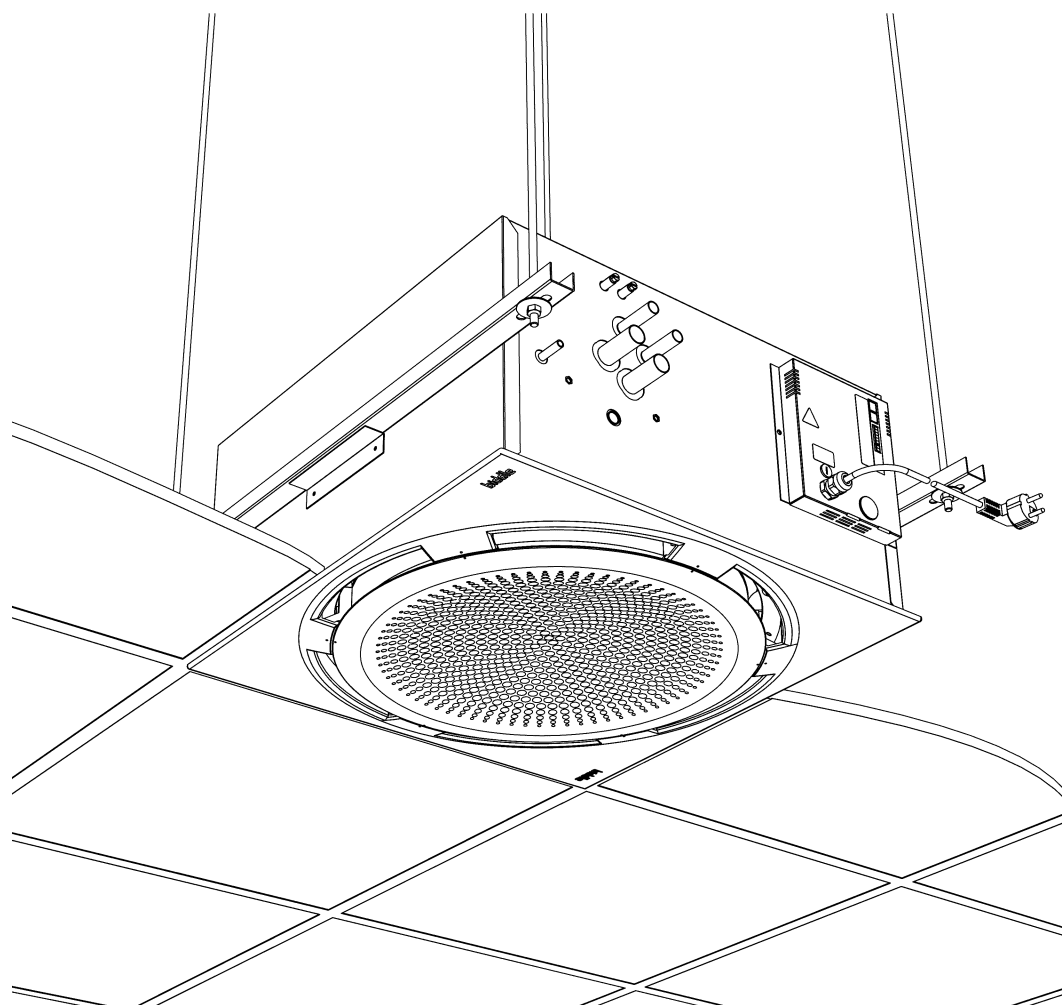


# Manual

# Cassette heater

Model Comfort Circle EC



Version 1.0  
Original Manual

**English**



**Biddle**

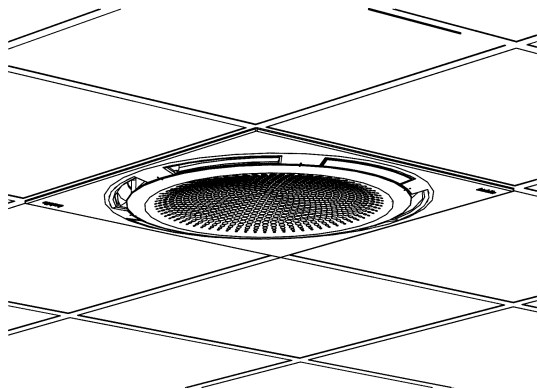
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# Introduction

## 1.1 About this manual



This manual describes the installation, operation and maintenance of , the cassette unit model Comfort Circle. The manual also provides instructions and information for servicing activities.

## 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.

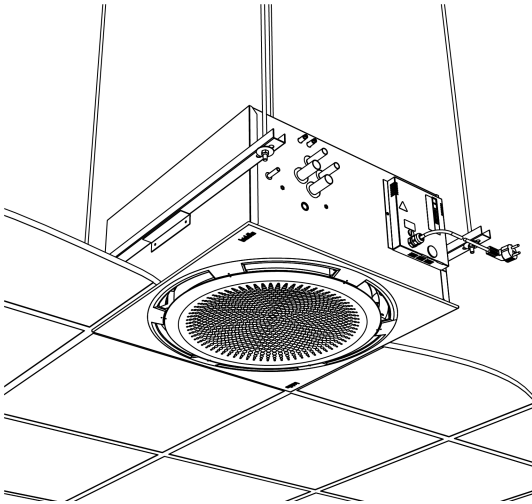
SYMBOL	DESCRIPTION
	<p><b>You have accessed a section of the unit containing components which carry a voltage.</b></p> <p>Access restricted to qualified maintenance staff only.</p> <p>Caution is required.</p>
	<p><b>This surface or component may be hot. Risk of burns on contact.</b></p>

### 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.
- insert sheet for adjusting fan speed settings (if required)

## 1.3 About the unit



### 1.3.1 Applications

The Comfort Circle is designed for heating rooms.

The model is designed for integration into suspended ceilings but can be used in other ceilings as well. The unit is designed to be mounted at a height of 2.0 to 3.5 m (from floor to discharge grille).

The unit draws air from the room, heats it, and blows it back into the room.

#### Other versions and intended use



**Warning:**  
Applications other than those described above are deemed to be 'usage other than for the intended purpose'. Biddle is not liable for damage or loss resulting from usage other than for the intended purpose. Usage for the intended purpose also entails observance of the instructions in this manual.

### 1.3.2 Working

The Comfort Circle blows out a flow of heated air, creating a comfortable climate in the room.

The units have a fixed discharge angle setting.

The unit can be delivered with two types of control, an advanced controller that features a digital controller, or a simpler mechanically thermostatically controlled unit. The manual covers only the latter. For the advanced controller product, please refer to the instructions supplied with that product.

### 1.3.3 Type designation



The table below provides an overview of the available models of the unit and the corresponding type designations. In combination, the type designations constitute the type code.

**Explanation of the type code**

TYPE CODE ELEMENT	DESIGNATION	MEANING
product series	CC	general designation for the series
size	60	60 x 60 cm
battery type	H2	water heating, element is 2 rows thick
	H3	water heating, element is 3 rows thick
control	BC1	Basic Controls Pack 1
	BC2	Basic Controls Pack 2
	BC3	Basic Controls Pack 3
	ADV	Advanced controls

**I.3.4 Type plate**

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

 Biddle bv Markowei 4 NL-9288 HA Kootsterlille  Made in the Netherlands  	Type	XX XX-XX-XX		
	Code	xxx	U	xxx V xN- xx Hz
	N°	xxxxxx/x-x xx-xx	I <sub>max</sub> L1	xxx A
			I <sub>max</sub> L2	-
			I <sub>max</sub> L3	-
	M	xx kg	P <sub>motor</sub>	xxx kW
	Medium	XXXX	P <sub>heating</sub>	-
	P <sub>max</sub> xxx kPa			

**Designations on the type plate**

DESIGNATION	MEANING
Type	complete type code of the unit
Code	configuration code
N°	serial number, production week and year
M	weight of unit
Medium	medium
P <sub>max</sub>	maximum permissible operating pressure
U	power supply voltage
I <sub>max</sub>	max. current
P <sub>motor</sub>	max. power consumption by fans

**I.3.5 Field of application****Operating limits for all models**

Ambient conditions	Minimum temperature	5 °C
	Maximum temperature	30 °C
	Relative air humidity	20% - 95%, not condensing
Power supply voltage		see type plate
Power		see type plate
Maximum discharge temperature		60 °C
Maximum operating pressure		see type plate

**Operating limits for all models**

Maximum water flow-path	H2	82/71 °C
	H3	60/40 °C

**Note:**

Consult Biddle if you want to connect a unit to a water flow-path with higher temperatures and higher pressure.

**Warning:**

The unit may not be used in potentially explosive environments.

**Biddle shall not be held liable for damage caused by use under these conditions.**

**1.3.6 CE declaration**

The unit is compliant with the applicable CE standards. The complete CE Declaration of Conformity can be found at: [www.biddle.info](http://www.biddle.info).

**1.3.7 Modifications and changes**

Without the approval of Biddle, no changes or modifications may be made to the unit that could adversely affect safety. The CE declaration is no longer valid if the unit has been modified or changed in any way.

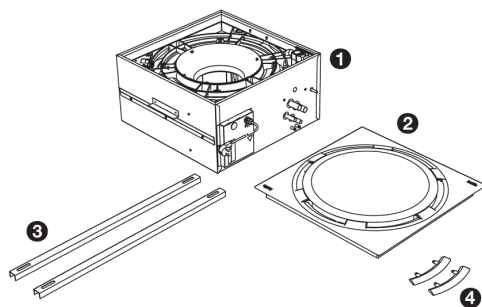
**1.4 Components and accessories****1.4.1 What's in the box**

The unit comes in a box, which contains the following components:

- unit ①;
- cover ②;
- 2 suspension profiles ③;
- 2 blind plates ④ with fixing screws to adjust the discharge pattern;

The following components are delivered separately and are optional items:

- controller ;





- room thermostats
- LTC Pipe stats
- remote wall mounted control switch

#### 1.4.2 Accessories

The following accessories are available as options:

- suspension kit consisting of Flamco rails and threaded rods;
- edge sections for edge finishing in suspended ceilings

#### 1.4.3 Components not supplied

The following components required for installation must be obtained from third parties:

- threaded rods (M8)
- other cabling
- **on models with ventilation (type V):** insulated ducts

## 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.



**Warning:**

The maximum environmental temperatures during operation are:

- in heating mode: 30°C

### 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 fan has stopped.



**Danger:**

The fan may continue rotating for a while.

3. Allow the unit to cool down.



**Caution:**

The heat exchanger or, as the case may be, the heating elements, can get very hot.

4. Disconnect the mains supply (switch off the isolation switch).
5. **For water-heated models:**  
shut off the central heating feed (if possible).



**Warning:**

The fins of the heat exchanger are sharp.

### 1.5.3 Transport

Prior to transporting the product, it should be removed and stowed safely so as to not incur damage. The original packaging should be used wherever possible and the product should be protected from any significant temperatures or vibration.

### 1.5.4 Storage

The product must be stored in a dark, dry, frost free and well ventilated place out of the reach of children. Storage temperatures should be between 0-30 °C. The original packaging should be used for long term storage.

# 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.

## 2.2 Inspection on delivery

- Check the unit and the packaging to ensure that 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

1. Hang the unit up.
2. **For models with water-heating (type H):**  
connect the unit to the central heating system.
3. **In the case of models for cooling (type C):**  
Attach the condensate drain.
4. **In the case of models with ventilation (type V):**  
Connect the unit to the air ducts.
5. Connect the unit to the mains supply.
6. Install the control panel and (any optional) connections to external controls.

7. Complete the installation of the unit.
8. Switch the mains 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.

## 2.4 Hanging the unit up

### 2.4.1 Positioning the unit



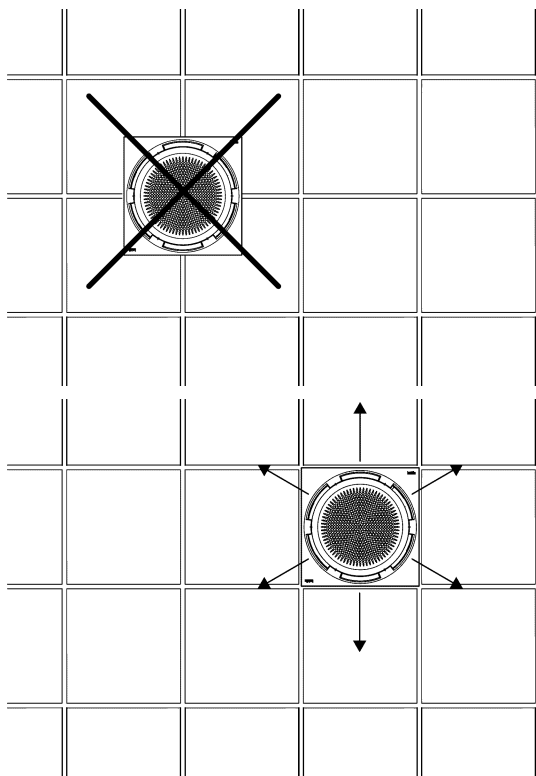
**Warning:**

Make sure that the structure from which the unit is about to be suspended can hold the weight of the unit. The weight is specified on the type plate.



**Warning:**

The *minimum* mounting height is 2.0 m.



- Ensure the following:
  - Position the unit between the ceiling profiles.
  - Pay attention to the unit's orientation in the room (it is possible to adapt the discharge pattern to the room).
  - The maximum mounting height for the unit is 3.5 m. (measured from floor to ceiling).



**Caution:**

The ceiling tiles should not rest on the cover. Instead, use the T-beams of the suspended ceiling or use the optional edge sections.



**Note:**

After hanging the unit, it is no longer possible to change the orientation of the cover.



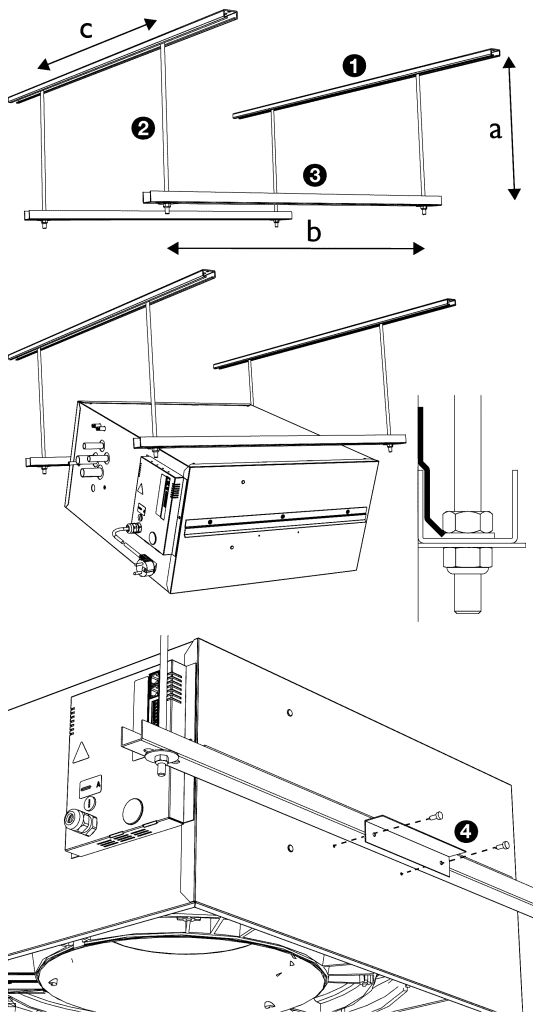
**Note:**

Provide for an inspection hatch in the ceiling if the Comfort Circle is not fitted in a suspended ceiling.



**Note:**

Mounting the unit above the maximum height may affect the proper working of the unit.



Dimensions for suspending the unit

REFERENCE		DIMENSION
a		as needed
b		670 - 750 mm
c	CC 60	600 mm

### 2.4.2 Suspending and securing the unit

1. Mount Flamco rails ❶ and fit threaded rods M8 ❷ according to the dimensions in the table



**Caution:**

Make sure the threaded rods are perpendicular.

2. Mount the suspension profiles ❸ to the threaded rods.
3. Hook the unit into the suspension profiles.
4. You can still change the position of the unit somewhat by moving it in the suspension profiles and Flamco rails.
5. Secure the suspension on both sides using the securing brackets ❹.



**Warning:**

The unit may come down if you do not secure the suspension.

6. Bring the underside of the unit in line with the T-beams of the ceiling..



**Caution:**

Ensure that the unit is level.

## 2.5 Units with thermostatic control

1. Connect the unit to the CH system – the flow and return paths are indicated by labels on the product.
2. Fill and bleed the system.
3. Check any compression joints for signs of weeping and tighten where appropriate.

**Note:**

The valve supplied with the unit is thermostatically operated by the discharge air to ensure the product won't overheat. Do not remove this from the unit. Failure to do so may result in a shortened product life.

## 2.6 Installing the thermostats

**Note:**

This product can be supplied with a variety of different control options to suit customer's requirements. Some of the below may or may not be relevant to your unit.

### 2.6.1 Controls Overview

The product can be supplied with the following controls:

- T1 - On/off thermostat
- T2 - Speed change thermostat
- T4 - Variable temperature pipe thermostat
- Remote switches - Wall mounted switches to allow the occupant to select the fan speeds and bypass the T4 (if fitted)

### 2.6.2 T1 & T2 Installation

**Note:**

T1 and T2 are available in adjustable and tamperproof styles, please contact the sales office for more information.

1. Fix the thermostats to the wall at a height of approximately 1.5m from the floor away from any draughts or heat sources such as radiators, direct sunlight or windows.
2. Wire up as per the wiring diagram supplied with the product.

### 2.6.3 T4 Installation

1. Wire the T4 as per the wiring diagram supplied with the product

2. Fix using the supplied cable tie to the flow connection before any control valves
3. Set to between 40-45 °C



**Note:**

Connecting the T4 to the return pipe will result in constant switching of the unit and poor heating.

## 2.7 Adjusting fan speeds

The product is supplied with a 0-10V variable speed EC fan that is factory set to operate at 4V (low), 5V (medium), 6V (high). These speeds can be adjusted on site if need be to either increase fan speed (in conjunction with heating duty and noise levels) or decrease the fan speed (reduction in heating duty and noise). Please contact the sales office for information on how the performance is affected and how the speeds can be changed.

## 2.8 Connecting the unit to the central heating system

### 2.8.1 Special points regarding the water connection

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

SYMBOL FEED PIPE	SYMBOL RETURN PIPE
arrow points towards the connection	arrow points away from the connection



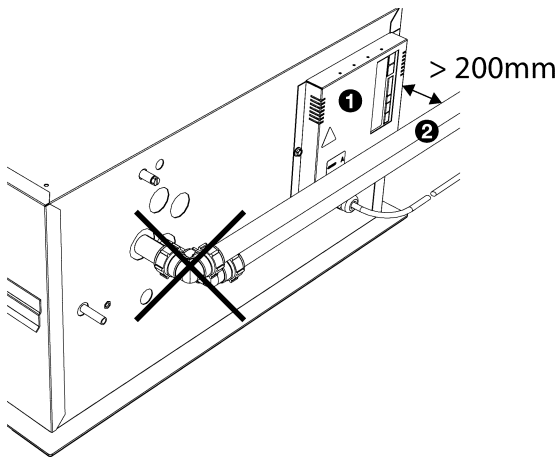
**Warning:**

Use only compression fittings to connect the unit to the system.



**Connection sizes of fittings.**

TYPE	COMPRESSION FITTING
CC 60	ø22 mm

**Caution:**

Biddle recommends the inclusion of a shut off valve in both pipes.

**Caution:**

The electronics module must remain accessible. The distance between the pipes ② and the electronics module ① must be at least 200 mm.

**Danger:**

**Take measures to limit the discharge temperature.**

**Take account of the critical discharge temperatures and water flow-paths indicated in the section Field of application.**

**Note:**

The central heating system must be fitted with an overpressure cut-out with an initial pressure not exceeding the permitted pressure of the unit. This is shown on the type plate at  $P_{max}$ .

**Note:**

Make sure that the central heating system has sufficient capacity.

**2.8.2 Connecting the unit**

1. Connect the unit to the central heating system.
2. Vent the heat exchangers.
3. Check the connections for leakage.

## 2.9 Connecting the mains supply

### 2.9.1 Special points regarding the mains supply



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



**Warning:**  
The unit must be earthed.



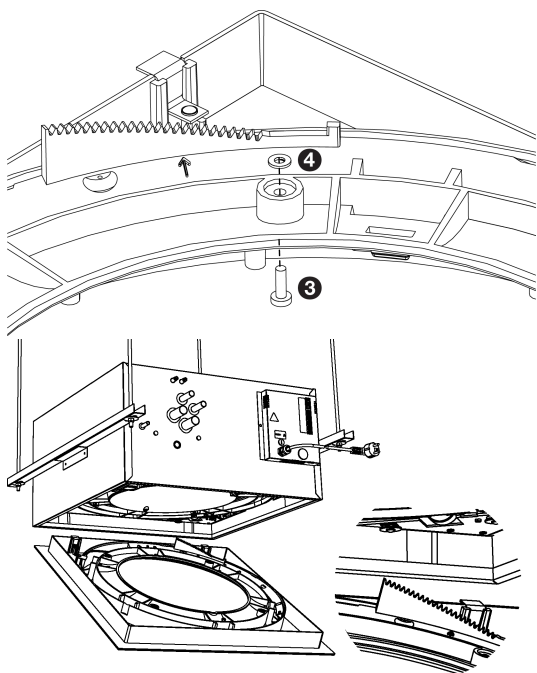
**Warning:**  
The unit must be connected in accordance  
with the applicable local requirements.

- The unit fuse is 1.6 A.
- Ensure that an (earthed) power socket is available at a maximum of 1.5 m from the left side of the unit.

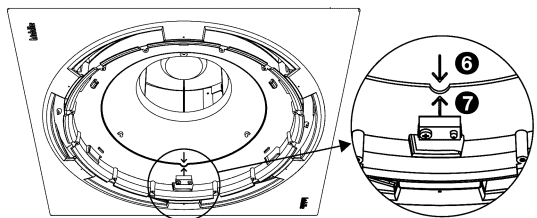


**Note:**  
The power socket must remain accessible after  
installation so that the unit can be disconnected for  
service and maintenance.

### 2.10 Mounting the cover



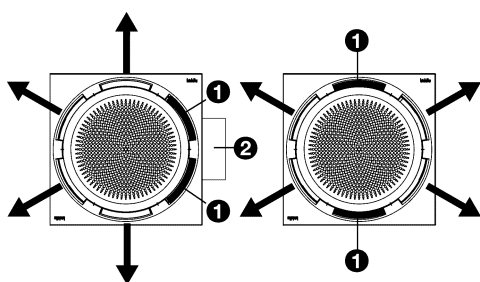
1. Remove the air inlet grille by turning it anticlockwise (bayonet catch).
2. Fit the supplied screws ③ and anti-loss rings ④ into the cover.
3. Mount the cover into the unit:
  - Hook the cover into the unit using the metal lips;
  - Tighten the screws in the indicated order.



**Caution:** Ensure that the projection ⑥ of the unit falls into the recess ⑦ of the cover. The cover fits to the unit in only one way.

4. Put back the air inlet grille.

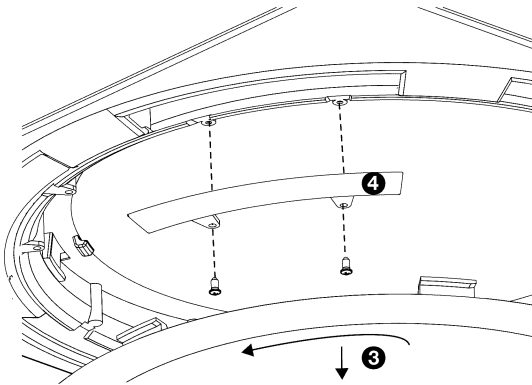
### 2.11 Adjusting the discharge pattern



The discharge pattern can be adjusted to the room using the supplied blind plates. ①.

**Caution:** If use is made of the air connection for an adjoining room, the two blind plates must be mounted in the two holes on the side of this connection ②.

**Caution:** Do not mount more than two blind plates per unit.



1. Remove the air inlet grille ③ by turning it anticlockwise (bayonet catch).
2. Place the blind plate ④ into the desired opening, and fix it with the supplied screws.
3. Replace the air inlet grille.

# 3 Operation

The product is able to be controlled in the following fashion:

## 3.1 On/off (T1) thermostat

This is usually set to around 20 °C. Once room temperature reaches this setting the fan automatically turns off.

## 3.2 Speed change (T2) thermostat

This provide an automatic 'boost' setting by allowing the fan to run at a higher speed when the room temperature is colder than its setting. In typical applications, this can be set to 16 °C.

## 3.3 Low temperature cut out (T4) thermostat

Clipped on to the supply pipework to the unit, this monitors the temperature of the water in the coil and automatically turns the fans off when it drops below its predefined setting (circa 40 °C – 45 °C).

## 3.4 Remote switches

The unit can be set to run at one of three fan speeds, however it is usual to set the remote slider to position I.

### *Summer/winter switch*

when the remote slider is set to 'Summer' (as indicated by the flame symbol) position it over-rides the low limit cut out (T4) thermostat and the on/off (T1) thermostat. This allows the unit to continually re-circulate ambient air when heating is turned off. When heating is required, the remote slider should be set to the (\*) position. However the fans will not operate until a water temperature of at least 40°C is detected by the low limit cut out (T4) thermostat.

# 4 Maintenance

## 4.1 Cleaning the unit

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



**Caution:**

Make sure that no water runs into the unit.

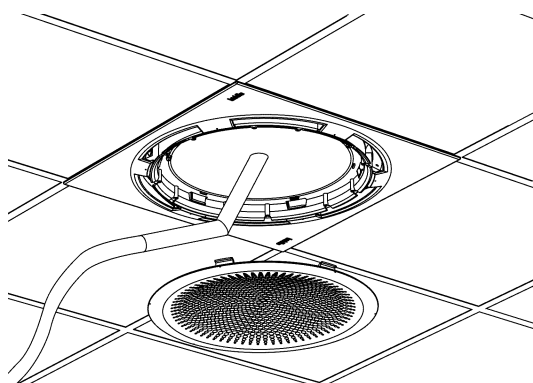
## 4.2 Replacing or cleaning the filter

The filter must be cleaned regularly. A dirty filter may cause inadequate heating as well as a high noise level. The interval at which the filter is to be cleaned depends on the local conditions.

You can clean the filter with a vacuum cleaner, for instance. After several cleanings, however, the filter must be replaced. New filters are available from Biddle.

### 4.2.1 Cleaning the filter

1. Switch the unit off using the controller.
2. Remove the air inlet grille ❶.
3. Clean the filter ❷ using a vacuum cleaner ❸.
4. Replace the air inlet grille.
5. Switch the unit on.



### 4.2.2 Removing and replacing the filter



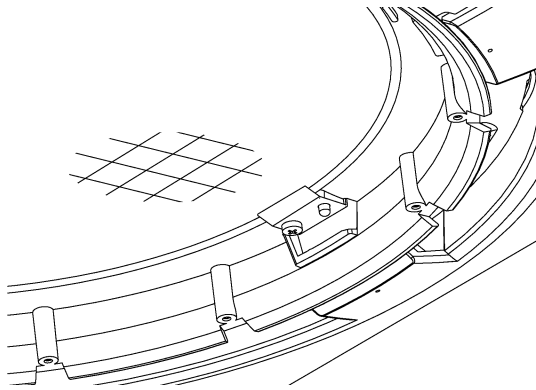
**Danger:**

This may be carried out by qualified staff only.



**Warning:**

Replace the filter if it is damaged.



1. Switch the unit off.
2. Disconnect power supply (remove plug from socket or move main switch to Off).
3. Remove the air inlet grille.
4. Loosen screw ❶, but do not remove it from the unit.
5. Turn away the locking plate ❷.
6. Take out the filter ❸.
7. Clean or renew the filter.
8. Replace the filter.
9. Re-apply the locking plate to the filter.
10. Tighten screw ❶.
11. Replace the air inlet grille.
12. Switch the power on again.

**Danger:**

**For safety reasons, the unit may not be used without a filter.**

### 4.3 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 is 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 Errors

## 5.1 Safety instructions



### **Danger:**

All work on the inside of the unit may only be carried out by personnel who are technically qualified to do so.



### **Warning:**

Before you begin: read the safety instructions.

## 5.2 Resolving simple problems



### **Danger:**

The actions in the table below may be performed by competent staff only.

#### *Fault finding by the installer*

PROBLEM	LIKELY CAUSE	WHAT TO DO
The fan does not work.	The fan is not receiving a power supply or is faulty.	<ol style="list-style-type: none"> <li>1. Check the fuse on the electronics module.</li> <li>2. Check the wiring between the PCB and the fan.</li> <li>3. Replace the fan.</li> </ol>
The fan does not operate at a certain speed.	The connection for the relevant speed is not correct.	Check the wiring.
Not all connected units are working.	The controller does not communicate with one or more connected units.	<p>Check if mains power is supplied to all connected units..</p> <ol style="list-style-type: none"> <li>1. Check the control cables.</li> <li>2. Check the fuses in all connected units.</li> </ol>



# 6 Service

## 6.1 Safety instructions

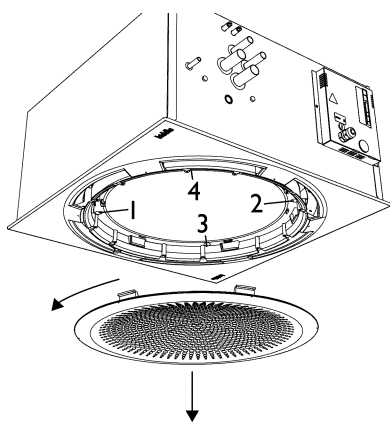


**Warning:**  
Servicing activities may only be carried out by personnel who are technically qualified to do so.



**Warning:**  
Before you begin: read the safety instructions.

## 6.2 Removing the main cover



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 grille by turning it anticlockwise (bayonet catch).
3. Loosen the screws in the indicated order. If anti-loss rings were mounted upon installation, the screws stay in the cover.

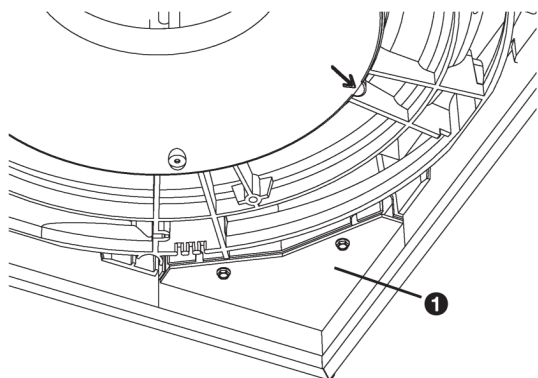
## 6.3 Accessing the interior of the unit

### 6.3.1 Recirculation units

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 main cover.
3. Remove the main cover **1**..
4. Detach the connections of fan, angle adjustment motor and temperature sensors from the PCB.
5. Detach the cables of fan and angle adjustment motor from their guides

6. Remove the drip tray **2** using screws **3**.



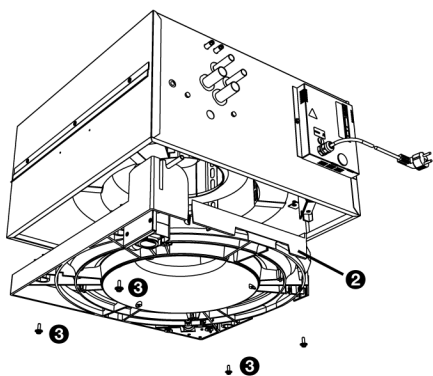
**Caution:**

The drip tray comes completely loose when you remove the screws. Ensure it does not fall down.



**Warning:**

The heat exchanger can be hot.



## 6.4 Electronics module

The unit offers one electronics module. It includes

- the PCB;
- the fuse.

If necessary, the connections of fan, condensate pump, angle adjustment motor and temperature sensors can be accessed via the bottom of the unit. The complete module is accessible via the side of the unit.

### 6.4.1 Accessing the electronics module from the bottom

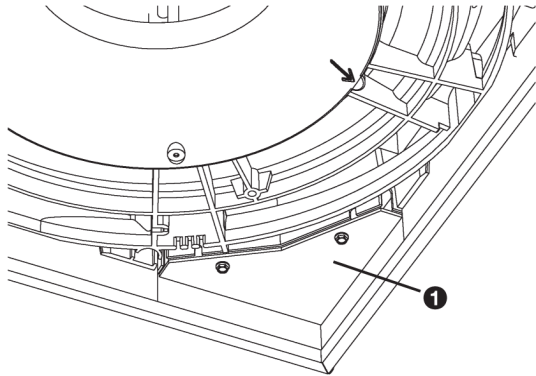
1. Switch the unit off using the controller.



**Warning:**

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

2. Remove the main cover
3. Remove the electronics module's cover ❶.



### 6.4.2 Removing the electronics module

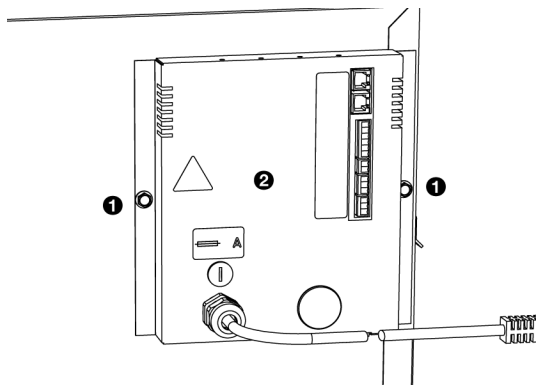
1. Switch the unit off using the controller.



**Warning:**

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

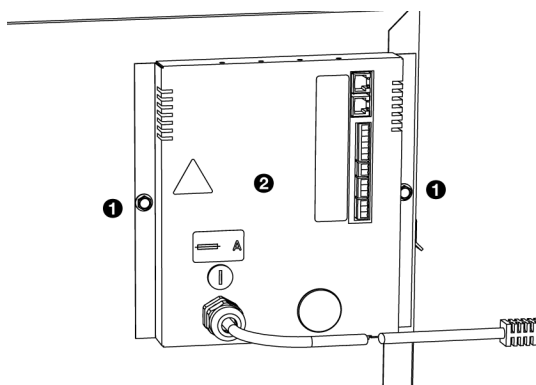
2. Remove the screws ❶ from the electronics module ❷.
3. Take out the electronics module ❷.
4. Disconnect all unit-connected connectors and earth connections from the electronics module.



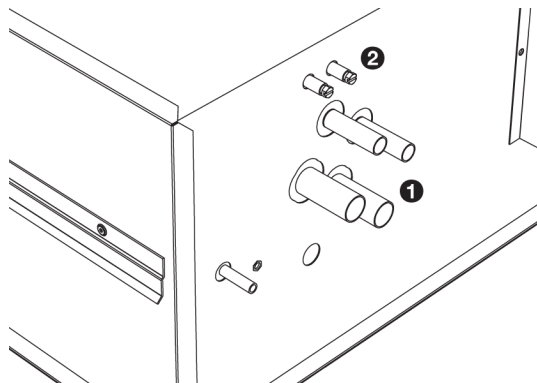
## 6.5 Fuse

The unit's electronics module has one fuse. The fuse rating is specified on a sticker near the fuse..

1. Disconnect the power supply (pull plug from socket or move isolation switch to Off)..
2. Loosen fuse holder ❸.
3. Replace the fuse.

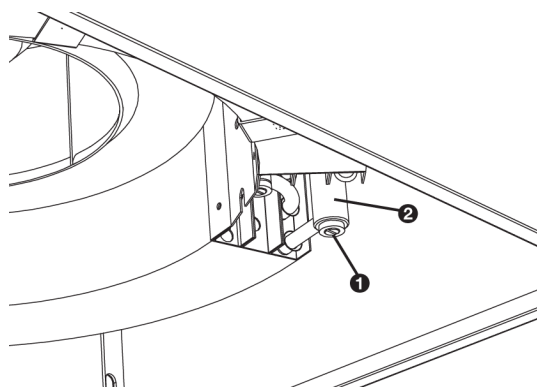


## 6.6 Venting the heat exchanger



The vent valve ② is above the CH connections.

## 6.7 Draining the heat exchanger



The heat exchanger can be completely drained.

1. Recirculation units: Remove the main cover and the drip tray.
2. Open the drain plug ① of collector ②.



**Caution:**

After refilling the system, check the sealing of the drain plug.

# 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.

Pursuant to EU legislation, used electrical and electronic appliances must be collected for recycling. 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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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 Addresses.

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