



The green and friendly entrance



Comfort air curtains
Model **CA₂**

Energy saving and user-friendly air curtain



In shops with open doors, model CA₂ provides for a comfortable shopping climate.

Model CA₂ is the newest addition to the series Biddle comfort air curtains. It is Biddle's conviction that with this successor to the successful air curtain model CA, it has developed the most **energy saving and user-friendly** air curtain in the market.

The green entrance

For commercial reasons many shops and public buildings often have their doors open, inviting passers-by to enter. But an open door disturbs the climate inside and a lot of energy is lost. Because of the commercial importance closing the door is not an option. Fortunately, with model CA₂ above the open entrance this is not necessary and any building can now have a "green entrance". The comfort air curtain is highly suitable for use in, for example, shops, supermarkets, offices, banks, hospitals and hotels.

Benefits model CA₂:

- maximum energy saving
- low water temperature coil:
45/35 °C - 90/70 °C
- low noise level
- low CO₂-consumption
- continuously the correct adjustment
- 100 % automatic control
- installation- and user-friendly



Model CA₂ combines three Biddle air curtain technologies, resulting in a high energy efficiency and ease of use.

Model CA₂ has it all:

1. Fully automatic with CHIPS-control

The air curtain is supplied as a standard with a fully automatic **CHIPS**-control. This control selects continuously, under any circumstances, the correct settings of the air curtain automatically. This ensures the optimum use of the proven separation efficiency of more than 90 %. Besides, the energy saving may increase up to 75% more compared with an air curtain with a manual speed controller.

2. High efficiency coil for low water temperatures

Model CA₂ can be connected to any CH-installation, because as a standard it is supplied with a low water temperature coil. Therefore the unit operates perfectly at any water range from 45/35 °C to 90/70 °C, and the built-in three-way valve guarantees the correct outlet temperature.

3. b-Touch control panel: personal settings

The CA₂ is equipped with a new control panel: the **b-Touch**. The user can easily navigate through the various menus. After the right settings are being programmed the CA₂ arranges everything automatically for the user. Depending on the situation and the use settings can be changed manually, such as raising or lowering the room temperature. Besides, it is possible to make personal settings, like a special PIN code as security for a number of user settings or setting the week timer.

Unsurpassed convenience

The operation and energy efficiency of an air curtain is largely determined by the correct installation. In actual practice this is often underestimated and therefore model CA₂ offers great ease of installation, but also the convenience for the user is unsurpassed.

Installer-friendly: easy to program

- The touch screen of the **b-touch** control panel shows all important settings of the air curtain. The installation menu offers step-by-step directions for the correct settings. Only a small number of settings need to be programmed.
- The air curtain with water heating coil is delivered ready for plugging in with a plug & play system and an integrated air and water control and is fitted with a fixed feeder cable with plug.
- The mounting rail, suspension brackets and threaded rod covers (not supplied) ensure that installation on the ceiling or wall is simple. The installation will be completed in next to no time.

User-friendly: 100 % automatic thanks to **CHIPS-control**

- Once the air curtain is properly set, the fully automatic **CHIPS-control** renders manual operation of the air curtain superfluous. The user does not need to worry at all.



b-touch -control panel

Special threaded rod covers (optional) and the fine end panels give the installation a good finish.



Subtle design and colours

Thanks to its attractive design model CA₂ blends with any interior. In addition, the slim design is visually enhanced by the slightly curved inlet grilles and end panels. The recessed and cassette models can be installed in a (lowered) ceiling. Special covering for the threaded rods used to suspend the air curtain give it a good finish.

Model CA₂ is supplied in two standard colours: RAL 9016 (traffic white) and RAL 9006 (aluminium). Other colours are available on demand.

Various options

Type code

CA₂ S-200-W-F

CA = Controlled Air strength-Technology

Types

S = Small (200 - 240 cm)
M = Medium (220 - 280 cm)
L = Large (250 - 330 cm)
XL = Extra Large (300 - 380 cm)

Unit width

100 - 150 - 200 - 250 = cm

Coil type

W = water heating
E = electric heating
A = no heating

Model

F = free-hanging
C = cassette
R = recessed

The type coding is put together by selecting 1 of all parts.

Model CA₂ can be supplied in four different capacities: S(mall), M(edium), L(arge) and XL (Extra Large). These series are suitable for door heights of 200 to a maximum of 380 cm. The higher the capacity the higher the air curtain can be mounted. All types are available in four sizes: 100 - 150 - 200 and 250 cm. By mounting more units next to each other doorways wider than 250 cm can be served.

Types	Installation height ¹	Door width	Coil type	Models
CA ₂ S	200-240 cm	100-150-	W (water)	free-hanging (F) cassette (C) recessed (R)
CA ₂ M	220-280 cm		E (electric)	
CA ₂ L	250-330 cm	200-250 cm	A (ambient)	
CA ₂ XL	300-380 cm		DK (R410A) ²	

¹ Measured from the floor to the bottom.

² For model CA₂ V, combined with Daikin VRV-system, a separate brochure is available.

Coil types

The CA₂ air curtain can be connected to any conceivable system because it is equipped with a low water temperature coil for every water temperature from 45/35 °C to 90/70 °C. Apart from a water coil model CA₂ can also be supplied with an electric exchanger or without a heating element (ambient). Model CA₂ can also be supplied with the refrigerant R410A, combined with the Daikin VRV-system (heat pump and heat recovery system).

Accessories

The air curtains come with grilles, air filters, and suspension brackets for ceiling installation. The recessed models (type R) have duct connections (ducts are not included in the package). To control the air curtain, a control set is composed.

The control set consists of:

- b-touch control panel
- door contact switch
- outdoor temperature sensor
- two plastic end panels (free-hanging model, for an attractive finish)
- three low-voltage cables with plugs, in several lengths

Additional accessories:

- wall suspension brackets, standard or design (see page 19)
- threaded rod covers (see page 19)
- GBS-interface module (instead of control panel)
- curved air discharge ornament for recessed models for revolving doors.



Design suspension brackets

Cleanable filters

Dirty filters can cause a higher sound level or less comfort. It is therefore necessary to clean or replace the filters (G1) at regular intervals. The control panel indicates when the filter requires cleaning. The inlet grilles are easy to detach and the filters maybe cleaned easily and fast using the vacuum cleaner.

Control and operation

Electronic control system

Model CA₂ with water coil has as a standard an integrated air and water control unit and a motor-controlled three-way valve installed. The valve is operated by the electronic control system in the unit. In air curtains with an electric heat exchanger the energy supply to the heat exchanger is determined by an electric power control.

The operating system of the air curtain consists of the **b-touch** control panel and a printed circuit board. The in- and outputs of the printed circuit board are connected to a connector plate at the top of the unit, which facilitates the connection of peripheral devices. The connector plate has six connections: to two of these the control panel and any extra units can be connected. Besides, there are two outputs (max. 24 Volt) that can be used for operating the boiler or monitoring defects. The last connections are for the outside air sensor, which is needed for the **CHIPS**-control and for, for instance, a door contact switch, room thermostat or a signal from a building management system.

b-touch control panel



The **b-touch** control panel has the following dimensions: 11.5 x 9 x 2.8 cm (h x w x d).

The control panel is connected to the unit using a low voltage cable with telephone plugs (RJ11). The control panel has one connection for an incoming signal for an external on/off signal or for an additional temperature sensor. With one control panel a maximum of ten air curtains can be operated. At the bottom of the panel there is a USB connection that can be used to load software and to download users' settings.

The air curtain can be operated automatically or manually:

- **Automatic**

The CA₂ air curtain operates as a standard with the fully automatic control. In this position the strength and temperature of the air stream are automatically adjusted to the climatological conditions in accordance with the **CHIPS**-control (see page 9).

Personal settings

In the automatic position it is possible to enter personal settings in order to adjust the operation of the air curtain to a specific situation. For instance, with an automatic door it is possible to let the air curtain react fast or slowly, depending of the door use, with the help of a door contact switch. It is also possible to keep the noise level at a convenient level by not letting the air curtain operate in the maximum position.

- **Manual**

With this manual setting there are six positions to choose from to overrule the automatic operation temporarily when the situation asks for it. To be assured of the best possible climate separation the manual setting should be adjusted to circumstances several times a day.

*To achieve a perfect climate separation and good comfort at a minimum use of energy, Biddle advises to use the fully automatic **CHIPS**-control.*

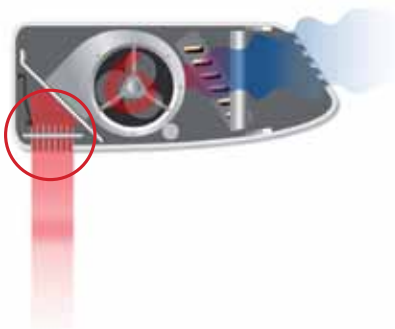
Energy saving air curtain technologies

In model CA₂ three Biddle air curtain technologies have been combined. This renders the comfort air curtain to the most energy saving and most user-friendly in its kind. Under all conditions the best possible continuous operation of the air curtain is guaranteed: **energy-saving and optimum climate separation with the best comfort**. To achieve this the air curtain must meet the following conditions:

- 1. Sufficient strength** (for an efficient climate separation)
 - the entire doorway is screened off to the floor.
- 2. Sufficient heating capacity** (for optimum comfort)
 - the incoming cold air is heated to the required inside temperature.

To make this possible the perfect concerted action between the **rectifier-**, the **CA-** and the **CHIPS-technology** is necessary.

1. Rectifier technology for a turbulence-free air stream



Through the rectified outlet grille the air is blown down to the floor without any turbulence.

Source: independent TNO research: "Energy analysis of an air curtain".

All Biddle air curtains are equipped with the patented rectifier. This outlet grille ensures the turbulent air coming from the ventilators being transformed into a laminar air stream. The air curtain reaches the floor at a much lower air speed than air curtains without rectifier. The incoming cold air is heated so it is not felt as a draught. This heated air benefits the climate inside so no energy is lost. The result is a climate separation efficiency of over 90 %.

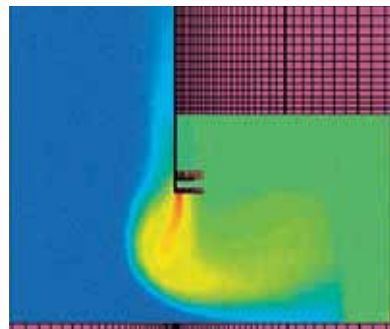


Fig. 1: Air curtain without rectifier: energy loss and draught.

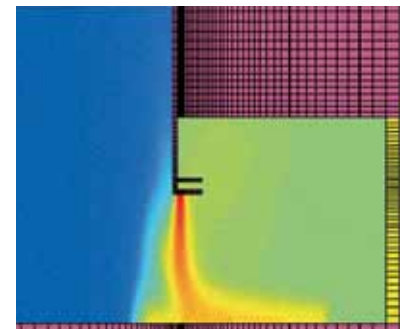


Fig. 2: Biddle air curtain with rectifier: energy saving and much comfort.

Consequences of high-speed discharge velocity

If more heating capacity is required, the air curtain is set at a higher level causing the air speed and air volume to increase. However, an air speed which is too high also causes more turbulence and at the same time there is the risk of the air stream hitting the floor with corresponding loss of energy. The noise level also increases when the speed is raised. For that reason Biddle has developed the CA-technology. It is made up of an ingeniously designed air valve which adapts the outlet width to the situation.

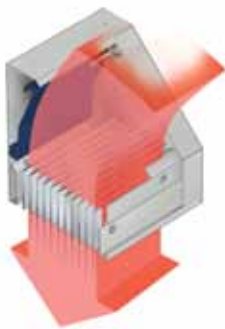
2. CA- technology for the correct outlet width

The strength of an air curtain is determined by the air speed and the outlet width, which are effected by the CA technology. CA stands for **C**ontrolled **A**ir strength - **T**echnology.

Model CA₂ has six different speeds each having its own outlet width. As soon as the air curtain is put into a higher speed, the outlet width is automatically adjusted to the climatologic situation around the door entrance. The air volume and the air speed are increased as far as necessary. The air does not collide with the floor and so the heat is solely used to heat the incoming cold air. This results in more indoor comfort and in saving energy.



Low fan speed

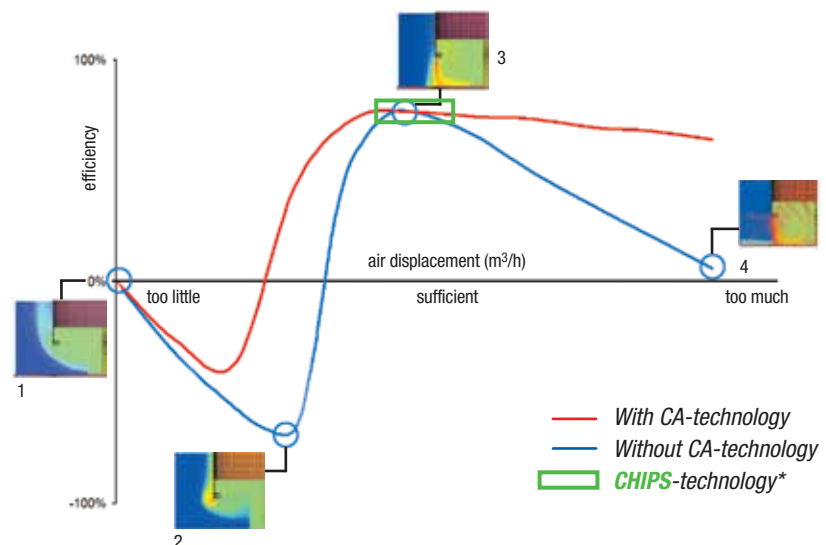


High fan speed

Advantages rectifier- and CA-technology

- climate separation efficiency of over 90 %
- heat supply benefits the indoor space
- very energy-efficient
- optimum indoor comfort in any circumstance or weather conditions

Optimum operation air curtain



* The **CHIPS**-technology guarantees always a high efficiency (see page 8 and 9).

Figure 3:

1. **Open door without an air curtain:** large waste of energy as hot air inside escapes through the open door.
2. **Open door with weak air curtain:** air velocity too low; large waste of energy as hot air inside escapes through the open door.
3. **Open door with Biddle air curtain:** optimal climate separation, hot air will be used for heating indoor space.
4. **Open door with too strong air curtain:** much turbulence, air stream hits the floor, large waste of energy and heat.

3. CHIPS-technology for sufficient heat and strength



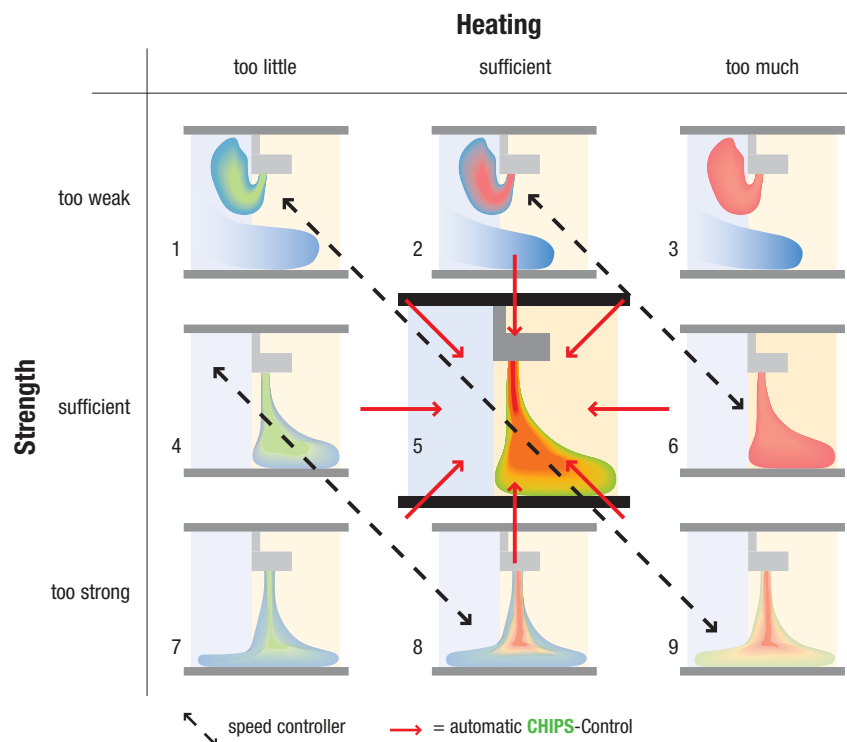
CHIPS means: **C**orrective **H**eating
and **I**mpulse **P**rediction **S**ystem

With changing weather conditions and insufficient attention to or knowledge of an air curtain, it still frequently occurs that an air curtain is not properly set. It blows often too strong or too weak, with an outlet temperature that is too high or it is not switched on at all. As a result there is energy loss, little comfort and an unnecessarily high noise level. Exactly because air curtains are intended to save energy and provide a high degree of comfort, Biddle has developed the fully automatic and energy saving **CHIPS**-technology.

The **CHIPS**-technology adjusts the outlet temperature and the strength (outlet width x air speed) of the air stream to the changing conditions round the doorway independent of each other. The technology has been translated into a fully automatic control for Biddle comfort-air curtains: **CHIPS**-control.

Dynamics of an air curtain

The diagram below clarifies the operation of the **CHIPS**-technology in various conditions.



Situation 5 is the optimal situation:
Sufficient strength to reach the floor
(optimum climate separation) and sufficient
heating to heat incoming air to the indoor
temperature required (comfort).

↖ Air curtain with speed control: strength and heat are linked to one another. When the fan speed of the air curtain is stepped up, manually or automatically, by, for instance, a thermostat heat and strength are adjusted simultaneously. Since in many cases either will be sufficient to reach the ideal situation, this ideal situation is seldom achieved with a speed regulation.

→ Model CA₂ with CHIPS-technology: strength and heat operate independently. The air curtain with **CHIPS**-control does reach the ideal situation under any changing circumstances, automatically and continuously. Based on climatologic conditions round the doorway the correct setting of the air curtain is selected. The ideal strength is determined by the sensor of the outside temperature, a control algorithm and the ideal heating by the built-in room temperature setting.

Operation automatic CHIPS-control

Not only weather conditions such as the outside temperature, wind velocity and wind direction change at any time of the day, but the indoor climate changes too because of lighting, use of doors and frequency of customer visits. Therefore the air curtain has to adapt itself continuously to these changing conditions.

Three sensors ensure that model CA₂ is supplied with all details regarding the climate outside and inside near the doorway. This information is translated by the CHIPS-control into the correct setting of the air curtain and shown in the b-touch control panel.



The automatic CHIPS-control will continuously reach the ideal situation under any changing condition: up to 75% energy savings and optimum comfort, compared to a conventional air curtain.

Your savings

Due to the CHIPS-control the CA₂ air curtain always functions in the right speed, with optimal energy savings as a result. See the below example:



Do you want to calculate your own savings? Please go to the "energy saving tool" at www.biddle.info (English).

Example situation		Annual savings	
Door height:	2.5 m	CA ₂ & CHIPS-control:	30.284 kW/hr
Door width:	2 m	CO ₂ reduction:	5754 kg
Inside temperature:	20 °C		
Outside temperature :	4.5 °C		
Energy costs:	0.05 €		
			1514 Euro

The calculation assumes the following: the medium building is situated on a normal location, the CA₂ air curtain is connected to a Central Heating installation and the door is opened nine hours a day, six days a week. The annual energy savings will be € 1514 compared to an open door without air curtain. By adapting the CA₂ with CHIPS control these savings will be maximal 75% higher compared to manually controlled conventional air curtains.

The correct selection



To avoid air leakage on the sides the unit should be at least as wide as the doorway.

An air curtain functions well if it covers the entire doorway and has sufficient heat capacity to bring the incoming cold air to a comfortable temperature. The selection of the right type of air curtain depends on door height and door width and of the volume of natural ventilation through the open door.

1. Door height (from floor to bottom of unit) and door width

Based on these known data an air curtain can easily be selected from the table on this page. It is important for the distance between the air curtain and the door to be as small as possible. In addition, the air curtain should be at least as wide as the doorway.

2. Natural ventilation

It is difficult to determine the volume and the temperature of the incoming outside air, because the conditions round the doorway are continuously changing. Constructional aspects may also influence the need for capacity. The following guide lines apply to a simple selection and prove to be successful in actual practice:

Favourable situation: covered shopping centre or entrance with revolving door

Normal situation: little direct wind effect, no opposite open doors, ground floor

Unfavourable situation: on a corner or a square, storeys, open staircase.

Type	Door height		
	Favourable situation	Normal situation	Unfavourable situation
CA ₂ S	to 240 cm	to 220 cm	-
CA ₂ M	to 280 cm	to 250 cm	to 220 cm
CA ₂ L	to 330 cm	to 300 cm	to 280 cm
CA ₂ XL	to 380 cm	to 350 cm	to 320 cm

By using this table an air curtain can easily be selected.

Strength of an air curtain

A properly working air curtain does not need to displace much air. The strength of an air curtain is determined by the correct ratio between speed and width of the air stream blown out. The air speed is determined by the turbulence in the air stream as well. By applying the patented rectifier technology of Biddle the air stream hardly fans out and much less air displacement is required than with air curtains without rectifier. Apart from giving more comfort less boiler capacity is needed and the energy consumption is lower. With an air curtain that is too strong the efficiency is reduced, because the stream collides with the floor and part of the heat is lost.



Explanation technical data

Selection boiler capacity

For the selection of the CH-boiler one can take the heating capacity in speed 6 at an outlet temperature of 40 °C. If a CH-boiler is available, usually no extra extension is needed, because more than 90 % of the heat produced by the air curtain benefits the climate indoors.

Maximum heating capacity

For the maximum heating capacity in the tables on pages 12 - 15 the heating capacity for each unit has been taken at speed 6 with an output temperature of 50 °C.

Water volume

The water volumes stated in the tables are based on a water temperature of 60/40 °C, a room temperature of 20 °C and an outlet temperature of 40 °C. With different values it is necessary to calculate the water volume with the formula below. With the help of this formula it can also be determined which water volume is required to achieve the necessary heating capacity at a given water volume or which maximum heating capacity can be achieved with a certain water volume.

- m_W = water volume [l/h]
- Q = heating capacity [kW]
(table value)
- ρ_W = density of water at 90 °C
(= 0.984) [kg/l]
- c_{pW} = specific heat of water
(= 4.18) $\left[\frac{\text{kJ}}{\text{kg } ^\circ\text{C}} \right]$
- ΔT_W = temperature difference water [°C]

$$m_W = \frac{Q}{\rho_W c_{pW} \Delta T_W} \cdot 3600 \text{ [l/h]}$$

Water pressure loss

If different water temperatures than 60/40 °C are concerned, the water pressure loss can be roughly calculated with the formula below. To do this the water volume should first be calculated (see above).

- Δp_{W_1} = water pressure loss
(table value)
- Δp_{W_2} = water pressure loss
- m_{W_1} = water volume
(table value)
- m_{W_2} = water volume, calculated
using formula

$$\Delta p_{W_2} = \Delta p_{W_1} \cdot \left(\frac{m_{W_2}}{m_{W_1}} \right)^2$$

Sound

The sound data are based on the direct field, in a situation with an open door and a sound absorbing ceiling. The sound data for different situations can be determined by adding the adjacent values to the table values. Deviating distances and several units next to each other can be calculated with the table below. Data of the 1 m unit, measured on a distance of 3 m, are the basic assumptions. The factors apply to all types of air curtains.

- Closed door: + 1 à 2 dB(A)
- Acoustical "hard" ceiling: + 2 à 3 dB(A)

Distance	Unit width (cm)					
	100	150	200	250	300	350
1.0 m	+4.8	+6.2	+7.1	+7.6	+8.0	+8.3
2.0 m	+1.8	+3.4	+4.5	+5.3	+6.0	+6.4
3.0 m	0	+1.7	+2.9	+3.8	+4.5	+5.0
4.0 m	-2.5	-0.8	+0.4	+1.4	+2.1	+2.7
5.0 m	-4.4	-2.7	-1.5	-0.5	+0.2	+0.8

Correction factors for sound pressure
in dB(A)

Technical data

CA₂ S/M/L/XL - 100

Basic data:

- door width : 100 cm
- room temperature : 20 °C
- air outlet temperature¹ : speed 1-5 = 35 °C
speed 6 = 40 °C
- power supply : W = 230 V / E = 400 V

* See table on page 10.

CA ₂ S-100							Water	Electric
door height*						cm	200 - 240	
weight model F/R/C						kg	46/60/58	51/65/63
max. heating capacity ²						kW	11.6	10.0
water flow rate ³						l/h	262	-
water pressure loss, incl. valve ³						kPa	0.68	-
max. power, motors						kW	0.19	0.19
max. current, motors (1 phase)						A	0.85	0.85
max. power consumption, heating						kW	-	10.5
max. current consumption (3 phases)						A	-	16.0
Speed		1	2	3	4	5	6	
air displacement	m ³ /h	420	585	675	875	1015	1155	
heating capacity	kW	2.1	2.9	3.4	4.4	5.1	7.7	
noise level at 3 m	dB(A)	27	35	38	43	47	50	
CA ₂ M-100							Water	Electric
door height*						cm	220 - 280	
weight model F/R/C						kg	52/66/64	55/69/67
max. heating capacity ²						kW	15.8	13.3
water flow rate ³						l/h	321	-
water pressure loss, incl. valve ³						kPa	1.00	-
max. power, motors						kW	0.27	0.27
max. current, motors (1 phase)						A	1.24	1.24
max. power consumption, heating						kW	-	14.0
max. current consumption (3 phases)						A	-	22.7
Speed		1	2	3	4	5	6	
air displacement	m ³ /h	490	730	880	1195	1425	1575	
heating capacity	kW	2.5	3.7	4.4	6.0	7.2	10.5	
noise level at 3 m	dB(A)	26	36	41	47	50	53	
CA ₂ L-100							Water	Electric
door height*						cm	250 - 330	
weight model F/R/C						kg	64/82/80	69/87/85
max. heating capacity ²						kW	33.0	23.3
water flow rate ³						l/h	586	-
water pressure loss, incl. valve ³						kPa	1.18	-
max. power, motors						kW	0.67	0.67
max. current, motors (1 phase)						A	3.03	3.03
max. power consumption, heating						kW	-	24.5
max. current consumption (3 phases)						A	-	37.9
Speed		1	2	3	4	5	6	
air displacement	m ³ /h	1145	1510	1890	2430	2865	3285	
heating capacity	kW	5.7	7.6	9.5	12.2	14.4	22.0	
noise level at 3 m	dB(A)	37	42	46	52	56	58	
CA ₂ XL-100							Water	Electric
door height*						cm	300 - 380	
weight model F/R/C						kg	68/86/84	73/91/89
max. heating capacity ²						kW	40.0	23.3
water flow rate ³						l/h	653	-
water pressure loss, incl. valve ³						kPa	1.44	-
max. power, motors						kW	1.11	1.11
max. current, motors (1 phase)						A	5.02	5.02
max. power consumption, heating						kW	-	24.5
max. current consumption (3 phases)						A	-	39.7
Speed		1	2	3	4	5	6	
air displacement	m ³ /h	1370	1815	2295	2975	3535	3980	
heating capacity	kW	6.9	9.1	11.5	14.9	17.7	26.6	
noise level at 3 m	dB(A)	43	47	51	56	60	63	

The CA₂ air curtain is as a standard suitable for all water ranges from 45/35 °C to 90/70 °C.

¹ Depending on the situation the outlet temperature varies in all speeds between 20 °C and 50 °C max.

² Based on a limited air outlet temperature of 50 °C.

³ Based on a water range of 60/40 °C.

Technical data

CA₂ S/M/L/XL - 150

Basic data:

- door width : 150 cm
- room temperature : 20 °C
- air outlet temperature¹ : speed 1-5 = 35 °C
speed 6 = 40 °C
- power supply : W = 230 V / E = 400 V

* See table on page 10.

CA ₂ S-150						Water	Electric
door height*						cm	200 - 240
weight model F/R/C						kg	65/87/82 / 70/92/87
max. heating capacity ²						kW	17.4 / 14.8
water flow rate ³						l/h	430 / -
water pressure loss, incl. valve ³						kPa	2.18 / -
max. power, motors						kW	0.28 / 0.28
max. current, motors (1 phase)						A	1.27 / 1.27
max. power consumption, heating						kW	- / 15.6
max. current consumption (3 phases)						A	- / 23.8
Speed		1	2	3	4	5	6
air displacement	m ³ /h	630	880	1010	1310	1525	1730
heating capacity	kW	3.2	4.4	5.1	6.6	7.7	11.6
noise level at 3 m	dB(A)	29	37	40	45	49	52
CA ₂ M-150						Water	Electric
door height*						cm	220 - 280
weight model F/R/C						kg	74/96/91 / 79/101/96
max. heating capacity ²						kW	23.7 / 19.8
water flow rate ³						l/h	530 / -
water pressure loss, incl. valve ³						kPa	3.20 / -
max. power, motors						kW	0.40 / 0.40
max. current, motors (1 phase)						A	1.86 / 1.86
max. power consumption, heating						kW	- / 20.8
max. current consumption (3 phases)						A	- / 33.8
Speed		1	2	3	4	5	6
air displacement	m ³ /h	740	1095	1320	1790	2140	2365
heating capacity	kW	3.7	5.5	6.6	9.0	10.7	15.8
noise level at 3 m	dB(A)	28	38	43	49	52	55
CA ₂ L-150						Water	Electric
door height*						cm	250 - 330
weight model F/R/C						kg	96/121/118 / 104/129/126
max. heating capacity ²						kW	49.5 / 34.6
water flow rate ³						l/h	1036 / -
water pressure loss, incl. valve ³						kPa	4.47 / -
max. power, motors						kW	1.00 / 1.00
max. current, motors (1 phase)						A	4.55 / 4.55
max. power consumption, heating						kW	- / 36.4
max. current consumption (3 phases)						A	- / 56.3
Speed		1	2	3	4	5	6
air displacement	m ³ /h	1715	2260	2830	3645	4295	4930
heating capacity	kW	8.6	11.3	14.2	18.3	21.6	33.0
noise level at 3 m	dB(A)	39	44	48	54	57	60
CA ₂ XL-150						Water	Electric
door height*						cm	300 - 380
weight model F/R/C						kg	102/127/124 / 110/135/132
max. heating capacity ²						kW	59.9 / 34.6
water flow rate ³						l/h	1162 / -
water pressure loss, incl. valve ³						kPa	5.50 / -
max. power, motors						kW	1.67 / 1.67
max. current, motors (1 phase)						A	7.53 / 7.53
max. power consumption, heating						kW	- / 36.4
max. current consumption (3 phases)						A	- / 59.0
Speed		1	2	3	4	5	6
air displacement	m ³ /h	2055	2725	3440	4465	5300	5970
heating capacity	kW	10.3	13.7	17.3	22.4	26.6	40.0
noise level at 3 m	dB(A)	45	49	53	58	62	65

The CA₂ air curtain is as a standard suitable for all water ranges from 45/35 °C to 90/70 °C.

¹ Depending on the situation the outlet temperature varies in all speeds between 20 °C and 50 °C max.

² Based on a limited air outlet temperature of 50 °C.

³ Based on a water range of 60/40 °C.

Technical data

CA₂ S/M/L/XL - 200

Basic data:

- door width : 200 cm
- room temperature : 20 °C
- air outlet temperature¹ : speed 1-5 = 35 °C
speed 6 = 40 °C
- power supply : W = 230 V / E = 400 V

* See table on page 10.

CA ₂ S-200						Water	Electric
door height*						cm	200 - 240
weight model F/R/C						kg	79/108/102 89/118/112
max. heating capacity ²						kW	23.1 20.0
water flow rate ³						l/h	598 -
water pressure loss, incl. valve ³						kPa	4.83 -
max. power, motors						kW	0.38 0.38
max. current, motors (1 phase)						A	1.69 1.69
max. power consumption, heating						kW	- 21.0
max. current consumption (3 phases)						A	- 32.0
Speed		1	2	3	4	5	6
air displacement	m ³ /h	835	1170	1350	1745	2035	2305
heating capacity	kW	4.2	5.9	6.8	8.8	10.2	15.4
noise level at 3 m	dB(A)	30	38	41	46	50	53
CA ₂ M-200						Water	Electric
door height*						cm	220 - 280
weight model F/R/C						kg	92/121/115 100/129/123
max. heating capacity ²						kW	31.6 26.6
water flow rate ³						l/h	740 -
water pressure loss, incl. valve ³						kPa	7.12 -
max. power, motors						kW	0.53 0.53
max. current, motors (1 phase)						A	2.48 2.48
max. power consumption, heating						kW	- 28.0
max. current consumption (3 phases)						A	- 45.5
Speed		1	2	3	4	5	6
air displacement	m ³ /h	985	1460	1760	2390	2855	3155
heating capacity	kW	4.9	7.3	8.8	12.0	14.3	21.1
noise level at 3 m	dB(A)	29	39	44	50	53	56
CA ₂ L-200						Water	Electric
door height*						cm	250 - 330
weight model F/R/C						kg	121/155/151 137/171/167
max. heating capacity ²						kW	66.0 46.6
water flow rate ³						l/h	1491 -
water pressure loss, incl. valve ³						kPa	10.78 -
max. power, motors						kW	1.34 1.34
max. current, motors (1 phase)						A	6.07 6.07
max. power consumption, heating						kW	- 49.0
max. current consumption (3 phases)						A	- 75.8
Speed		1	2	3	4	5	6
air displacement	m ³ /h	2290	3015	3775	4860	5730	6575
heating capacity	kW	11.5	15.1	18.9	24.4	28.7	44.0
noise level at 3 m	dB(A)	40	45	49	55	59	61
CA ₂ XL-200						Water	Electric
door height*						cm	300 - 380
weight model F/R/C						kg	130/164/160 146/180/176
max. heating capacity ²						kW	79.9 46.6
water flow rate ³						l/h	1676 -
water pressure loss, incl. valve ³						kPa	13.32 -
max. power, motors						kW	2.23 2.23
max. current, motors (1 phase)						A	10.0 10.0
max. power consumption, heating						kW	- 49.0
max. current consumption (3 phases)						A	- 79.4
Speed		1	2	3	4	5	6
air displacement	m ³ /h	2740	3635	4585	5950	7065	7965
heating capacity	kW	13.8	18.2	23.0	29.9	35.5	53.3
noise level at 3 m	dB(A)	46	50	54	59	63	66

The CA₂ air curtain is as a standard suitable for all water ranges from 45/35 °C to 90/70 °C.

¹ Depending on the situation the outlet temperature varies in all speeds between 20 °C and 50 °C max.

² Based on a limited air outlet temperature of 50 °C.

³ Based on a water range of 60/40 °C.

Technical data

CA₂ S/M/L/XL - 250

Basic data:

- door width : 250 cm
- room temperature : 20 °C
- air outlet temperature¹ : speed 1-5 = 35 °C
speed 6 = 40 °C
- power supply : W = 230 V / E = 400 V

* See table on page 10.

CA ₂ S-250						Water	Electric
door height*						cm	200 - 240
weight model F/R/C						kg	102/138/130
max. heating capacity ²						kW	28.9
water flow rate ³						l/h	767
water pressure loss, incl. valve ³						kPa	8.89
max. power, motors						kW	0.47
max. current, motors (1 phase)						A	2.12
max. power consumption, heating						kW	-
max. current consumption (3 phases)						A	39.8
Speed		1	2	3	4	5	6
air displacement	m ³ /h	1045	1465	1685	2185	2545	2880
heating capacity	kW	5.3	7.3	8.5	11.0	12.8	19.3
noise level at 3 m	dB(A)	31	39	42	47	51	54
CA ₂ M-250						Water	Electric
door height*						cm	220 - 280
weight model F/R/C						kg	114/150/142
max. heating capacity ²						kW	39.6
water flow rate ³						l/h	951
water pressure loss, incl. valve ³						kPa	13.14
max. power, motors						kW	0.67
max. current, motors (1 phase)						A	3.1
max. power consumption, heating						kW	-
max. current consumption (3 phases)						A	56.5
Speed		1	2	3	4	5	6
air displacement	m ³ /h	1230	1825	2200	2985	3565	3940
heating capacity	kW	6.2	9.2	11.0	15.0	17.9	26.4
noise level at 3 m	dB(A)	30	40	45	51	54	57
CA ₂ L-250						Water	Electric
door height*						cm	250 - 330
weight model F/R/C						kg	154/197/191
max. heating capacity ²						kW	82.4
water flow rate ³						l/h	1696
water pressure loss, incl. valve ³						kPa	4.81
max. power, motors						kW	1.68
max. current, motors (1 phase)						A	7.58
max. power consumption, heating						kW	-
max. current consumption (3 phases)						A	94.2
Speed		1	2	3	4	5	6
air displacement	m ³ /h	2860	3770	4720	6075	7160	8215
heating capacity	kW	14.4	18.9	23.7	30.5	35.9	55.0
noise level at 3 m	dB(A)	41	46	50	60	56	62
CA ₂ XL-250						Water	Electric
door height*						cm	300 - 380
weight model F/R/C						kg	163/206/200
max. heating capacity ²						kW	99.9
water flow rate ³						l/h	1900
water pressure loss, incl. valve ³						kPa	5.97
max. power, motors						kW	2.78
max. current, motors (1 phase)						A	12.55
max. power consumption, heating						kW	-
max. current consumption (3 phases)						A	98.8
Speed		1	2	3	4	5	6
air displacement	m ³ /h	3425	4540	5735	7440	8830	9955
heating capacity	kW	17.2	22.8	28.8	37.3	44.3	66.6
noise level at 3 m	dB(A)	47	51	55	60	64	67

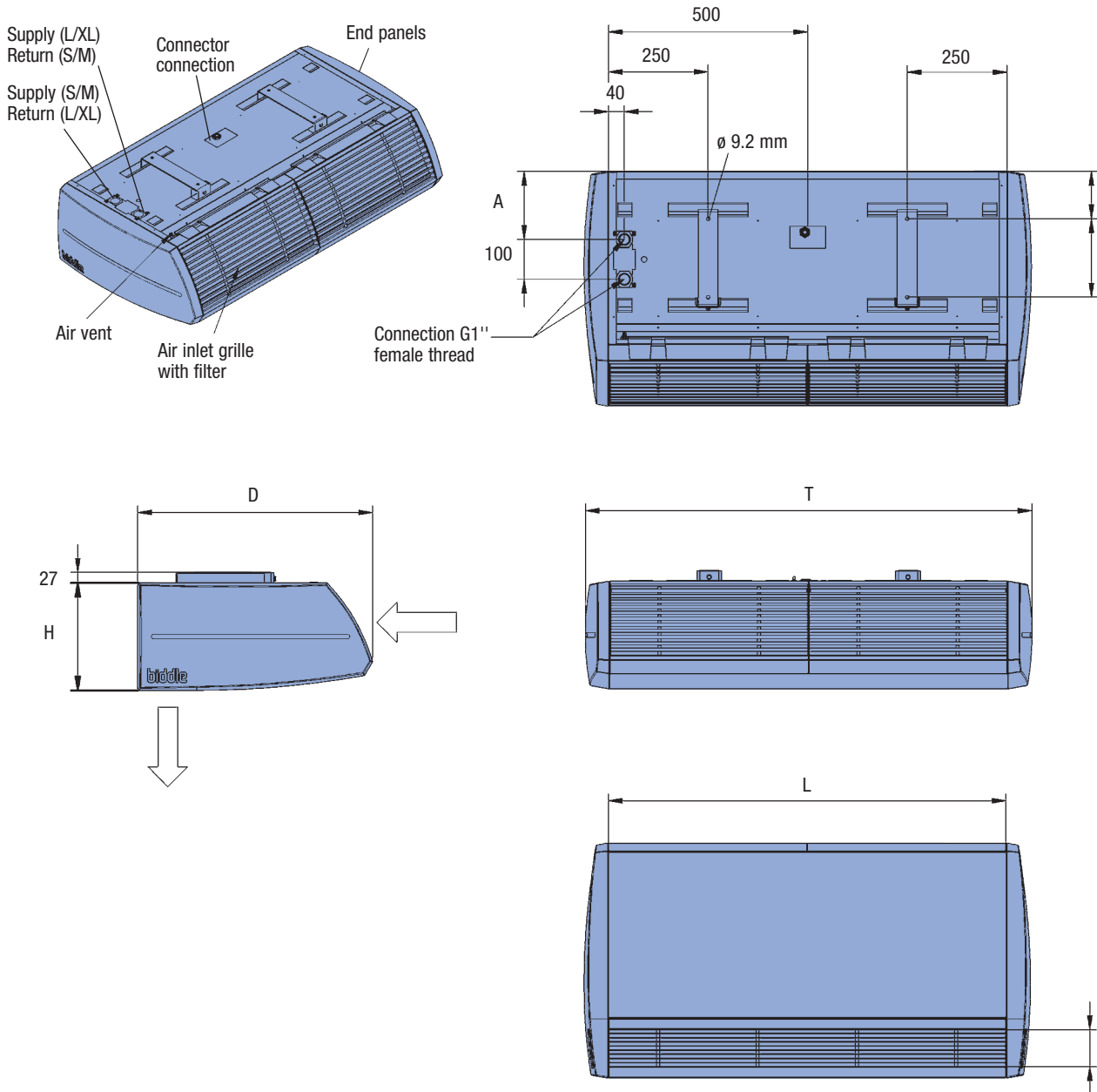
The CA₂ air curtain is as a standard suitable for all water ranges from 45/35 °C to 90/70 °C.

¹ Depending on the situation the outlet temperature varies in all speeds between 20 °C and 50 °C max.

² Based on a limited air outlet temperature of 50 °C.

³ Based on a water range of 60/40 °C.

Dimensional sketches free-hanging model (F)

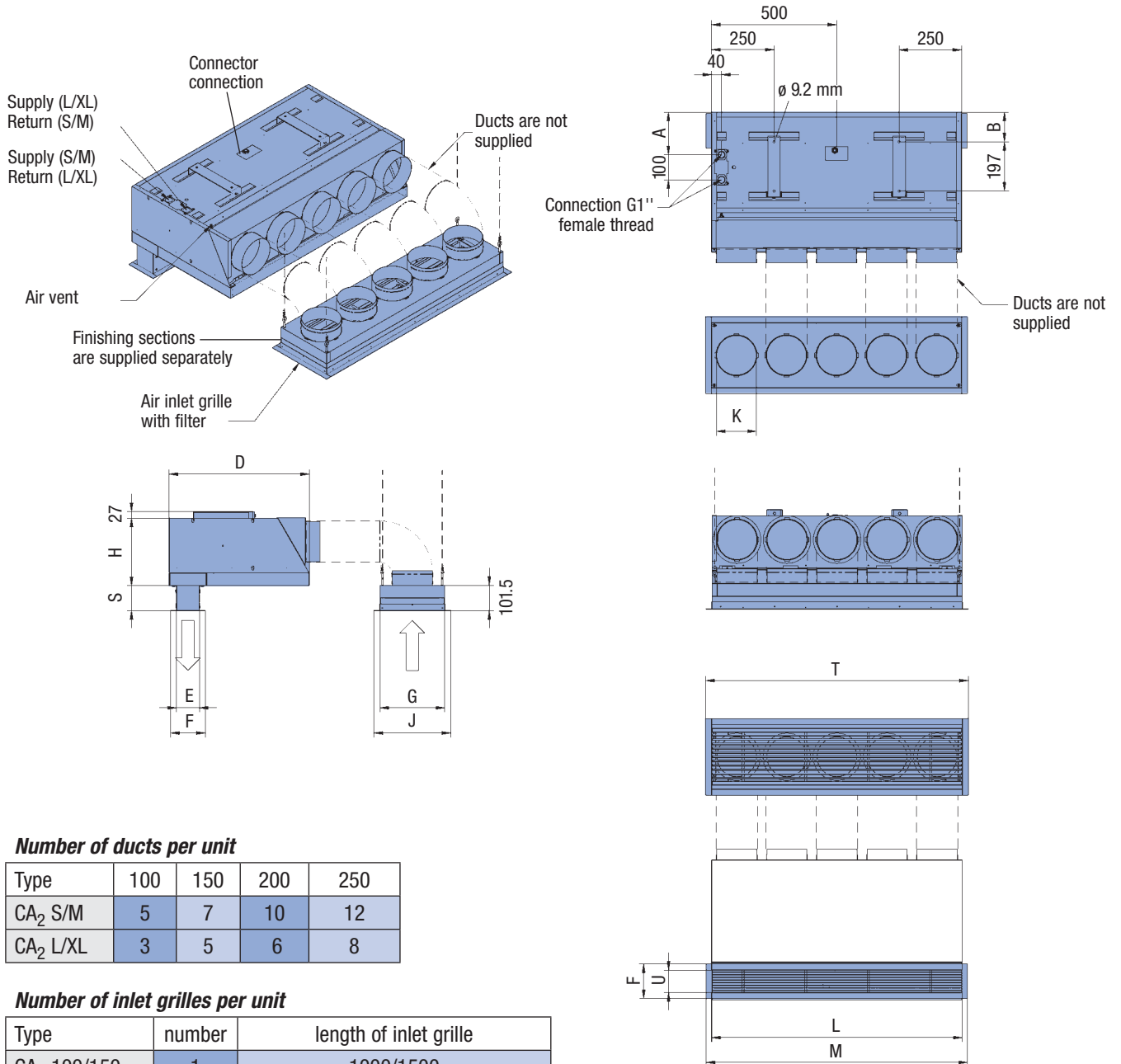


Type	L	H	D	U	A	B	T
CA ₂ S/M	1000 -1500 - 2000 - 2500	270	590	93	171	119	1123 -1623 - 2123 - 2623
CA ₂ L/XL		370	774	124.5	245.5	200	1153 -1653 - 2153 - 2653

Notes

- All dimensions are in mm.
- The units of 2500 mm wide have 3 suspension brackets.
- By removing the end panels, the units are easy to interlink.

Dimensional sketches recessed model (R)



Number of ducts per unit

Type	100	150	200	250
CA ₂ S/M	5	7	10	12
CA ₂ L/XL	3	5	6	8

Number of inlet grilles per unit

Type	number	length of inlet grille
CA ₂ 100/150	1	1000/1500
CA ₂ 200/250	2	1000/1250

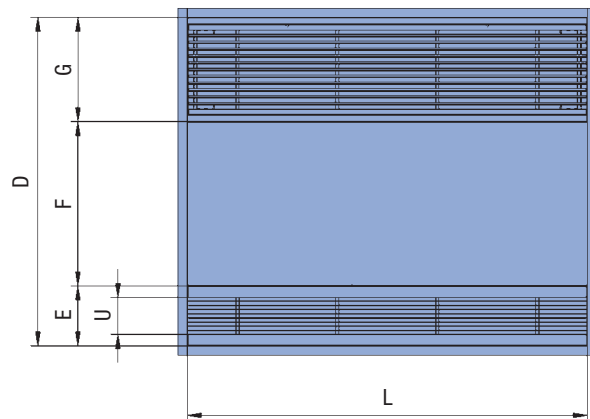
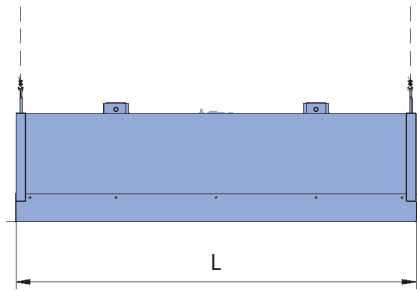
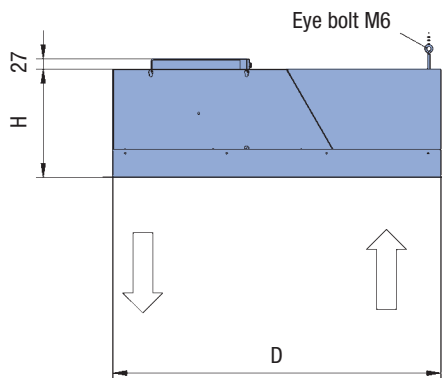
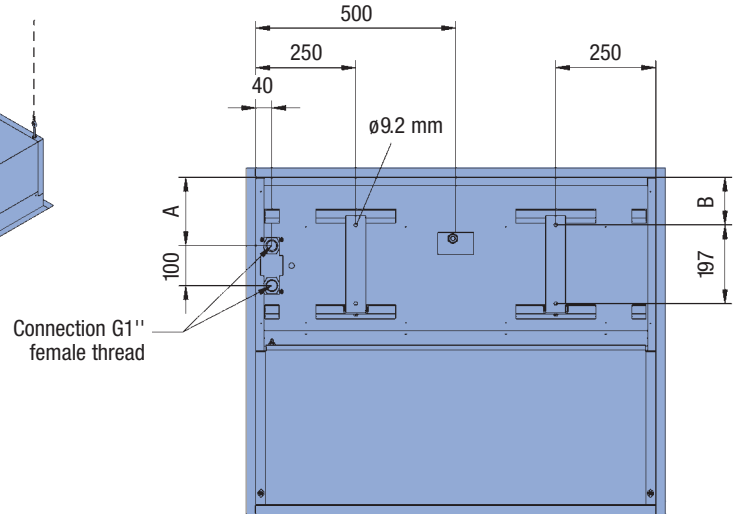
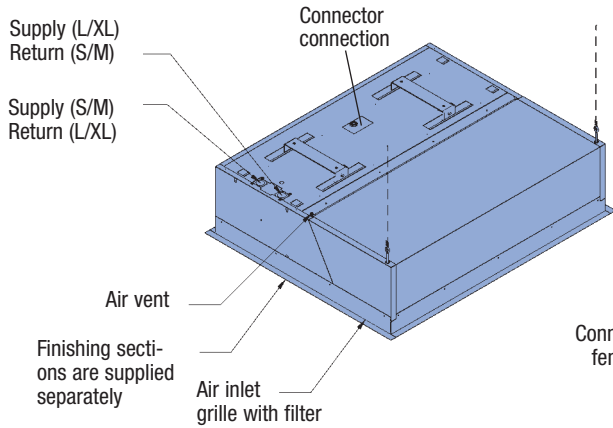
*1 outlet grille per unit

Type	L	H	D	S	U	A	B	E	F	G	J	K	M	T
CA ₂ S/M	1000-1500-	270	561	80-125	90	171	119	92	139	260	308	$\phi 160$	1044-1544-	1048-1548-
CA ₂ L/XL	2000-2500	370	745		121.5	245.5	200	123.5	170	360	408	$\phi 250$	2044-2544	2048-2548

Notes

- All dimensions are in mm.
- The units of 2500 mm wide have 3 suspension brackets.
- Daylight openings (if cover moldings are used): - for air discharge: (E+8) x (L+8) mm - for air inlet: (G+8) x (L+8) mm.
- If the recessed model is to be built into a cove, it is also available in a design that has no inlet air plenum or flexible ducts. To prevent bad air from let in, the cove will need to be air-tight.

Dimensional sketches cassette model (C)



Number of inlet grilles per unit

Type	number	length of inlet grille
CA ₂ 100/150	1	1000/1500
CA ₂ 200/250	2	1000/1250

*1 outlet grille per unit

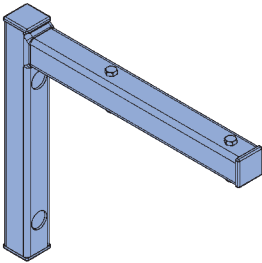
Type	L	H	D	U	A	B	E	F	G
CA ₂ S/M	1000-1500-2000-2500	270	821	93	171	119	150	411	260
CA ₂ L/XL		370	1105	124.5	245.5	200	181.5	563.5	360

Notes

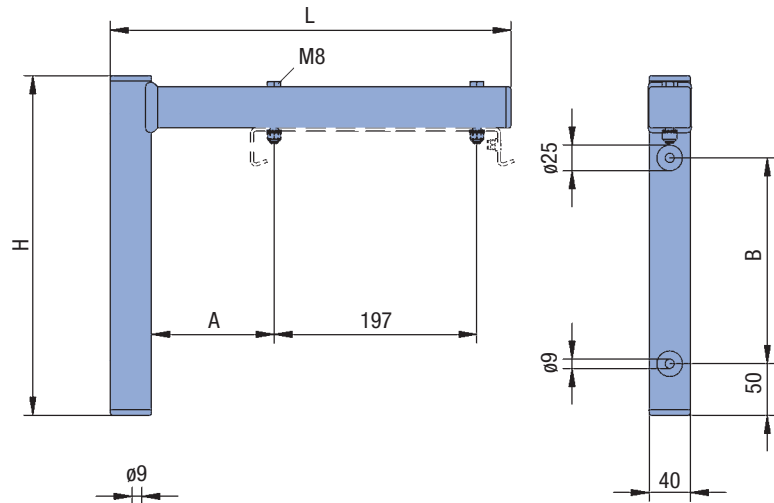
- All dimensions are in mm.
- The units of 2500 mm wide have 3 suspension brackets.
- Daylight opening if cover moldings are used in a suspended ceiling: (L+8) x (D+8) mm.

Dimensional sketches wall suspension brackets

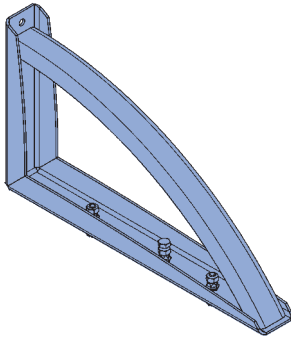
Standard



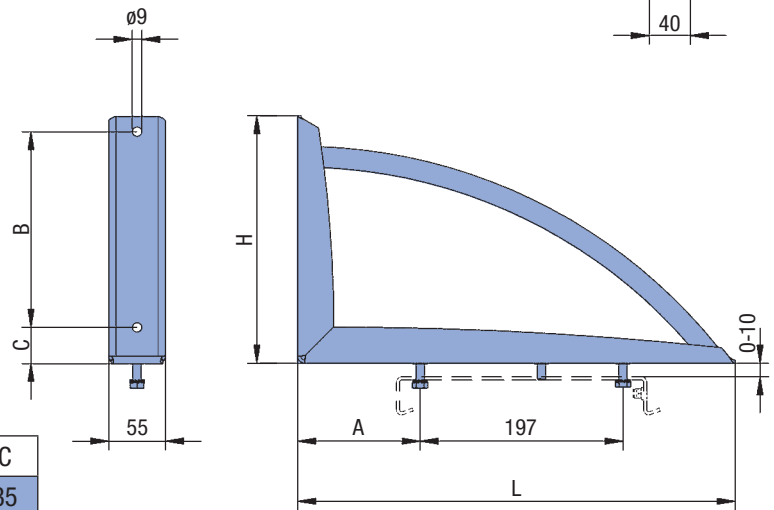
Type	L	H	A	B
CA ₂ S/M	389	330	119	200
CA ₂ L/XL	470	430	200	300



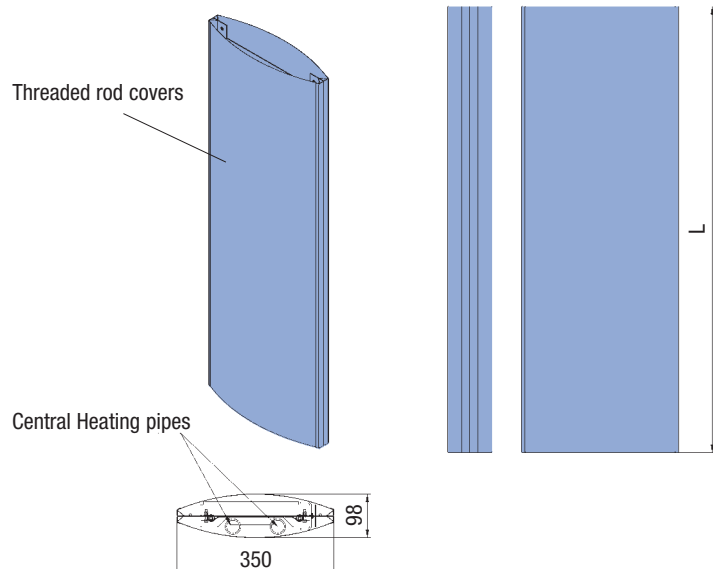
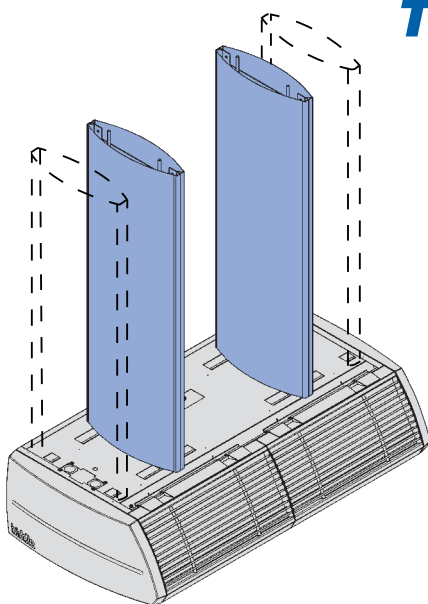
Design



Type	L	H	A	B	C
CA ₂ S/M	425	240	119	190	35
CA ₂ L/XL	500	280	200	210	55



Threaded rod covers



Notes

- All dimensions are in mm.
- Size L is the distance between unit and ceiling. This size needs to be communicated on the order.
- It is also possible to change the position of the threaded rod covers to the sides on top of the unit, to cover all connections.
- Material threaded rod covers: zinc coated plate steel, painted, standard color RAL 9016.

Specifications

Casing



The casing is made of zinc plated sheet steel, and has an inspection panel in the bottom. The inlet grilles are made of anodized aluminium with fixed fins. Both the inlet grille casings and the end panels as well as the casing are, as a standard, supplied in the color traffic white (RAL 9016) or aluminium (RAL 9006). Other RAL colors are available at an extra charge.

Motor / Fan assembly

The air curtain is equipped with two or more (depending on type) dual-inlet, vibration-free suspended centrifugal fans. Each fan is driven by a two-sided, suspended rotor motor on ball bearings. The fan casing and the impeller are made of zinc coated plate steel. The motors are, as a standard, fitted with thermal contacts. These thermal contacts will break the circuit of the motor when the maximum permissible motor temperature is exceeded.

Heating coil

The low water temperature heating coil is made up of 3/8" (CA₂ S/M) and 1/2" (CA₂ L/XL) copper pipes and aluminium fins. The water supply connections are G1" female thread. The maximum operating pressure is 6 bar at 110°C. Higher pressure levels, up to 10 bar, are available on request. The permissible difference (Δp) is 0.5 bar CA₂ S/M, and 1.0 bar for CA₂ L/XL. The electric heating exchanger is made up of aluminium fins. The exchanger is controlled by the electronic control unit and is fitted with overload protection. When the unit is switched off, the fans will continue to rotate until the fins have cooled off sufficiently.



• ISO 9001
• ISO 14001



Connections

To connect hot-water heated units to the mains supply, they come with a fixed cable (approx. 2 m long) with a molded, earthed plug. The Central Heating connections and the connector plate are fitted at the top of the unit. So, the unit need not be opened during installation. The feeder cable to electrically heated units must be connected within the unit. The top of the unit has a tension sleeve for feeding through the feeder cable.

Subject to change without notice

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