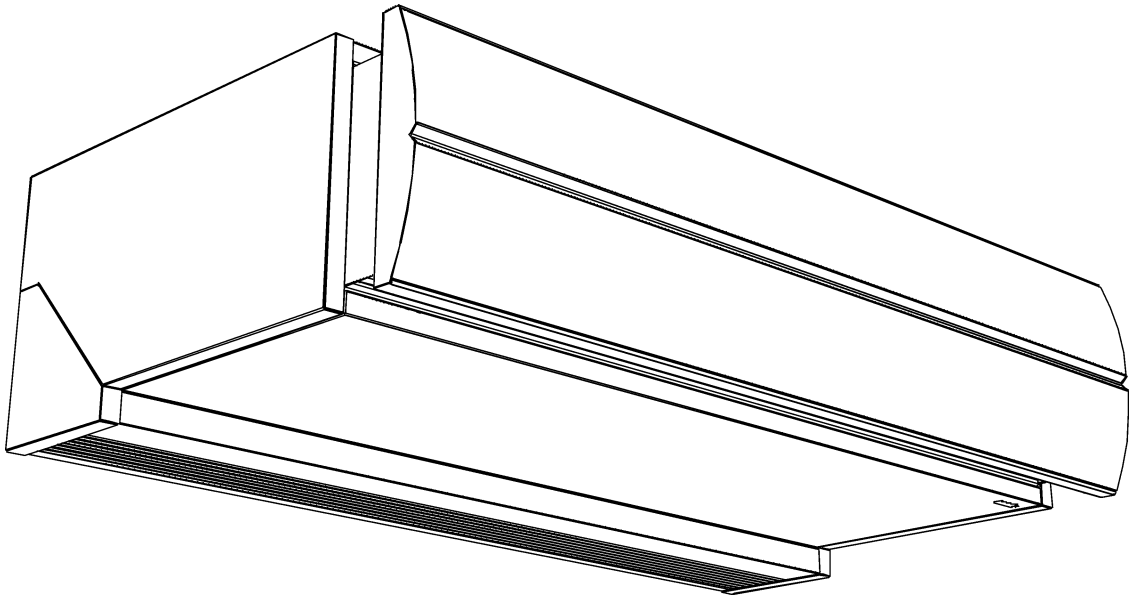


Manual

Comfort Air Curtain

Model DF



Version 3.0 - North America
Original Manual

English



biddle

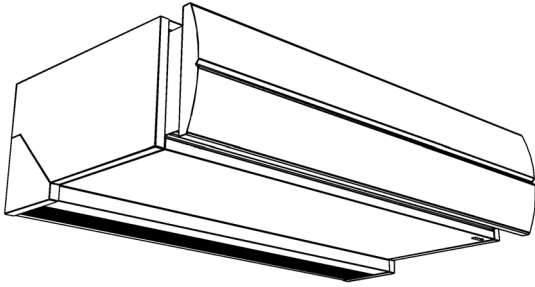
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1. Introduction

1.1 About this manual



This manual describes the installation, operation and maintenance of the comfort air curtain model DF. The manual also provides instructions and information about servicing.

1.2 How to read this manual

1.2.1 Designations used in the manual

The following symbols are used in the manual:



Note:

Refers to an important section in the text.



Caution:

If you do not carry out the procedure or action correctly, you may cause damage to the unit.

Follow the instructions precisely.



Warning:

If you do not carry out the procedure or action correctly, you may cause physical injury and/or damage.

Follow the instructions precisely.







Danger:

Is used to designate actions that are not permitted.

Ignoring this prohibition may lead to serious damage or to accidents resulting in physical injury.

1.2.2 Symbols used on the unit and in the manual

The following symbols indicate possible risks or hazards. The same symbols will also be found on the unit.

SYMBOL	DESCRIPTION
	 <p>You have accessed a section of the unit with components carrying a voltage.</p> <p>Access restricted to qualified maintenance staff only.</p> <p>Caution is required.</p>
	 <p>This surface or component may be hot. Risk of burns on contact.</p>

1.2.3 Related documentation

In addition to this manual, the following documentation is also supplied with the unit:

- wiring diagram for installation and servicing.

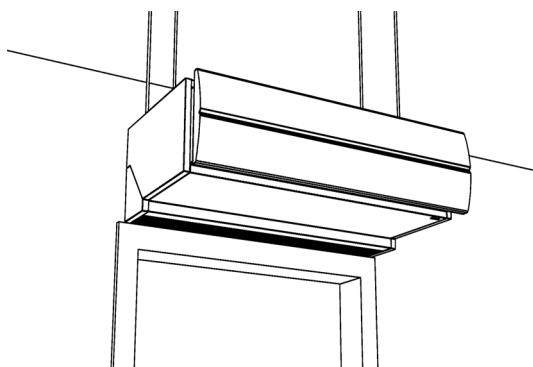
1.3 About the unit

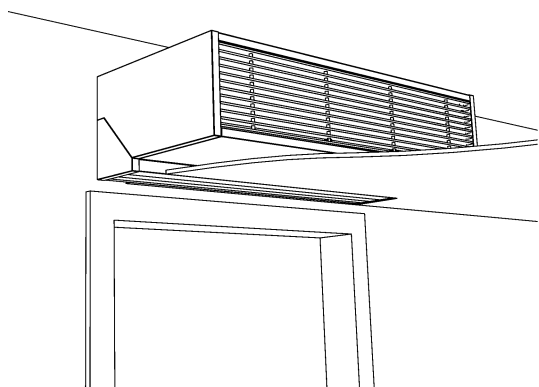
1.3.1 Application and operation of the air curtain

The air curtain is designed to separate indoor and outdoor climates. The unit draws air from the room and discharges it, either heated or not, across the width of the doorway. The air curtain removes the undesired effects of an open door by either reducing the exchange of indoor and outside air, by heating the entering air, or a combination of the two.

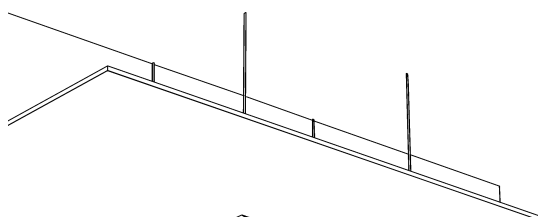
Mounting methods

The free-hanging model is designed for free, visible installation above the door.

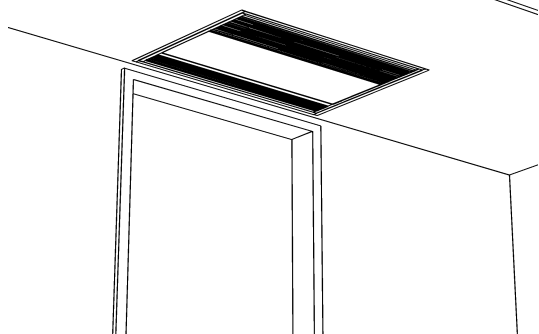




The recessed model is designed for integration into a false ceiling or into a cove, with the inlet opening possibly at some distance from the unit.



The cassette model is designed for installation above a false ceiling, with the inlet opening close to the unit and with easy access to the unit.



Other versions and intended use.

We can supply versions for non-standard applications on request.



Warning:
Applications other than those described above are deemed to be 'used other than for the intended purpose'. Biddle is not liable for damage or loss resulting from improper usage. Proper usage also entails strict adherence to the instructions provided in this manual.

I.3.2 Type designation

Type designations, when combined, form a unit type code, e.g.:

DF S-100-W-F-230/22
DF M-150-E-C-230/22

Different combinations may arise.


Explanation of the type code

TYPE CODE ELEMENT	DESIGNATION	MEANING
product series	DF	air curtain
capacity	S	small
	M	medium
length	100, 150, 200, 250	discharge length (cm)
battery type	W	hot water
	E	electrical
	A	zonder verwarm- ing (Ambient)
model	F	free-hanging model
	C	cassette model
	R	recessed model
mains power supply	208/32	208V, three-phase (without neutral wire), 60 Hz
	230/22	230V, split phase, 60 Hz

I.3.3 Type plate

The type plate is located on the top of the unit.

Example of a type plate

biddle Biddle bv Markowei 4 NL-9239 HA Krootsterille 	Type	DF S-100-W-F		
	Code		U	230V ~ 50 Hz
	N°	123456/1-1 09-04	I _{max} L1	1.1 A
			I _{max} L2	-
	M	37 kg	I _{max} L3	-
	Medium	LPHW	P _{motor}	0.23 kW
	P _{max} 800 kPa	P _{heating}	-	

Designations on the type plate

DESIGNATION	MEANING
Type	complete type code of the unit
M	weight of unit
P _{max}	For water-heated models: max. permissible operating pressure
U	power supply voltage
I _{max}	max. current
P _{motor}	max. power consumption by fans
P _{heating}	For electrically heated models: max. power consumption by heating element

I.3.4 CE declaration

The unit is compliant with the applicable CE standards. The complete CE Declaration of Conformity can be found at: www.biddle.info

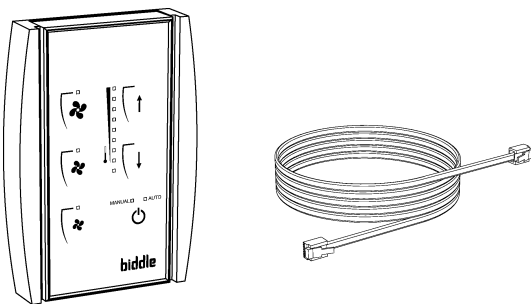
I.3.5 Modifications and changes

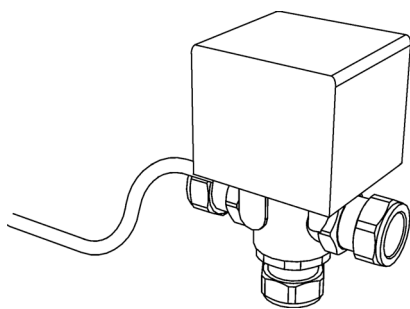
Without the approval of Biddle, no changes or modifications may be made to the unit that could adversely affect safety.

I.3.6 Components and accessories

For all models:

- control panel (supplied separately – can be used for multiple units)
- control cable – Type RJ4 (supplied separately)
- **optional:**
door contact switch (supplied separately)





I.4 Restrictions on use

For water-heated models (Type W):

- valve for water-side control (supplied separately)

For recessed models (Type R):

- telescopic discharge duct (supplied)
- **optional:**
inlet grille for installation in alcove (supplied separately)

I.4.1 User environment

- The unit is only to be used indoors.
- The unit is suitable only for dry and non-dusty environments.
- The unit is not to be used in an environment where corrosive or chemically aggressive gases are present.
- The unit is suitable for ambient temperatures from 0°C to 40°C (32°F to 104°F).

These restrictions also apply to the control unit and/or control panel.

I.4.2 Required skills

- You must be technically qualified to install, maintain or service this equipment in accordance with local legislation, regulations and standards.
- For operation in daily use, no special skills are required.
- The unit is not intended for use by children or people with an intellectual disability.



Danger:
NEVER attempt to perform installation, maintenance, or servicing work on the unit unless you are sufficiently qualified.

1.4.3 Application limitations with water heating

Application limitations for units with water heating

Heating medium	water with max. 20% glycol
Max. water supply temperature	90°C (194°F)
Max. discharge temperature	70°C (158°F)
Maximum operating pressure	8 bar (116 psi)

1.5 Safety instructions

1.5.1 Safety in use



Warning:

Do not put any objects into the inlets and outlets.



Warning:

Do not obstruct the unit's inlets or outlets.



Warning:

The upper surface of the unit becomes hot during operation.



Caution:

In exceptional situations, water may run out of the unit. Therefore, do not place anything under the unit that could be damaged as a result.

1.5.2 Safety issues relating to installation, maintenance and servicing



Danger:

The unit may only be opened by qualified technical staff.



Warning:

Perform the following actions before opening the unit:



1. Switch the unit off using the control panel.
2. Wait until the fans have stopped.
3. Allow the unit to cool down.

**Caution:**

The heat exchanger or, as the case may be, the heating elements, can get very hot. Moreover, the fans may continue to rotate for a while.

4. Disconnect the mains power supply (remove plug from power socket or set the isolation switch to OFF).
5. If you are going to conduct maintenance or repairs on electrical components: switch the mains power supply group off.
6. For water-heated models:
Shut off the central heating feed (if possible).

**Warning:**

The fins of the heat exchanger are sharp.

2. . Installation

2.1 Safety instructions



Warning:
Installation activities may only be performed by technical staff qualified for this purpose.



Warning:
Before starting installation: read the safety instructions.

See also:

1.5 "Safety instructions" on page 10

2.2 Inspection on delivery

- Check the unit and the packaging to ensure they have been delivered in good order. Notify the driver and the supplier immediately if any shipping damage is detected.
- Ensure that all components are present. Notify supplier of any missing parts immediately.

2.3 General working method

2.3.1 Sequence of operations

Biddle recommends working as follows when installing the unit:

1. Hang the unit up.
2. **For water-heated models:**
connect the unit to the central heating system.

3. Connect the unit to the mains power supply.

**Caution:**

Make sure the unit's power supply voltage matches the local mains voltage.

The unit's power supply voltage is displayed on the type plate.

4. Install the control panel and (any optional) connections to external controls.
5. Complete appliance installation.
6. Turn the mains power supply on and check that the unit is working properly.

General instructions

Some parts of this section only apply to certain models. Where this is the case, it will be indicated. If no specific model is referred to, then the description applies to all models.

**Note:**

Make sure that you perform all installation operations that are applicable to your unit.

Check the type plate and consult the manual if in doubt about the model or type of your unit.

**Note:**

During the installation period, protect the unit against damage and penetration of dust, cement, etc.. You can, for instance, use the packaging for protection.

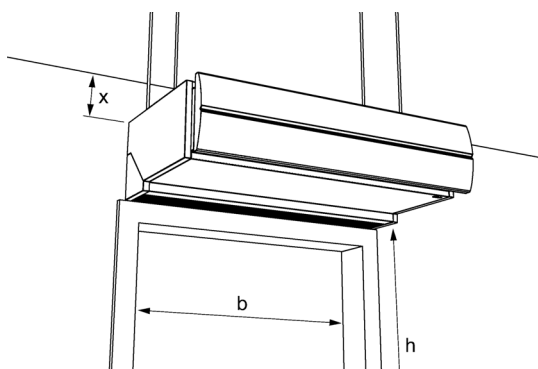
See also:

- 2.4 "Hanging the unit up" on page 14
- 2.5 "Connecting the unit to the central heating system" on page 16
- 1 "Connecting the mains supply" on page 1
- 2.7 "Installing the control panel and external controls" on page 21
- 2.8 "Unit finishing" on page 27
- 2.9 "Switching on and checking operation" on page 29

2.4 Hanging the unit up

2.4.1 Determining the location of the unit

- Make sure that the structure from which the unit is about to be suspended can bear the weight of the unit. The unit's weight is marked on its type plate.
- Note the following dimensions:
 - The unit must be at least as wide as the door opening (dimension b).
 - Position the unit as near to the doorway as possible.
 - Position the unit as close to the top of the door as possible.



Warning:
The minimum installation height (dimension h) is 1.8 m (6 ft).



Warning:
The top of the unit may get hot. The unit should be placed with at least 25 mm (1") ceiling clearance (dimension x).

- ***If the unit is mounted against the ceiling:***
Make sure that air can enter the unit freely above the unit.

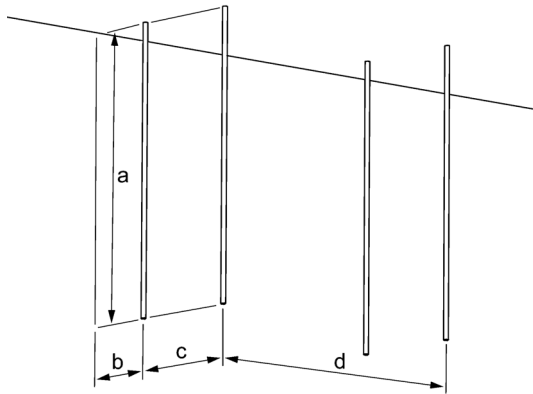
See also:

1.3.3 "Type plate" on page 8

2.4.2 Suspending and securing the unit

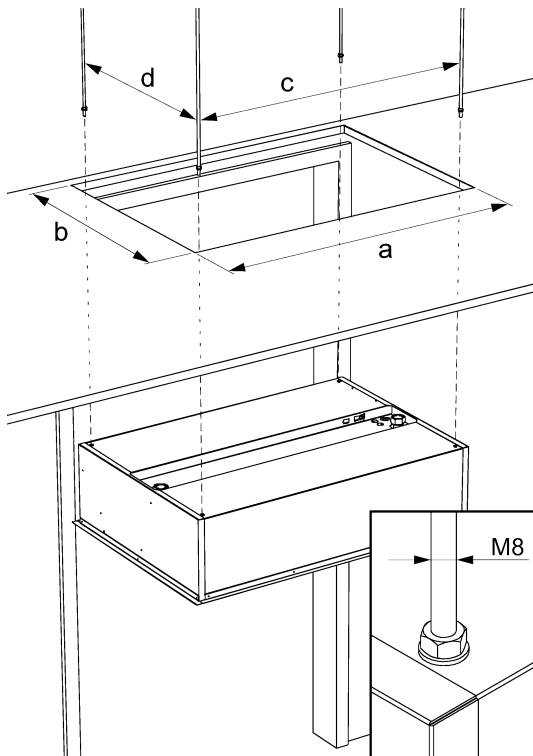
- I. Position the four M8 (metric) screw threads. Make sure the thread rods are perpendicular.

Dimensions for free-hanging and recessed units.

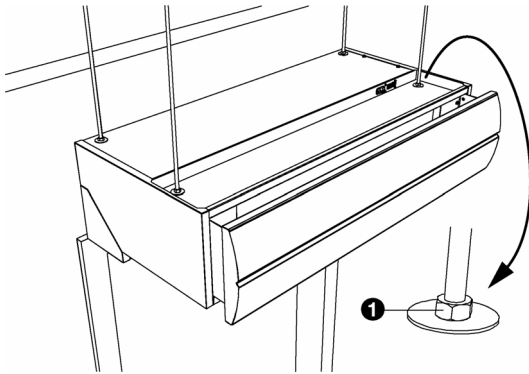


SIZE	TYPE	DIMENSIONS
a	all DF F, R	as needed
b	all DF F, R	35 mm(1 3/8")
c	all DF F, R	290 mm(11 13/32")
d	DF 100-F, 100-R	896 mm(35 9/32")
	DF 150-F, 100-R	1396 mm(54 31/32")
	DF 200-F, 200-R	1896 mm(74 21/32")
	DF 250-F, 250-R	2396 mm(94 11/32")

Dimensions of hole and suspension for cassette model



SIZE	TYPE	DIMENSIONS
a	DF 100-C	1012 mm(39 27/32")
	DF 150-C	1512 mm(59 17/32")
	DF 200-C	2012 mm(79 7/32")
	DF 250-C	2512 mm(98 29/32")
b	all DF C	705 mm(27 3/4")
c	DF 100-C	937 mm(36 7/8")
	DF 150-C	1437 mm(56 9/16")
	DF 200-C	1937 mm(76 1/4")
	DF 250-C	2437 mm(95 15/16")
d	all DF C	641 mm(25 1/4")



2. Screw a lock nut ❶ onto each threaded rod.
3. Attach the unit to the threaded rods.
4. Secure the unit by tightening the lock nuts ❶.

2.5 Connecting the unit to the central heating system

Only for water-heated units (type W)

See also:

6.2.2 "Opening the unit" on page 40

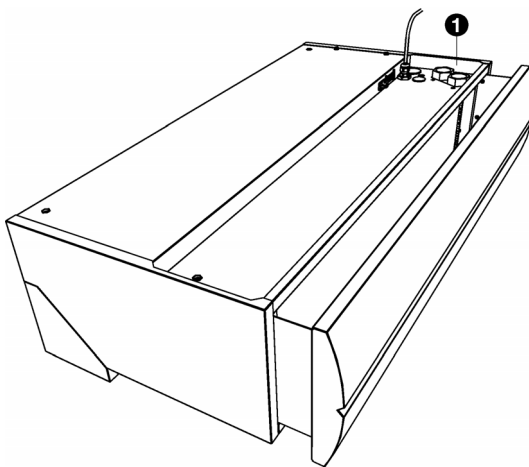
2.5.1 Particulars



Caution:

The central heating system's supply and return pipes must be attached to the correct connectors ❶. On the unit, the directions are indicated using arrows.

- Keep the connectors ❶ in place by using pliers when connecting the pipes.
- Biddle recommends inserting a valve and a venting valve on both pipes close to the unit.



Application limitations for units with water heating

Heating medium	water with max. 20% glycol
Max. water supply temperature	90°C(194°F)
Max. discharge temperature	70°C(158°F)
Maximum operating pressure	8 bar(116 psi)

2.5.2 Frost protection

Take the following precautions if you install the unit in a room where frost may occur:

- Provide for constant circulation of the water at the right temperature;
- Add up to 20% glycol to the water when the unit is not in operation during the wintertime;
- Or bleed the system and the unit.

2.5.3 Connecting the water-side control

1. Open the unit.
2. Connect the unit and the three-way valve to the central heating system as shown in the diagram.

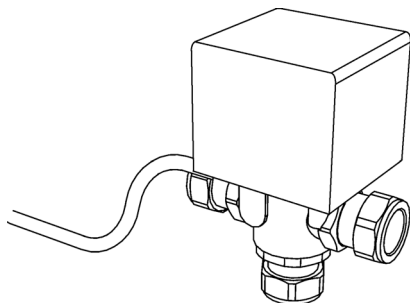
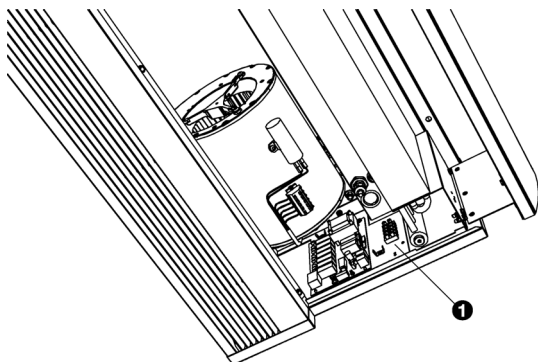
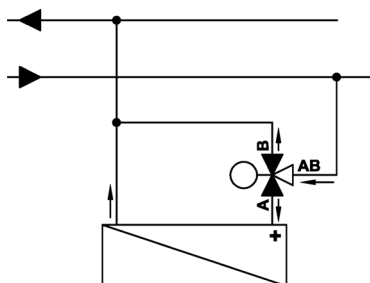


Note:

The diameter of the bypass pipe from Connection B to the return pipe must be at least 22 mm(7/8").

3. Connect the valve to Terminal Block ❶ as shown in the electrical diagram.

4. Open the valve manually using the handle (Position 'MAN').
5. Fill and bleed the system.
6. Check the connections for leakage.
7. Return the handle to its starting position (Position 'AUTO').



2.6 Connecting the unit to the mains power supply

2.6.1 Special notes about the mains supply

For all models:



Warning:
The unit must be earthed.



Warning:
Connect unit in accordance with applicable local requirements.

For water-heated models and models without heating:

- The unit can be switched on and off from the power supply. This requires that the control panel be configured for this purpose.
- ***If, on delivery, the unit is equipped with a power supply cable with plug:***
Ensure that an earthed wall socket is available no further than 1.5 m (5 ft) from the connection side of the unit.



Note:
The power point must remain accessible after installation so that the unit can be disconnected for service and maintenance.

- ***If the unit is not equipped with a power supply cable:***
Connect the unit to the mains using a power cable (not supplied). Maximum ratings are specified on the type plate.

It must be possible to disconnect the unit from the mains supply. You may choose to use either a plugged power supply cable or an isolation switch.

Electrically-heated models:**Warning:**

Do not turn unit ON/OFF at its power supply. Use the control panel.

- Connect the unit to the mains using a power cable (not supplied). Maximum ratings are specified on the type plate.
- An isolation switch (not supplied) must be fitted between the unit and the power supply. This switch must:
 - be all-pole;
 - have a contact separation of at least 3 mm (1/8");
 - be positioned no farther than 4 m (13 ft) from the connection side of the unit.

See also:

1.3.3 "Type plate" on page 8

2.6.2 Fuse ratings**Warning:**

Each unit should be individually fused according to the table below.

Fuse ratings

MAXIMUM AMPERAGE ON TYPE PLATE L1, L2 OR L3	MAXIMUM FUSE VALUE A
≤ 10 A	16 A
≤ 15 A	20 A
≤ 20 A	25 A
≤ 25 A	35 A
≤ 35 A	50 A
≤ 50 A	63 A
≤ 65 A	80 A
≤ 80 A	100 A
≤ 102 A	125 A

**Note:**

A single fuse may only be used for multiple units if they draw a total current of less than 10 A.

2.6.3 Connecting the unit

For units supplied without a mains power cable/plug only:

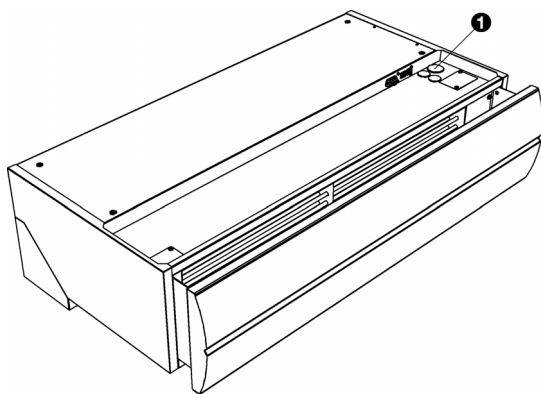


Warning:

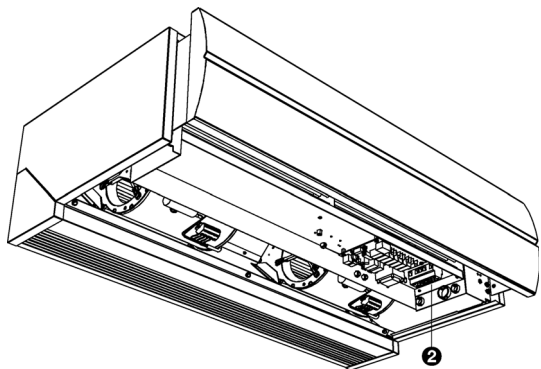
Only connect the unit if you are qualified to work on three-phase power systems.

Make sure the mains power supply group with which you are working has been turned off.

1. Fit the isolation switch and connect it to the power supply.
2. Open the unit.
3. Feed the power cable through the cable gland ❶.



4. Connect the cable to the unit's power terminal ❷ as shown in the wiring diagram.
5. Connect the power supply cable to the isolation switch.



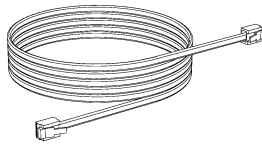
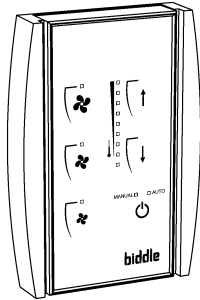
Caution:

Do not switch the mains supply on yet.

See also:

6.2.2 "Opening the unit" on page 40

2.7 Installing the control panel and external controls



2.7.1 Control panel details

Positioning

- You may fix the control panel either to the wall or to a standard junction box.

Cabling



Note:

Take the following into account, otherwise faults may occur:

- The control cable between the control panel and the (first) connected unit may not be longer than 30 m (98 ft).
- Keep control cables away from electromagnetic fields and interference sources such as high-voltage cables and fluorescent-light starters.
- Lay control cables out straight or roll them bifilarly by folding cables in half before rolling them. This significantly reduces inductance.
- Do not remove the dummy plug, unless otherwise stated.



Note:

Use Biddle control cables only (Type RJ4). Standard modular telephone cable is NOT suitable.



Multiple units operated from one single control panel

- A maximum of 8 units can be connected to a single control panel.



Note:

The RSR receiver module counts as one unit.

- Units are daisy chained using Biddle control cables and Connectors  and .
- The total length of the control cables must not exceed 30 m (98 ft). If the distance is too great, an additional control panel must be connected.
- Configure any one unit as a master. The sequence of the connected units is not important.

- Connect the control panel and external control components to the master unit.



Note:

Do NOT remove the external control input bridges on the other units.

Units with two control circuit boards

Only the following types: DF S-250-E, M-250-E.

These units have two control circuit boards that each control a part of the unit. The control circuit board on the connection side has been configured as master on delivery.

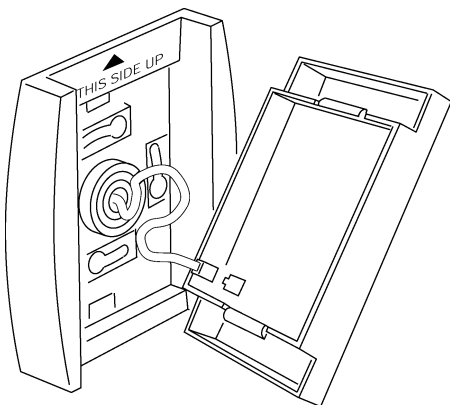
You can connect one or more of these units to a single control panel in combination with other units. The following applies in this regard:

- A unit with two control circuit boards counts as two units.
- A unit with two control circuit boards is always the master unit. Units with a single control circuit board must be configured as normal units.
- If several units have two control circuit boards, then one of these units is configured as the master unit. All control circuit boards in all other units must be configured as normal units.
- The control panel and the external control components must always be connected to the master unit.

2.7.2 Control panel settings

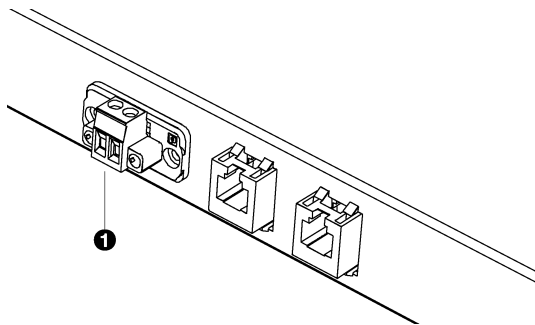
Optional

Several dip switches are located inside the control panel. These allow the control panel to be configured.



Control panel settings

NO.	POSITION OFF (FACTORY SETTING)	POSITION ON
1	unit remains turned off after supply voltage interruption	unit continues running in the same mode after supply voltage interruption
2	fans continue running as long as the unit is turned on	fans do not run if heating is not required
3	heating is turned OFF once the set room temperature has been reached	heating is always on as long as the unit is turned on
4	display heating settings using multiple LEDs	display heating settings with only one LED (does not affect operation)

**2.7.3 External control input**

A door switch and/or building management system can be connected to the input.

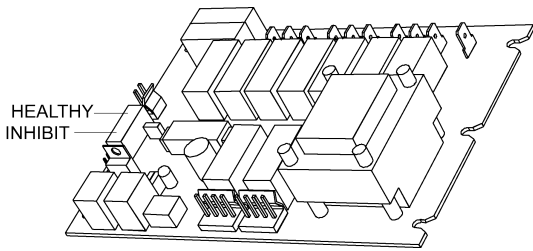
- The connector is located on the control circuit board (INHIBIT connector). This connector has been fed through to Connector ❶ on the outside of the unit.
- This connector is fitted with a bridge on delivery.
- The input is suitable for potential-free switches.

Working of the input

contact closed (or bridged)	unit operates normally
contact open	unit remains off
resistor across contact (3.3 kΩ)	unit working, but heating remains turned off (summer mode)

See also:

2.7.5 "Unit settings" on page 24



2.7.4 Fault signal output

A building management system (BMS) can be connected to the output.

- The connector is located on the control circuit board (HEALTHY connector).

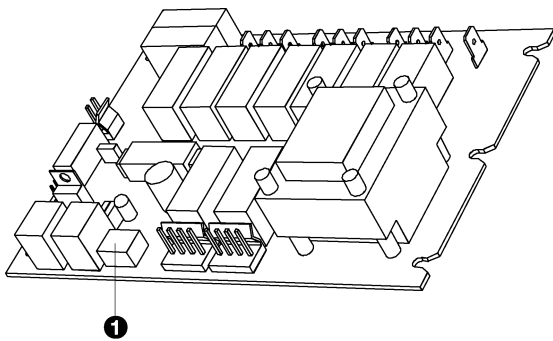
Output operation

24 VDC	unit operates normally
no power supply voltage	temperature cut-out has turned the heating off or the unit is not being powered


2.7.5 Unit settings

Optional unless otherwise stated

Several dip switches ❶ are located on the unit's control circuit board. These allow the unit to be configured.



Control circuit board settings

No.	POSITION OFF (FACTORY SETTING)	POSITION ON
1	fan and heating mode independently adjustable	high heating setting disabled for low and medium fan settings
2	fans continue running for two minutes after shutdown for cooling purposes	 not permitted for electrically heated units fans stop immediately after shutdown
3	unit operates normally	unit configured as a master unit
4	only heating is turned off when the temperature cut-out activates.	heating AND fans shut down when the temperature cut-out activates.

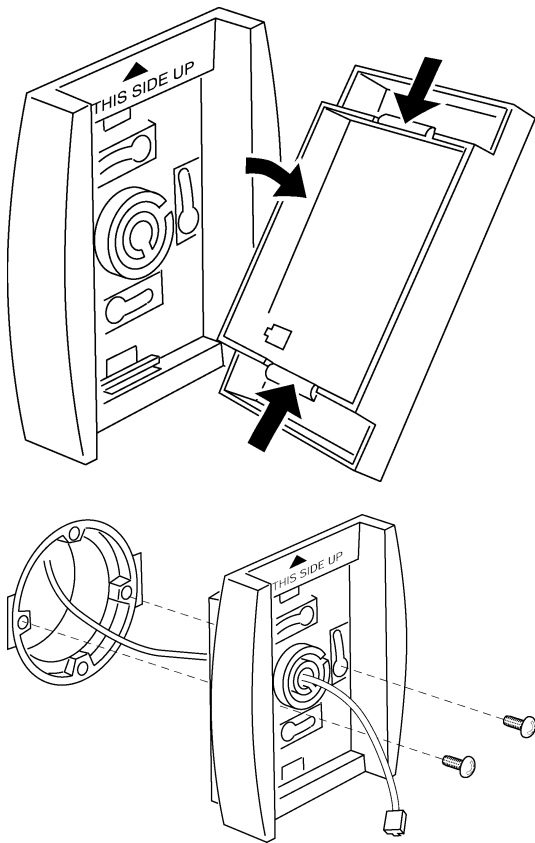
Master settings

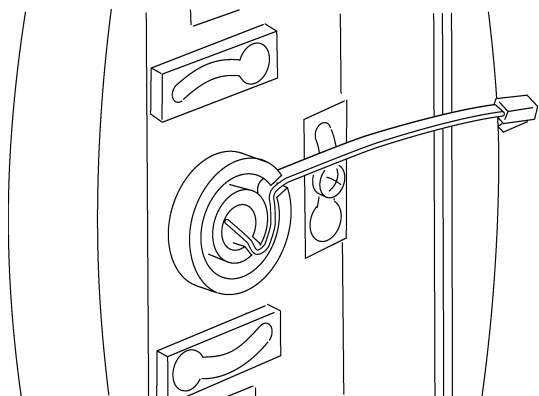
Only if multiple units have been connected to a single control panel

	<i>all units configured as normal units</i>	<i>one unit configured as a master unit</i>
<i>external control input</i>	only connected unit responds	all units follow the master
<i>automatic temperature control</i>	each unit is independently controlled	all units are controlled by the master

2.7.6 Mounting and connecting control panel

1. Open the control panel.
2. Feed the control cable through an opening in the rear plate.
3. Attach the rear plate to the wall.



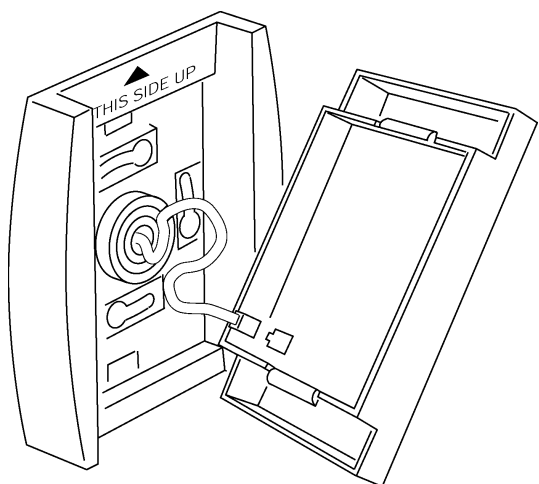


4. Secure the cable in a tension-free state.

The cable should protrude by approx. 9 cm (3 1/2").

5. **Optional:**

Set the dip switches on the front plate.



6. Attach the control cable's connector to the PCB.



7. Replace the front plate onto the rear plate.

See also:

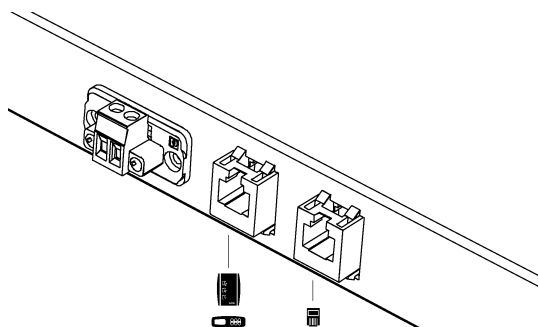
2.7.2 "Control panel settings" on page 22

6.5 "Biddle control cable composition" on page 43

2.7.7 Connecting control panel to unit

The control panel is connected to one of the two modular unit connectors (marked with Symbols  and ).

The two sockets are identical.



2.8 Unit finishing

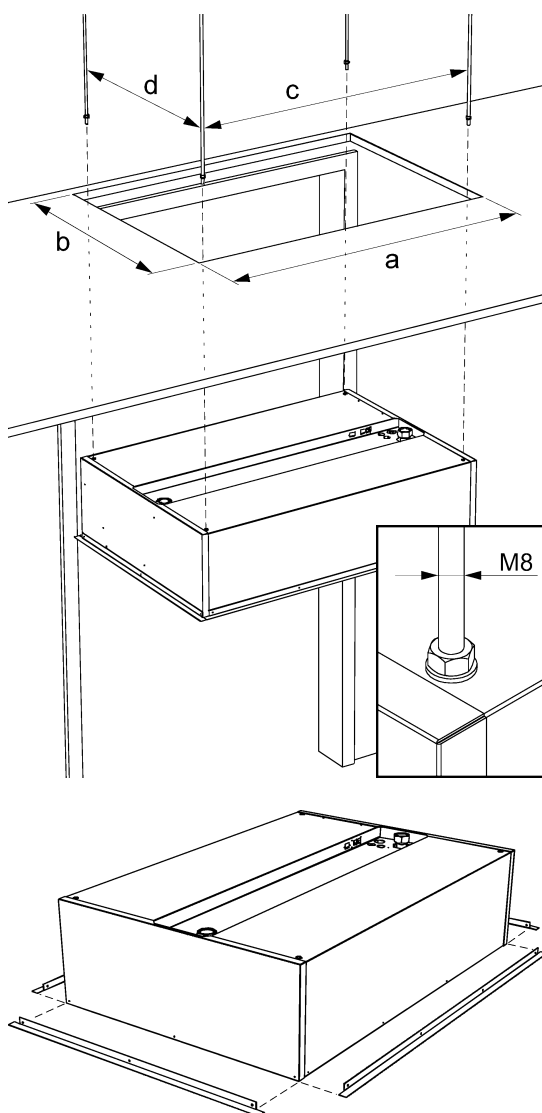
2.8.1 Edge finishing

For cassette models (Type DF C) only:

1. Make a hole in the ceiling for the unit.

Dimensions of hole and suspension for cassette model

SIZE	TYPE	DIMENSIONS
a	DF 100-C	1012 mm(39 27/32")
	DF 150-C	1512 mm(59 17/32")
	DF 200-C	2012 mm(79 7/32")
	DF 250-C	2512 mm(98 29/32")
b	all DF C	705 mm(27 3/4")
c	DF 100-C	937 mm(36 7/8")
	DF 150-C	1437 mm(56 9/16")
	DF 200-C	1937 mm(76 1/4")
	DF 250-C	2437 mm(95 15/16")
d	all DF C	641 mm(25 1/4")



2. Attach the angle sections using the screws supplied along the unit's edges.

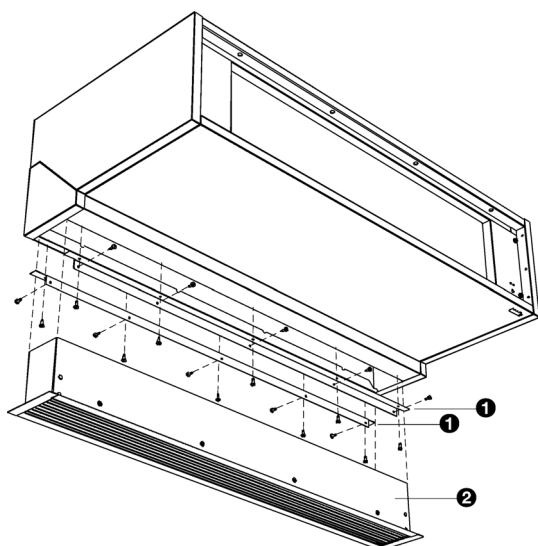
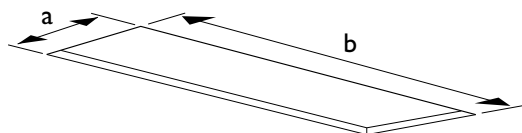
2.8.2 Attaching discharge section

For recessed models (Type DF R) only:

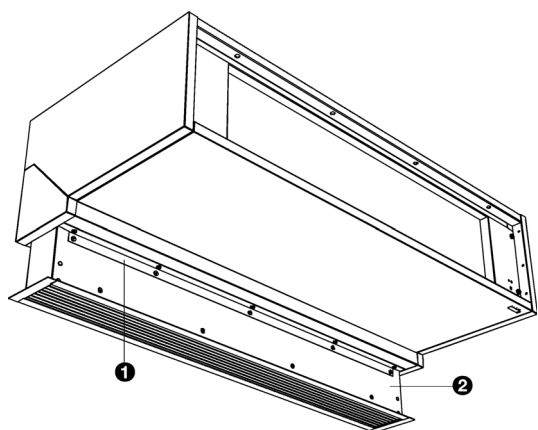
1. Make a hole in the ceiling for the discharge.

Discharge section hole dimensions

SIZE	TYPE	DIMENSIONS
a	R	90 mm (3 17/32")
b	100-R	970 mm (38 3/16")
	150-R	1470 mm (57 7/8")
	200-R	1970 mm (77 9/16")
	250-R	2470 mm (97 1/4")



2. Attach the two angle sections ❶ to the unit along the discharge openings' edges using the screws supplied.
3. Extend the telescopic discharge grille ❷ into the unit's discharge opening until it reaches the required height.



4. Attach the discharge duct to the angle sections ❶ using the screws supplied.



Let op:

For the unit to work properly, it is essential that there are sufficient openings in the alcove or ceiling for air to enter the unit.

2.9 Switching on and checking operation

For all models:

1. Connect all units.
2. Check the following connections:
 - power supply;
 - control cables between control panel and unit (or units);
 - **If applicable:**
external control components.
3. Switch the mains power supply on and/or plug in all connected units.
4. Start up the air curtain using the control panel.
5. Check that air is being blown out of all units across their full width.

For water-heated models:

1. Check whether the heat exchanger and the control valve have been connected correctly.
2. Make sure that the central heating system has been turned on.
3. Turn the heating on using the control panel.
4. Check whether the airflow is getting hotter for all connected units. This may take some time.
5. Vent the heat exchanger if necessary.

Electrically-heated models:

1. Turn the heating on using the control panel.
2. Check whether the airflow is getting hotter for all connected units across their full width.

3. . Operation

3.1 General

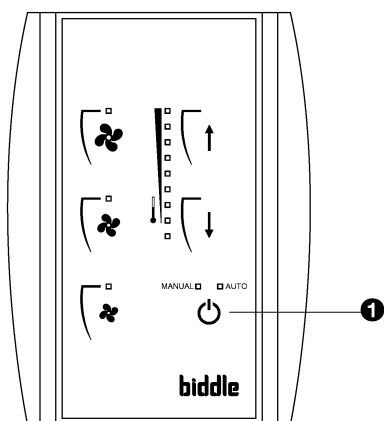
All regular features can be operated from the control panel. The control panel allows you to:

- start and stop the air curtain
- set the required heating capacity
- set the required room temperature
- turn the heating on and off
- adjust the air curtain's airflow rate

If multiple units are connected to a single control panel:

The settings on the panel are the same for all units.

3.2 Starting and stopping



Press Button ❶ repeatedly to start and stop the air curtain, and to select the required temperature control mode:

- The air curtain is running in manual mode – **MANUAL** LED is on.
- The air curtain is running in automatic mode – **AUTO** LED is on.
- The air curtain is not running – all LEDs are off.



Note:

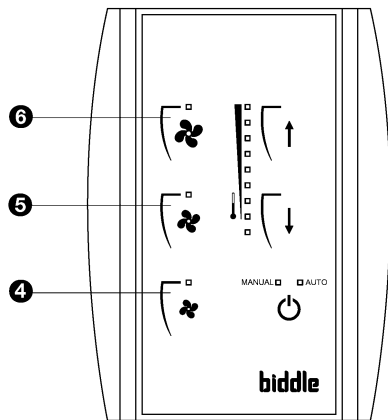
The unit continues to run at a low fan speed after it has been turned off to allow it to cool down

See also:

3.4.1 "Manual temperature control" on page 31

3.4.2 "Automatic temperature control" on page 32

3.3 Adjusting the strength of the air curtain



You can select three air curtain airflow settings:

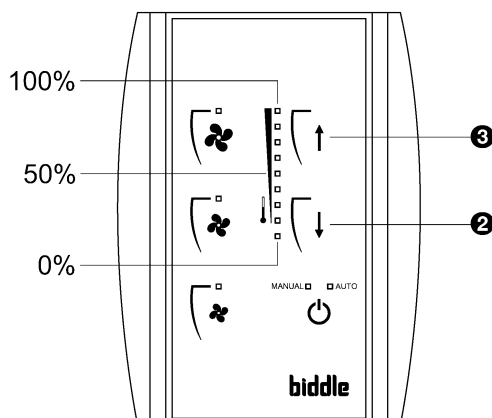
- Button ④: low fan
- Button ⑤: medium fan
- Button ⑥: high fan



Note:

To achieve maximum climate separation for minimum energy consumption, Biddle recommends selecting the lowest setting at which no draughts occur.

3.4 Adjusting heating



3.4.1 Manual temperature control

In manual mode, heating can be set to full or reduced capacity, or turned off.

- Press Button ② to reduce the heating setting by one level.
- Press Button ③ to increase the heating setting by one level.

Control panel LEDs indicate the air curtain's heating setting.

Room temperature when heating



Caution:

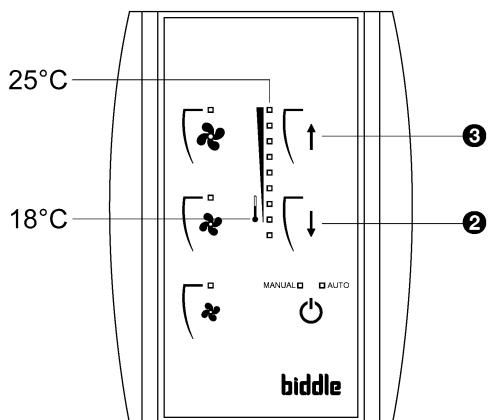
Heating may not be used when the room temperature is higher than 25°C (77 °F), otherwise faults may occur.

Heating needs to be turned off manually if temperature settings are being adjusted manually.

Heating is turned off automatically when using automatic temperature control.

See also:

3.4.3 "Turning off heating" on page 32

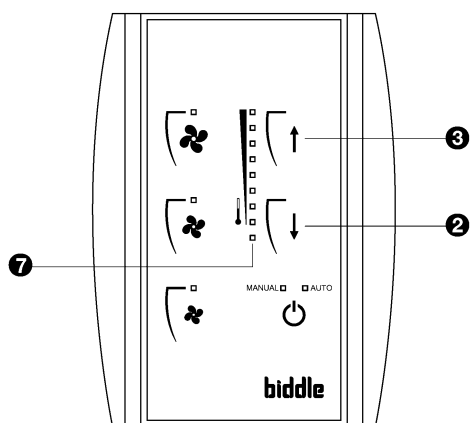


3.4.2 Automatic temperature control

In automatic mode, the unit measures the air inlet temperature and automatically selects the required heating setting to adjust the air temperature to the configured level.

- Set the required temperature using Buttons ② and ③

The LEDs display the temperature in a range from 18 °C to 25 °C (64 °F to 77 °F). This temperature is measured at the unit's air inlet and may deviate slightly from actual room temperature.



3.4.3 Turning off heating

You can turn off heating to achieve climate separation without actually heating the air, e.g. if indoor air is being cooled and is colder than outside.

This can be configured in both manual and automatic modes.

To turn heating off:

- Press Button ② until blue LED ⑤ illuminates.

To turn heating on:

- Press Button ③: the blue LED turns off and one or more of the yellow LEDs turns on.

4 . . Maintenance

4.1 Cleaning the unit

You may clean the exterior of the unit with a damp cloth and a domestic cleansing agent. Do not use any solvents.



Caution:

Make sure no water runs into the unit.

4.2 Scheduled maintenance

Biddle recommends to have the following inspection and maintenance works performed by an installer or other technical expert each year.

- Check that the heat exchanger and the electrical heating element are clean. Settled dust may cause unpleasant smells.
- Gently remove dust with a vacuum cleaner.
- Check whether fans are working properly.

5. . Faults

5.1 Safety instructions



Danger:

All work on the inside of the unit may only be carried out by appropriately qualified technical staff.



Warning:

Before you begin: read the safety instructions.

See also:

1.5 "Safety instructions" on page 10

5.2 Resolving simple problems

If you suspect a fault, first try to resolve the problem, using the table below. You need not be an expert for this.

Solutions to simple problems

PROBLEM	PROBABLE CAUSE	WHAT TO DO
There is a draught	Air curtain is turned off.	Turn the air curtain on.
	Air curtain is adjusted too low.	Switch the air curtain to a higher operating strength.
	Air curtain is adjusted too high.	Turn the air curtain down.
	The unit's heater has been turned off.	Turn the heater on.
	The heater is adjusted too low.	Turn the heater up.
It is too hot.	Space heating and air curtains are collectively producing too much heat.	<ol style="list-style-type: none"> 1. Turn space heating down. 2. Turn the unit down. 3. Turn the heater down.
It is too cold.	Room is too cold.	<ol style="list-style-type: none"> 1. Turn space heating up. 2. Turn the unit up. 3. Turn the heater up.
It is too noisy.	Air curtain is at highest setting.	Turn the unit down.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit is not working and the control panel LEDs are off.	The unit is switched off.	Turn the unit on.
	The unit has no power supply.	Check the power supply: <ul style="list-style-type: none"> • is the plug in the socket? • Is the isolation switch on? • is there a voltage present?
The air curtain is switched off but is still working.	The unit cools off automatically.	This is not a fault. The unit will normally shut down automatically within two minutes.

See also:





- 3.2 "Starting and stopping" on page 30
- 3.3 "Adjusting the strength of the air curtain" on page 31
- 3.4 "Adjusting heating" on page 31



5.3 Remediating faults


If you suspect a fault:

1. Check whether the problem can be easily resolved.
2. Try to resolve the problem using the table below. Technical expertise is needed for this.
3. If you have identified a fault, and the previous section does not provide a solution, then contact the supplier.

Fault rectification (for qualified technical staff only)

PROBLEM	POSSIBLE CAUSE	RESOLUTION
The control panel works normally but the unit does not respond.	The power supply to the fans is cut.	<ol style="list-style-type: none"> 1. Check the fuses on the control circuit board. 2. For water-heated units and for units at ambient temperature, check the extra fuses in the unit. 3. Check wiring between the control circuit board and the fans.
	The connection between the control panel and the control circuit board is not correct.	<ol style="list-style-type: none"> 1. Check the control cable. 2. Check wiring between Connectors  and  and the unit's control circuit board.
	The contact on the external control input is open.	<ol style="list-style-type: none"> 1. If no external control is connected: Check the bridge at the input. 2. If an external control has been connected (door contact switch or BMS): Check the operation of the control component. 3. Check wiring and connection of control components to the input. 4. Check wiring between the input and the control circuit board (INHIBIT connector).
The unit is not working and the control panel LEDs are off.	The unit is not receiving power.	Check power supply connections, wiring and fuses.
	The connection between the control panel and the control circuit board is not correct.	<ol style="list-style-type: none"> 1. Check the control cable. 2. Check wiring between Connectors  and  and the unit's control circuit board.
	The control circuit board is not working.	<ol style="list-style-type: none"> 1. Check the control circuit board's fuse. 2. For water-heated units and for units at ambient temperature, check the extra fuses in the unit. 3. Check the power supply cable. 4. Replace the control circuit board.
	The control panel is defective.	Check the control panel by connecting another unit. Replace the control panel if it is not working.
One fan does not work.	The fan is defective or not receiving a power supply.	<ol style="list-style-type: none"> 1. Check the wiring of the fan. 2. Replace the fan.

PROBLEM	POSSIBLE CAUSE	RESOLUTION
Fans are not working at a particular speed level.	The connection at the particular fan speed level is faulty.	Check the fans' wiring.
Not all connected units are working (or only partially).	The control panel is not communicating with one or more connected units (or with one of the control circuit boards in a dual-control circuit board unit).	<ol style="list-style-type: none"> 1. Check that power is supplied to all connected units. 2. Check the control cables: <ul style="list-style-type: none"> • are they connected and free from breaks? • are they stretched out or rolled up neatly? (folded double before being rolled up) • are they shielded from magnetic fields? 3. Check the control circuit board's fuses in each connected unit. 4. For water-heated units and for units at ambient temperature, check the extra fuses in all units. 5. Check wiring between Connectors  and  and the control circuit board(s).
<p>If several units are connected to a single control panel:</p> <p>The units (or part of a unit) are not responding uniformly to the external control (door contact switch or BMS).</p>	The master unit (or the master control circuit board in a dual-control circuit board unit) has not been configured properly.	<p>Check that the unit to which the external control has been connected has been configured as the master.</p> <p>For dual-control circuit board units:</p> <p>Check whether the control circuit board on the connection side has been configured as the master.</p>
	The contact on the external control input is open.	<p>Check the input bridges on the units to which no external controls have been connected.</p> <p>For dual-control circuit board units:</p> <p>Check the input bridge on the secondary control circuit board.</p>
The unit is blowing out cold air.	<p>For water-heated units:</p> <p>The unit is not being supplied any hot water.</p>	<ol style="list-style-type: none"> 1. Check the central heating system. 2. Check whether the valve is allowing hot water to pass. 3. Check valve drive and inlet temperature sensor wiring and connectors. 4. Take the drive from the valve and check the interior for mechanical operation and defects.

PROBLEM	POSSIBLE CAUSE	RESOLUTION
The unit (or part of the unit) is blowing cold air. The LEDs on the control panel are flashing.	<p>For electrically heated units: The temperature cut-out has turned the unit (or part of the unit) off to prevent overheating.</p>  <p>This may indicate a serious fault that may be hazardous.</p> <p>This fault can also occur if the unit has been powered down for a short while.</p>	<ol style="list-style-type: none"> 1. Check and reset the temperature cut-out. 2. Check the fans. If one or more fans do not work, check: <ul style="list-style-type: none"> • the fan wiring; • control circuit board connections • control circuit board fuses 3. If these are in order, then replace the fan.
Discharge air is not hot enough.	<p>For water-heated units: The supply water temperature is too low.</p>	Raise the central heating system's water temperature.
	<p>For electrically heated units: One or more phases on the power supply have tripped out.</p>	<ol style="list-style-type: none"> 1. Check the power supply's fuses and electrical connections. 2. Check the control thermostat. These should be set to 60°C (140°F).
The unit continues to blow hot air.	<p>For water-heated units: The valve has been opened manually.</p>	Turn the handle on the valve to the 'AUTO' position.
The unit always blows cold air in automatic mode.	The temperature sensor is not working.	<ol style="list-style-type: none"> 1. Check Connector J3 on the control circuit board. 2. Replace the sensor.
<p>If multiple units have been connected to a single control panel: The units warm up unevenly in automatic mode.</p>	The temperature is set independently in each unit.	Configure one unit as a master.

See also:

2.7.2 "Control panel settings" on page 22

2.7.3 "External control input" on page 23

2.7.5 "Unit settings" on page 24

6.3 "Fuses" on page 42

6.4 Temperature cut-out op pagina 43

6 . . Service

6.1 Safety instructions



Warning:

Service activities may only be carried out by personnel who are technically qualified to do so.



Warning:

Before you begin: read the safety instructions.

See also:

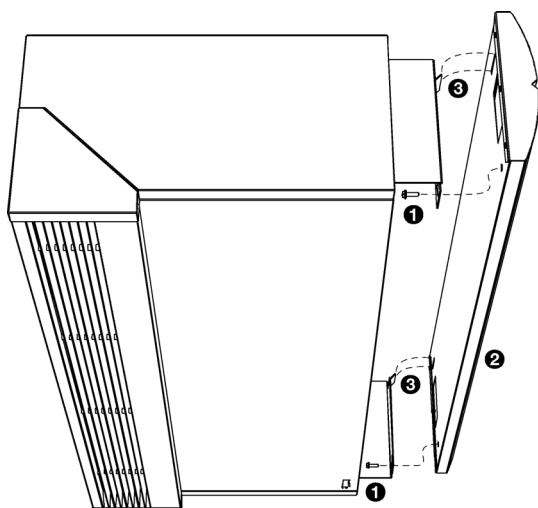
1.5 "Safety instructions" on page 10

6.2 Access

6.2.1 Removing the front panel

For free-hanging models only:

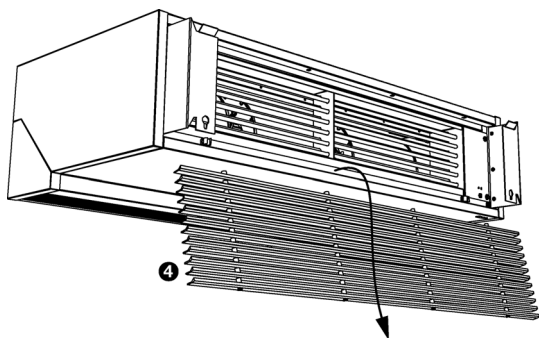
1. Remove the locking bolts ❶ from the front panel ❷.
2. Remove the front panel ❷ from its suspension hooks ❸.



6.2.2 Opening the unit

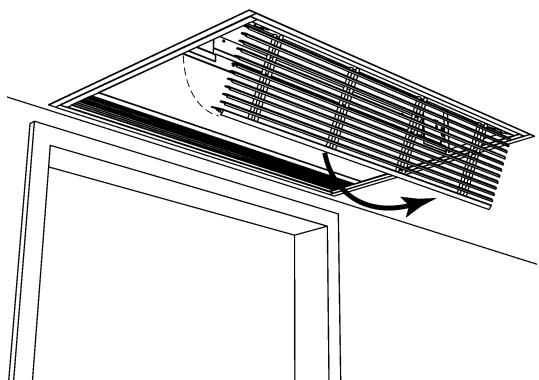
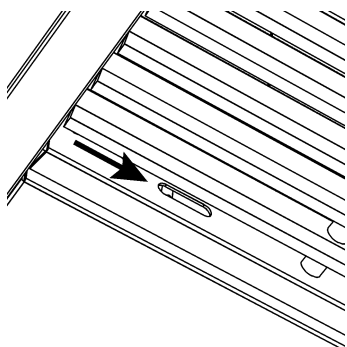
For free-hanging and recessed models with electrical heating (Types DF E-F, E-R) and models without heating (Types DF A-F, A-R):

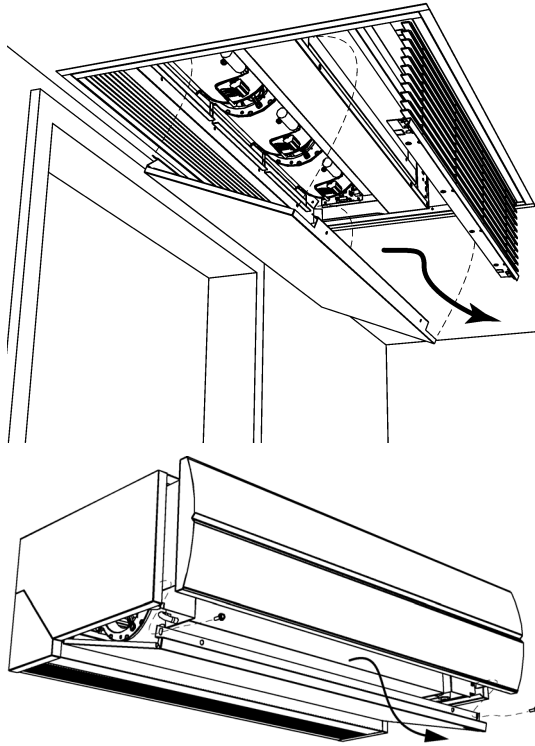
1. Remove the front panel, if necessary.
2. Remove the inlet grille ④.



For cassette models (Type DF C):

1. Push the inlet grille's left- and right-hand latches towards each other. Use a screwdriver to do this.
2. Twist the inlet grille open and allow to hang freely.
3. Remove the inlet grille, if necessary, by opening the latches on the other side.



**For all models:**

1. Remove the screws along the edge of the panel.
2. Pull the panel a little forward and take it away.

**Caution:**

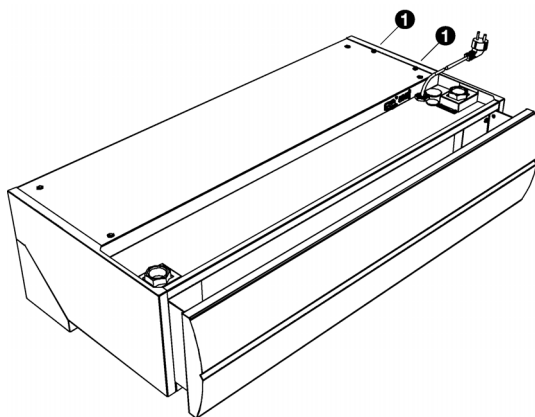
The entire panel comes free once pulled forward – make sure it does not fall.

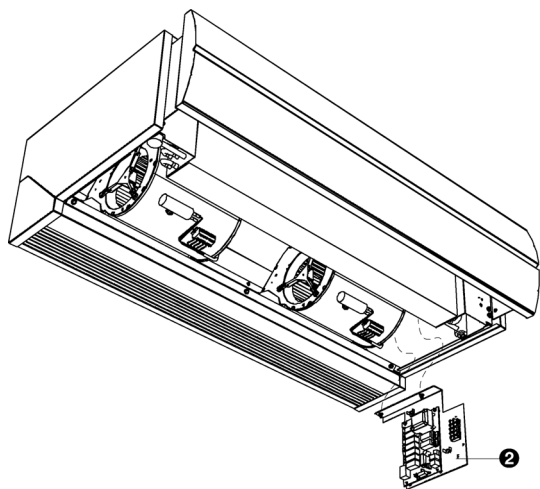
6.2.3 Removing the control circuit board**With all units:**

1. Open the unit.

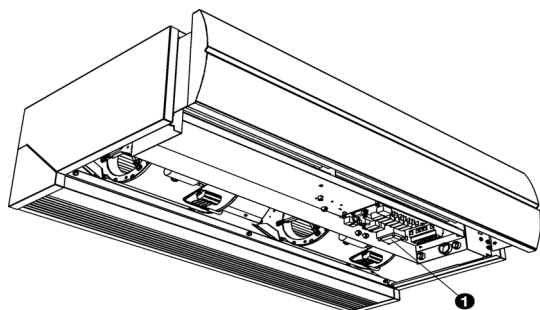
For water-heated units and units without heating:

1. Remove the screws ❶ on the top of the unit.





2. Remove the control circuit board ②.
3. Disconnect all unit-connected connectors and grounded connections from the control circuit board.



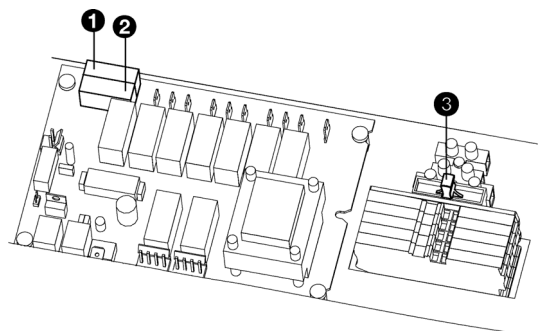
For electrically heated units:

1. Disconnect all connectors and earth contacts connecting the unit and control circuit board ①.
2. Remove the control circuit board.

See also:

6.2.2 "Opening the unit" on page 40

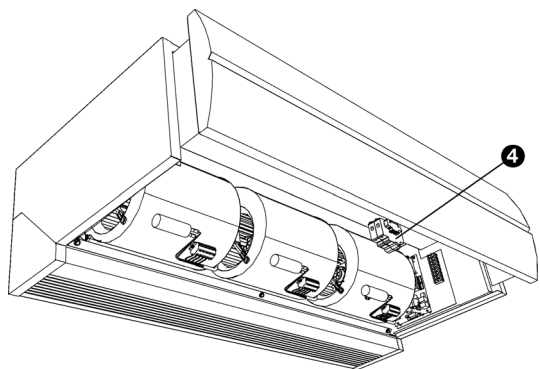
6.3 Fuses



The unit's control circuit board has two fuses – ① and ②. Values have been marked on the PCB.

Electrically heated units have an extra fuse ③. The value is indicated on the fuse.

Units that are water-heated and (ambient) units without heating have two extra fuses in the unit ④. The value is indicated on the fuses.



6.4 Temperature cut-out

Electrically-heated models only:

The unit has been fitted with a temperature cut-out to prevent too much heating.

For the following types: DF S-250-E, M-250-E.

These units have two temperature cut-outs. These protect each section of the unit and can operate independently of one another.

6.4.1 Resetting the maximum temperature cut-out

1. Turn the unit off.
2. Allow the unit to cool down for 10 minutes.
3. Push back the temperature cut-out pin ❶.



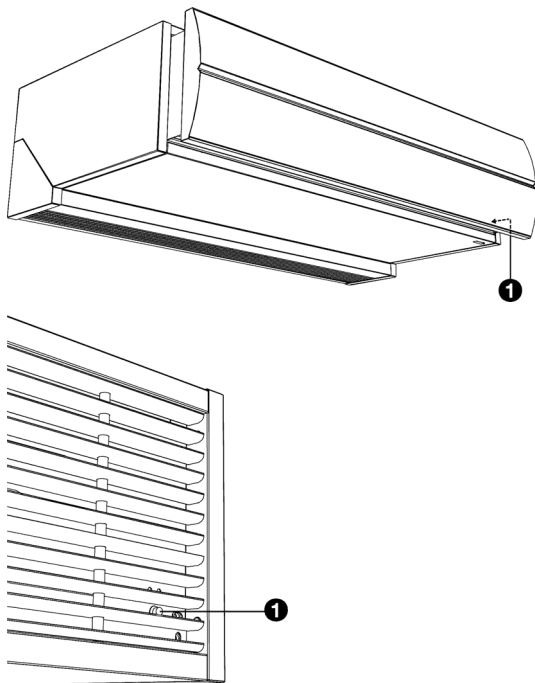
Note:

Remove the front panel, if necessary.

4. Check unit connections.
5. Turn the unit on.
6. Check whether fans are working properly.

See also:

6.2.2 "Opening the unit" on page 40



6.5 Biddle control cable composition

The control system cable is made up as follows:

- The plugs are modular, type 4P4C connectors.
- Connectors are untwisted, i.e. at both cable ends cores are connected to the same pin.

7. . Dismantling

The dismantling of the installation and the handling of the coolant, oil and other components must be carried out by a qualified fitter in accordance with the relevant local and national legislation and regulations.

By ensuring that this product is disposed of in the correct manner, you are helping to prevent potential negative consequences for the environment and public health. For more information about this, please contact your supplier or the relevant government authority.

8 . . Addresses

If you have any comments or queries relating to this product, please do not hesitate to contact your Biddle branch.

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At all times, Biddle shall not be held liable for consequential damages.

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Although great care has been taken to ensure the correct and, where necessary, complete description of the relevant components, Biddle shall not be held liable for loss or damages as a consequence of errors and/or imperfections in this manual.

Biddle reserves the right to alter the specifications as mentioned in this manual.

Should you nevertheless discover any errors or ambiguities in the manual, we shall be glad to learn that from you. It helps us to improve the documentation still further.

For more information

If you have any comments or queries relating to this product, please do not hesitate to contact Biddle. You will find the contact information for your Biddle branch in chapter [8 Addresses](#).

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