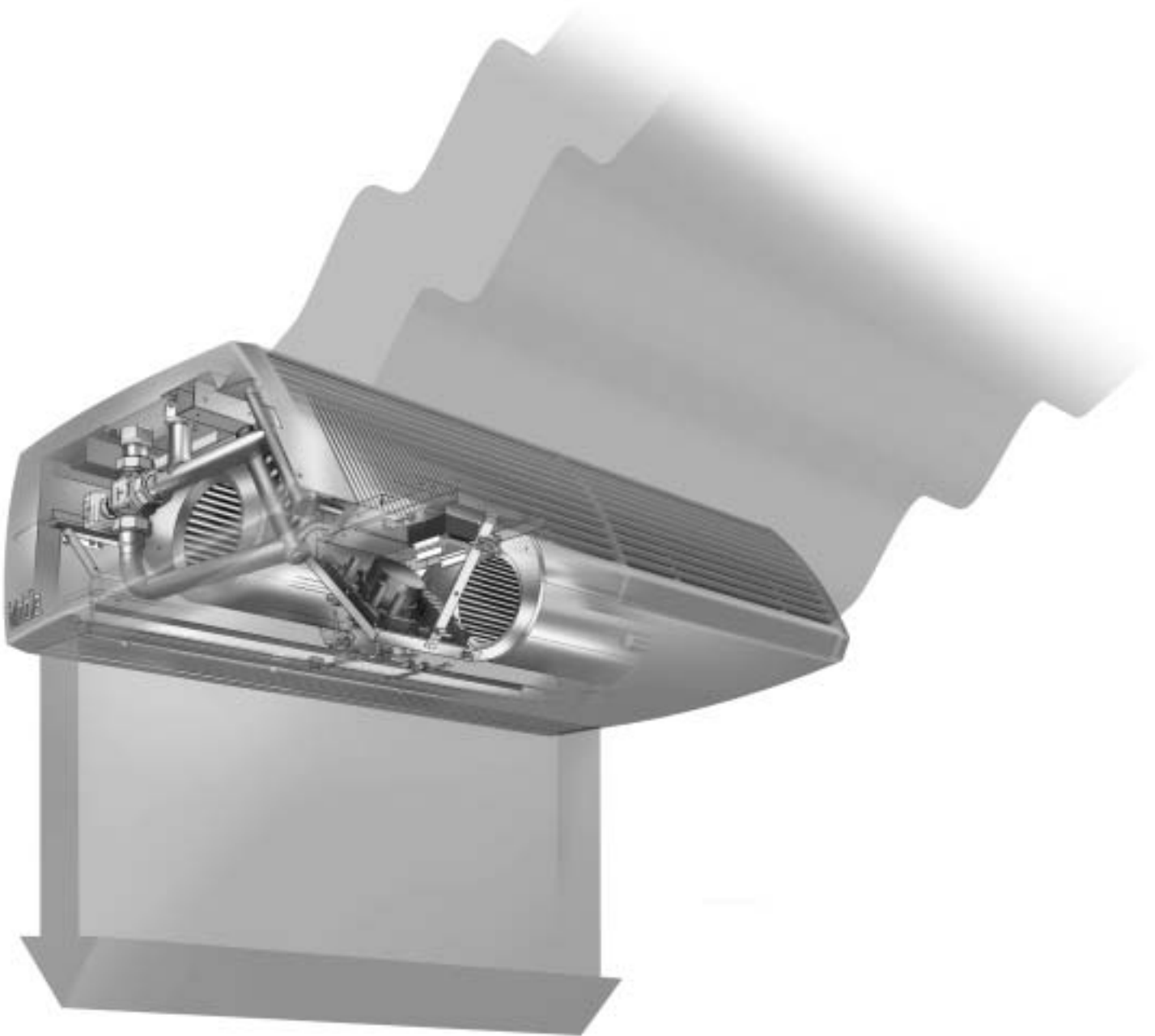


Comfort Air Curtains



Model CA

biddle

Comfort air curtains featuring CA technology



Biddle rectifier

Many retail stores and public buildings keep their doors open. Entering cold outdoor air may, however lead to draught and corresponding problems. With a Biddle comfort air curtain above an open door, the indoor climate is no longer disturbed. The optimum air stream prevents heat from being lost, while conditioning the outside air that enters. The new Biddle comfort air curtain combines two technologies: the rectifier and the CA technology.

Rectifier and CA technology

In collaboration with the Dutch research institute TNO and the University of Groningen, Biddle has developed a patented rectifier. The rectifier smoothes out the air turbulence, that arises in the fans generating the air flow. The air is discharged in a straight, rectified lamina stream. This means that relatively little air is needed to reach the floor and to screen off the entire door opening. As soon as the fan speed of the air curtain is increased, the ingenious valve system widens the discharge opening. As a result, the air velocity will remain constant, at the optimum level for good conditioning of the incoming air, right down to the floor level.



Low fan speed, low air velocity, valve half open.



Highest fan speed, valve open, air velocity remains constantly low.

Advantages of the CA air curtain include:

- **Better downward penetration**

The wide air stream is discharged with little turbulence, in a straight, rectified lamina flow. Therefore, penetration is optimized with relatively little air needed to screen off all of the door opening.

- **Comfortable air discharge velocity**

The excellent penetration and the wider discharge opening allow the air discharge velocity to be kept low. People will hardly notice the air flow when passing through the doorway.

- **High efficiency**

The efficient air stream results in little energy being lost. The efficiency of an air curtain is that part of the supplied energy that comes to the benefit of the indoor climate. Biddle air curtains have a theoretical efficiency of 94%. In practice, the efficiency may be lower, depending on conditions.

Various options

Type code

CA S - 200 - W - F

CA = Constant Air velocity
Technology

S = short range

M = medium range

L = long range

XL = extra long range

100 - 150 - 200 - 250
= unit width (cm)

W = hot-water heating

E = electric heating

F = free-hanging model

R = recessed model

C = cassette model

The comfort air curtain is available in three capacities: S = short range, M = medium range, L= long range and XL= extra long range. The higher the capacity of an air curtain, the higher the air curtain may be mounted. Each air curtain is available in four widths. Above wider doors, multiple units may be installed in a consecutive row. Selecting one option from each column will result in the type code. Thus, the combination CA S-200-W-F is an instance of a type code.

Type	Door height ¹	Door width ²	Heating battery	Model
CA S	200 - 240 cm	100 – 150 – 200 – 250 cm	W (water) E (electric)	free-hanging (F) recessed (R) cassette (C)
CA M	220 - 280 cm	100 – 150 – 200 – 250 cm	W (water) E (electric)	free-hanging (F) recessed (R) cassette (C)
CA L	250 - 330 cm	100 – 150 – 200 – 250 cm	W (water) E (electric)	free-hanging (F) recessed (R) cassette (C)
CA XL	300 - 380 cm	100 – 150 – 200 – 250 cm	W (water) E (electric)	free-hanging (F) recessed (R) cassette (C)

¹ mounting height, measured from floor to bottom of unit

² by installing multiple air curtains next to each other, door widths of 2.5 meters or more may also be covered

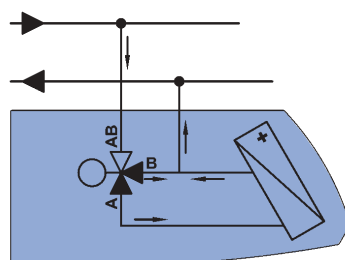
Intelligent control

The comfort air curtain has an integrated air and water control unit. This combined control unit translates the user's needs into unit functions. Through the control panel, the electronic control system (see page 5) ensures that the optimum combination of air discharge width, speed and temperature are selected.

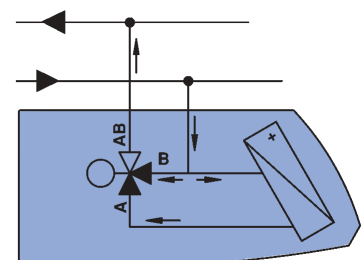


three-way valve

Air curtains with a hot-water heating battery have, as a standard, a motor-controlled three-way valve installed. The valve is controlled by the electronic control system within the unit. Biddle can also supply an air curtain with the return pipe of the three-way valve closed off (applications include district heating). In this way, the valve will work like a two-way valve. In air curtains with an electric heating battery, the supply of energy to the heating battery is determined by an electric power control.



working principle water control unit (S/M)



working principle water control unit (L/XL)

Accessories

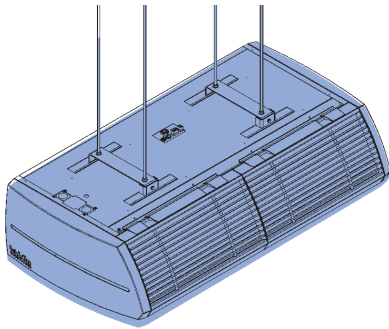
The air curtains come with grilles, air filters and suspension brackets for ceiling installation. The recessed models (type R) have duct connections (ducts themselves are not included in the package). To control the air curtain, Biddle has composed a control set. Additional accessories are also available.

Control set consists of:

- two plastic end panels for the left and right sides of a single or bank of air curtains (only free-hanging model, type F)
- control panel with LCD display – available as stand-alone or with a connection to the Biddle building management system
- three low-voltage, two-plug cables: 2 x 5 m and 1 x 25 m

Additional accessories:

- door contact switch
- wall brackets: standard or design
- curved air discharge ornament for revolving doors – fit for recessed models
- add-on module with long-life filter to lengthen maintenance intervals

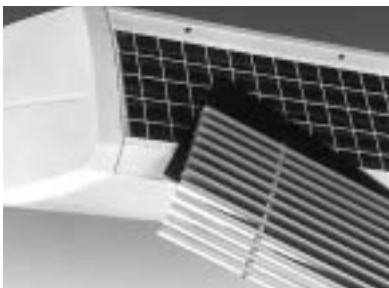


Clever suspension system

The separately supplied suspension brackets can be inserted in the recesses in the top of the unit, and be fixed to the mounting rail. The suspension brackets may then be moved horizontally. For wall mounting purposes, special wall brackets (standard and design) are available (see page 21).

Washable filter

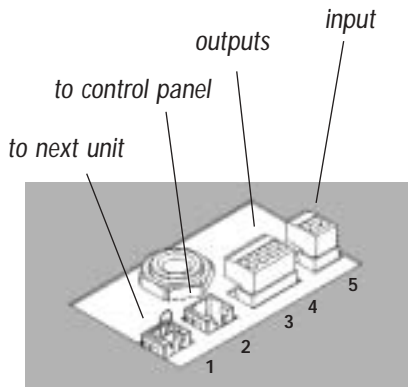
The inlet grilles have a filter (of class G1), which prevents dust in the inlet air from settling on the heating battery or the fans. If the filter is to function optimally, it is essential to clean it regularly. The LCD display on the control panel indicates when the filter requires cleaning. The inlet grilles are easy to detach and the filter may be cleaned using a vacuum cleaner.



By removing the inlet grilles the filter can be cleaned.

Electronic control system

The electronic control system of the air curtain consists of a control panel, featuring an LCD display, and a printed circuit board (PCB) within the unit. The in- and outputs of the PCB are connected to a connector plate in the top of the unit.



Connector plate

The connector plate provides five connections. The first two connectors allow the control panel to be connected, using a low-voltage cable, with multiple units. The third and fourth connections are outputs (max. 24 V) that may be used for, for instance, controlling the boiler or signaling failures. The fifth connection is an input for, for instance, a timer or a door contact switch.

Control panel with LCD display



The control panel has the following dimensions: 12.5 x 10 x 2.7 cm (l x w x d).

The control panel has five buttons: one to switch the unit on and off, two to regulate the fan speed of the unit, one to switch the heating on and off, as well as a program key to set the air curtain. The control panel has a user level and an installer level.

User level

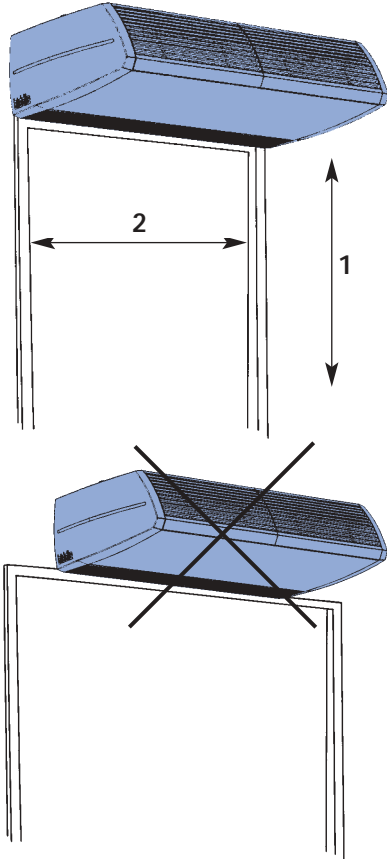
- The user may set the fan speed of the air curtain himself. The electronic control will then select the proper combination of discharge width (CA technology), discharge velocity, and discharge temperature. The LCD display indicates those values. The display also represents the following: the room temperature, any failures, the level of dirtiness of the filter, and what peripheral equipment the air curtain is connected to.

Installer level

- With the program button, the installer may set functions to adjust the functioning of the unit to the conditions. Instances include: installation level A or B, the functioning of the in- and outputs on the connector plate, and the positioning of the room temperature sensor.

The control panel has an additional input for connecting a timer that may switch the air curtain on and off. A single control panel allows you to control up to 10 air curtains. The maximum length of the low-voltage cables within a control system is some 100 meters.

Selection



To prevent air leakages on the sides, the air curtain must be at least as wide as the door opening.

An air curtain is selected properly if it has sufficient capacity to heat up entering cold outside air to a comfortable temperature. Additionally, the unit must be able to properly screen off the entire width and height of the door opening. The air curtain type to be selected depends on:

1. the door height (= mounting height, measured from floor to bottom of unit)
2. the door width
3. the volume and temperature of the outside air entering through the open door

1. Door height and 2. door width

These are known data, so – based on the table on page 7 – it is easy to select your air curtain. It is important for the distance between the air curtain and the door to be as short as possible. In addition, the air curtain must be at least as wide as the door opening, as too narrow an air curtain will lead to air leakages on the sides.

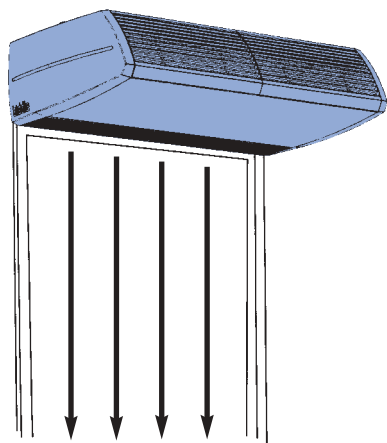
3. Entering cold air through natural ventilation

In practice, the volume and temperature of entering outside air are difficult to determine, as conditions near a door vary continuously. Other aspects, such as floors with open connections, multiple open doors in a single room, or the orientation of the building, may also have a large influence on the capacity need. To make selection easy, the following guidelines may be used:

- **Favorable conditions:** covered shopping mall or revolving-door entrance.
- **Normal conditions:** little direct wind, no opposite open doors, building with ground floor only.
- **Unfavorable conditions:** location at a corner or square, multiple floors and/or open stairwell.

In practice, these guidelines work for most conditions. In case of doubt, do not hesitate to ask Biddle for advice.

Strength of air curtain not only determined by air displacement



It is commonly believed that a properly working air curtain should displace much air, but that is a misconception. The screening effect of an air curtain, which Biddle calls the air curtain strength, is determined by a proper mix of air velocity, air outlet temperature, and air stream width. The required air velocity is partly determined by the turbulence of the air stream. If the patented Biddle rectifier is used, the air stream will be practically laminar, and far less air will have to be displaced than with conventional air curtains. This does not only result in higher comfort but it also means that less boiler capacity will be needed, and that the electrical power consumption will be lower as well. If an air curtain is too strong, however, the efficiency will fall because a part of the heat will escape, over the floor, to outside.

Selection

door height	door width			
	up to 100 cm	up to 150 cm	up to 200 cm	up to 250 cm
favorable conditions³				
up to 240 cm	CA S - 100 ¹	CA S - 150 ¹	CA S - 200 ¹	CA S - 250 ¹
up to 280 cm	CA M - 100	CA M - 150	CA M - 200	CA M - 250
up to 330 cm	CA L - 100	CA L - 150	CA L - 200	CA L - 250
up to 380 cm	CA XL - 100	CA XL - 150	CA XL - 200	CA XL - 250
normal conditions³				
up to 220 cm	CA S - 100 ¹	CA S - 150 ¹	CA S - 200	CA S - 250 ¹
up to 250 cm	CA M - 100	CA M - 150	CA M - 200	CA M - 250
up to 300 cm	CA L - 100	CA L - 150	CA L - 200	CA L - 250
up to 350 cm	CA XL - 100	CA XL - 150	CA XL - 200	CA XL - 250
unfavorable conditions³				
up to 220 cm	CA M - 100	CA M - 150	CA M - 200	CA M - 250
up to 250 cm	CA L - 100	CA L - 150	CA L - 200	CA L - 250
up to 280 cm	CA L - 100 ²	CA L - 150 ²	CA L - 200 ²	CA L - 250 ²
up to 300 cm	CA XL - 100	CA XL - 150	CA XL - 200	CA XL - 250
up to 320 cm	CA XL - 100 ²	CA XL - 150 ²	CA XL - 200 ²	CA XL - 250 ²

¹ CA S type only offers installation level B

² to be applied with installation level B only

³ see page 6 (third point) for definiton of different conditions

Two installation levels

To accurately gear the capacity to the prevailing conditions, Biddle has provided the control unit of the CA air curtains (except model CA S) with the possibility to set two different installation levels:

1. Installation level A: comfort setting

The capacity is slightly limited for all strengths. The lower discharge velocity and the lower noise level result in even higher comfort. Model CA S does not offer installation level A.

2. Installation level B: standard setting

This level is the standard setting, and is suitable for all conditions. At all strengths, more capacity is supplied than with installation level A.

The installation level is programmable using the control panel. Although level B is set as a standard, level A will do for most conditions. Especially in unfavorable conditions, more use may be made of level B. If, in practice, it turns out that conditions were under- or overestimated, the installation level may be reduced to A or increased to B.

If noise is a major criterion for selection, Biddle recommends a higher-capacity air curtain that is set at installation level A.

Technical data

CA S-100

Basic data

- max. door width : 1.0 m
- max. door height : 2.0 - 2.4 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA S-100		LPHW	Electric
weight of model F	kg	45	48
model R		59	62
model C		57	60
electrical supply	V	230	400
max. heating capacity ²	kW	12.1	10.0
max. water flow rate (m_{W_1})	l/h	533	-
max. water pressure loss, incl. valve (Δp_{W_1})	kPa	1.5	-
max. power, motors	kW	0.20	0.20
max. power consumption, heating	kW	-	10.5
max. current, motors (1 phase)	A	0.90	0.90
max. current cons., electr. air curtain (3 phases)	A	-	16.0

Installation level B		speed 1	speed 2	speed 3	speed 4	speed 5	speed 6
tapping voltage, fans	V	105	105	130	160	230	230
air displacement ³	m ³ /h	490	490	670	880	1230	1230
air outlet temperature	°C	30	35	35	35	35	40
heating capacity	kW	1.7	2.6	3.5	4.6	6.4	8.5
noise level at 3 m	dB(A)	30	30	36	42	50	50

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA S-150

Basic data

- max. door width : 1.5 m
- max. door height : 2.0 - 2.4 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA S-150		LPHW	Electric
weight of model F	kg	64	67
model R		86	89
model C		81	84
electrical supply	V	230	400
max. heating capacity ²	kW	19.6	14.8
max. water flow rate (m_{W_1})	l/h	866	-
max. water pressure loss, incl. valve (Δp_{W_1})	kPa	4.3	-
max. power, motors	kW	0.30	0.30
max. power consumption, heating	kW	-	15.6
max. current, motors (1 phase)	A	1.35	1.35
max. current cons., electr. air curtain (3 phases)	A	-	23.8

Installation level B		speed 1	speed 2	speed 3	speed 4	speed 5	speed 6
tapping voltage, fans	V	105	105	130	160	230	230
air displacement ³	m ³ /h	740	740	1000	1310	1850	1850
air outlet temperature	°C	30	35	35	35	35	40
heating capacity	kW	2.6	3.9	5.2	6.8	9.6	12.8
noise level at 3 m	dB(A)	32	32	38	44	52	52

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA S-200

Basic data

- max. door width : 2.0 m
- max. door height : 2.0 - 2.4 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA S-200			LPHW	Electric
weight of model	F	kg	77	83
	R		106	112
	C		100	106
electrical supply		V	230	400
max. heating capacity ²		kW	27.7	20.0
max. water flow rate (m_{W_i})		l/h	1200	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	8.7	-
max. power, motors		kW	0.40	0.40
max. power consumption, heating		kW	-	21.0
max. current, motors (1 phase)		A	1.80	1.80
max. current cons., electr. air curtain (3 phases)		A	-	32.1

Installation level B		speed 1	speed 2	speed 3	speed 4	speed 5	speed 6
tapping voltage, fans	V	105	105	130	160	230	230
air displacement ³	m ³ /h	990	990	1340	1750	2470	2470
outlet temperature	°C	30	35	35	35	35	40
heating capacity	kW	3.4	5.1	6.9	9.1	12.8	17.1
noise level at 3 m	dB(A)	33	33	39	45	53	53

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA S-250

Basic data

- max. door width : 2.5 m
- max. door height : 2.0 - 2.4 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA S-250			LPHW	Electric
weight of model	F	kg	99	103
	R		135	139
	C		127	131
electrical supply		V	230	400
max. heating capacity ²		kW	34.8	24.8
max. water flow rate (m_{W_i})		l/h	1534	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	14.9	-
max. power, motors		kW	0.50	0.50
max. power consumption, heating		kW	-	26.1
max. current, motors (1 phase)		A	2.25	2.25
max. current cons., electr. air curtain (3 phase)		A	-	39.9

Installation level B		speed 1	speed 2	speed 3	speed 4	speed 5	speed 6
tapping voltage, fans	V	105	105	130	160	230	230
air displacement ³	m ³ /h	1240	1240	1670	2190	3080	3080
outlet temperature	°C	30	35	35	35	35	40
heating capacity	kW	4.3	6.4	8.7	11.4	16.0	21.4
noise level at 3 m	dB(A)	34	34	40	46	54	54

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA M-100

Basic data

- max. door width : 1.0 m
- max. door height : 2.2 - 2.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA M-100			LPHW	Electric
weight of model F		kg	49	53
model R			64	68
model C			61	65
electrical supply		V	230	400
max. heating capacity ²		kW	13.8	13.3
max. water flow rate (m_{W_i})		l/h	609	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	2.0	-
max. power, motors		kW	0.28	0.28
max. power consumption, heating		kW	-	14.0
max. current, motors (1 phase)		A	1.24	1.24
max. current cons., electr. air curtain (3 phase)		A	-	22.7

Installation level	A	B	speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans	V		90	115	90	115	115	130	130	160	160	230	160	230
air displacement ³	m ³ /h		530	750	530	750	750	890	890	1230	1230	1530	1230	1530
air outlet temperature	°C		30	30	35	35	35	35	35	35	35	35	40	40
heating capacity	kW		1.8	2.6	2.8	3.9	3.9	4.6	4.6	6.4	6.4	7.9	8.5	10.6
noise level at 3 m	dB(A)		25	33	25	33	32	37	37	45	45	51	45	51

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA M-150

Basic data

- max. door width : 1.5 m
- max. door height : 2.2 - 2.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA M-150			LPHW	Electric
weight of model F		kg	69	76
model R			91	98
model C			86	93
electrical supply		V	230	400
max. heating capacity ²		kW	22.5	19.8
max. water flow rate (m_{W_i})		l/h	992	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	5.6	-
max. power, motors		kW	0.42	0.42
max. power consumption, heating		kW	-	20.8
max. current, motors (1 phase)		A	1.86	1.86
max. current cons., electr. air curtain (3 phase)		A	-	33.8

Installation level	A	B	speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans	V		90	115	90	115	115	130	130	160	160	230	160	230
air displacement ³	m ³ /h		800	1120	800	1120	1120	1330	1330	1840	1840	2290	1840	2290
air outlet temperature	°C		30	30	35	35	35	35	35	35	35	35	40	40
heating capacity	kW		2.8	3.9	4.2	5.8	5.8	6.9	6.9	9.6	9.6	11.9	12.7	15.9
noise level at 3 m	dB(A)		27	35	27	35	34	39	39	47	47	53	47	53

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA M-200

Basic data

- max. door width : 2.0 m
- max. door height : 2.2 - 2.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA M-200			LPHW	Electric
weight of model F		kg	86	96
model R			115	125
model C			109	119
electrical supply		V	230	400
max. heating capacity ²		kW	31.2	26.6
max. water flow rate (m_{W_r})		l/h	1376	-
max. water pressure loss, incl. valve (Δp_{W_r})		kPa	11.3	-
max. power, motors		kW	0.56	0.74
max. power consumption, heating		kW	-	28.0
max. current, motors (1 phase)		A	2.48	2.48
max. current cons., electr. air curtain (3 phase)		A	-	45.5

Installation level	A	B		speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans			V	90	115	90	115	115	130	130	160	160	230	160	230
air displacement ³			m ³ /h	1070	1490	1070	1490	1490	1770	1770	2450	2450	3050	2450	3050
air outlet temperature			°C	30	30	35	35	35	35	35	35	35	35	40	40
heating capacity			kW	3.7	5.2	5.5	7.8	7.8	9.2	9.2	12.7	12.7	15.9	17.0	21.1
noise level at 3 m			dB(A)	28	36	28	36	35	40	40	48	48	54	48	54

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA M-250

Basic data

- max. door width : 2.5 m
- max. door height : 2.2 - 2.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA M-250			LPHW	Electric
weight of model F		kg	106	115
model R			142	151
model C			134	143
electrical supply		V	230	400
max. heating capacity ²		kW	40.0	33.1
max. water flow rate (m_{W_r})		l/h	1761	-
max. water pressure loss, incl. valve (Δp_{W_r})		kPa	19.5	-
max. power, motors		kW	0.7	0.7
max. power consumption, heating		kW	-	34.8
max. current, motors (1 phase)		A	3.1	3.1
max. current cons., electr. air curtain (3 phase)		A	-	56.5

Installation level	A	B		speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans			V	90	115	90	115	115	130	130	160	160	230	160	230
air displacement ³			m ³ /h	1330	1870	1330	1870	1870	2215	2220	3060	3060	3810	3060	3810
air outlet temperature			°C	30	30	35	35	35	35	35	35	35	35	40	40
heating capacity			kW	4.6	6.5	6.9	9.7	9.7	11.5	11.5	15.9	15.9	19.8	21.2	26.4
noise level at 3 m			dB(A)	29	37	29	37	36	41	41	49	49	55	49	55

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA L-100

Basic data

- max. door width : 1.0 m
- max. door height : 2.5 - 3.3 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA L-100			LPHW	Electric
weight of model	F	kg	63	69
	R		81	87
	C		79	85
electrical supply		V	230	400
max. heating capacity ²		kW	24.3	23.3
max. water flow rate (m_{W_i})		l/h	1073	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	2.3	-
max. power, motors		kW	0.75	0.75
max. power consumption, heating		kW	-	24.5
max. current, motors (1 phase)		A	3.3	3.3
max. current cons., electr. air curtain (3 phase)		A	-	38.0

Installation level	A	B	speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans	V		90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³	m ³ /h		1020	1330	1020	1330	1330	1730	1730	2210	2210	2990	2210	2990
air outlet temperature	°C		30	30	35	35	35	35	35	35	35	35	40	40
heating capacity	kW		3.5	4.6	5.3	6.9	6.9	9.0	9.0	11.5	11.5	15.5	15.3	20.7
noise level at 3 m	dB(A)		37	42	37	42	40	46	45	51	50	57	50	57

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA L-150

Basic data

- max. door width : 1.5 m
- max. door height : 2.5 - 3.3 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA L-150			LPHW	Electric
weight of model	F	kg	94	104
	R		139	149
	C		116	126
electrical supply		V	230	400
max. heating capacity ²		kW	39.8	34.6
max. water flow rate (m_{W_i})		l/h	1755	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	6.5	-
max. power, motors		kW	1.13	1.13
max. power consumption, heating		kW	-	36.4
max. current, motors (1 phase)		A	4.95	4.95
max. current cons., electr. air curtain (3 phase)		A	-	56.5

Installation level	A	B	speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans	V		90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³	m ³ /h		1530	2000	1530	2000	2000	2600	2600	3320	3320	4490	3320	4490
air outlet temperature	°C		30	30	35	35	35	35	35	35	35	35	40	40
heating capacity	kW		5.3	6.9	7.9	10.4	10.4	13.5	13.5	17.3	17.3	23.3	23.0	31.1
noise level at 3 m	dB(A)		38	44	38	44	42	48	47	53	52	59	52	59

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA L-200

Basic data

- max. door width : 2.0 m
- max. door height : 2.5 - 3.3 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA L-200			LPHW	Electric
weight of model	F	kg	119	137
	R		153	171
	C		149	167
electrical supply		V	230	400
max. heating capacity ²		kW	55.4	46.6
max. water flow rate (m_{W_r})		l/h	2440	-
max. water pressure loss, incl. valve (Δp_{W_r})		kPa	13.3	-
max. power, motors		kW	1.50	1.50
max. power consumption, heating		kW	-	49.0
max. current, motors (1 phase)		A	6.6	6.6
max. current cons., electr. air curtain (3 phase)		A	-	76.0

Installation level	A	B	speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans	V		90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³	m ³ /h		2030	2670	2030	2670	2670	3470	3470	4430	4430	5980	4430	5980
air outlet temperature	°C		30	30	35	35	35	35	35	35	35	35	40	40
heating capacity	kW		7.1	9.2	10.6	13.9	13.9	18.0	18.0	23.0	23.0	31.1	30.7	41.5
noise level at 3 m	dB(A)		40	45	40	45	43	49	48	54	53	60	53	60

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA L-250

Basic data

- max. door width : 2.5 m
- max. door height : 2.5 - 3.3 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA L-250			LPHW	Electric
weight of model	F	kg	151	170
	R		194	213
	C		188	207
electrical supply		V	230	400
max. heating capacity ²		kW	70.9	57.9
max. water flow rate (m_{W_r})		l/h	3297	-
max. water pressure loss, incl. valve (Δp_{W_r})		kPa	23.0	-
max. power, motors		kW	1.88	1.88
max. power consumption, heating		kW	-	60.9
max. current, motors (1 phase)		A	8.25	8.25
max. current cons., electr. air curtain (3 phase)		A	-	94.5

Installation level	A	B	speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans	V		90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³	m ³ /h		2540	3330	2540	3330	3330	4340	4340	5530	5530	7480	5530	7480
air outlet temperature	°C		30	30	35	35	35	35	35	35	35	35	40	40
heating capacity	kW		8.8	11.6	13.2	17.3	17.3	22.5	22.5	28.8	28.8	38.9	38.4	51.8
noise level at 3 m	dB(A)		41	46	41	46	44	50	49	55	54	61	54	61

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA XL-100

Basic data

- max. door width : 1.0 m
- max. door height : 3.0 - 3.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA XL-100			LPHW	Electric
weight of model F		kg	67	73
model R			84	90
model C			82	88
electrical supply		V	230	400
max. heating capacity ²		kW	27.3	23.3
max. water flow rate (m_{W_i})		l/h	1205	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	2.80	-
max. power, motors		kW	1.40	1.40
max. power consumption, heating		kW	-	24.5
max. current, motors (1 phase)		A	6.1	6.1
max. current cons., electr. air curtain (3 phase)		A	-	40.8

Installation level	A	B		speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans			V	90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³			m ³ /h	1300	1610	1300	1610	1610	2160	2160	2800	2800	3650	2800	3650
air outlet temperature			°C	30	30	35	35	35	35	35	35	35	35	40	40
heating capacity			kW	4.5	5.6	6.8	8.4	8.4	11.3	11.3	14.5	14.5	19.0	19.4	25.3
noise level at 3 m			dB(A)	42	47	42	47	46	52	51	56	56	61	56	61

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA XL-150

Basic data

- max. door width : 1.5 m
- max. door height : 3.0 - 3.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA XL-150			LPHW	Electric
weight of model F		kg	100	110
model R			144	154
model C			121	131
electrical supply		V	230	400
max. heating capacity ²		kW	44.9	34.6
max. water flow rate (m_{W_i})		l/h	1978	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	8.20	-
max. power, motors		kW	2.10	2.10
max. power consumption, heating		kW	-	36.4
max. current, motors (1 phase)		A	9.15	9.15
max. current cons., electr. air curtain (3 phase)		A	-	60.7

Installation level	A	B		speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans			V	90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³			m ³ /h	1950	2420	1950	2420	2420	3250	3250	4190	4190	5480	4190	5480
air outlet temperature			°C	30	30	35	35	35	35	35	35	35	35	40	40
heating capacity			kW	6.8	8.4	10.1	12.6	12.6	16.9	16.9	21.8	21.8	28.5	29.1	38.0
noise level at 3 m			dB(A)	44	49	44	49	48	53	53	58	58	63	58	63

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Technical data

CA XL-200

Basic data

- max. door width : 2.0 m
- max. door height : 3.0 - 3.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA XL-200			LPHW	Electric
weight of model F		kg	128	146
model R			162	180
model C			158	195
electrical supply		V	230	400
max. heating capacity ²		kW	62.5	46.6
max. water flow rate (m_{W_i})		l/h	2754	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	16.7	-
max. power, motors		kW	2.80	2.80
max. power consumption, heating		kW	-	49.0
max. current, motors (1 phase)		A	12.2	12.2
max. current cons., electr. air curtain (3 phase)		A	-	81.6

Installation level	A	B		speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans			V	90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³			m ³ /h	2600	3230	2600	3230	3230	4330	4330	5590	5590	7310	5590	7310
air outlet temperature			°C	30	30	35	35	35	35	35	35	35	35	40	40
heating capacity			kW	9.0	11.2	13.5	16.8	16.8	22.5	22.5	29.1	29.1	38.0	38.8	50.7
noise level at 3 m			dB(A)	45	50	45	50	49	55	54	59	59	64	59	64

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

CA XL-250

Basic data

- max. door width : 2.5 m
- max. door height : 3.0 - 3.8 m¹
- room temperature : 20° C
- water range : 90/70° C

¹ see page 7

CA XL-250			LPHW	Electric
weight of model F		kg	160	179
model R			202	221
model C			196	215
electrical supply		V	230	400
max. heating capacity ²		kW	80.1	57.9
max. water flow rate (m_{W_i})		l/h	3532	-
max. water pressure loss, incl. valve (Δp_{W_i})		kPa	29.1	-
max. power, motors		kW	3.50	3.50
max. power consumption, heating		kW	-	60.9
max. current, motors (1 phase)		A	15.25	15.25
max. current cons., electr. air curtain (3 phase)		A	-	101.5

Installation level	A	B		speed 1		speed 2		speed 3		speed 4		speed 5		speed 6	
tapping voltage, fans			V	90	105	90	105	105	130	130	160	160	230	160	230
air displacement ³			m ³ /h	3250	4030	3250	4030	4030	5410	5410	6990	6990	9130	6990	9130
air outlet temperature			°C	30	30	35	35	35	35	35	35	35	35	40	40
heating capacity			kW	11.3	14.0	16.9	21.0	21.0	28.1	28.1	36.3	36.3	47.5	48.5	63.3
noise level at 3 m			dB(A)	46	51	46	51	50	56	55	60	60	65	60	65

² to be used only for deviating water range, see page 16

³ see explanation on page 6 (strength of air curtain not only determined by air displacement)

Explanation of technical data

Heating capacity

The maximum heating capacities stated in the tables on page 8 to 15 are based on a water range of 90/70°C. If different water temperatures are concerned, the max. heating capacity may be multiplied by the factors from the below table.

Water temperature	Room temperature		
	+15°C	+18°C	+20°C
90/70 °C	1.10	1.04	1
80/60 °C	0.90	0.83	0.79
70/50 °C	0.69	0.63	0.59
60/50 °C	0.67	0.61	0.57
60/40 °C	0.48	0.42	0.38

Heating capacity electrically heated units

The air displacement and the heating capacities for each speed from the tables on pages 8 to 15 are lower, by 10% at the most, for electrically heated units.

Boiler capacity

For selecting the CH boiler, one may depart from the heating capacity at an air outlet temperature of 40°C. If a CH boiler is already available, it will not need any further addition. More than 80% of the heat issued by the air curtain benefits the indoor climate.

Water volume

The water volumes stated in the tables on page 8 to 15 are based on a water range of 90/70°C and a room temperature of 20°C. If different values are concerned, the water volume may be roughly calculated using the below formula. To do so, the heating capacity must first be calculated again (see above).

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

m_W = water volume [l/h]

Q = heating capacity [kW] (see above)

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]

Explanation of technical data

Water pressure loss

The water pressure loss stated in the tables on page 8 to 15 are based on a water range of 90/70°C. If different water temperatures are concerned, the water pressure loss may be roughly calculated using the below formula. To do so, the water volume must first be calculated (see page 16).

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

Δp_{W_2} = water pressure loss

Δp_{W_1} = water pressure loss, table values

m_{W_1} = water volume, table values

m_{W_2} = water volume calculated using formula on page 16

Sound

The sound data stated in the tables on pages 8 to 15 are based on the direct field, in situations with open doors and sound-absorbing ceilings. Sound data for other conditions may be determined by adding below values to the table values.

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

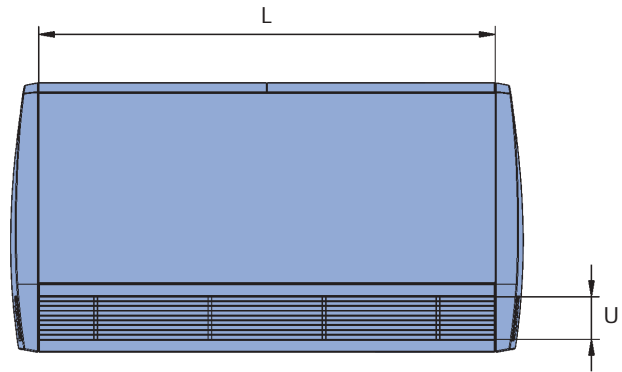
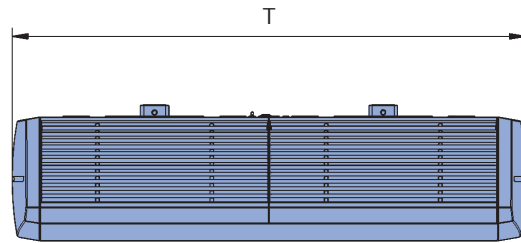
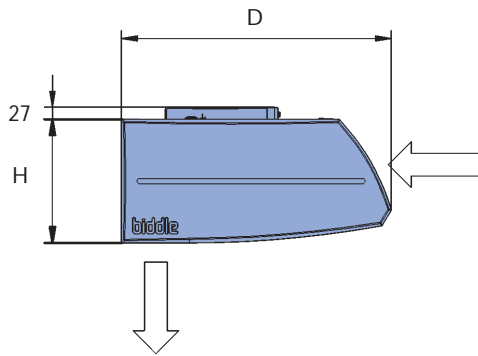
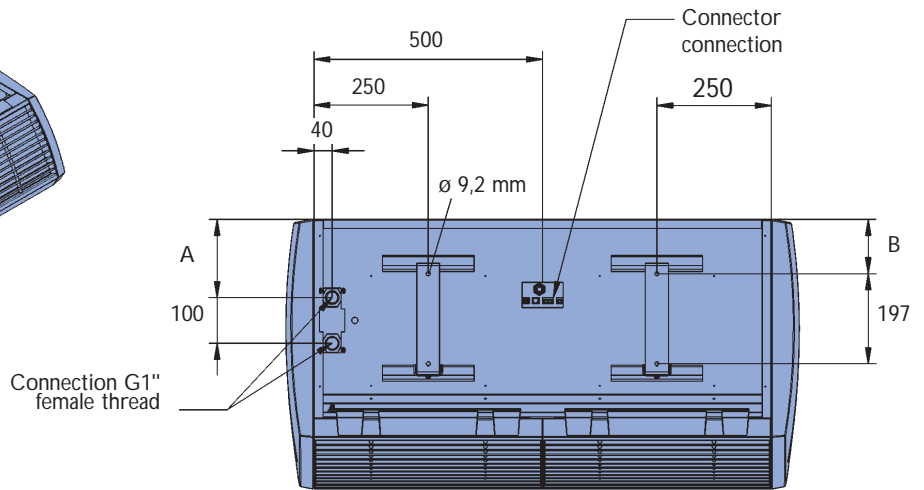
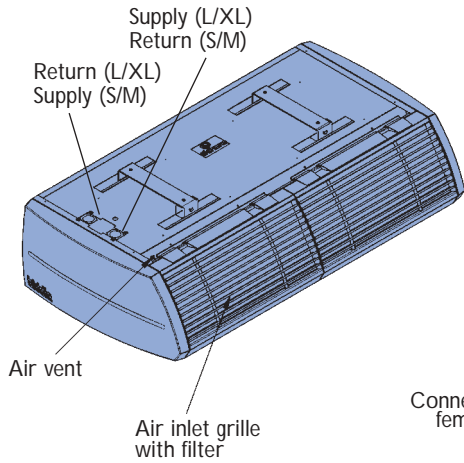
For other distances, or for multiple units next to each other, see below table.

Correction factors for sound pressure, in dB(A)

distance	total unit width					
	1.0 m	1.5 m	2.0 m	2.5 m	3.0 m	3.5 m
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

The factors apply for all air curtain types.

Dimensional sketches free-hanging model (F)

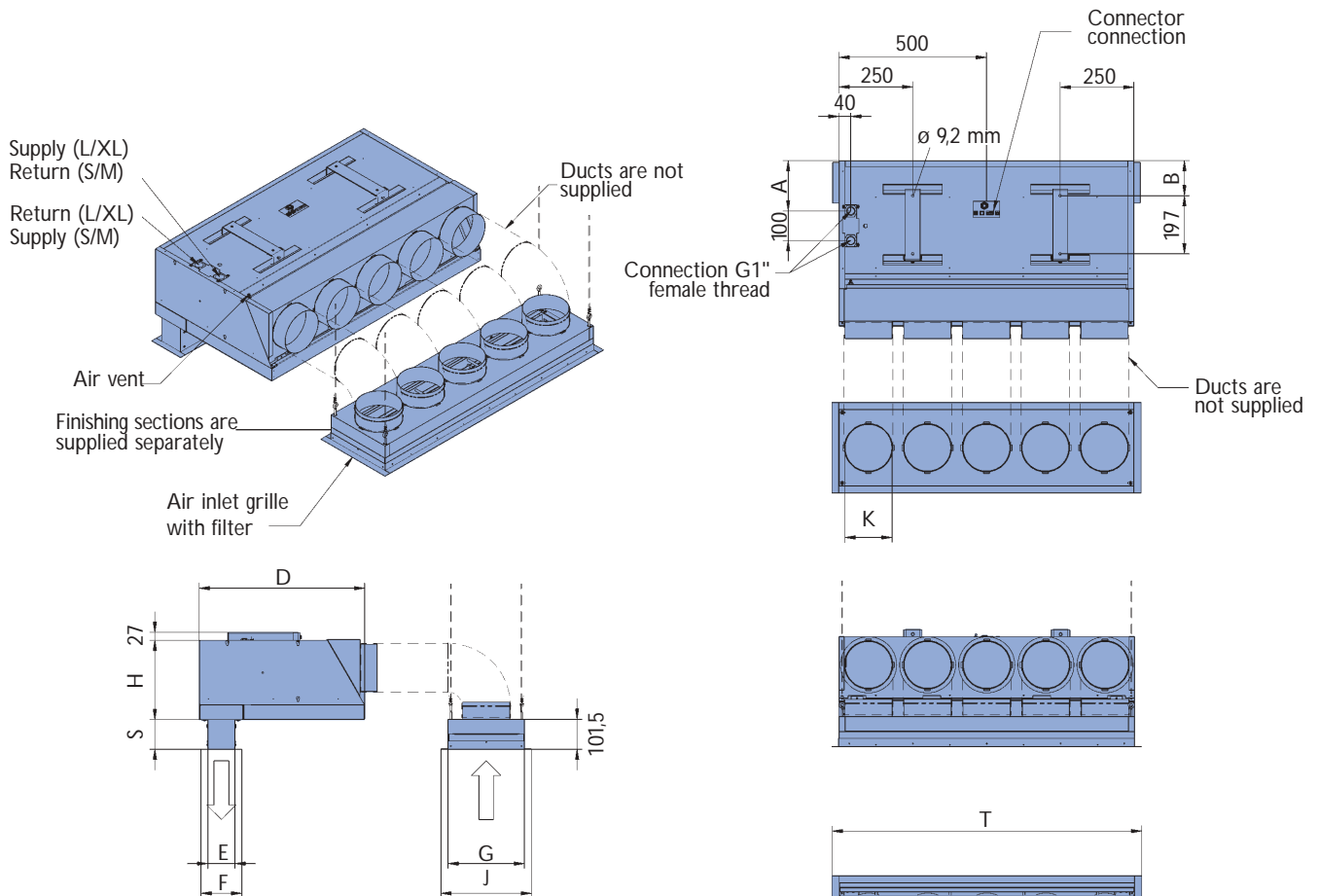


dim.	L	H	D	U	A	B	T
CA S/M	1000 - 1500 - 2000 - 2500	270	590	93	171	119	1123 - 1623 - 2123 - 2623
CA L/XL	1000 - 1500 - 2000 - 2500	370	774	124,5	245,5	200	1153 - 1653 - 2153 - 2653

Notes

- The units of 2500 mm wide have 3 suspension brackets, the third one of which is mounted halfway the unit's length.
- By removing the end panels, the units are easy to interlink.

Dimensional sketches recessed model (R)



Number of ducts per unit

Type	1000	1500	2000	2500
CA S/M	5	7	10	12
CA L/XL	3	5	6	8

Number of inlet grilles per unit

length of unit	number	length of inlet grille
1000 / 1500	1	1000 / 1500
2000 / 2500	2	2000 / 2500

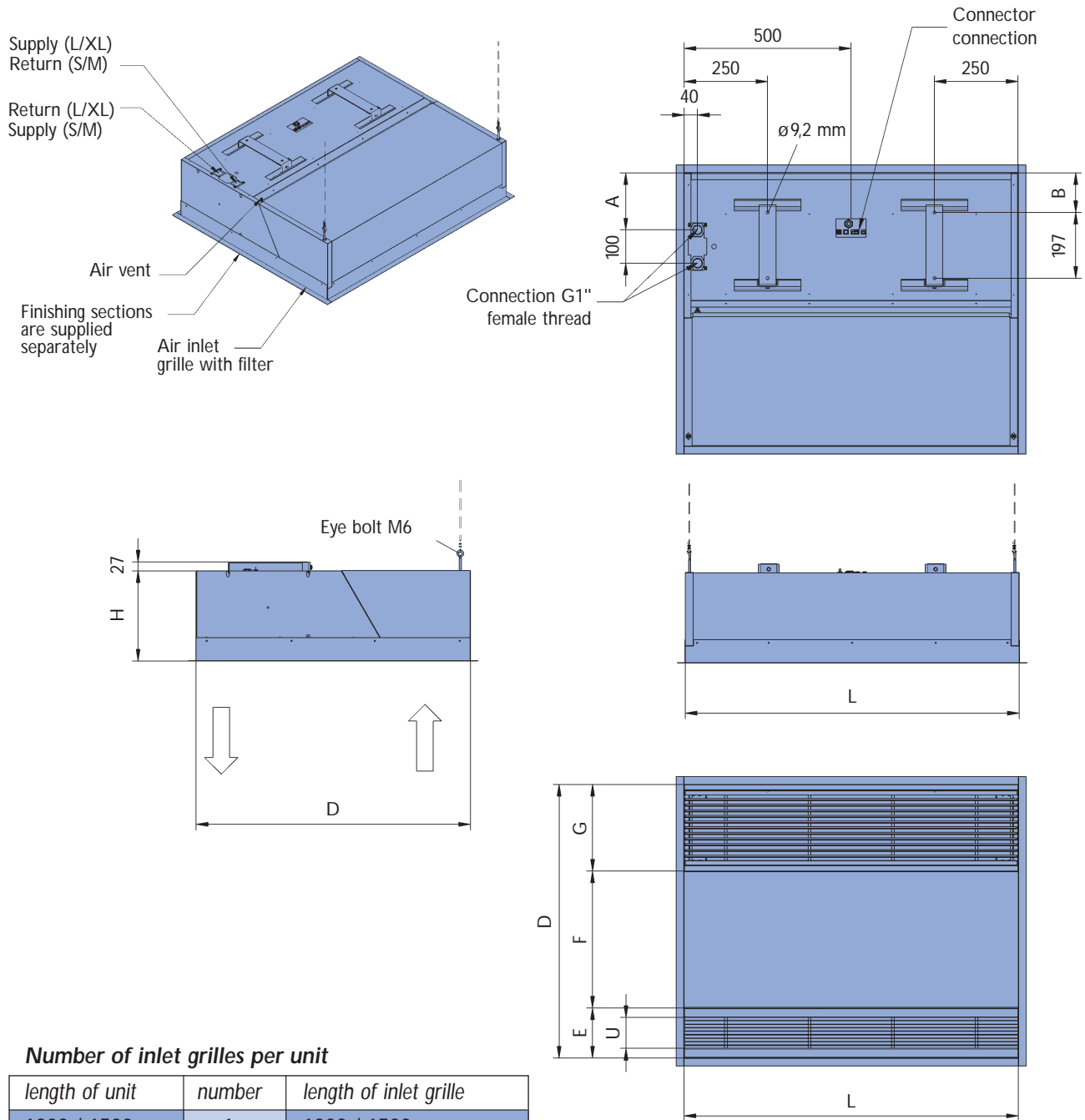
* 1 outlet grille per unit

dim.	L	H	D	S	U	A	B	E	F	G	J	K	M	T
CA S/M	1000-1500- 2000-2500	270	561	80-125	90	171	119	92	139	260	308	ø160	1044-1544- 2044-2544	1048-1548- 2048-2548
CA L/XL	1000-1500- 2000-2500	370	745	80-125	121,5	245,5	200	123,5	170	360	408	ø250	1044-1544- 2044-2544	1048-1548- 2048-2548

Notes

- The units of 2500 mm wide have 3 suspension brackets, the third one of which is mounted halfway the unit's length.
- 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

length of unit	number	length of inlet grille
1000 / 1500	1	1000 / 1500
2000 / 2500	2	1000 / 1250

* 1 outlet grille per unit

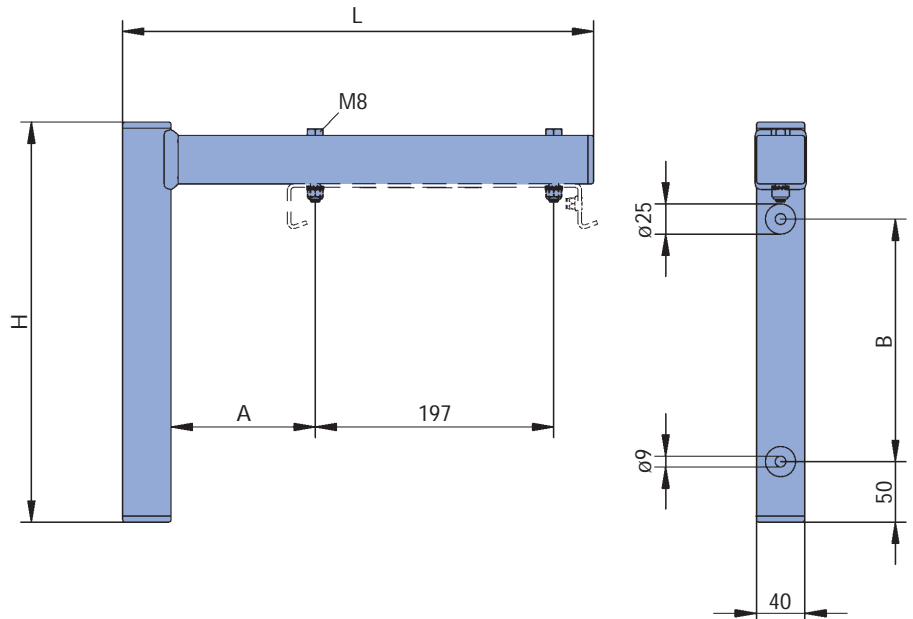
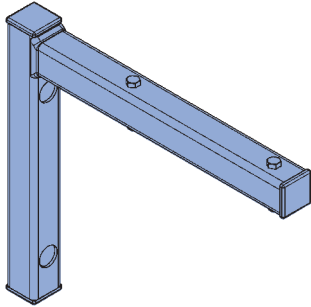
dim.	L	H	D	U	A	B	E	F	G
CA S/M	1000-1500-2000-2500	270	821	93	171	119	150	411	260
CA L/XL	1000-1500-2000-2500	370	1105	124,5	245,5	200	181,5	563,5	360

Notes

- The units of 2500 mm wide have 3 suspension brackets, the third one of which is mounted halfway the unit's length.
- Daylight opening if cover moldings are used in a suspended ceiling: (L+8) x (D+8)mm.

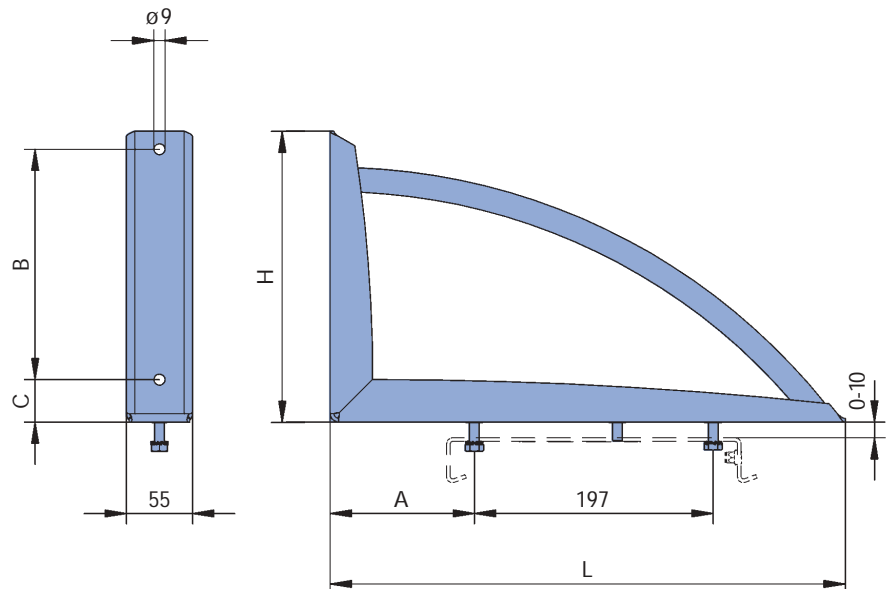
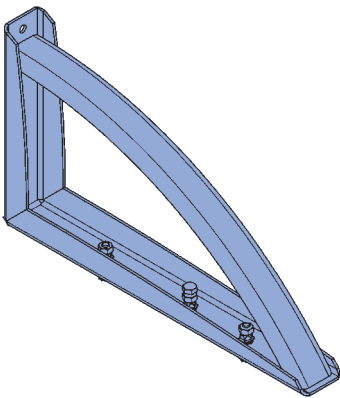
Dimensional sketches wall mounting brackets

Standard



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

Design



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

Note

• The units of 2500 mm wide have 3 suspension brackets, the third one of which is mounted halfway the unit's length.

Many control options

Depending on the situation where the air curtains are being installed, the operation can be controlled in different ways:

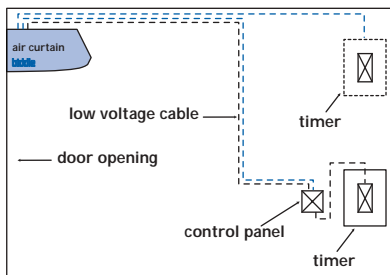
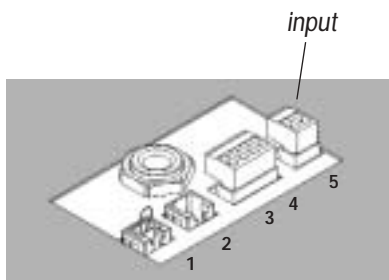
- a. manually through set parameters in the control panel (see page 5)
- b. automatically via external controls

External controls

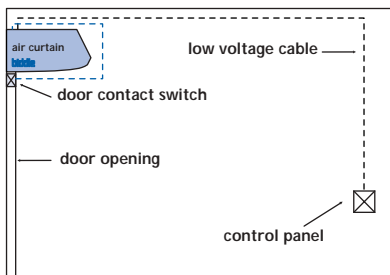
The connector plate on the unit has an input for the connection of various external controls. This input suits controls using potential-free contacts. Also the control panel has an input function (on/off).

The air curtain can be controlled automatically by using:

1. timer
2. door contact switch
3. climate separation by means of room thermostat (on/off or two-stage)



Install the timer in an accessible place out of reach of the public.



Mount the door contact switch in the door opening.

1. Timer

Depending on the situation, a timer can be used to turn the air curtain on and off by way of time settings. The contact can run via the input of the control panel (black line), controlling only the on/off function. It is also possible to connect the timer to the input on the unit (blue line).

Example:

- 8 AM: air curtain turns automatically on
- 6 PM: air curtain turns automatically off

2. Door contact switch

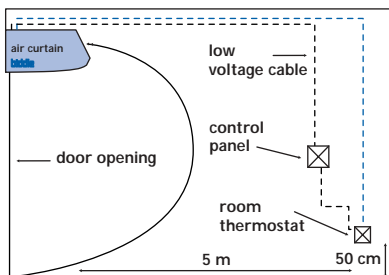
The opening and closing of the door determines the air curtain heating capacity. When the door is closed, the air curtain is operating in the low control panel setting. Once the door opens, the air curtain goes one or two speeds up, resulting in increased capacity and air volume. The incoming cold air can be conditioned to the required temperature. The extra advantage of a closed door is that the warm air can be used for heating up the room. The door contact switch is connected to the input of the unit. The input function can simply be programmed with the installer menu, using the control panel.

Many control options

3. Climate separation by means of a room thermostat

Room thermostat

The air curtain can be controlled on the basis of the required room temperature. The air curtain is activated as soon as the room thermostat shows a value that does not match the setting.



Mount the room thermostat opposite the entrance at approximately 500 mm from the floor and at least 5 m from the door opening.

Option 1: on/off

The temperature has been set at 20°C. The air curtain is switched off, once the room temperature exceeds 20°C. If the area is cooler than 20°C, the air curtain will be switched on. The contact runs via the input on the control panel (black line), controlling only the on/off function.

Option 2: 1 or 2 speeds higher

It is also possible to connect the room thermostat to the input function on the unit (blue line). In this case the air curtain will be operating according to the control panel setting as soon as the thermostat shows a room temperature exceeding 20°C. When the room temperature drops below 20°C, the air curtain runs at two speeds higher. The port function is programmed on the control panel via the installer menu.

Two-stage thermostat

The air curtain can also be controlled using a two-stage thermostat which has two switch points. A temperature sensor measures the room temperature. The air curtain is activated as soon as the sensor measures values which do not match the room thermostat settings.

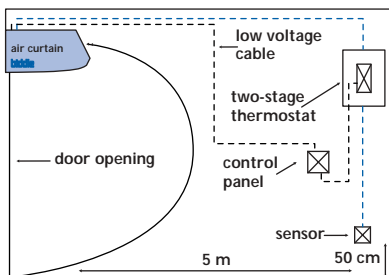
Example:

1. minimum set temperature is 20°C
2. maximum set temperature is 25°C

Room temperature exceeds 25°C: the air curtain is turned off;

Room temperature between 20° and 25°C: the air curtain operates as in the setting;

Room temperature below 20°C: the air curtain goes two speeds up.



Mount the temperature sensor opposite the entrance at approximately 500 mm from the floor and at least 5 m from the door opening.

The contact runs via the input of control panel (black line) and via the input of the unit. The input function can simply be programmed with the installer menu, using the control panel.

For detailed information about the control options, see the manual.

Control and operation

The control panel is connected with the unit through a low-voltage cable that has RJ11 plugs. This type of cable is also used to interconnect multiple units. The control unit within the air curtain regulates fan speed, discharge width, and discharge temperature.

Electric 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 CH 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. There is a terminal strip inside the unit.



Subject to change

Specifications

Casing

The casing is made of zinc plated sheet steel, and has an inspection panel in the bottom. The metal inlet grates have anodized aluminum grilles with fixed fins mounted in them. Both the inlet grille casings and the end panels as well as the casing are, as a standard, supplied in the color white (RAL 9010) or aluminum (RAL 9006). Other RAL colors are available at an extra charge.

Motor / Fan assembly

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 motor is manufactured according to DIN 40050, protection class IP44, and insulation class B. 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. This is represented in the LCD display of the control panel.

LPHW Heating battery

The 2-row heating battery is made up of 3/8" 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 CA S/M, and 1.0 bar for CA L/XL

Electric heating battery

The electric heating battery is made up of aluminium fins. The battery 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.

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