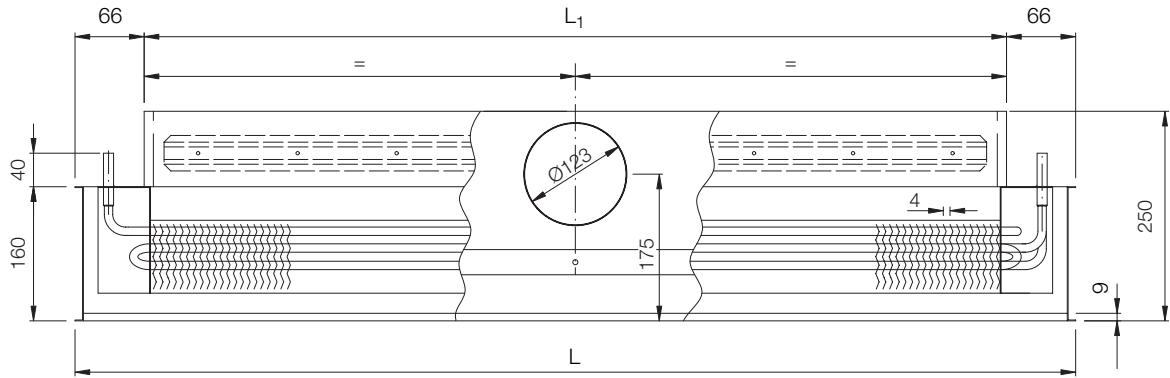
Finish

Standard finish to beam is RAL9010 white.

Closed Active Chilled Beams Dimensions Model GB 30



L (mm)	L ₁ (mm)	L (mm)	L ₁ (mm)	L = Total Length L ₁ = Active Length
594	462	2394	2262	
894	762	2694	2562	
1194	1062	2950	2862	
1494	1362			
1794	1662			
2094	1962			



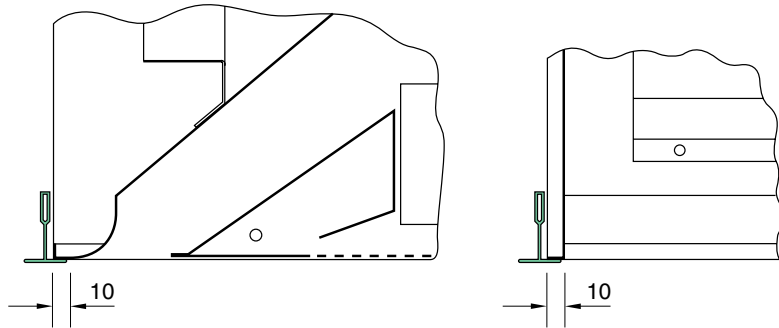
Closed Active Chilled Beams Installation Guide Model GB 30

For ease of access the GB-30 incorporates a hinge front panel, which gives generous access to the heat exchanger for any routine maintenance.

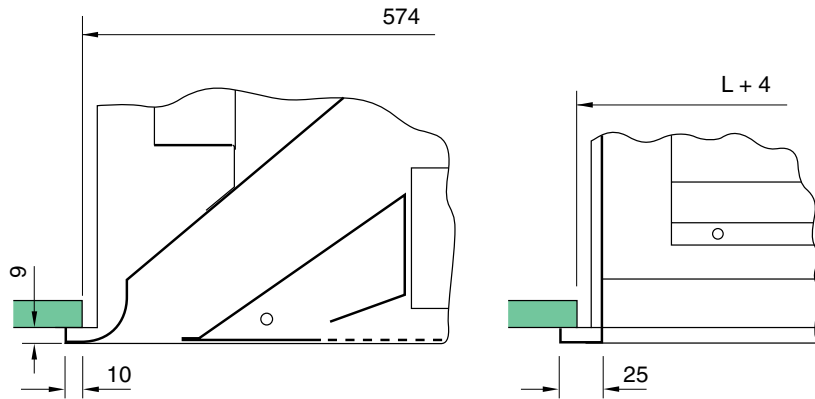
The heat exchanger should be vacuum cleaned once every one to five years depending on the use of space. The more dust generated during use, the more often the need for cleaning. There are no filters, condensate trays, or pipework in the beam which require cleaning.



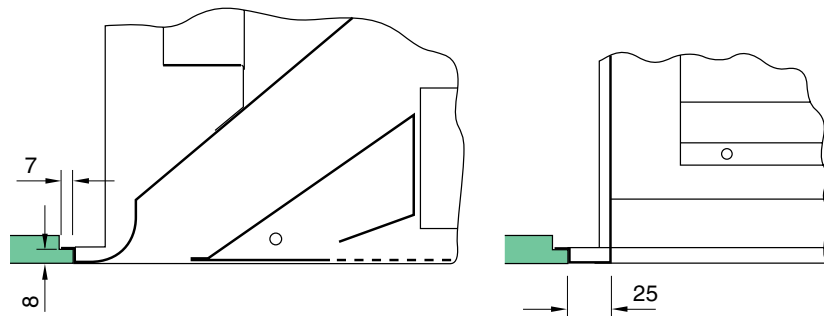
T-bar mounting



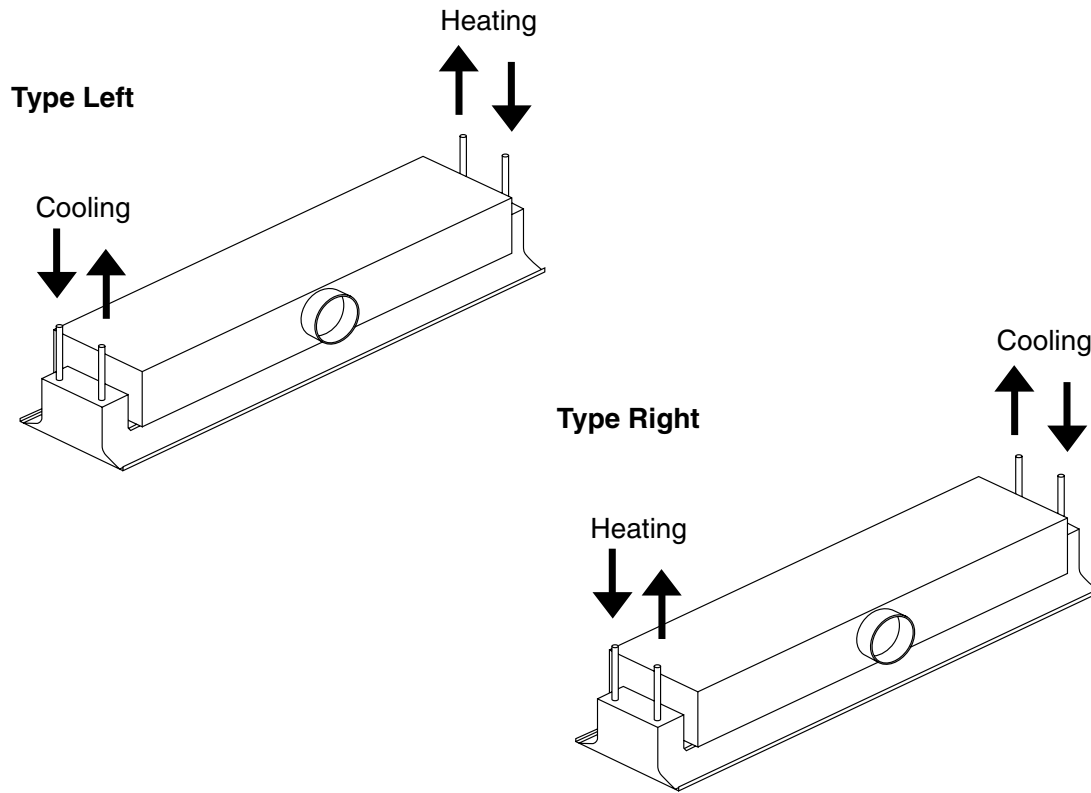
Surface mounting



Recessed mounting



Model GB-30 – Ordering Information



Model GB-30 How to Order

Chilled beam unit, GB-30BH 1500, 300 mm wide, L=1494 mm, nominal length of the battery 1200mm, suited for T-bar mounting with heating and cooling, nozzle type B.

GB	T	3	0	B	H	R	1	4	9	4	1	2	0	0
	T : T-bar mounting	300mm wide beam		Nozzle configuration A-B-C-D	C : Cooling only H : Heating and cooling		L Overall length				Nominal length battery			
Z : Recessed mounting			0 : Perforated front Ø4,1mm, 51% open			R : Cooling water pipes at the right								
S : Surface mounting			1 : Square perforation 6mm, 44% open			L : Cooling water pipes at the left								
			2 : Perforated front Ø4,1 mm, 51% open, plenum pressure measuring point behind face											
			3 : Square perforation 6mm, 44% open, plenum pressure measuring point behind face											

Closed Active Chilled Beams

Introduction - Model GB 60

Introduction

The closed active beam GB-60 (600mm wide) is designed to provide sensible cooling, ventilation and also heating if necessary. Standard modular total beam lengths of 600mm, 900mm, 1200mm, 1500mm, 1800mm, 2100mm, 2400mm, 2700mm and 2950mm are offered so that the beam is suitable for many applications including offices, hotels, retail shops, bank halls, hospitals.

The benefits of this beam include;

- Free cooling (Supply water 14 - 18 °C).
- Low noise.
- Easy set up with static pressure.
- Minimal primary fresh air.
- Linear capacity control utilising Variable Air Volume.
- Dummy sections to order.
- Choice of perforated face panel.
- Can be either 4 pipe (heating and cooling) or 2 pipe (cooling only).
- Simple installation using integral hanging rail and mounting brackets.
- Suitable for all ceiling: T-bar, recessed or surface mounting.



Description

The GB-60 closed active beam has a nominal width of 600mm and provides a 2 way opposite horizontal air pattern. A choice of perforated steel faceplate is available, from either a circular Ø4,1mm (51% open) or a square 6mm (44% open) mesh. The standard colour finish is RAL9010 white, alternative RAL-colours by request. The beam is supplied in various standard modular total lengths to suit the application.

Other special lengths are also available by request. The overall height is 250mm including the plenum box, although inactive beams are 160mm and dummy beams are only 70mm.

Plenum boxes are normally supplied unlined with a Ø 125mm spigot, but alternatively may also be supplied with 6mm melamine internal lining as an optional extra.

When the primary air is >130 m³/h (36 l/s), the plenum will be provided with 2 spigots of Ø 125mm. A heat exchanger with aluminium fins and four separate Ø12mm copper pipes are fitted into the beam casing (for pipes only when heating and cooling). These pipes have plain tails and are suitable for compression fittings.

Operation

The GB-60 closed active beam is used to cool or heat room air. Active beams contain a supply air plenum. Primary fresh air is supplied directly into the plenum where it is forced through induction nozzles. Air leaving the nozzles at high velocity pulls secondary room air through the heat exchanger, from below the beam, using the induction effect. The mixture of the primary supply air and induced secondary air enters the room, through the longitudinal slots along both sides of the beam, with a horizontal air pattern.

The chilled beam system is a dry-cooling system and therefore, to avoid condensation, the inlet water temperature for the beam should always be above the primary air dew point temperature. If windows can be opened then the water flow to the beams should be disabled to avoid condensation. If for some reason the room air has become too humid, the water circulation must be switched off with the primary fresh air ventilation still running. After the building has dehumidified, the water circulation can be restarted.

The principle method for individual room temperature control is by regulating water flow ON/OFF, this method of continuous air movement and fresh primary air provide optimal comfort. Capacity may also be controlled by using Variable Air Volume units for the primary air. By zoning the chilled beams, the diversity resulting from VAV control allows for a reduction of the primary supply air.

Typical water temperatures required are 14 - 18 °C for cooling and 35 - 50 °C for heating, which allows for large amount of free cooling with the use of a heat pump system or by the use of ground source energy.

Maximum operating water pressure is 6 bar at 90 °C and 7 bar at 20 °C

Primary air: 16 - 20 °C (summer) and 18 - 21°C (winter) is typical, primary air dew point should always be 1 - 2 °C below the cold water supply temperature to allow for dehumidification.

Optimal minimum plenum pressure of the primary air is 100 Pa. Minimum primary air plenum pressure is 50 Pa. Dehumidification of the primary air from the main air-handling unit is used to control humidity levels and to avoid condensation.

Due to the aerodynamic design of the nozzles it allows greater levels of primary air to be introduced into the beam, creating high secondary cooling. Which is particularly useful for higher air volume applications.

Standard sizes:

600mm
900mm
1200mm
1500mm
1800mm
2100mm
2400mm
2700mm
2950mm

Product Specification

Material

Beam casing from steel with a choice of perforated front panel from either circular Ø4.1mm (51% free area) or square 6mm (44% free area) mesh. Heat exchanger coil has aluminium fins and Ø12mm copper pipes. Galvanised sheet steel plenum box.

Construction

Beam casing is formed from a single sheet with end plates mechanically joined to the casing, having a hinged perforated front panel. The plenum box section has a Ø125mm circular spigot with end plates mechanically joined and sealed to the beam casing. Plenum Box with pressure measuring point behind front panel (optional).

Installation

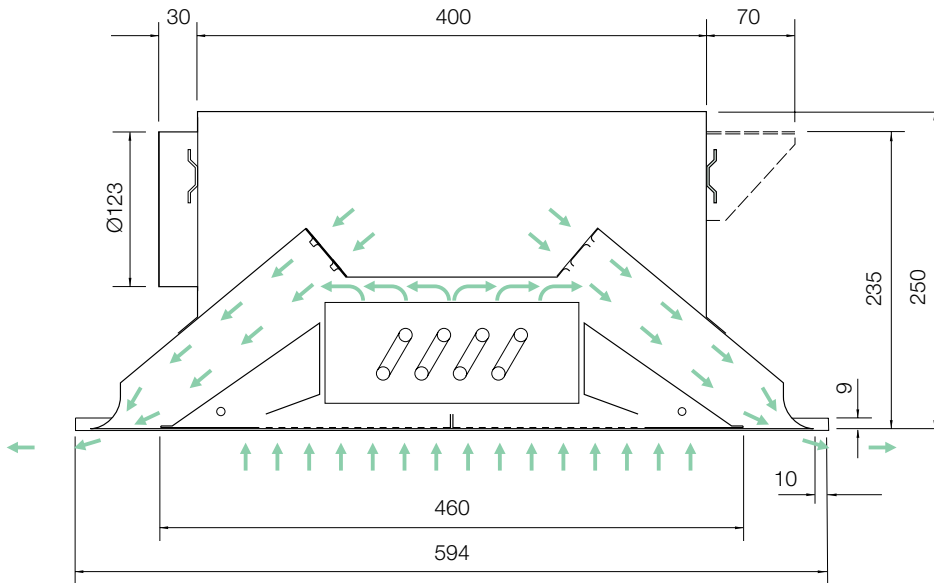
Provision for fixing by drop rod or wire using preformed lugs with a sliding rail arrangement. Suitable for T-Bar, surface or recessed ceiling systems. Heat exchanger coil, Ø12mm copper pipes have plain tails suitable for compression fittings.

Product specification

Finish

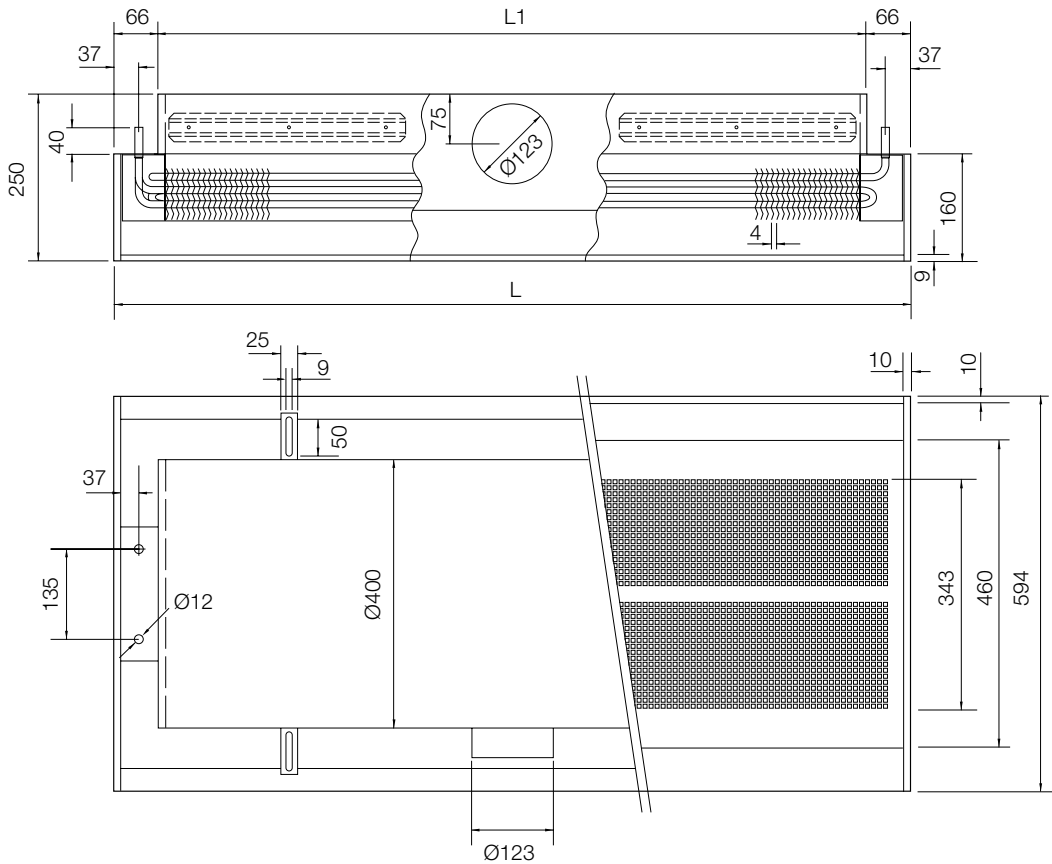
Standard finish to beam is RAL9010 white.

Closed Active Chilled Beams Dimensions Model GB 60



L (mm)	L ₁ (mm)	L (mm)	L ₁ (mm)
594	462	2094	1962
894	762	2394	2262
1194	1062	2694	2562
1494	1362	2950	2862
1794	1662		

L = Total Length
L₁ = Active Length

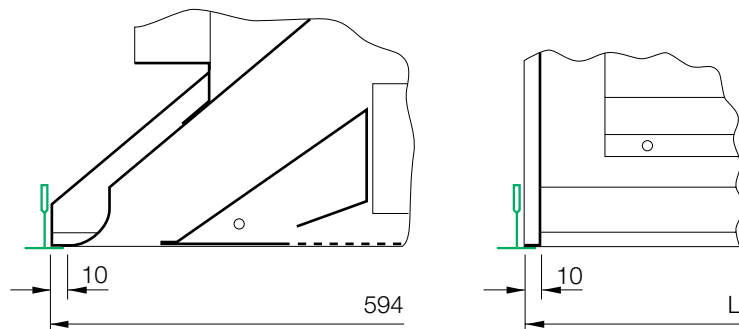


Closed Active Chilled Beams Installation Guide Model GB 60

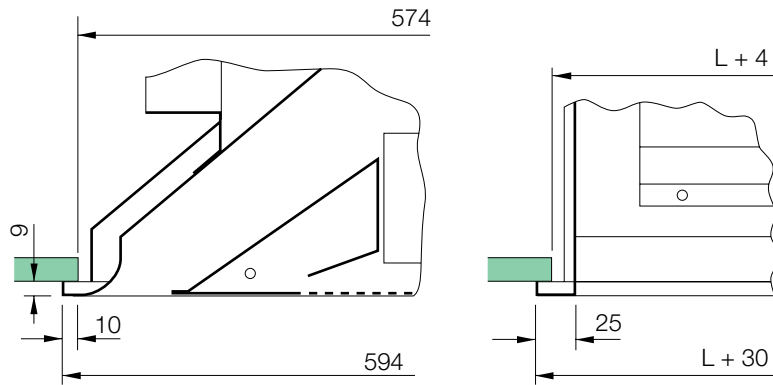
For ease of access the GB-60 incorporate a hinged front panel, which gives generous access to the heat exchanger for any routine maintenance. The heat exchanger should be vacuum cleaned once every one to five years depending on the use of space. The more dust generated during use, the more often the need for cleaning. There are no filters, condensate trays or pipework in the beam which require cleaning.



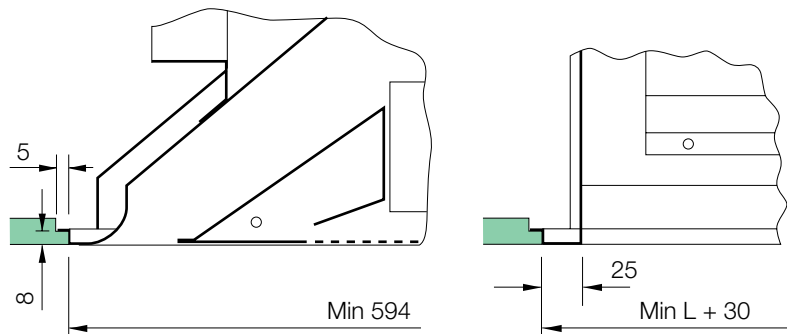
T-bar mounting



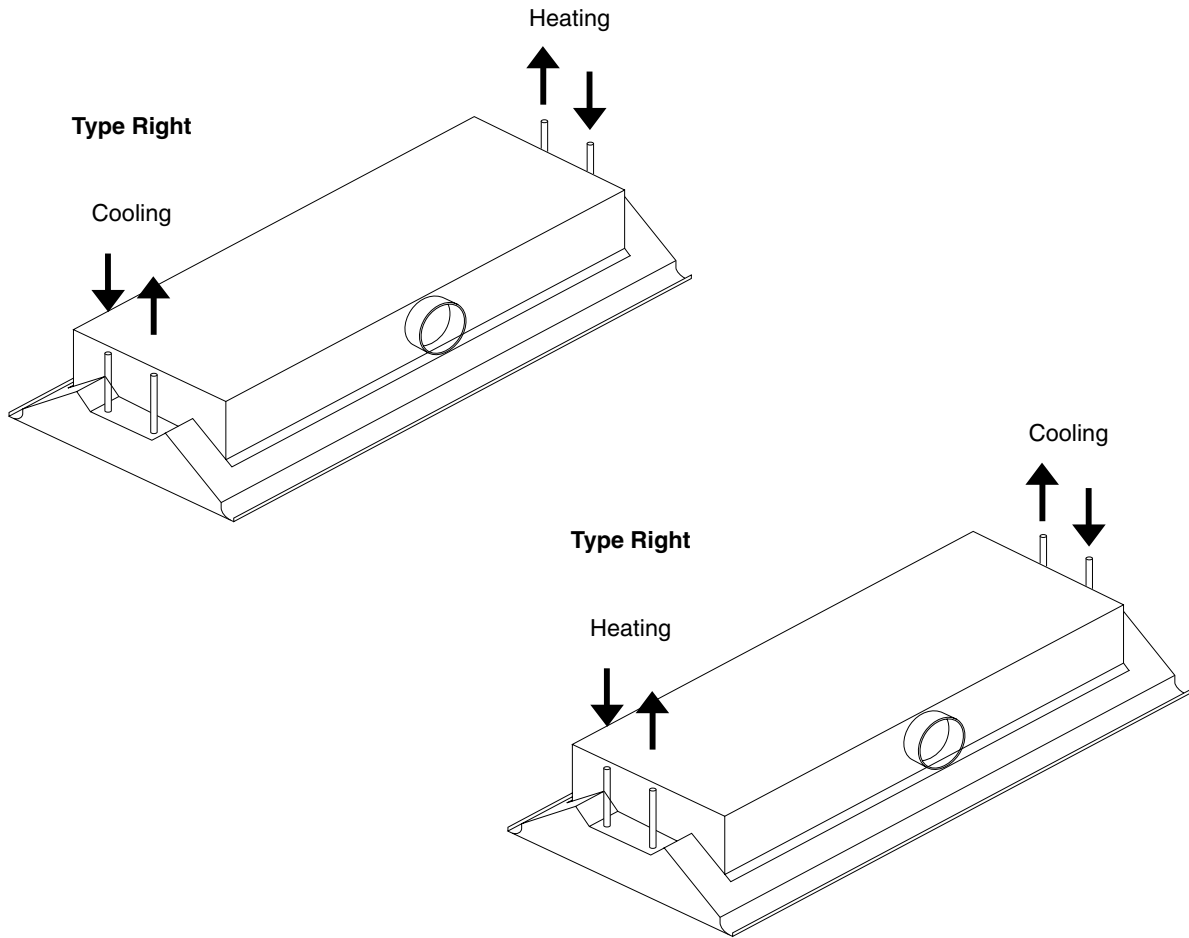
Surface mounting



Recessed mounting



Model GB-60 – Ordering Information



Model GB-60 How to Order

Chilled beam unit, GB-60BH 1500, 600 mm wide, L =1494 mm, nominal length of the battery 1200 mm, suited for T-bar mounting with heating and cooling, nozzle type B.

GB	T	6	0	B	H	R	1	4	9	4	1	2	0	0
	T : T-bar mounting Z : Recessed mounting S : Surface mounting	600mm wide beam	0 : Perforated front Ø4,1mm, 51% open 1 : Square perforation 6mm, 44% open 2 : Perforated front Ø4,1 mm, 51% open, plenum pressure measuring point behind face 3 : Square perforation 6mm, 44% open, plenum pressure measuring point behind face	Nozzle configuration A-B-C-D	C : Cooling only H : Heating and cooling	R : Cooling water pipes at the right L : Cooling water pipes at the left	L Overall length				Nominal length battery			