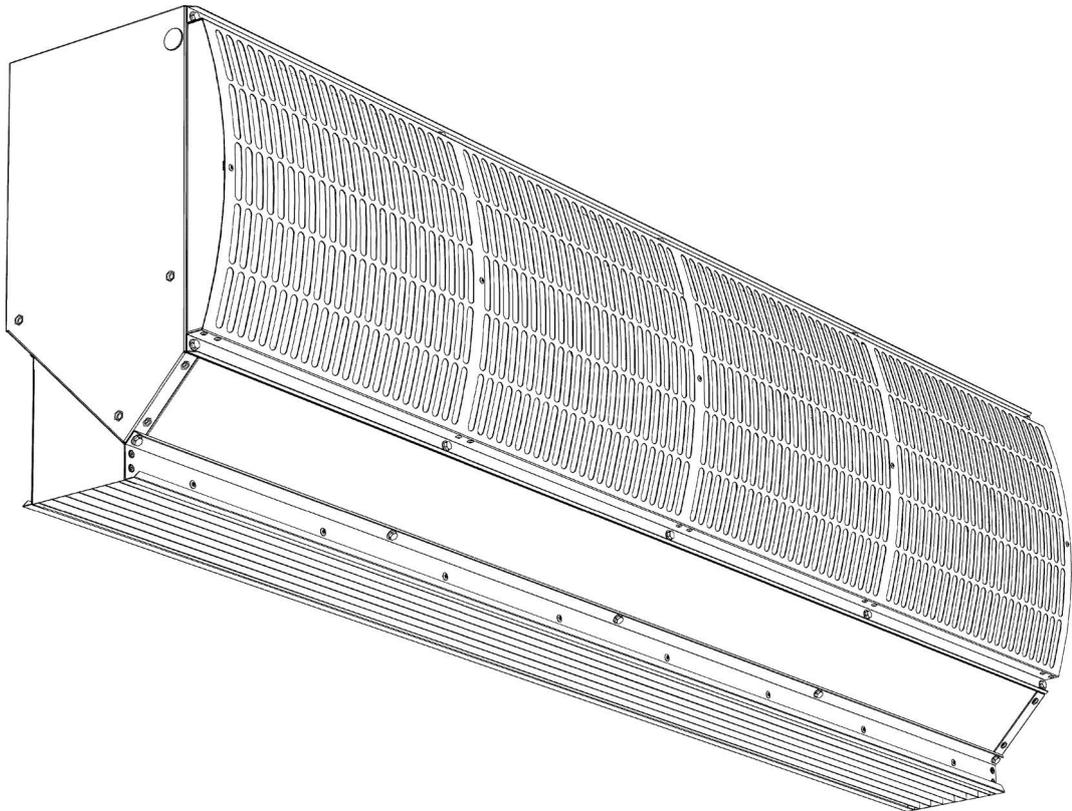


# Manual

# Cold room air curtain

Model IsoAir<sub>2</sub>



Version 1.0  
Original Manual

**English**



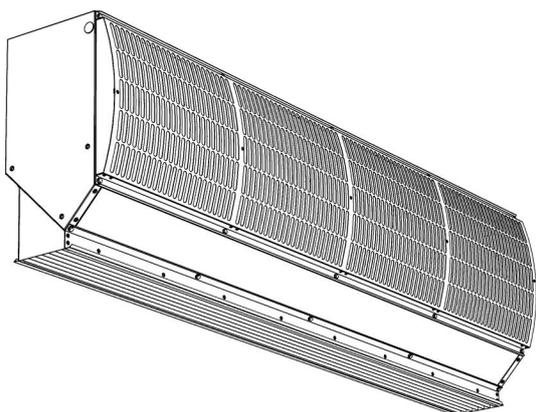
**Biddle**

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# Introduction

## 1.1 About this manual



This manual describes the installation, operation and maintenance of the cold storage unit air curtain model IsolAir2. 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>

**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 Applications**

The air curtain model IsoAir2 is intended for the separation of climates between two rooms. The unit is installed above the doorway, across its full width. The model is primarily suitable for applications in cold-storage and deep-freeze units.

**Other versions and intended use**

Upon request, we can supply versions for non-standard applications.



### **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 General

An air curtain above the door opening counteracts losses of energy and comfort. Located at the opening, it blows out a stream of air and thereby brings about the following:

- The exchange of air between two rooms due to a temperature difference (convection) is stopped.

### 1.3.3 Type designation

The table below provides an overview of the available models of the cold room air curtain and the corresponding type designations. In combination, the type designations constitute the type code, for instance: IsolAir2 150.

If some part of the manual applies to certain models only, these will be indicated with the corresponding type designation, for example:

- 150: models with discharge width 150

#### **Explanation of the type code**

TYPE CODE ELEMENT	DESIGNATION	MEANING
product series	IsolAir2	general designation for the IsolAir2 series
length	150, 200 or 250	discharge length in cm

### 1.3.4 Type plate

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

#### **Designations on the type plate**

 Biddle bv Markovlei 4 NL-9288 HA Kooiesterlie  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	-
	M	xx kg	I <sub>max</sub> L3	-
	Medium	XXXX	P <sub>motor</sub>	xxx kW
	P <sub>max</sub>	xxxx kPa	P <sub>heating</sub>	-

DESIGNATION	MEANING
Type	complete type code of the unit
N°	serial number, production week and year

DESIGNATION	MEANING
M	weight of unit
U	power supply voltage
$I_{\max}$	max. current
$P_{\text{motor}}$	max. power consumption by fans

### 1.3.5 Field of application

Observe the following limits for the unit:

#### *Operating limits for all models*

Ambient conditions	Temperature	5 °C to 40°C
	Relative air humidity	20% - 95%, not condensing
Power supply voltage		see type plate
Power		see type plate



#### **Warning:**

**The unit may not be used in potentially explosive environments, outdoors or in very dusty or aggressive air conditions.**

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

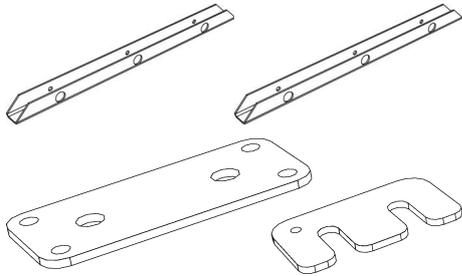
### 1.3.6 CE declaration

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 Components supplied

- suspension rails (2 per unit), also used for fixing the unit to the pallet;
- coupling plate and bracket for coupling the units;
- operating package:
  - control box
  - door contact switch
  - room thermostat (optional)



#### Note:

For delivery purposes, some components may be packed within the unit (behind the inspection panel).

### 1.4.2 Accessories

- plastic side shields;

### 1.4.3 Components not supplied

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

- threaded rods (M8)
- other cabling
- isolation switch

## 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.

### 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.

**Danger:**

The fans may continue rotating for a while.

3. Disconnect the mains supply (turn off at the isolation switch).

# 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 9

## 2.2 Inspection on delivery

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

**See also:**

1.4 "Components and accessories" on page 8

## 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. Install the control box.
3. Install any applicable external controls.
4. Connect the unit to the mains supply.

**Caution:**

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

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

5. Complete the installation of the unit.
6. Switch the mains supply on and check that the unit is working properly.

**2.3.2 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:**

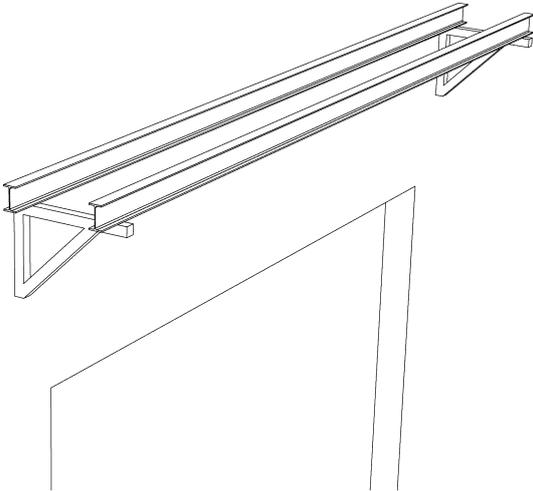
During the installation period, protect the unit against damage and penetration of dust, cement, etc. You can, for instance, use the packaging for protection.

**See also:**

- 1.3.3 "Type designation" on page 5
- 1.3.4 "Type plate" on page 6

## 2.4 Hanging the unit up

Example of an auxiliary structure



### 2.4.1 Suspension method

This manual assumes that the unit will be suspended from an auxiliary structure, consisting of two horizontal beams positioned above the door.

You may also fix the units directly to the ceiling, or to another horizontal structure, using the screw holes in the upper side of the unit.



#### **Warning:**

**Make sure that the structure from which the unit is about to be suspended can bear at least 4 times the weight of the unit.**

#### **See also:**

1.3.4 "Type plate" on page 6

### 2.4.2 Determining the location of the unit

- The unit should preferably be placed in the room where the temperature is highest.
- Position the underside of the unit at the same height as the top of the doorway.
- Position the discharge side of the unit as close to the doorway as possible, to ensure optimum operation.



#### **Note:**

If the distance is greater than 5 cm., Biddle recommends that you seal off the openings at the side. For this purpose, you can order a side shield of plastic strips from Biddle.

- Position the row of units centrally in relation to the doorway.
- Units of different widths can be positioned in random order.
- Make sure that the inspection and intake sides of the units remain accessible for maintenance.



#### **Warning:**

**Make sure that all units can freely take in and blow out air across their entire width**

### 2.4.3 Suspending the unit

Perform the following actions for each unit:

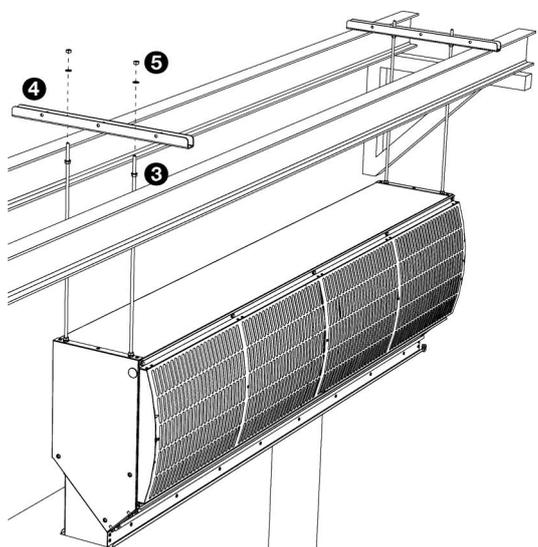
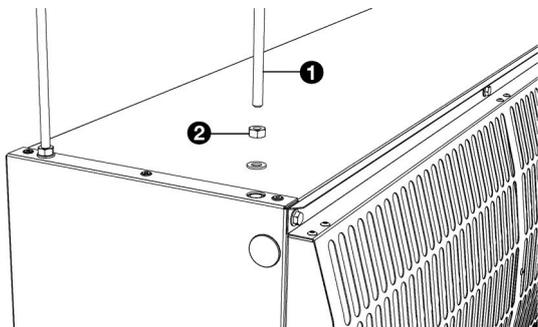
1. Lay the unit in a horizontal position.
2. Fit threaded rods **1** (M8) in all screw holes on the top of the unit.
3. Provide all threaded rods with lock nuts **2**, and tighten them.



**Note:**

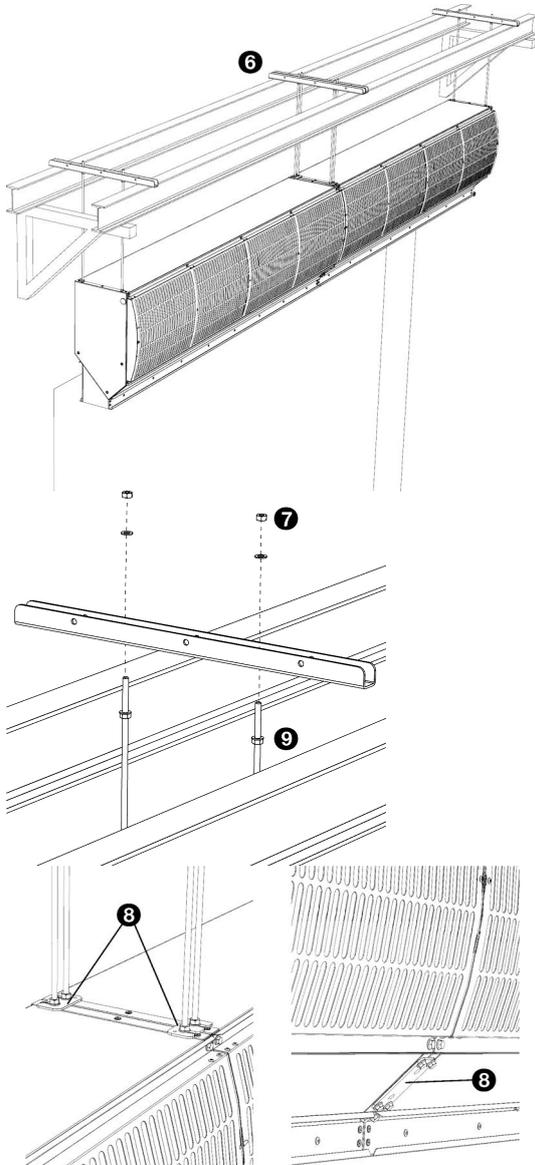
The threaded rods must be secured, otherwise the unit may fall down.

4. Fit lock nuts **3** to each threaded rod.
5. Bring the unit into position using lifting equipment.
6. Put the suspension rails **4** on the auxiliary structure, and fasten them with nuts **5** to the threaded rods of the unit.
7. Allow the unit to hang freely.



### 2.4.4 Adjusting and securing

1. Position the units against one another, in one line, by placing the suspension rails ⑥ against one another.
2. Attach the suspension rails to the auxiliary structure.



**Warning:**

**Make sure that the suspension rails can never come loose from the auxiliary structure.**

3. Adjust the units to the same height, and level them by tightening the nuts ⑦.



**Caution:**

Ensure that the units are hanging level and horizontal in both directions. Otherwise the fans may run out of true.

4. Secure the suspension to the threaded rods by tightening the lock nuts ⑨.



**Warning:**

**The threaded rods must be secured, otherwise the unit may fall down.**

5. You can possibly fasten the units to each other, using the brackets and the coupling plate ⑧.



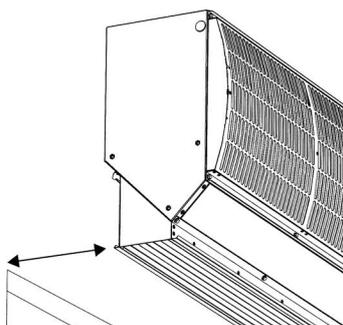
**Caution:**

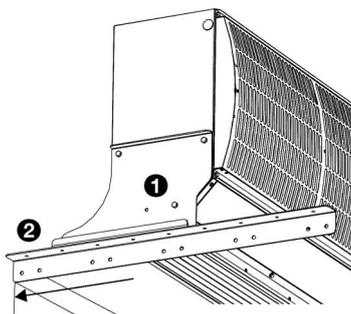
First position the units independently of each other, so that no force is exerted on the coupling elements.

### 2.4.5 Installing side shield

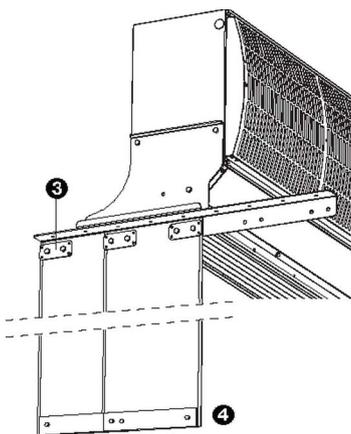
For optimum operation, the unit's discharge opening must be placed as close as possible to the door opening. If the distance is greater than 5 cm., you are advised to seal off the openings at the side.

For this purpose, you can order a side shield of plastic strips from Biddle.





1. On both sides of the unit, mount a side plate ❶.
2. To each side plate, fasten an angle profile, reaching to the wall ❷.
3. Cut the plastic strips to size.



4. Fasten the strips to the suspension system ❸.
5. Fasten the steel plates at the bottom of the strips ❹.

## 2.5 Installing the control box

### 2.5.1 Mounting and connecting the control box



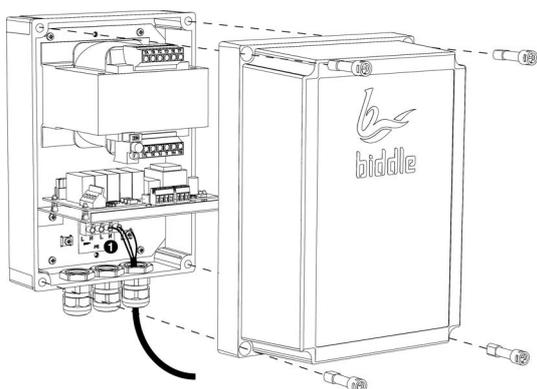
**Warning:**

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



**Caution:**

When installing the unit, use the wiring diagram supplied.



1. Fasten the control box to a wall near to the unit.
2. Open the control box:
  - Remove the 4 screws.
  - Remove the cover.
3. Lay the cable between the control box and the unit.
4. Connect the cable to the control box:
  - Fit a cable gland for pull relief.
  - Lead the cable into the control box.
  - Connect the cable to terminal block, in accordance with the wiring diagram.

**Note:**

Do not close the control box yet.

**Connecting multiple control boxes**

A maximum of 2 units can be connected to 1 control box. This corresponds with a maximal total unit length of 5m.

In the case of wider doorways, additional control boxes and accessories (thermostat and/or door switch) should be fitted.

**2.5.2 Connecting the control box to the unit****Warning:**

The unit must be earthed.

1. Remove the inlet grille ❶.

**Note:**

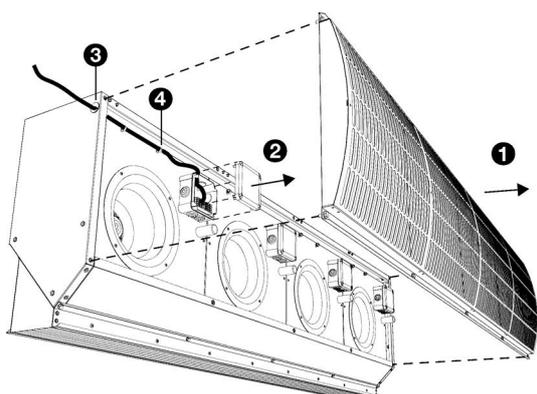
In the event of multiple units, remove the inlet grille of each unit.

2. Remove the cover of the first terminal box ❷, depending on the side through which you lead the cable into the unit.
3. Lead the cable into the unit.
  - In the feed-through hole to be used ❸, fit a cable gland for pull relief.
  - Fasten the cable to the edge inside the unit, using the cable clips ❹.

**Warning:**

Do not allow the cable to lie or hang loosely.

4. Make the grommets in the terminal boxes to measure.





**Caution:**

Ensure that the grommets fit so tightly around the cable that they remain watertight.

5. Lead the cable into the terminal box.
6. Connect the cable to terminal block, in accordance with the wiring diagram.

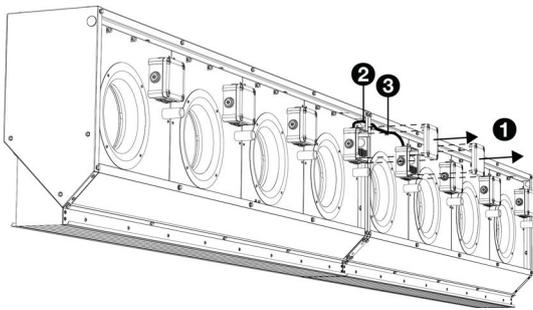
**Connecting multiple units (control wiring)**



**Caution:**

A maximum of 8 fans can be connected to 1 control box. This corresponds with a maximum total unit length of 5m.

1. Remove the covers of the adjoining terminal boxes of both units.
2. Install the cable between the terminal boxes using a cable gland for strain relief and fastening the cable to the edge inside the unit, using the cable clips ③.



**Warning:**

**Do not allow the cable to lie or hang loosely.**

Make the grommets in the terminal boxes as required.



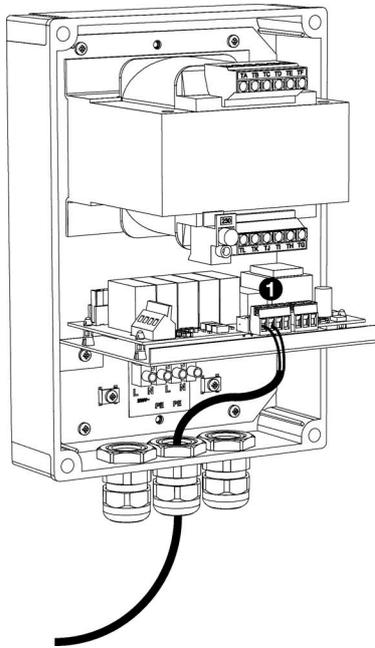
**Warning:**

**Ensure that the grommets fit so tightly around the cable that they remain watertight.**

Lead the cable into both terminal boxes.

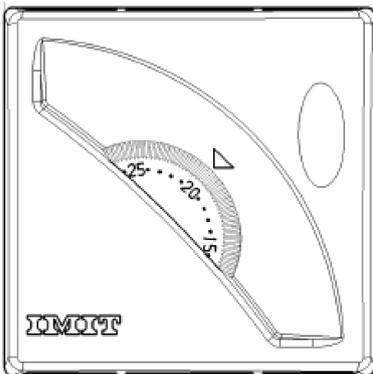
Connect the cable in both units to the terminal block, in accordance with the wiring diagram.

## 2.6 Installing external controls



### 2.6.1 Installing door contact switch

1. Mount the door contact switch to the doorframe.
2. Lay the cable between the door contact switch and the control box.
3. Connect the cable to the control box:
  - Fit a cable gland for pull relief.
  - Lead the cable into the control box.
  - Connect the cable to terminal block X4 ❶, in accordance with the wiring diagram.



### 2.6.2 Installing the room thermostat (accessory)

If the temperature difference between the rooms which are to be separated is variable, then a room thermostat can be connected so as to allow the unit to switch between a low setting and a high setting.

1. Mount the room thermostat in the vicinity of the unit.



**Note:**

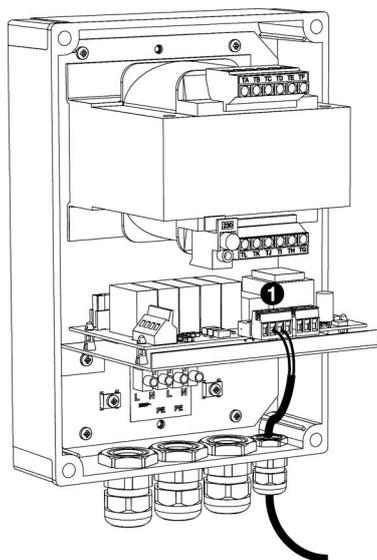
Place the room thermostat in the room where the unit also hangs.

2. Lay the cable between the room thermostat and the control box.
3. Connect the cable to the room thermostat in accordance with the wiring diagram.



**Note:**

Ensure that, with the aid of the red limiting jumpers, the adjusting knob of the room thermostat remains limited at the set temperature.



4. Connect the cable to the control box:
  - Drill an extra aperture in the control box.
  - Fit a cable gland for pull relief.
  - Feed the cable into the control box.
  - Connect the cable to terminal block, in accordance with the wiring diagram.

## 2.7 Connecting the mains supply

### 2.7.1 Special points regarding the mains supply

#### For all models



**Warning:**

The unit must be earthed.



**Warning:**

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

Maximum ratings are specified on the type plate.

#### For all models

- The unit is connected to the mains supply with a cable (3-core, not supplied).



**Caution:**

For emergency situations and maintenance, it must be possible to render the entire system electrically dead.

- An isolation switch (not supplied) must be fitted between the unit and the mains supply. This switch must:
  - be all-pole;
  - have a contact separation of at least 3 mm,

- be positioned near the unit.

### 2.7.2 Connecting the mains supply

The mains supply is connected directly to the unit.



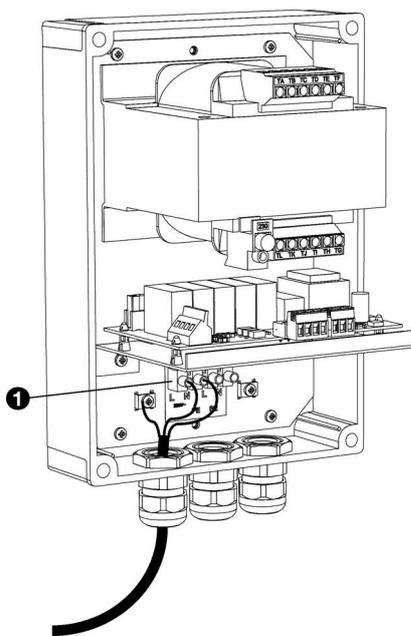
**Warning:**

Make sure that the mains supply is switched off.



**Warning:**

In the case of multiple units, each unit should have a separate supply. Daisy chaining multiple units together (where one unit is connect to the end of the adjacent unit) is not accepted.



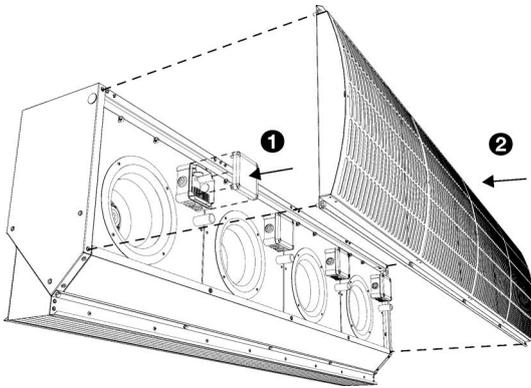
1. Fit an isolation switch between the mains supply and the unit.
2. Lead the mains power cable between the isolation switch and the electrical box mounted on the front ❶. Ensure that a cable gland is used of sufficient size for the cable to provide adequate strain relief and ingress protection.
3. Lead the cable into the electrical terminal box.
4. Connect the cable to terminal block in accordance with the wiring diagram supplied with the unit.



**Warning:**

Ensure the earthing terminal is connected to the supply earth in the electrical terminal box.

## 2.8 Finishing the unit



### Closing the unit

1. Place the covers back on the terminal boxes **1** in order to protect the connections against dirt and water.
2. Put the inlet grilles back into place **2**.

### Closing the control box

1. Put the cover back on the control box.
2. Screw down the cover, using the 4 screws.

## 2.9 Switching on and checking operation

1. Check the following connections:
  - power supply;
  - cable between control box and unit(s);
  - external control components
2. Switch on the mains supply.
3. Check that the fans are running.

# 3 Operation

## 3.1 General

The unit is set up for the situation concerned at the time of installation. Further control is not necessary during use.

If the unit is not working properly, consult chapter [Errors Errors](#).

# 4 Errors

## 4.1 Resolving simple problems

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

If this fails to resolve the problem, there may be a fault; in that case, alert the installer.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit does not work.	The unit has not been switched on	Turn the unit on
	The unit has no power supply.	Check the mains supply: <ul style="list-style-type: none"> <li>• isolation switch,</li> </ul>
	The unit has been switched off by external control components.	Check external control components, if present: <ul style="list-style-type: none"> <li>• door contact switch: is the door open?</li> </ul>
The unit is not discharging much air. (There is a draught)	The inlet and/or discharge section is blocked.	Remove obstacles to the inlet and discharge section.
	The unit is not set properly.	Consult your advisor.
The unit is not discharging much air.	The unit is set at too low a strength.	Switch the unit to a higher strength.

# 5 Maintenance

## 5.1 Cleaning the unit

You can clean the inside and the outside of the unit with water and household cleaning products. Do not use any solvents.

The fans too can be cleaned with water.



### **Warning:**

**No water under high pressure may be sprayed onto the fans or the terminal boxes.**

## 5.2 Scheduled maintenance

### 5.2.1 Monthly maintenance

**With all units:**

- Check the fans for dust and other dirt; if necessary, clean.
- Check that all fans work.
- Check the discharge section for pollution/dirt and/or blockage; if necessary, clean.

**See also:**

1.1 "Cleaning the unit" on page 1

### 5.2.2 Annual maintenance

- Carry out all monthly checks.
- Check the cabling between the terminal boxes in the units and the control unit.
- Inspect the casing, the suspension or mounting structure, and the securing of each unit.
- Check whether the fans are firmly attached and are not running out of true; if necessary, fasten them again.

# 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.

See also:

1.5 "Safety instructions" on page 9

## 6.2 Replacing a fan box



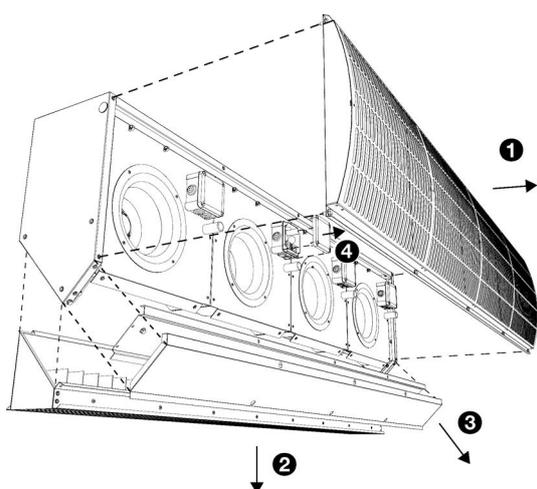
### **Warning:**

Isolate the mains supply.



### **Note:**

In order to remove one of the outermost fan boxes, the adjacent fan box must first be removed.

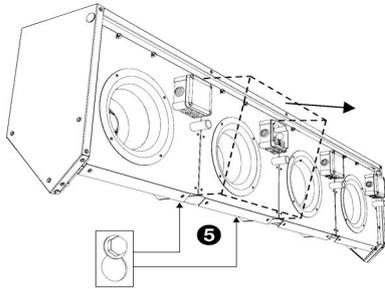


1. Open the unit:

- Remove the inlet grille ①.
- Remove the discharge grille ②.
- Remove the base plates ③.

2. Disconnect the fan box that is to be removed:

- Remove the cover from the terminal box ④.
- Disconnect the wiring



3. Unscrew the fan box ⑤.
4. Lift the fan box out of the unit.
5. Position the new fan box.
6. Secure the new fan box with screws.
7. Connect the new fan box:

- Make the grommets in the terminal boxes to measure.



**Warning:**

**Ensure that the grommets fit so tightly around the cable that they remain watertight.**

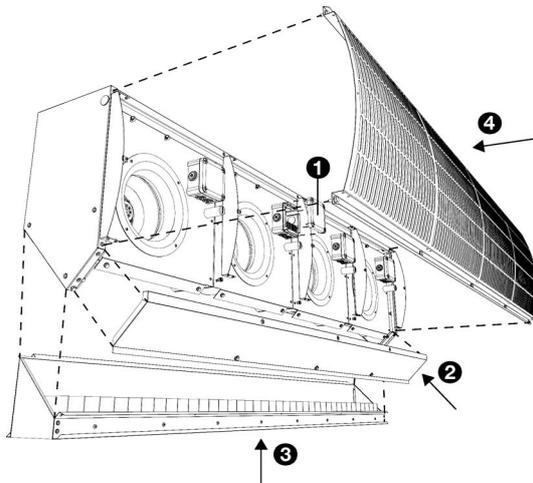
- Lead the cable into the terminal box.
- Connect the cables to the terminal block in accordance with the wiring diagram.



**Warning:**

**Keep the length of the cables as short as possible.**

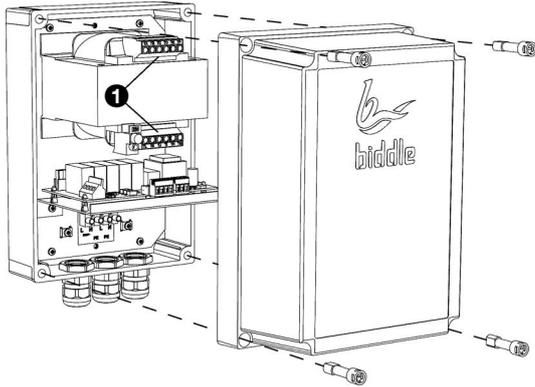
8. Close the unit:
  - Place the covers back on the terminal box ①, in order to protect the connections against dirt and water.
  - Fasten the base plates ②.
  - Fasten the discharge grille ③.
  - Fasten the inlet grille ④.
9. Switch on the mains supply.



## 6.3 Fuses

The unit is not equipped with any fuses.

## 6.4 Adjusting modes



### 6.4.1 Adjusting Fan Speeds

The unit is designed to operate between two fixed speeds that are set during installation and commissioning. The speeds can be adjusted, should site conditions change.



Note:

In order to successfully set the speeds, the air curtain unit needs to remain powered. All voltages within the CBI-2 enclosure are a maximum of 10V but care should still be taken to avoid touching electrical terminals.

10. Consult your Biddle advisor about the optimum speeds for your specific situation.
11. Open the control box.
12. Insert a small screwdriver into the relevant speed potentiometer (dial)
13. Using a digital volt meter, measure the voltage between the terminals with the blue and grey wires.
14. Rotate the screwdriver to set the value you require for the fan speed.
15. Close the control box



Note:

Use gentle force when changing the speeds, excessive force will break the potentiometer (dial).

### 6.4.2 Adjusting room thermostat

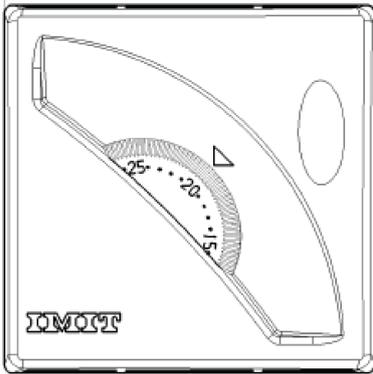
The room thermostat determines at what temperature in the front hall the unit will switch between the low mode and the high mode.



Note:

If the temperature in the front hall is lower than the set temperature, the unit will operate in the low mode.

If the temperature in the front hall is higher than the set temperature, the unit will operate in the high mode.



1. Consult your Biddle advisor about the optimum setting of the room thermostat for your specific situation.
2. Open the room thermostat.
3. Look for the recommended temperature on the white outer rim of the adjusting knob and turn the knob so that that temperature is located at the limiter pin.



**Note:**

Use the small white figures on the outer rim and thus not the large grey figures.

4. Set the knob by placing the red jumpers immediately to the left and right of the recommended temperature.
5. Close the room thermostat.



**Note:**

Check that the recommended temperature is now located at the arrow.

# 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 the Addresses chapter.

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