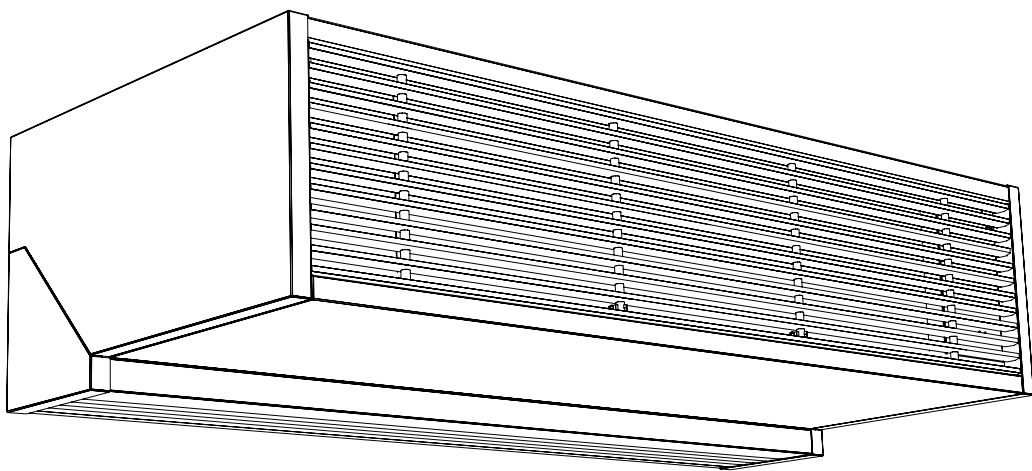


Manual

Comfort Air Curtain

Model SF



Version of guide: 4.0



biddle

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For more information

If you have any comments or questions about specific topics relating to this product, please do not hesitate to contact Biddle.

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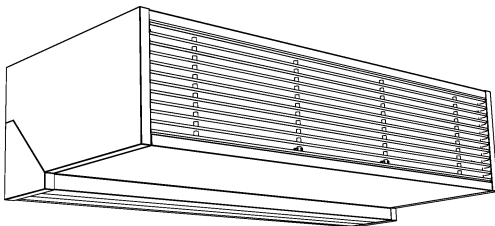
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I . . Introduction

I.1 About this manual



I.1.1 General

This manual describes the installation, operation and maintenance of the Comfort Air Curtain model SF. The manual also provides instructions and information on service works.

The manual provides important directions for the correct and safe operation of the air curtain, and for the prevention of accidents and damages.

So, read this manual carefully before starting to handle the unit in any way.

I.2 How to use this manual

If you are unfamiliar with the Comfort Air Curtain, read this manual section by section.

If you are familiar with the device, you may use this manual as a reference. Refer to the table of contents for looking up information.

I.2.1 References in the manual

In this manual the following marginal symbols are used:



Note:

Draws your attention to an important part of the text.
Read this part of the text carefully.



Caution:

If you do not perform this procedure or action correctly, you may damage the device.
Follow the instructions carefully.



Warning:

If you do not perform this procedure or action correctly, you may cause damage and/or bodily injury.
Follow the instructions strictly.



Danger:

This indicates actions which are not permitted.



Ignoring this warning may lead to serious damage or accidents which may involve bodily injury.

The action may be carried out only by qualified staff performing maintenance or repair works.

1.2.2 Symbols used on the unit and in the manual

The symbols in Table 1-1 warn against potential risks and/or dangers. The symbols can be found opposite the text discussing risk-entailing operations. The same icons will also be found on the device.

Table 1-1 Symbols

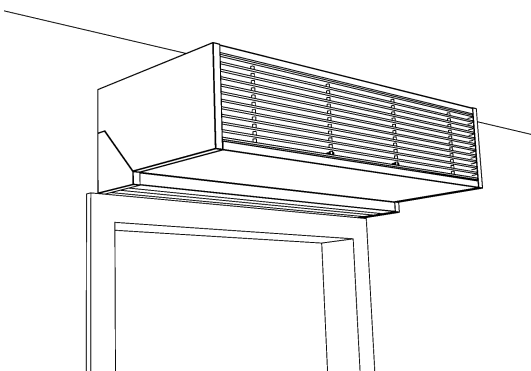
ICON	DESCRIPTION
	Warning: You are entering an area which contains 'live' components. Accessible to qualified maintenance staff only. Exert caution.
	Warning: This surface or part can be hot. There is a risk of burns on contact.

1.2.3 Related documentation

Besides this manual, the following document comes with the unit:

- wiring diagram for installation and service purposes.

1.3 About the unit

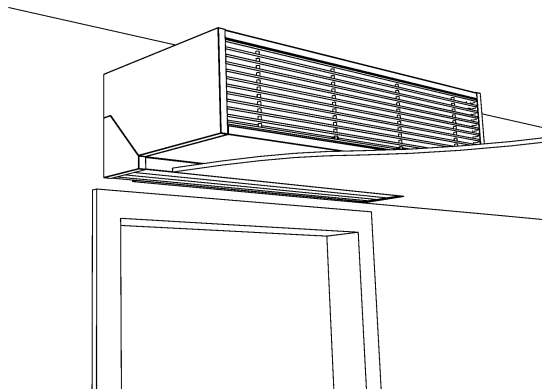


1.3.1 Applications

The comfort air curtain is designed to separate the climates between two rooms. The unit is installed above the doorway, across its full width.

By installing multiple units side by side, openings of unlimited width can be screened off in steps of 50 cm.

The model is designed for free, visible installation above doors as well as for integration into coves or suspended ceilings.



1.3.2 Working

The air curtain blows a stream of either heated or unheated air straight down, achieving the following:

- The exchange of air between two rooms due to temperature differences (convection) is stopped.
- For heated air: the air entering across the floor due to draught is heated.
- For unheated air: warm outside air is kept outside to support the air-conditioning in the room.

The air curtain is designed such that there is no need for air filters.

1.3.3 Models and type references



Table 1-2 on page 7 provides an overview of the available models of the comfort air curtain and the corresponding type references. Combined, the type references constitute the type code, for instance: SF*i* SP-100-VV-F.

If some part of the manual applies to certain models only, these will be indicated using the corresponding type reference, for instance:

- SF*i*: models with touchpad controller
- SF*s*: models with three-speed switch
- SF VV: water-heated models
- SF E: electrically-heated models
- SF A: models without heating (ambient)

Table 1-2 Type code explained

TYPE CODE ELEMENT	REFERENCE	MEANING
product series	SF	general reference for the series
control	<i>i</i> or <i>s</i>	touchpad controller or three-speed switch
capacity	SP or HP	installation height 2.20-2.40 m or 2.80-3.00 m
unit length	100, 150 or 200	unit length in cm
heating	VV	water heating
	E	electric heating
	A	without heating (ambient)
mounting method	F	free-hanging model, also fit as recessed model

 Biddle bv Markzwei 4 NL-9288 HA Kootsterille 	Type	SF _s HP-200-W-F		
	Code		U	230 V 1N- 50 Hz
	N°	123456/1-1 04-53	I _{max} L1	6.18 A
			I _{max} L2	-
	M	66 kg	I _{max} L3	-
	Medium	LPHW	P _{motor}	1.42 kW
	p _{max}	1400 kPa	P _{heating}	-

1.3.4 Type plate

The type plate can be found on the top of the unit.

This manual refers to the following data on the type plate:

- *Type*: full type code of the unit.
- *M*: weight of the unit.
- *p_{max}*: maximum permissible operating pressure in the hot water circuit (at 110 °C).
- *U, I_{max}, P_{motor}* and *P_{heating}*: maximum load on the electrical system by the unit.

1.3.5 Components and accessories

Components

The following components are delivered separately but are always required:

- touchpad controller or three-speed switch.

Accessories

The following accessories are available as options:

- water-side control for connection with touchpad controller.
- water-side control for fixed discharge temperature.
- Biddle control cable, available in various lengths, to link multiple units to one single touchpad controller.
- door contact switch.
- suspended ceiling finishing kit.
- Telescopic discharge grille for recessed model.
- Intake grille for recessed model.

I.4 Safety instructions

I.4.1 Operation



Warning:
It is not allowed to install air filters in the air curtain.



Warning:
Do not put any objects in the in- and outlets.



Warning:
Do not block the in- and outlets.



Warning:
The upper surface of the unit becomes hot during operation.

I.4.2 Installation, maintenance and service



Danger:
The unit may be opened by qualified technical staff only.



Warning:
Perform the following actions before opening the unit:



1. Switch the unit Off using the controller.
2. Wait until the fans have stopped.
3. Allow the unit to cool down.



The heat exchanger or, as the case may be, the heating elements can get very hot. Moreover, the fans may keep on rotating for a while.

4. Disconnect the power supply (pull plug from socket or move isolation switch, if any, to Off).
5. *For water-heated models:* close central heating supply (if possible).



Warning:
The fins of the heat exchanger are sharp.

2. . Installation

2.1 Safety instructions



Danger:

Installation works on the unit may be performed by qualified technical staff only.



Warning:

Before opening the unit, follow the safety instructions in section 1.4.

2.2 Delivery check

1. Check the unit and its packaging for correct delivery. Immediately report any transport damage to the driver concerned and to the supplier.
2. Make sure that all components have been supplied. Immediately report any defects to the supplier.

2.3 General working method

Working method

Biddle recommends the following working method for the installation of the comfort air curtain:

1. Mount the unit (section 2.4).
2. *For water-heated models:* connect the unit to the central heating system (section 2.5).
3. Connect the unit to the power supply (section 2.6).
4. Install the controller and (any optional) connections to external controls (sections 2.7, 2.8, and 2.9).
5. Finish the unit (section 2.11).
6. Turn on the power supply and check the working of the unit (section 2.12).

General instructions

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



Note:

Make sure you perform all installation operations that are required for your unit.

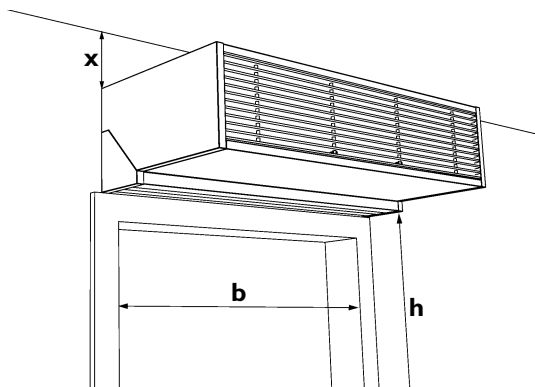
Check the type plate and refer to section 1.3.3 if you are not sure about the model or type of your unit.



Note:

Protect the unit from damage and ingress of dust, cement, etc. throughout the installation. You can, for instance, use the packaging for protection.

2.4 Mounting the unit



2.4.1 Positioning the unit

- Make sure that the structure from which the unit is about to be suspended can bear the weight of the unit. The weight is specified on the type plate (see section 1.3.4).
- Note the following dimensions:
 - The unit must be at least as wide as the doorway (dimension b).
 - Position the unit as near to the doorway as possible.
 - The maximum mounting height of the unit (dimension h, measured from the floor to the discharge grille) depends on the unit type (see Table 2-1).



Warning:

The minimum mounting height (dimension h) is 1.8 m.



Warning:

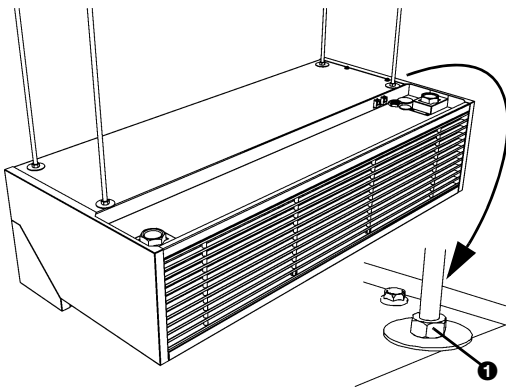
The top of the unit may get hot. Mount the unit at a minimum of 25 mm from the ceiling (dimension x on page 11).

Table 2-1 Mounting height of unit

TYPE	MAXIMUM MOUNTING HEIGHT H
SF SP	2.40 m
SF HP	3.00 m
<ul style="list-style-type: none"> These heights apply under normal circumstances. If not sure, ask Biddle for advice on the correct height. 	



Note:
Mounting the unit at a height exceeding the maximum height may affect the proper working of the unit.



2.4.2 Suspending and securing the unit

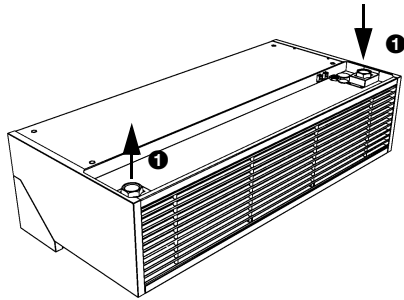
1. Fix four M8 threaded rods according to the dimensions in Table 2-2. Make sure that the threaded rods are perpendicular.
2. Apply a lock nut ❶ to each threaded rod.
3. Fix the unit to the threaded rods.
4. Secure the unit to the suspension rods by tightening the lock nuts ❶.

Table 2-2 Dimensions for suspending the unit

	REFERENCE	TYPE	DIMENSIONS
	a	all models	as needed
	b	all models	35 mm
	c	all models	228 mm
	d	SF 100	896 mm
		SF 150	1396 mm
		SF 200	1896 mm

2.5 Connecting the unit to the central heating system

Water-heated models only



2.5.1 Particulars



Caution:

The supply and return pipes of the central heating system must be connected to the appropriate corresponding connections ❶ (G1"). The directions are indicated on the unit using arrows.



Caution:

When connecting the pipes, hold the connections ❶ in place using pliers.



Caution:

Biddle recommends the inclusion of a valve and a relief valve in both pipes, near the unit.

The maximum permissible operating pressure in the hot water circuit is specified on the type plate (see section 1.3.4). This pressure applies at a water temperature of 110 °C.

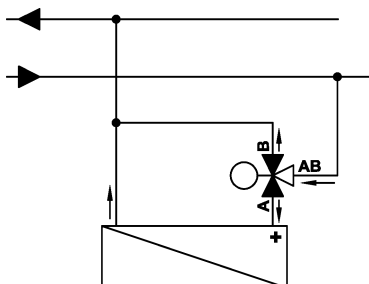
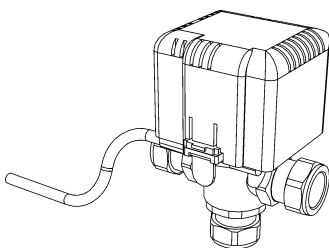
2.5.2 Units without water-side control

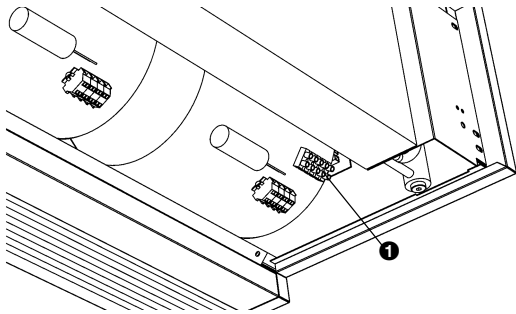
1. Connect the unit to the central heating system.
2. Fill and bleed the system.
3. Check the connections for leaks.

2.5.3 Units with water-side control

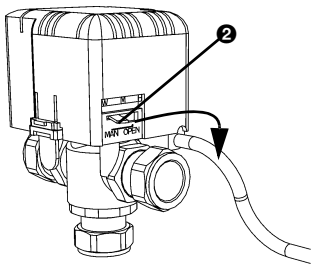
Control for connection with touchpad controller.

1. Open the unit (see section 6.2).
2. Connect the unit and valve to the central heating system according to the opposite diagram.



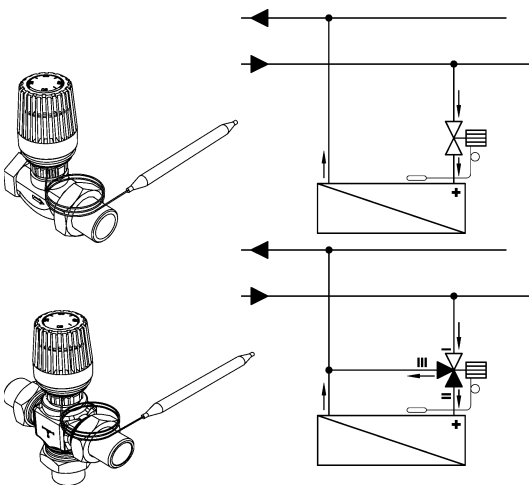


3. Connect the valve to connector **1** according to the wiring diagram.
4. Close the unit.

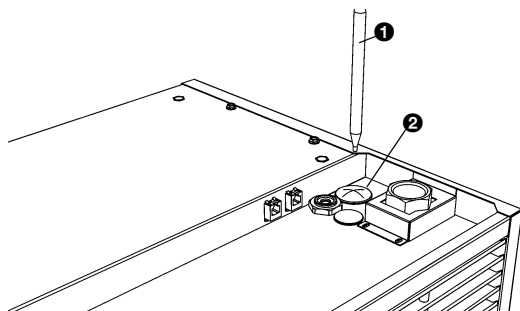


5. Manually open the valve using handle **2**.
6. Fill and bleed the system.
7. Check the connections for leaks.
8. Place handle **2** back to its starting position.

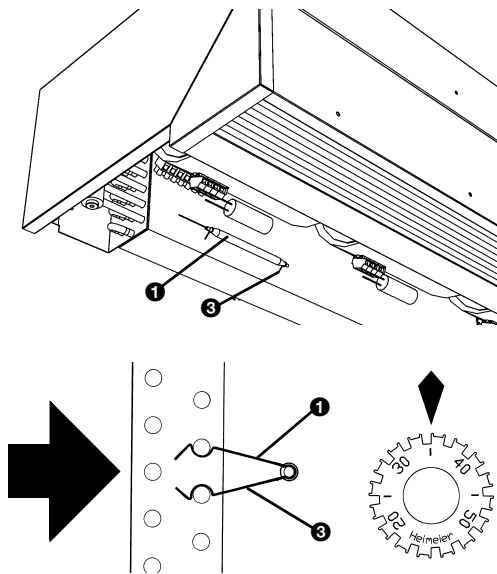
Control for fixed discharge temperature



1. Open the unit (see section 6.2)
2. Connect the unit and valve to the central heating system according to the opposite diagrams.
3. Mount the thermostatic control to the valve.



4. Make crosswise cuts in grommet **2**.
5. Insert sensor **1** into the unit.



6. Mount sensor ❶ to the heat exchanger using the spring clips ❸.
 7. Close the unit.
 8. Set the thermostatic control to the desired discharge temperature.
- Note:**
Biddle recommends a discharge temperature of 35°C.
9. Fill and bleed the system.
 10. Check the connections for leaks.

2.6 Connecting the unit to the power supply

2.6.1 Connecting water-heated models

1. Ensure that an (earthed) power point is available at a maximum of 1.5 m from the right-hand side of the unit.



Caution:
Do NOT yet switch the mains supply on.



Warning:
The unit must be earthed.

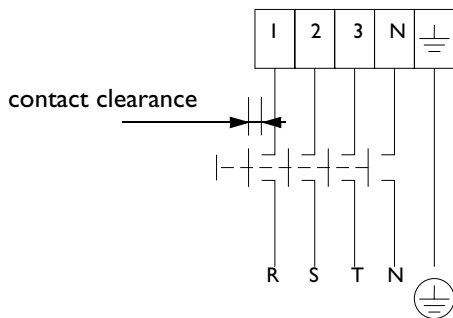
2.6.2 Connecting electrically-heated models



Danger:
Do not perform the connection work unless you are qualified to work with three-phase current.

Particulars

- Connect the unit to the power supply with a 5-core cable (not supplied). The maximum load data are specified on the type plate (see section 1.3.4).



- An isolation switch (not supplied) must be fitted between the unit and the power supply. This switch must:
 - be all-pole;
 - have a minimum contact clearance of 3 mm;
 - be positioned within 4 m from the right side of the unit.



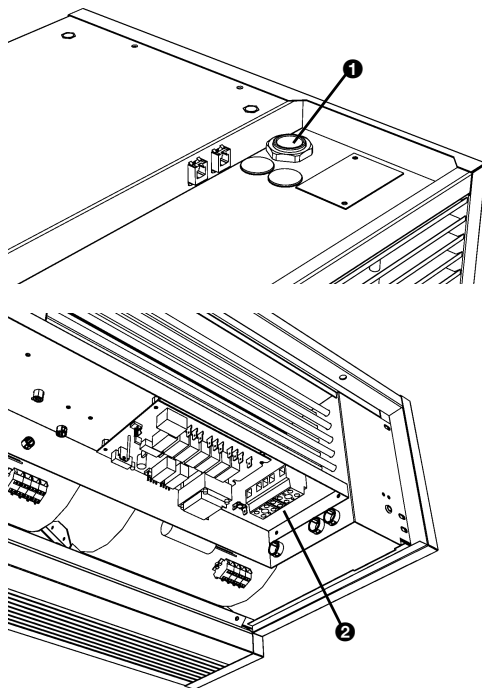
Warning:
The unit must **NOT** be switchable using the power supply cable – use the touchpad controller for that.



Warning:
The unit must be earthed.



Warning:
Connect the unit in accordance with the applicable local requirements.



Performing the connection



Warning:
Make sure that the power supply you are working on is switched off.

1. Fit the isolation switch and connect it to the power supply.
2. Open the unit (see section 6.2).
3. Lead the mains supply cable through the cable gland ①.
4. Connect the cable to the terminal ② in the unit according to the wiring diagram.
5. Put back and screw down the inspection panel and grille.
6. Connect the mains supply cable to the isolation switch.



Caution:
Do **NOT** yet switch the mains supply on.

2.7 Setting a unit as master (SF_i, optional)

With multiple units operated from one control panel only

2.7.1 Working

On delivery, each unit comes set as equal. If you apply multiple units with one control panel, the units work independently:

- If you connect an external control (see section 2.8.1), only the unit to which it is connected to will respond to it.
- With the automatic temperature control (see section 3.2.3), the temperature is regulated independently in each unit.

You may choose to set one unit as master. By this, the working of the units will be linked:

- If you connect an external control to the master unit, the other units will respond to it in the same way.
- With the automatic temperature control, all units are regulated from the master unit.

2.7.2 Setting the unit

With the unit that is to be set as master:

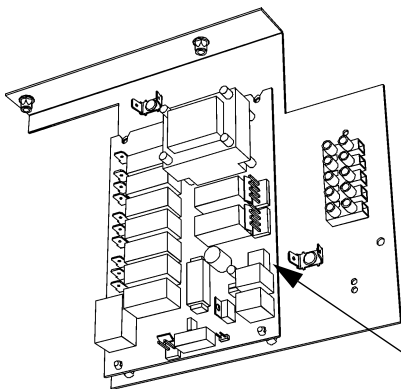
1. Open the unit. (see section 6.2)
2. Take out the PCB if necessary (see section 6.3)
3. Set DIP switch no. 3 on the PCB into the 'ON' position.



Warning:
NEVER change the settings of the other DIP switches.

4. Close the unit.

With the other units, leave this setting unchanged.



2.8 Connecting external controls (SF_i, optional)

2.8.1 Input for external control

To the input, you may connect a door contact switch and/or a BMS system.

The connector is located in the top of the unit. It comes with a bridge in it on delivery. The connector is wired to the PCB (connector INHIBIT).

The input is fit for potential-free switch contacts. It is operated as follows:

- *contact closed* (or with a bridge): The unit works normally.
- *contact open*: The unit remains switched off.
- *with a resistance across the contact* (3,3 kΩ): The unit works, but the heating remains switched off (Summer setting).

Multiple units operated from one control panel

To let all connected units respond to the external control in the same way:

1. Set one unit as master. (see section 2.7)
2. Connect the door contact switch to the master unit.



Note:

Do NOT remove the bridges from the other units.

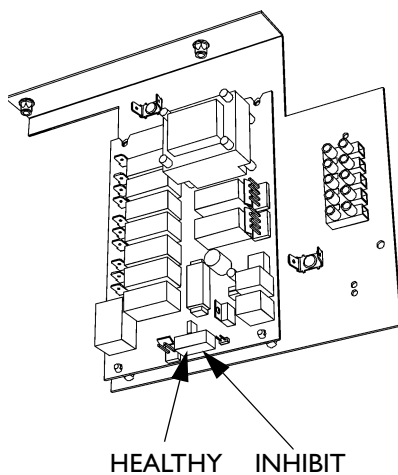
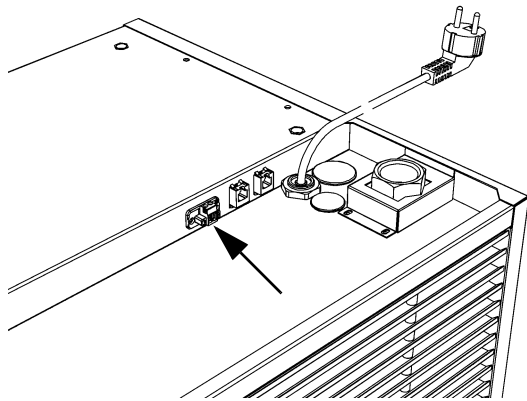
2.8.2 Output for fault signal indication

To the output, you may connect a BMS system.

The connector is located on the PCB (connector HEALTHY).

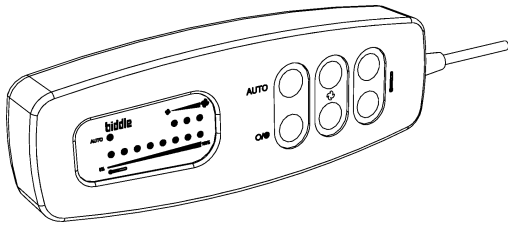
The output works as follows:

- *24V DC*: The unit is working normally.
- *no potential*: Either the high-limit thermostat has switched off the heating, or no power is supplied to the unit.



2.9 Installing the controller

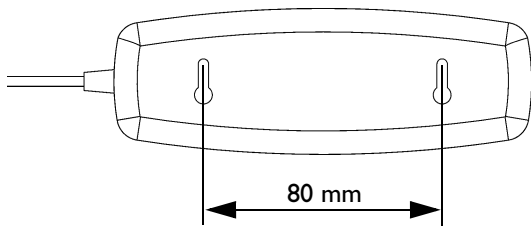
2.9.1 Mounting and connecting the touchpad controller (SF_i)



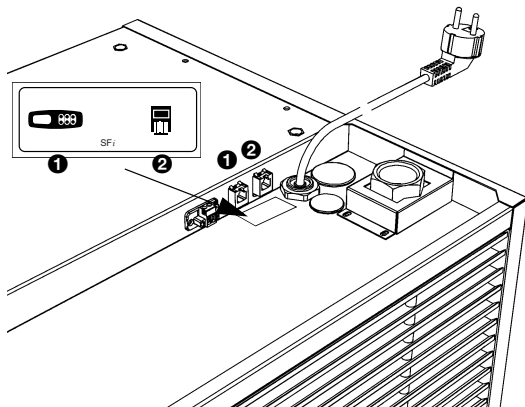
Note:

Take the following into account, otherwise faults may occur:

- Keep control cables away from electromagnetic fields and interference sources such as high-voltage cables and fluorescent-light starters.
- Stretch control cables out or wind them bifilarly.

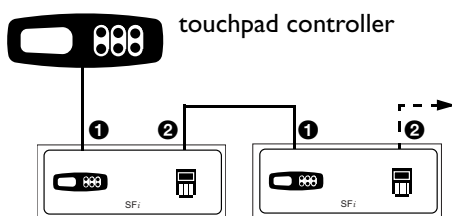


1. Drive two screws into the wall at a centre distance of 80 mm. Keep a clearance of approx. 2 mm between screw head and wall.
2. Hook the control panel on the screws using the key holes.
3. Connect the controller cable to socket ❶ in the top of the unit.



Multiple units operated from one control panel

- Only SF_i-type units can be simultaneously operated using one single control panel.
- Up to 100 units can be connected to one single control panel. The units must be interlinked using special control cable from Biddle.
- The total length of the control cables is not to exceed 100m.
- *If a unit has been set as master:* the control panel may be connected to any unit.



Note:

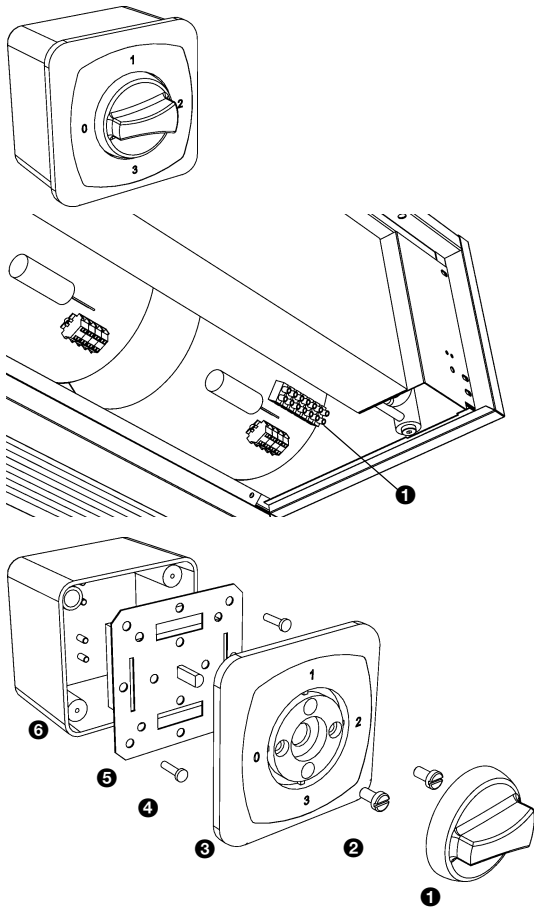
Use only control cables from Biddle. Standard modular telephone cable is *not* suitable.

1. Interlink the units: Connect the control cable of the unit to which the controller is linked to socket ❷, and that of the next unit to socket ❶.

2.9.2 Mounting and connecting the three-speed switch (SF₃)

Fix the three-speed switch to the wall or to a standard socket.

1. Open the unit (see section 6.2).
2. Connect a 4-core cable to terminal strip ❶ according to the wiring diagram.
3. Open the three-speed switch by:
 - pulling knob ❶ out;
 - loosening screws ❷ and removing cover ❸;
 - loosening screws ❹ and removing switch ❺.
4. Make a hole in the switch casing ❻ and lead the feeder cable through it. Mount the switch casing to the wall or install a standard power socket.
5. Connect the 4-core cable to switch ❺ according to the wiring diagram.
6. Mount switch ❺ to the switch casing or to the power socket.
7. Replace cover ❸ and knob ❶.



Caution:

Make sure that the switch indicates the correct speed on the cover.



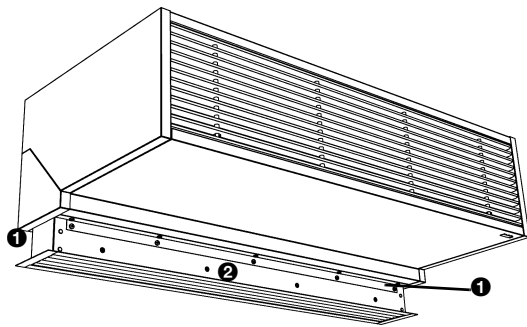
Warning:

Never connect more than one unit to a three-speed switch.

2.10 Integrating the unit

The SF is as standard fit for integration into coves or above suspended ceilings. To that end, the discharge section protrudes 24mm from the bottom of the unit. If that is not enough, the unit can be supplied with a loose telescopic discharge grille instead of the standard mounted discharge grille. Optionally, an air intake grille for integration can be supplied.

2.10.1 Mounting the telescopic discharge grille

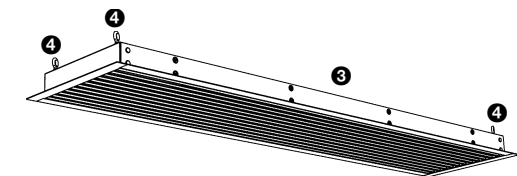


1. Make a hole in the ceiling for the discharge section (see Table 2-3 for the dimensions).
2. Using the supplied screws, fix the two angle profiles ① to the unit, along the edges of the discharge opening.
3. Slide the telescopic discharge grille ② into the unit's discharge opening until you reach the desired height.
4. Fix the discharge duct to the angle profiles ① using the supplied screws.

Table 2-3 Dimensions of hole for discharge section

	REFERENCE	TYPE	DIMENSIONS
	a	SF S-R	90 mm
	b	SF 100-R	970 mm
		SF 150-R	1470 mm
		SF 200-R	1970 mm

2.10.2 Mounting the integrated intake grille (option)

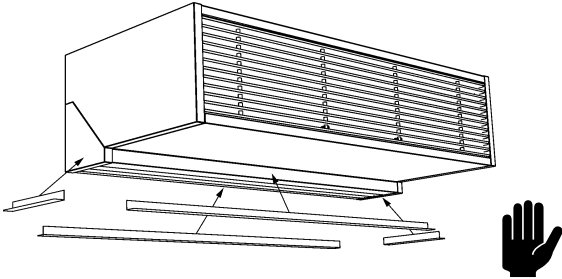


1. Make a hole in the ceiling for the integrated intake grille (see Table 2-4).
2. Hang up the integrated intake grille ③. To do so, use the screw eyes ④ or four threaded rods M6.

Table 2-4 Dimensions of hole for the integrated intake grille

	REFERENCE	TYPE	DIMENSIONS
	a	SF -R	205 mm
	b	SF 100-R	970 mm
		SF 150-R	1470 mm
		SF 200-R	1970 mm

2.11 Applying the edge finishing



This only applies if you integrate the unit into a cove or a suspended ceiling.

1. Fix the edge finishing strips to the discharge section of the unit.

Caution:

For the unit to work properly, the cove or ceiling must have enough openings through which the unit can take air in.

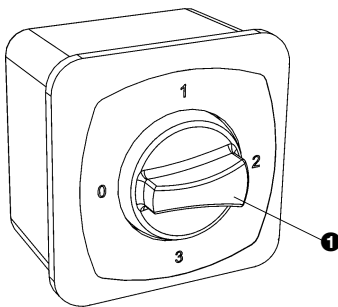
2.12 Switching On and checking operation

1. Check the following connections:
 - power supply;
 - control cable(s) between controller and unit(s);
 - external control components (if used).
2. Only SF W:
 - Check if the heat exchanger is connected correctly.
 - Make sure the central heating system is turned on.
3. Switch the mains power on and/or plug in all connected units.
4. Switch the air curtain on using the controller (see sections 3.1 and 3.2.1).
5. Make sure heating is enabled in the controller (only SF *i*, see section 3.2.3).
6. Feel whether the discharged air stream is getting warm (not for SF A). This may take some time.

3 . . Operation

This section describes the functions you should know for the day-to-day use of the comfort air curtain.

3.1 Three-speed switch (SF_s)



The three-speed switch of the SF_s allows you to switch the air curtain On and Off and to set the strength of the air curtain.

The three-speed switch is used for units without heating (SF_s A) as well as for water-heated units (SF_s W) either without discharge temperature control or with a fixed discharge temperature.

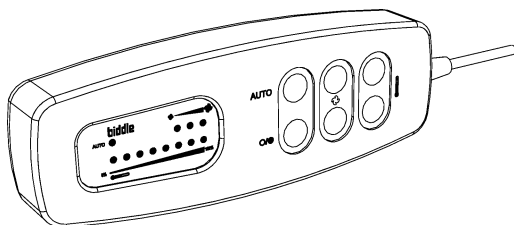
3.1.1 Setting the air curtain strength

- Turn knob ❶ to the desired mode:
 - 0 = Off
 - 1 = Low
 - 2 = Medium
 - 3 = High

Recommended air curtain strength

To achieve maximum climate separation with minimum energy consumption, Biddle recommends to select the lowest strength at which no draught occurs.

3.2 Touchpad controller (SF_i)

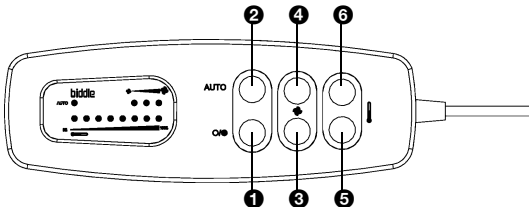


All functions of the SF_i can be operated from the touchpad controller. The controller allows you to:

- switch the air curtain On and Off;
- set the strength of the air curtain;
- enable and disable heating;
- regulate the desired room temperature;
- control the desired heating capacity.

Multiple units operated from one control panel

If multiple units are connected to one control panel, its settings will be the same for all units.



3.2.1 Switching the air curtain On and Off

You can switch the air curtain On and Off manually.

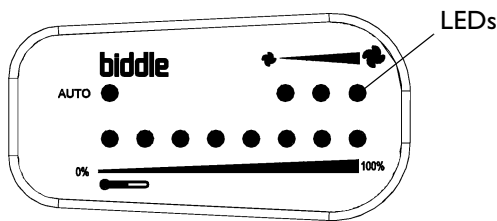
- Press key ❶ briefly to switch the air curtain On or Off.

Upon switching off the unit, the heat and air-flow settings are retained. If heating is enabled, the unit will keep on running at low speed for another minute.

3.2.2 Setting the air curtain strength

You can set the strength of the air curtain by choosing from 3 fan speeds.

- Press key ❷ to increase the air curtain strength by one step.
- Press key ❸ to decrease the air curtain strength by one step.



LEDs on the controller indicate the air curtain strength.

Recommended air curtain strength

To achieve maximum climate separation with minimum energy consumption, Biddle recommends to select the lowest strength at which no draught occurs.

3.2.3 Enabling or disabling heating

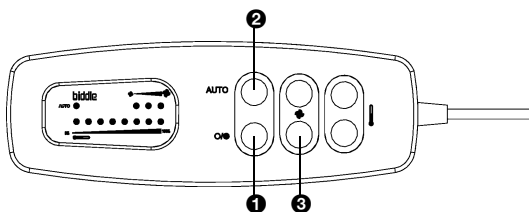
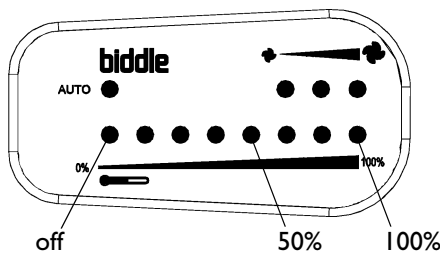
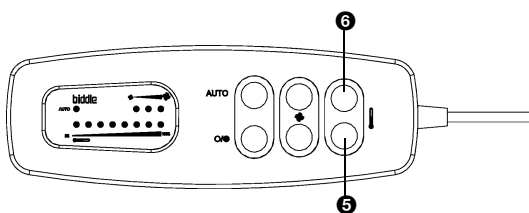
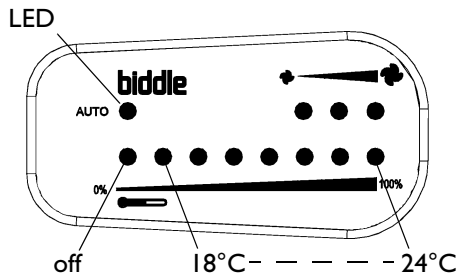
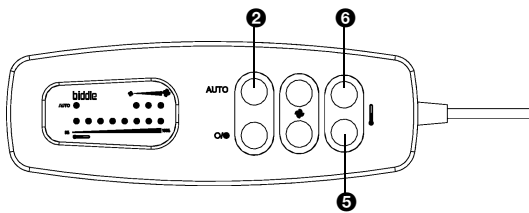
Depending on the type of the unit, the heating of the air curtain can be controlled automatically and manually. This only applies for the types SF*i* E and for the types SF*i* W with corresponding water-side control.



Note:

With the types SF*i* W without water-side control or with fixed discharge temperature and with the types SF*i* A, heating is indicated on the controller but has no function.

You can disable heating to achieve climate separation without heating the air if, for instance, the air is cooled inside and is colder than outside.



Automatic temperature control

In the Automatic mode, the unit reads the air inlet temperature and automatically selects the heating level required to reach or maintain the preset air temperature level.

- Press key 2 to enable or disable automatic temperature control.

If automatic temperature control is enabled, the LED next to the text “AUTO” on the controller will be lit.

- Keys 5 and 6 allow you to regulate the desired room temperature.

If the first LED is lit, heating is disabled. The next LEDs indicate the temperature setting from 18°C to 24°C. This temperature is read in the unit’s air intake section and may slightly differ from the real room temperature.

Setting heating manually

In the Manual mode, you can set the heating at full or half capacity or you can disable heating.

- Press key 6 to increase heating by one step.
- Press key 5 to decrease heating by one step.

LEDs on the controller indicate the unit’s heating level.

3.2.4 Enabling or disabling Automatic restart

When the supply power is interrupted, you can have the unit operate in either of the following ways:

- *Automatic restart* (default setting): The control panel retains all settings, and the unit will continue to work in the same way when the power is restored.
- *Manual restart*: The unit remains off when the power is restored.

To change this setting:

1. Switch the unit on with key 1.
2. Hold down key 2 until the LED next to “AUTO” flashes.
3. Press key 3 to toggle the setting.

4. . Maintenance

4.1 Cleaning the unit

You may clean the exterior of the unit with a damp cloth and a domestic cleaner. 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 if the heat exchanger or the electric heating elements are clean. Settled dust may cause unpleasant smells.
- Gently remove dust with a vacuum cleaner.



Caution:

The fins of the heat exchanger are delicate parts.



Warning:

The fins of the heat exchanger are sharp.

- Check the operation of the fans.

5 . . Faults

5.1 Safety instructions



Danger:

Work on the unit's interior shall be performed by qualified technical staff only.



Warning:

Before opening the unit, follow the safety instructions in section 1.4.

5.2 Fault-finding by the user

If you suspect a fault, first try to resolve the problem using Table 5-1. You need not be an expert for this.

5.3 Fault-finding by the installer

If table 5-1 does not provide the solution to the problem, table 5-2 can be used to investigate the fault further. Contact the supplier if table 5-2 does not provide the solution either



Caution:

First run through table 5-1 before considering the actions in table 5-2.



Danger:

The actions in table 5-2 may be performed by qualified staff only


Table 5-1 Resolving simple problems

PROBLEM	LIKELY CAUSE	WHAT TO DO
There's a draught.	The air curtain is Off.	Switch the air curtain On.
	The strength of the air curtain is too low.	Switch the air curtain to a higher strength.
	The strength of the air curtain is too high.	Switch the air curtain to a lower strength.
	The unit's heating is disabled(SFi).	Enable heating.
	The heating level is too low (SF _i).	Switch heating to a higher level.
It is too hot.	Together, the room heating and the air curtain produce too much heat.	<ul style="list-style-type: none"> • Reduce the room heating. • Switch the unit to a lower strength. • Switch heating to a lower level (SF_i).
It is too cold.	The heating in the room is insufficient.	<ul style="list-style-type: none"> • Increase room heating. • Switch the unit to a higher speed. • Switch heating to a higher level (SF_i).
It is too noisy	The unit is operating at the highest strength.	Switch the unit to a lower strength.
The unit does not work, and the controller display is blank.	The unit is Off.	Switch On the unit.
	No power is supplied to the unit.	Check the mains power supply: <ul style="list-style-type: none"> • is the unit plugged in? • is the isolation switch switched On? • is the mains power supply switched On?
The air curtain is switched Off but is still working.	The unit is cooling down automatically (SF _i).	This is not a fault. Normally, the unit will automatically shut down within 1 minute.

Tabel 5-2 Remediating faults by the installer

PROBLEM	LIKELY CAUSE	WHAT TO DO
The controller works normally but the unit does not respond.	The fans are dead.	<ol style="list-style-type: none"> 1. Check the fuse on the PCB. 2. Check the wiring between the PCB and the fans.
	The connection between the controller and the PCB is not correct.	<ol style="list-style-type: none"> 1. Check the control cable. 2. Check the wiring between the connectors ❶ and ❷ (see section 2.9.1) and the PCB in the unit.
	The contact on the input for external controls is open.	<p>If no external control component has been connected:</p> <ol style="list-style-type: none"> 1. Check the bridge on the input. <p>If an external control is present (door contact switch or BMS):</p> <ol style="list-style-type: none"> 2. Check the operation of the control component. 3. Check the wiring and the connection of the control component to the input. (see section 2.8). 4. Check the wiring between the input and the PCB (connector INHIBIT).
The unit does not work and the LEDs on the controller are not lit.	The unit is dead	<ol style="list-style-type: none"> 1. Check the power connections, wiring and fuses.
	The PCB does not work.	<ol style="list-style-type: none"> 1. Check the fuse on the PCB. 2. Check the feeder cable. 3. Replace the PCB.
	The controller is defective.	<ol style="list-style-type: none"> 1. Check the controller by connecting it to another unit. Replace the controller if it does not work.
One fan does not work.	The fan is dead or defective.	<ol style="list-style-type: none"> 1. Check the wiring of the fan. 2. Replace the fan.
The fans do not operate at a certain strength.	The connection for the relevant strength is not correct.	<ol style="list-style-type: none"> 1. Check the wiring of the fans.
Not all connected units are working.	The controller does not communicate with one or more connected units.	<ol style="list-style-type: none"> 1. Check if mains power is supplied to all connected units. 2. Check the control cables: <ul style="list-style-type: none"> - are they properly connected and free from breaks? - are they either stretched out or wound bifilarly? - are they shielded from magnetic fields? 3. Check PCB fuses in all connected units. 4. Check the wiring between the connectors ❶ and ❷ (see section 2.9.1) and the PCB.

Table 5-2 Remediating faults by the installer

PROBLEM	LIKELY CAUSE	WHAT TO DO
Multiple units connected to one: control panel: The units do not respond to the external control (door contact switch or BMS) in the same way.	The master unit has not been set properly.	1. Check if the unit to which the external control has been connected has been set as master. (see section 2.7)
	The contact to the input for external controls is open.	1. Check the bridges on the inputs of the units that have not been connected to the external control.
The unit blows cold air.	SF W: No hot water is supplied to the unit.	<ul style="list-style-type: none"> • Check the central heating system. SF _i W: <ol style="list-style-type: none"> 1. Check if the valve lets hot water pass through. 2. Check the wiring and connectors of the valve drive and the intake air temperature sensor. 3. Take the drive from the valve, and check the interior for mechanical operation and defects.
The unit blows cold air.	SF E: The high-limit thermostat switched the unit Off: this is to protect against overheating.	This fault may occur: if the unit has been temporarily dead, e.g., due to a power failure. In other cases, there may be a serious defect that may pose a risk to persons. <ol style="list-style-type: none"> 1. Check and reset the high-limit thermostat (see section 6.5). 2. Check the fans. If one or more fans do not work, check: <ul style="list-style-type: none"> - the fan wiring; - the connections to the PCB; - the PCB fuses. If these are OK, replace the fan.
	SF W: The thermostat was wrongly set.	Set the control thermostat at the desired discharge temperature.
The air discharged is not hot enough.	SF W: The supplied water temperature is too low.	Increase the water temperature of the central heating system.
	SF E: One or more power supply phases fail.	Check the fuses of the power supply and the electrical connections.
The unit continues discharging hot air.	SF _i W: The valve was opened manually.	Put valve handle  of the valve actuator back to the left (see section 2.5.3)

Tabel 5-2 Remediating faults by the installer

PROBLEM	LIKELY CAUSE	WHAT TO DO
The unit always blows cold air in the Automatic mode.	The temperature sensor is not working.	<ol style="list-style-type: none">1. Check connection J3 on the PCB.2. Replace the sensor.
Multiple units connected to one control panel: The units heat unequally in the Automatic mode.	The temperature is controlled independently in each unit.	<ol style="list-style-type: none">1. Set one unit as master. (see section 2.7)

6. . Service

6.1 Safety instructions



Danger:

Service work on the unit may be performed by qualified technical staff only.



Warning:

Before opening the unit, follow the safety instructions in section 1.4.

6.2 Access to the interior of the unit

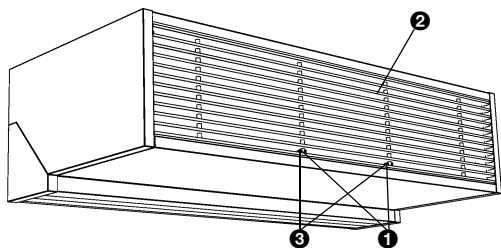
For all models

1. Switch the unit Off using the controller.



Warning:

Disconnect the power supply (pull plug from socket or move isolation switch to Off).



2. Detach the inlet grille from the unit:

- Only for SF E and SF A: remove the screws ❶ from the grille.
- Pull the grille ❷ forward using the white clamps ❸ at the bottom.

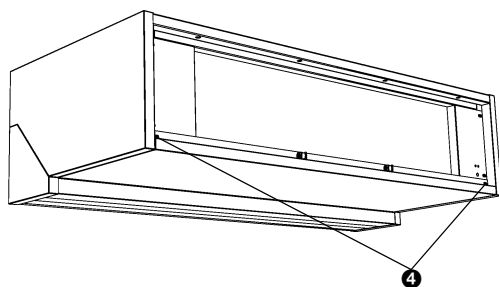


Warning:

The heat exchanger or heating elements may be hot.

3. Remove the inspection panel:

- Remove the screws ❹.
- Pull the panel a little forward and take it away.



Caution:

The whole panel will come loose when you pull it forward: take care it does not fall down.

6.3 PCB (SF_i)

6.3.1 Introduction

The unit has one fused PCB.

The SF_i E and the SF_i W house the PCB at different locations.



Note:

The PCB in your unit may look different from the PCB illustrated opposite.

6.3.2 Removing the PCB (SF_i W)

1. Switch the unit Off using the controller.



Warning:

Disconnect the power supply (pull plug from socket or move isolation switch to Off).

2. Remove the inspection panel (see section 6.2).
3. Remove the screws ❶ at the upper side of the unit.
4. Remove the PCB ❷.
5. Disconnect all unit-connected connectors and earth connections from the PCB.

6.3.3 Removing the PCB (SF_i E)

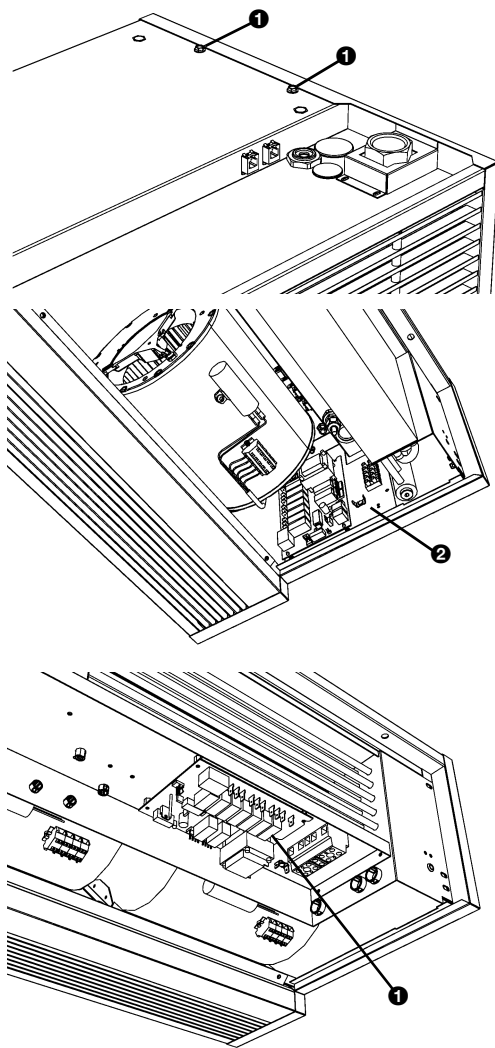
1. Switch the unit Off using the controller.



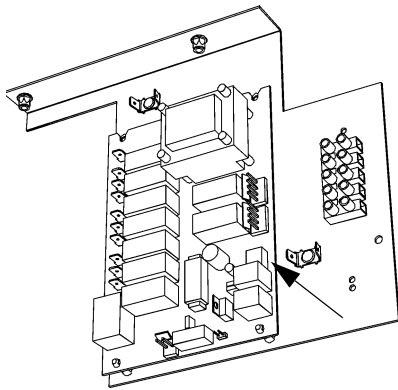
Warning:

Disconnect the power supply (pull plug from socket or move isolation switch to Off).

2. Remove the inspection panel (see section 6.2).
3. Disconnect all unit-connected connectors and earth connections from the PCB ❶.
4. Remove the PCB.



6.3.4 DIP switches on the PCB

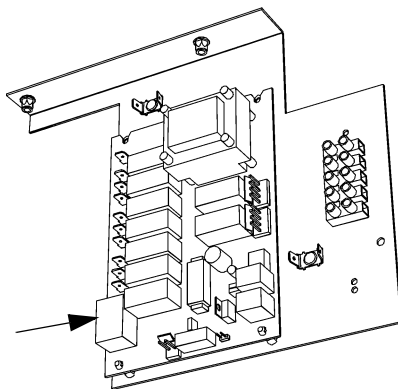


Warning:
NEVER change the settings of the DIP switches, unless instructed otherwise.



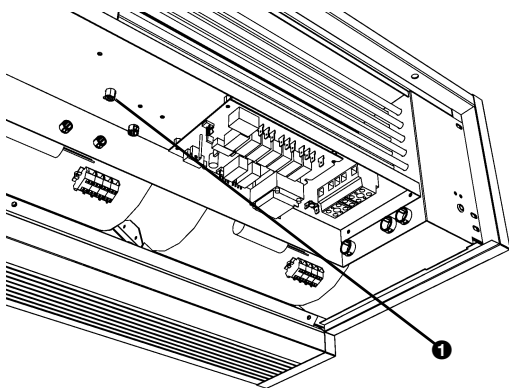
Caution:
If you replace the PCB: set the DIP switches on the new PCB in the same positions as the old PCB.

6.4 Fuses (SF_i)



The unit's PCB has 2 fuses. Their values are indicated on the PCB.

6.5 Resetting the high-limit thermostat (SF_i E)



The electrically-heated units come with a high-limit thermostat to protect against overheating.

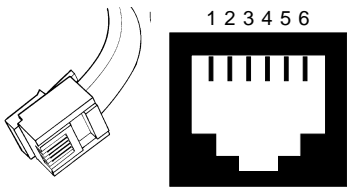
1. Open the unit.
2. Push back the pin of the high-limit thermostat ❶.
3. Check the unit's connections.
4. Close the unit.
5. Check the operation of the fans.

6.6 Composition of Biddle control cable

The control cable for Biddle units is different from standard modular telephone cables.

The connectors are of the RJ-11 type but the connections are 'straight' at both ends of the cable, the core is connected to the same pin.

Table 6-1 Colour codes of Biddle cables

	PIN	COLOUR
	1	(not used)
	2	black
	3	red
	4	green
	5	yellow
	6	(not used)

