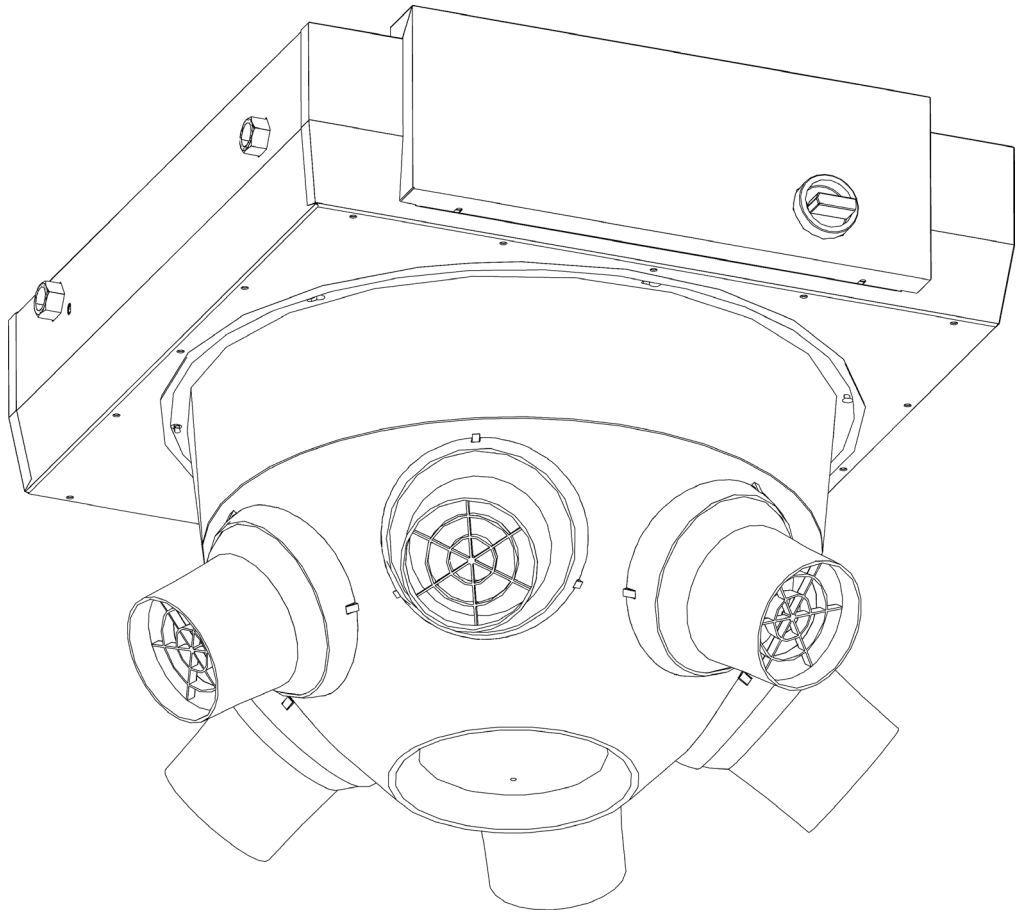
Manual
Air heater

Model NOZ2



Version 6.0 - North America
Original Manual

English

CE

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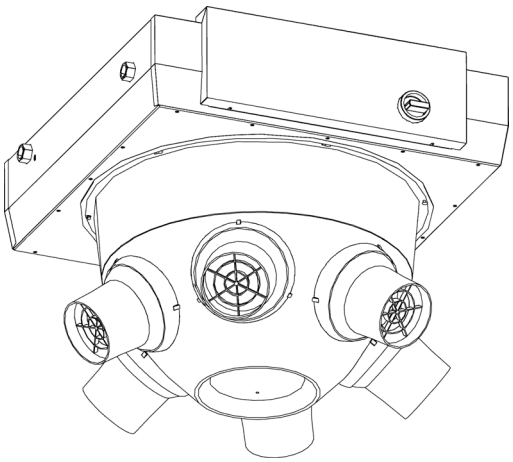
1. . Introduction

1.1 About this manual



This manual describes the installation, operation and maintenance of the air heater model NOZ_2. 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
	 **You have accessed a section of the unit containing components which carry a voltage.** Access restricted to qualified maintenance staff only. Caution is required.
	 **This surface or component may be hot. Risk of burns on contact.**

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 heater is intended for the heating and (depending on the unit type) ventilation of large, open spaces. The unit is placed (free-hanging) at the top of the space concerned.

1.3.2 Operation

General

The unit blows currents of warm air downwards. The airflow rate ensures that the warm air spreads over a large area.

Depending on the setting, the unit can also blow unheated air.

Depending on the implementation, the unit can also ventilate.

The automatic *CHIPS* control

CHIPS

Depending on the implementation, the unit may be equipped with an automatic *CHIPS* control.

The *CHIPS* control automatically adjusts the strength and heat of the unit to changing weather conditions. Thus, in all situations the energy loss is minimal and the comfort maximal.

CHIPS stands for "*Corrective Heat and Impulse Prediction System*".

Control when unit 'on'

For the most efficient effect, it is important that the airflow just touches the floor and is heated sufficiently. The unit continuously measures the values that are needed in order to achieve this:

1. The installation height (entered in the control panel)
2. The room temperature
3. The temperature of the discharged air

As soon as the situation changes, the control adjusts the outlet flow rate and the temperature of the airflow to that.

Control with unit 'off'

If the unit is off – at night, for example – it is not active as climate separation.

If it is off, the unit can indeed still perform other functions:

- The unit can be set to keep the room at a minimal 'night' temperature.
- Water-heated models are equipped with integrated frost protection.

Note:
In some situations the unit does not discharge any air, even though it is on.

1.3.3 Type designation

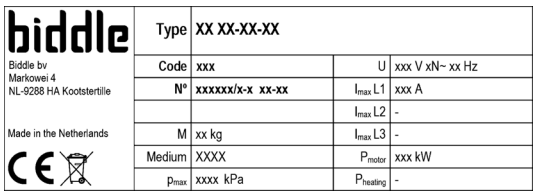
The table below provides an overview of the available models of the unit and the corresponding type designations. In combination, the type designations constitute the type code, for instance: NOZ_2 25-H2-Auto-230/22.

Explanation of the type code

TYPE CODE ELEMENT	DESIGNATION	MEANING
product series	NOZ_2	general designation for the series
capacity	25	short range
	25V	short range, suitable for ventilation
	50	long range
	50V	long range, suitable for ventilation
battery type	H2	water heating, element is 2 rows thick
	H3	water heating, element is 3 rows thick
	H6	water heating, element is 6 rows thick
	A	without heating
control	Basic	basic control
	Auto	automatic *CHIPS* control
mains supply	230/22	230V, split phase, 60 Hz
	480/32	480V, three-phase (without neutral wire), 60 Hz
	480/52	480V, combination three phase/split phase, 60 Hz

1.3.4 Type plate

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



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_{max}	maximum permissible operating pressure
U	power supply voltage
I_{max}	max. current
P_{motor}	max. power consumption by fans

1.3.5 Field of application

The air heater is utilised in large, open spaces. The following operating limits must be observed:

Application limits for all models

Ambient conditions	Temperature	5 °C to 40°C (41 °F – 104 °F)
	Relative air humidity	20% – 95%, non-condensing
Power supply voltage		see type plate
Power		see type plate
Maximum discharge temperature	NOZ_2 25	45 °C (113 °F)
		60 °C(140 °F) in lower modes
	NOZ_2 50	40 °C (104 °F)
		60 °C(140 °F) in lower modes

Parameters of use for water-heated models

Maximum operating pressure	see type plate

Maximum water flow-paths

TYPE OF UNIT		MAXIMUM POWER	MAXIMUM PERMITTED DISCHARGE TEMPERATURE	MAXIMUM WATER FLOW-PATH (UNREGULATED)	MAXIMUM WATER FLOW-PATH (REGULATED)
NOZ_2 25	H2	10V	45 °C (113 °F)	90/70 °C (194/158 °F)	125 °C/16 bar (257 °F/16 bar)*
		8V	60 °C(140 °F)		
	H3	10V	45 °C (113 °F)	70/50 °C (158/122 °F)	125 °C/16 bar (257 °F/16 bar)*
		8V	60 °C(140 °F)		
	H6	10V	45 °C (113 °F)	60/40 °C (140/104 °F)	125 °C/16 bar (257 °F/16 bar)*
		8V	60 °C(140 °F)		
NOZ_2 50	H2	10V	40 °C(104 °F)	90/70 °C (194/158 °F)	125 °C/16 bar (257 °F/16 bar)*
		8V	60 °C(140 °F)		
	H3	10V	40 °C(104 °F)	80/60 °C (176/140 °F)	125 °C/16 bar (257 °F/16 bar)*
		8V	60 °C(140 °F)		
	H6	10V	40 °C(104 °F)	60/40 °C (140/104 °F)	125 °C/16 bar (257 °F/16 bar)*
		8V	60 °C(140 °F)		

Caution:

* A water flow-path up to 125 °C/16 bar (257 °F/16 bar) is only permitted if all units connected have been set in such a way that the maximum discharge temperature is not exceeded **at the lowest fan speed**.

Note:

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

Warning:

The air heater 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 in such situations.

Sound levels

	MAXIMUM SOUND PRESSURE LEVEL L_P [dB(A)]	MAXIMUM SOUND POWER LEVEL L_W [dB(A)]
NOZ_2 25	58	76.1
NOZ_2 50	67	87.3

V = max. air flow; T60 = 1.2s; R = 5m; Q = 2

Warning:
Prolonged exposure can cause damage to the hearing. If necessary, wear hearing protection.

Maximum number of units that can be daisy chained

Take into account the maximum number of units that can be daisy chained as shown in the table below:

Caution:
Only daisy chain units of equal capacity.

Caution:
With Auto type unit: The total cable length between the first and the last unit may be 100m at maximum.

	NOZ_2	NOZ_2 V (VENTILATION)
Basic	5	5
Auto	10	10
Basics per Auto	4	not possible

Note:
Consult your Biddle advisor if you wish to connect more units.

1.3.6 Modifications and changes

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

1.4 Components and accessories

1.4.1 Components supplied

- adjustment aid, nozzle angles.

1.4.2 Operating package

The unit can be supplied with a basic control or an automatic *CHIPS* control. A corresponding operating package is supplied.

Operating package for basic control

- *b-control* continuously variable controller.

Operating package for automatic *CHIPS* control

- *b-touch* control panel;
- Biddle control cable;
- room sensor;
- water-side control (valve and drive).

1.4.3 Accessories

- suspension frame with vibration dampers.
- set of cover caps for nozzles;
- room thermostat;
- flanges;
- roof cowl;
- channel sections;
- filter module;
- damper module;
- servomotor.

1.4.4 Components not supplied

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

- threaded rods (M8)
- other cabling

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.It is permissible to cover a maximum of 2 nozzles with the caps supplied.

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

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

1.5.2 Safety issues relating to installation, maintenance and servicing

Warning:
Mount the unit so that the underside hangs at least 2.8 m above the floor. It should not be possible to reach the nozzles without the use of mechanical aids.

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).

Caution:
For models NOZ_2 50 with automatic *CHIPS* control:
The units are equipped with 2 mains power cables. Disconnect the mains supply to both mains power cables.

5. If you are going to carry out maintenance or repairs on electrical components: switch the mains supply group off.
6. **For water-heated models:**
   shut off the central heating feed (if possible).

Warning:
The fins of the heat exchanger are sharp.

2. . Installation

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 12

2.1 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.

See also:
1.4.3 "Accessories" on page 11

2.2 General working method

2.2.1 Sequence of operations

Biddle recommends working as follows when installing the unit:

1. Install roof cowl, if applicable.
2. Install accessories, if applicable.
3. Hang the unit up.
4. For water-heated models **(type H)**:
   connect the unit to the central heating system.

5. 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.

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.

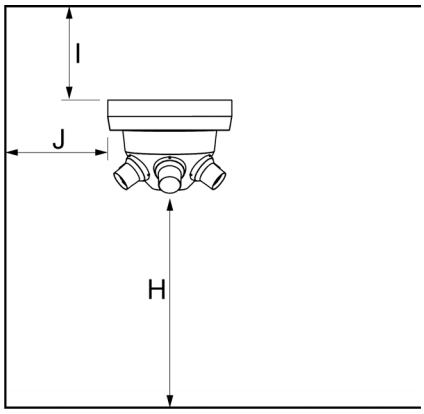
Check the type plate and consult the manual if in doubt about the model or type of your unit.

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.

See also:
1.3.4 "Type plate" on page 8

2.3 Determining the location of the unit

- 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. The unit's weight is indicated on its type plate.
- The unit must hang freely in the room. Note the following dimensions:



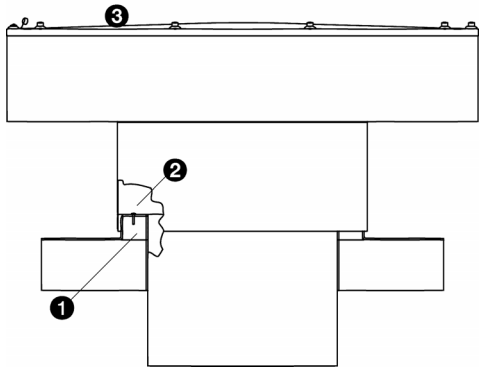
SIZE	DESCRIPTION		MINIMUM VALUE
H	installation height		280 cm (10 ft.)
I	minimum distance between unit and ceiling (in the case of intake from the room)	NOZ_2 25	20 cm (8")
		NOZ_2 50	30 cm (12")
J	minimum distance to walls		3 m (10 ft.)

Warning:
The top of the unit may get hot. The unit must have at least 20 cm (8") (NOZ_2 25) or 30 cm (12") (NOZ_2 50) clearance from the ceiling.

Note:
In the case of multiple units, where the water valve must be connected in series, you are advised to hang the unit with the control circuit board (type Auto) in the middle.

See also:
1.3.4 "Type plate" on page 8

2.4 Mounting the roof cowl (accessory)



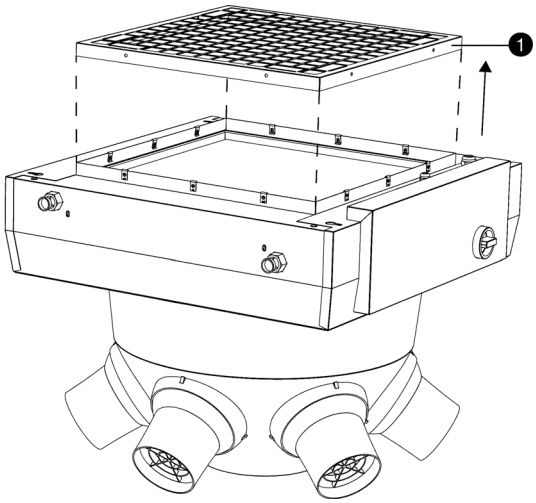
You have the option of installing a roof cowl if the unit is used for ventilation.

Conduit sizes

	NOZ_2 25	**NOZ_2 50**
conduit	575 x 575 mm (22 41/64" x 22 41/64")	800 x 800 mm (31 1/2" x 31 1/2")

1. Make a hole in the roof.
2. Make a curb ❶ around the hole.
3. Fit roof covering over the curb.
4. Remove the top ❸ of the roof cowl by loosening the bolts.
5. Place the roof cowl over the curb.
6. Using screws, attach the cowl to the curb, as at ❷.
7. Mount the top ❸ onto the roof cowl.
8. Seal all cracks between the roof cowl and the roof with a draught-free and leak-proof finish.

2.5 Hanging the unit up

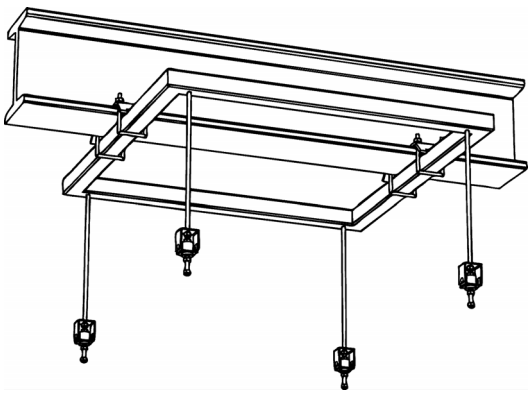


2.5.1 Detaching the inlet grille

If you are making use of ventilation accessories, **only for units without heating (type A),** you must first remove the inlet grille.

Caution:
In all other cases, do NOT remove the inlet grille.

1. Remove the screws around the inlet grille ❶.
2. Remove the inlet grille.



2.5.2 Hanging the unit up

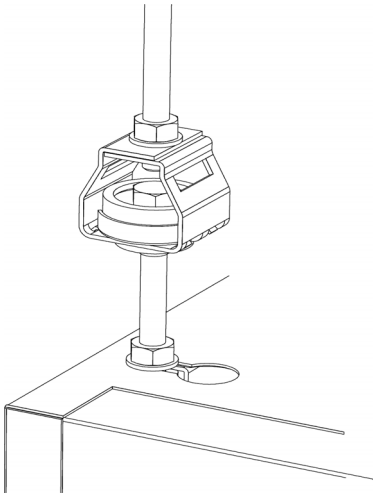
1. If you are using the suspension frame (accessory):
   - Attach the suspension frame.

   If you are not using a suspension frame:
   - Insert four threaded rods. Make sure that the threaded rods are hanging perpendicularly.

Dimensions for suspending from threaded rods

	NOZ_2 25	**NOZ_2 50**
distance between threaded rods	710 x 640 mm (28" x 25 13/64")	935 x 865 mm (36 13/16" x 34")
screw thread	M8	M8

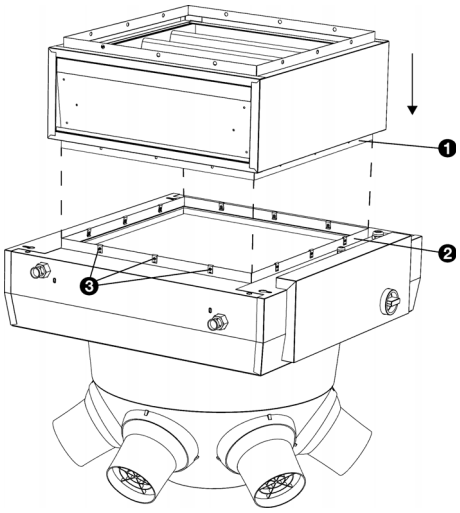
2. Onto each threaded rod, screw two bolts a few centimetres apart.



3. Hang the unit from the threaded rods:
   - Hook the threaded rods with the lowest set of bolts in the key holes on the top of the unit.
   - Internally, there is a locking edge under every keyhole. The bolts must lock in place behind these.
4. Secure the unit by tightening the top bolts against the plating.

Warning:
The suspended unit must be secured.

2.5.3 Mounting the filter module (accessory)



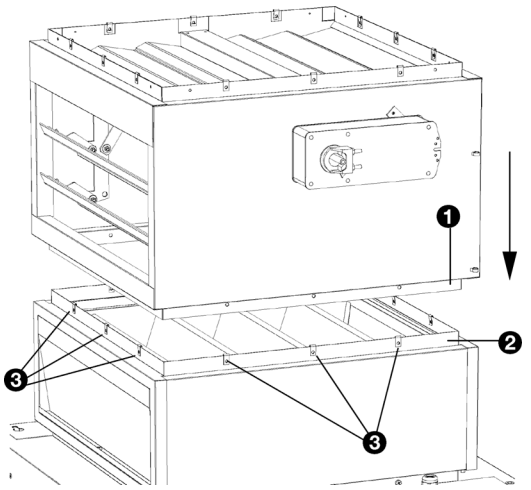
The unit can be fitted with a filter module. The section can be mounted on the unit or on a damper module.

The illustrations alongside the instructions are based on the mounting to the unit. The actions required for mounting to a damper module are the same as this.

1. Place the flange ❶ of the filter module over the flange ❷ of the unit.

Caution:
Position the filter module in relation to the unit as indicated in the illustration. If the module is positioned in a different direction, cables can become pinched off.

2. Attach the flanges together, using 12 screws ❸.



2.5.4 Mounting the damper module (accessory)

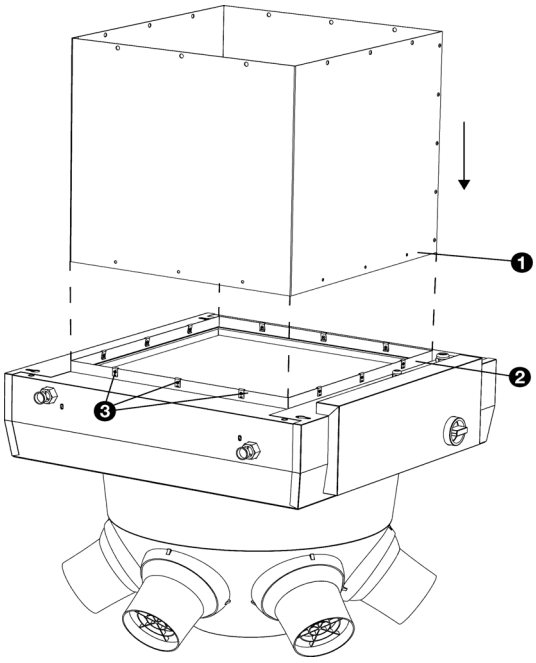
The unit can be equipped with a damper module. With this, a connection to a ventilation duct can be opened and closed. The damper module is supplied in two variants:

- a 1-way module (only suitable for ventilation), and
- a 3-way module (suitable for ventilation and recirculation).

The damper module can be mounted on the unit or on a filter module.

The illustrations alongside the instructions are based on the mounting of a 3-way damper module on a filter module. The actions required for the mounting of a 1-way damper module to the unit are the same as this.

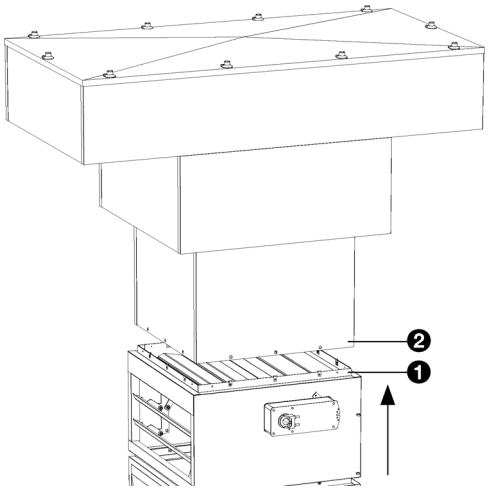
1. Place the flange ❶ of the damper module over the flange ❷ of the unit.
2. Attach the flanges together using 12 screws ❸.
3. Connect the servomotor in accordance with the electrical diagram supplied.



2.5.5 Installing the ventilation ducts (accessories)

If the unit is used for ventilation, you can optionally install a ventilation duct.

1. Place the interconnecting duct ❶ over the flange ❷ of the unit or the damper module.
2. Attach the interconnecting duct to the flange, using 12 screws.



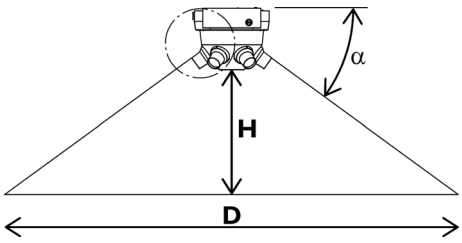
2.5.6 Mounting the unit to the roof cowl

Caution:
The unit cannot be suspended from the roof cowl. One must always make use of a suspension construction, such as a suspension frame, for example.

1. Determine the height at which the unit must hang, and if necessary, attach a channel section of the correct length to the roof cowl.
2. Bring the unit to the correct height, so that the flange ❶ comes within the rim of the roof cowl ❷.
3. Attach the roof cowl to the flange, using 12 screws.

See also:
2.4 "Mounting the roof cowl (accessory)" on page 17

2.6 Regulating the discharge direction



Set the nozzles to the angle which produces the most optimal effect of the unit for the situation. For this purpose, the nozzles are equipped with a ball-and-socket joint.

The optimal angle of the nozzles depends on the mounting height of the unit and on the floor surface area to be reached.

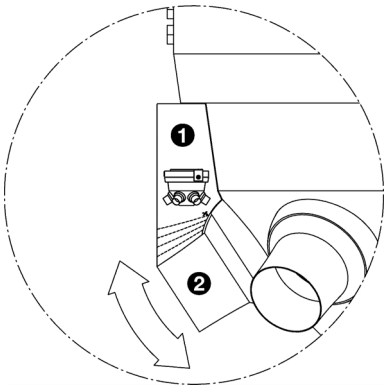
Note:
Measure all the values in metres.

1. Determine the diameter (**D**) of the floor surface area that must be reached;
2. Measure the mounting height (**H**) of the unit. This is the distance between the floor and the underside of the unit;
3. From the table, read out the angle (**α**) at which the nozzles must be set;

Note:
For the NOZ_2 25, only the section of the table printed in bold type is applicable.

Nozzle angle

D [m]	10	12.5	15	17.5	20	22.5		27.5	30	32.5
H [m]										
3.0	**42**	**36**	**31**	**27**	**24**	**22**	20	18	17	15
4.0	**50**	**44**	**39**	**34**	**31**	**28**	26	24	22	20
5.0	-	**50**	**45**	**41**	**37**	**34**	31	29	27	25
6.0	-	-	**50**	**46**	**42**	**39**	36	33	31	29
7.0	-	-	-	**50**	**46**	**43**	40	37	35	33
8.0	-	-	-	-	**50**	**47**	44	41	39	36
9.0	-	-	-	-	53	50	47	44	42	40
10.0	-	-	-	-	-	53	50	47	45	43
11.0	-	-	-	-	-	-	53	50	48	45
12.0	-	-	-	-	-	-	-	53	50	48
13.0	-	-	-	-	-	-	-	-	52	50
14.0	-	-	-	-	-	-	-	-	-	52



4. Snip off the adjustment aid ❶ (supplied) along the dotted line which corresponds to the correct angle (**α**);
5. Hold the snipped-off adjustment aid ❶ against the unit and turn the nozzle ❷ against the underside of the adjustment aid;

Caution:
Do not aim the nozzles at walls or other obstacles (such as scaffolding). If a nozzle is unavoidably aimed at an obstacle, you can close off the nozzle with a cap. You can close a maximum of 2 nozzles. A set of 2 caps is available as an accessory.

6. Repeat step 5 for all nozzles.

Note:
For models with automatic *CHIPS* control:

Note down the nozzle angle (**α**) and the mounting height (**H**) (in metres). For optimal operation of the automatic regulation, these values must be entered during the installation of the control unit.

2.7 Connecting the unit to the central heating system

Only for water-heated models (type H)

2.7.1 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

Caution:
Biddle recommends the inclusion of a valve in both pipes.

Danger:
Take measures to limit the discharge temperature.

Take account of the critical discharge temperatures and water flow-paths. The application limits for this are shown in section 1.3.5 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.

2.7.2 The water-side control (accessory)

The unit is equipped with a water-side control. This regulates the water supply to the heat exchanger, so that a constant discharge temperature is achieved. The control can also be used to limit the discharge temperature. The maximum permitted discharge temperature is indicated in 1.3.5 Field of application. For models with automatic *CHIPS* control, this limitation is automatically set.

Note:
In an assembly with automatic *CHIPS* control, the water-side control valve is automatically closed by default if the unit and/or the heating is switched off.

Special points regarding the water-side control

Biddle supplies water-side controls for models with automatic *CHIPS* control.

Caution:
A maximum of 5 units having a control valve can be connected in series per control circuit board. Consult Biddle if you want to connect more control valves in an assembly with a single control circuit board.

Control valves that are not supplied by Biddle must, in any case, comply with the following:

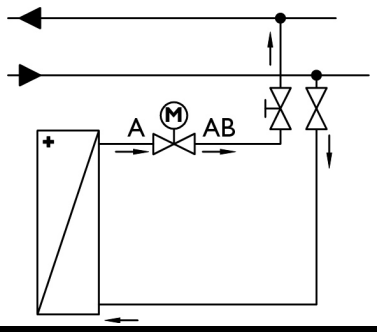
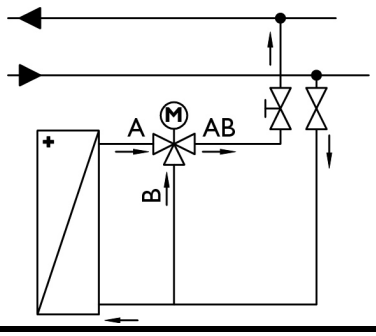
- 24V power supply.
- 0-10V control.
- The total power consumption of the water-side controls that are connected to 1 control circuit board may be a maximum of 7.6 VA.

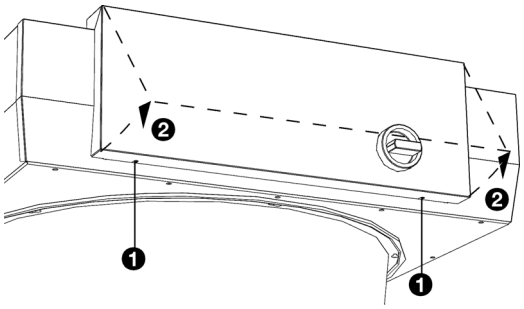
Connecting the water-side control

For models with automatic *CHIPS* control:

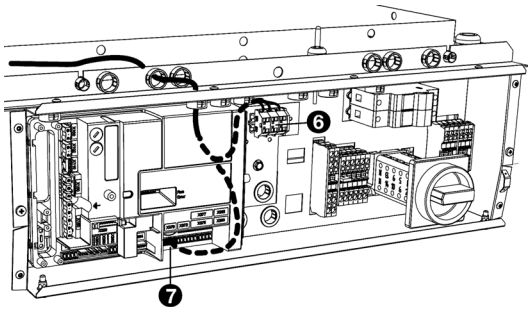
1. Connect the control valve and the drive to the heat exchanger, in accordance with the diagram. In doing so, follow the instructions given in the control valve manual.

Note:
Ensure that the axis of the valve is in the correct position when connecting the drive. See the control valve manual.

WIRING DIAGRAM 2-WAY VALVE	WIRING DIAGRAM 3-WAY VALVE
	



2. Open the electronics housing: undo screws ❶ at the bottom of the housing, tilt the cover ❷ and lift the cover off the unit.



3. Connect the cord to the drive, in accordance with the wiring diagram.

Note:
Use a cable of at least 0.5 mm^2.

4. Feed the cord from the drive through the openings in the electronics housing.
5. Connect the cord to the control circuit board, in accordance with the wiring diagram:

   For models with recirculation: Use connection X67 ❻.

   For models with ventilation: Use connection X370 ❼.

6. *For models with recirculation:* Connect (if applicable) the drive among multiple units. Link the units, using a connecting cable, to connections X67❻.

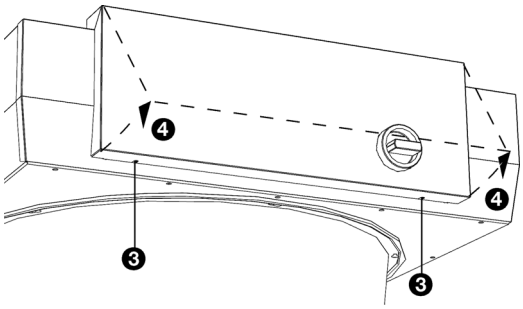
Note:
Models with ventilation (types 25V and 50V) are always equipped with a control circuit board. With each unit, connect the drive of the water valve to the unit's own control circuit board.

Note:
Only close the electronics housing after connecting the mains supply and the control unit and possible external controls.

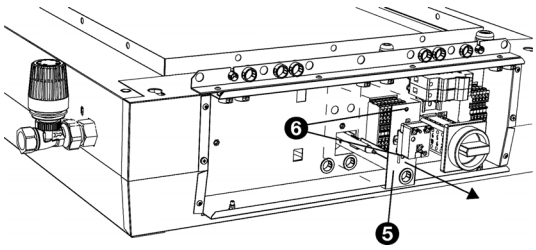
For models with a basic control:

For models with a basic control, a capillary valve (not supplied) can be connected.

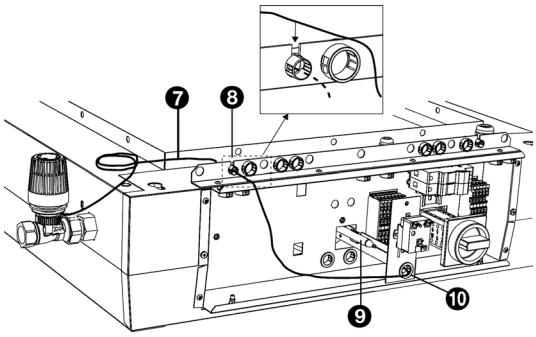
1. Connect the valve and the control element to the heat exchanger. In doing so, follow the instructions given in the control valve manual.
2. Open the electronics housing: undo screws ❸ at the bottom of the housing, tilt the cover ❹ and lift the cover off the unit.



3. Remove the bracket ❺ from the hole in the rear wall of the housing: undo the screws ❻ and push the bracket out of the housing.



4. Lead the capillary tube ❼ through the hole ❽in the electronics housing. For this purpose, the grommet in the hole is provided with an opening. If necessary, twist the grommet with the opening upwards.
5. Lead the sensor ❾ with the capillary tube through the opening ❿ in the bracket.
6. Click the sensor ❾ into the clamp on the bracket.
7. Place the clamp back in the rear wall of the housing and fasten the screws.



Warning:
The capillary tube must not make contact with elements carrying a voltage. Keep any superfluous length of the capillary tube outside the housing of the electronics.

8. Set the control element to the desired temperature.

Note:
Only close the electronics housing after connecting the mains supply and the control unit and possible external controls.

See also:

1 "Special points regarding the water connection" on page 1
1.3.5 "Field of application" on page 8

2.7.3 Frost protection

For models with automatic *CHIPS* control (Auto type)

The electronic control features integrated frost protection. This works in two stages:

1. If the temperature of the discharged air falls to below 5 °C (41 °F) and the temperature of the intake air falls below 8 °C (46 °F):

   - the valve of the integral water-side control will open fully;
   - the output on the unit gives a signal for the central heating installation provided that function 61. Function of outputs on the control panel is set to Risk of freezing.

2. If the temperature of the discharged air falls to below 2 °C (36 °F) and the temperature of the intake falls below 8 °C (46 °F):

   - the control panel will temporarily display error message E6;
   - the fans will be switched off, but the valve of the water-side control will stay open.

Caution:

The frost protection reduces the risk of freezing but does not guarantee complete protection.

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

- Ensure constant circulation of the water at the right temperature;
- Add up to 50% glycol to the water when the unit is not in operation during the wintertime;
- Or bleed the system and the unit.

For ventilation models with basic control (type NOZ2 V-Basic)

The unit is fitted with a frost thermostat which is activated if the temperature of the discharged air falls to below 6 °C(43 °F). This can be integrated into its own control.

2.7.4 Connecting the unit

1. Connect the unit to the central heating system.
2. Check the connections for leakage.

2.8 Connecting the unit to the mains supply

2.8.1 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.

Warning:
Each unit must be fused in accordance with the table below.

Fuse ratings

MAXIMUM AMPERAGE ON TYPE PLATE L1, L2 OR L3	MAXIMUM FUSE VALUE A
≤ 10A	16A

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

Note:
The earth leakage circuit breaker (if applied) must be **type B**, preferably 300 mA.

- It must be possible to disconnect the unit from the mains supply. The installer must provide a facility for doing this.

For all models

Danger:
Only carry out the connection if you are qualified to work on three-phase power systems.

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

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

- Every unit has an isolation switch in order to make maintenance easier.

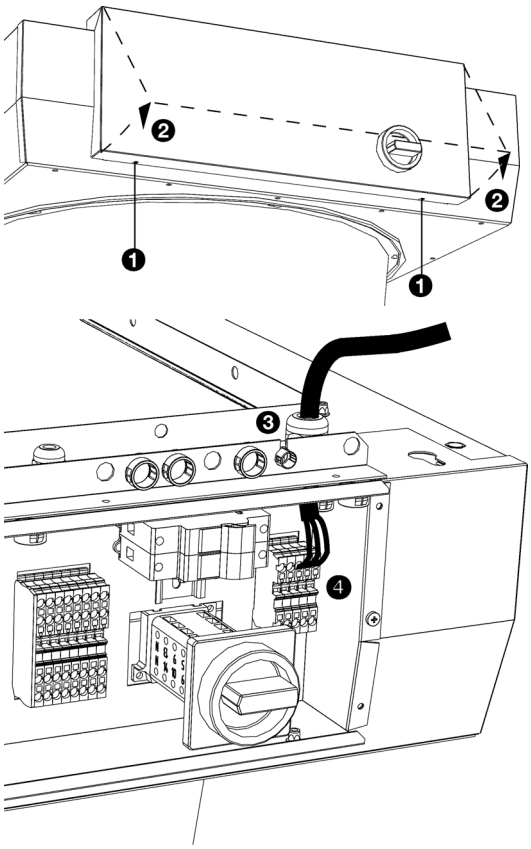
Warning:
Also, do be sure to switch off the mains supply if you are going to conduct maintenance on, or make repairs to, electrical components.

2.8.2 Connecting the unit

Warning:
Make sure that the mains supply is switched off.

Warning:
The mains power cables must be resistant to the high temperatures in the unit. See 1.3.5 Field of application for the maximum temperatures.

Note:
Connect each unit separately to the mains supply.



1. Open the housing of the electronics: undo the screws ❶ at the bottom of the housing, tilt the cover ❷ and lift the cover of the unit.
2. Lead the cable into the housing of the electronics via the cable gland ❸ at the top of the unit.

Warning:
Make sure the earth wire is longer than the power supply wires.

3. Connect the mains power cable to the terminal block X01 ❹, in accordance with the wiring diagram supplied.

Caution:
Do not switch on the mains supply yet.

Note:
Do not close the housing of the electronics yet.

Connect the control circuit board

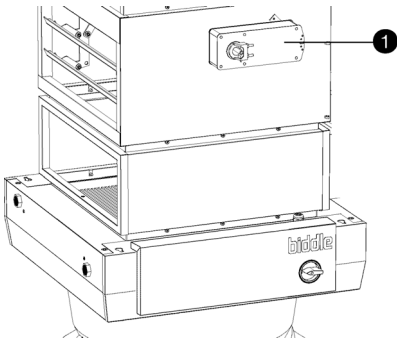
Only regarding NOZ_2 50 with automatic *CHIPS* control

The control circuit board for the automatic *CHIPS* control must be separately connected to a power supply of 230 V.

1. Lead the cable into the housing of the electronics via the cable gland at the top of the unit.
2. Connect the mains power cable to the terminal block X06, in accordance with the wiring diagram supplied.

Caution:
Do not switch on the mains supply yet.

Note:
Do not close the housing of the electronics yet.



2.8.3 Connecting the servomotor (accessory)

For models with automatic *CHIPS* control (Auto type)

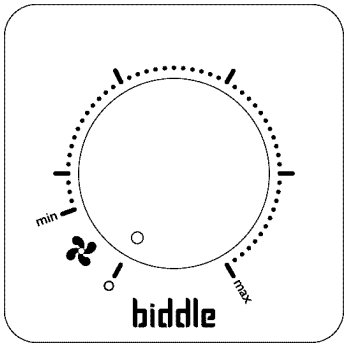
If you have installed a damper module with servomotor (accessories), you must connect this to the controller.

1. Connect the plug of the servomotor ❶ to the cable intended for that purpose on the unit.

For models with basic control (Basic type)

Connect the chosen motor for the damper module.

2.9 Installing the *b-control* continuously variable controller



Various control units are available for the NOZ_2 air heater. This chapter describes the installation of the *b-control* continuously variable controller that is used on units having a basic control (Basic type).

2.9.1 Special points regarding the controller

Positioning

You can fasten the controller either to the wall or to a standard junction box.

Cabling

The controller is connected to the unit via a cable (not supplied), and can be connected in series among several units.

Take the following into account, otherwise errors may occur:

- Keep the length of the cables as short as possible.
- Keep the cables away from electromagnetic fields and interference sources, such as high-voltage cables and fluorescent light starters.

Multiple units with a single controller

A maximum of 5 units may be connected to a single controller.

Note:
Consult your Biddle advisor if you wish to connect more units.

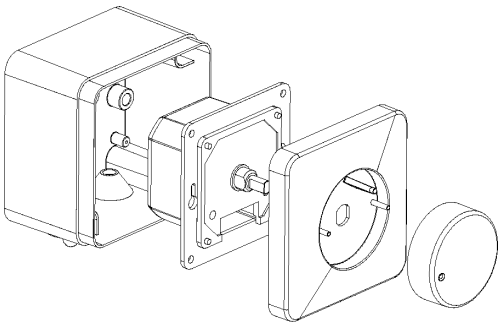
Setting output voltage

The controller can adjust the strength of the unit in a continuously variable manner. The output voltage can be set between Vmin and Vmax. This is done after the complete installation of the unit and all connections.

2.9.2 Mounting and connecting the controller

Warning:
Make sure that the mains supply on which you are working has been turned off.

Caution:
When installing the unit, use the wiring diagram supplied.



1. Remove the adjustment button.
2. Remove the hexagonal nut.
3. Remove the shut-off cap.
4. Fasten the surface-mounted box to the wall if you are not making use of a standard junction box.

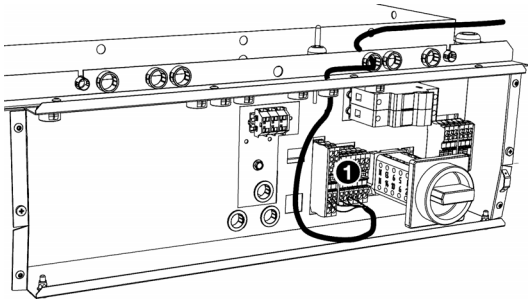
Caution:
(1/5")

5. Lead the control cable (not supplied) between the controller and a unit of your choice. For the specifications of the cable, see section 2.9.1 Special points regarding the controller.
6. Connect the control cable to the controller. See the wiring diagram supplied.

Caution:
Do not turn the controller off yet if you still want to adjust the output voltage after complete installation of the unit.

7. Using the 2 small screws and rings, screw the switch to the surface-mounted box or standard junction box.
8. Fit the shut-off cap.
9. Fasten the hexagonal nut.
10. Fit the adjustment button: Press this on firmly and set to position '0'.

2.9.3 Connecting the controller to the unit



Warning:
The unit must be earthed.

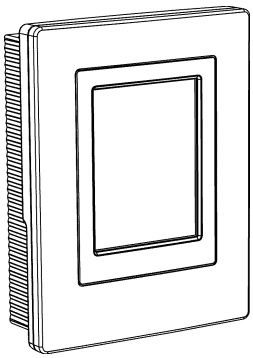
1. Lead the control cable into the unit via the cable gland at the top of the electronics housing.
2. Connect the cable to terminal block X60 ❶, in accordance with the wiring diagram supplied.

Connecting multiple units with a single controller

Note:
Check in 2.9.1 Special points regarding the controller to see how many units can be connected to the controller.

1. Lay the cable between the electronic housings of the units to be connected
2. Feed the cable into the electronic housings of both units.
3. Connect the cable in both units to terminal block X60 ❻, in accordance with the wiring diagram.
4. Repeat steps 1 to 3 for each unit to be connected.

2.10 Installing the *b-touch* control panel



For the NOZ_2 air heatervarious control units are available. This chapter describes the installation of the *b-touch* control panel, which is used on units having an automatic control (type Auto).

2.10.1 Special points regarding the control panel

Positioning

- You can fasten the control panel either to the wall or to a standard junction box.

Cabling

Note:
Take the following into account, otherwise errors may occur:

- The control cable between the control panel and the (first) connected unit may not be longer than 50 m(165 ft.).
- Keep control cables away from electromagnetic fields and interference sources such as high-voltage cables and fluorescent light starters, for example.
- Lay the control cables out straight or roll them in a bifilar coil by folding cables in half before rolling them. As a result, the magnetic fields will cancel each other out to an important extent.

Note:
Use Biddle control cables only. Standard modular telephone cable is NOT suitable.

Multiple units operated from a single control panel

- A maximum of 10 'Auto' units can be connected to a single control panel. And with 'Auto' unit, 4 'Basic' units.The units are thereby daisy chained.

Caution:
Units with differing capacities (type 25 and type 50) cannot be combined.

Caution:
Only with NOZ_2 V (ventilation) units: Units with automatic control (Auto) cannot be connected to units with a basic control (Basic).

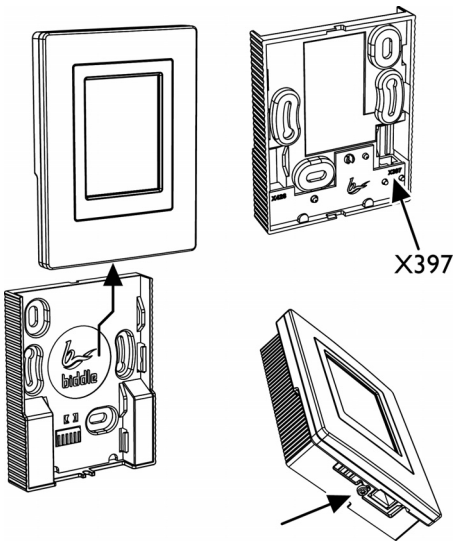
- The total length of the control cables between the first and the last unit must not exceed 100m (330ft). If the distance becomes too great, an additional control panel must be connected.
- Only units from the same product series, with the same battery type and of the same capacity can be applied in combination with a single control panel.
- Configure any single unit as the master. The sequence of the connected units is not important.
- Connect the control panel and the external control components to the master unit.

Note:
The master unit can be recognised by the addition 'Auto' on the type designation on the type plate.

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

Operation without control panel

The unit can be operated without control panel. In that event, only remove the control panel after complete installation.



2.10.2 Mounting and connecting the control panel

1. Lay the control cable.
2. Slide the control panel out of the wall holder.
3. Connect the control cable to terminal X397.

Caution:
Ensure that the wall behind the wall holder is even.

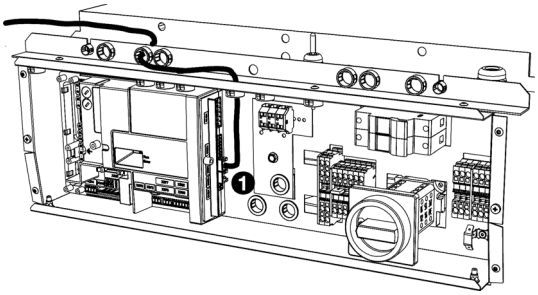
Caution:
Place the control panel in the housing supplied if class IP54 is required. The openings for the cable guide must be on the bottom.

4. Screw the wall holder onto the junction box or against the wall.

Caution:
The control panel should only be put back into the wall holder when the power supply of all the connected units has been switched on.

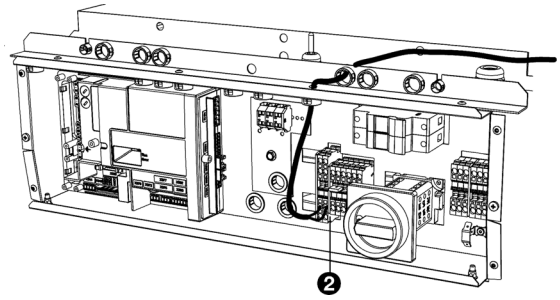
2.10.3 Connecting the control panel to the unit

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



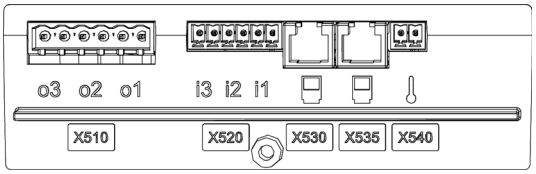
1. Lead the control cable into the unit
2. Connect the cable to terminal block X530 ❶, in accordance with the wiring diagram.

Connecting multiple units with a single control panel



1. Lay a 2-core cable between the electronic housings of the units to be connected
2. Feed the cable into the electronic housings of both units.
3. Connect the cable in both units to terminal block X60 ❷, in accordance with the wiring diagram.
4. Repeat all steps for each unit to be connected.

2.11 Installing external controls



2.11.1 Special points regarding external controls

Inputs on the unit i1, i2, i3 (11, 22, 33)

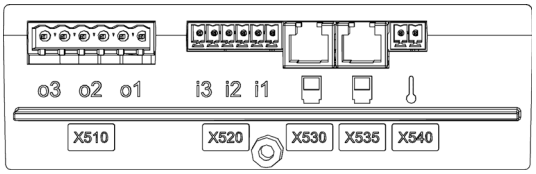
Only for models with automatic *CHIPS* control

On terminal block X520, the unit has three input signal interfaces. For example, a timer switch or a signal from a building management system can be connected to this.

Caution:
The inputs are designed for controls with potential-free contacts, and are not to be loaded.

Caution:
The inputs of multiple units must NOT be connected to each other.

Note:
With the setting All units off and with the NC (Normally Closed) settings of function 60. Function of inputs, a jumper must be laid on the input for all the subsequent connected units.



Outputs on the unit o1, o2, o3

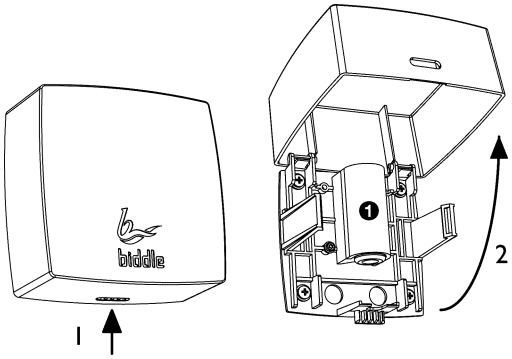
Only for models with automatic *CHIPS* control

On terminal block X510, the unit has three signal interfaces for an output signal. These can be used, for example, for controlling the central heatingor for transmitting status reports to a BMS.

Caution:
The outputs are potential-free contacts (relays). Their maximum load is 24 V / 1 A.

Options and operation

Options and operation depend on the input or output and on the control panel settings.



2.11.2 Installing the room sensor

For models with automatic *CHIPS* control

The automatic *CHIPS* control works on the basis of the temperature in the room.

1. Mount the room sensor in the room at a height of approx. 1.5 m.

Caution:
Do not place the sensor in the direct airflow path of the unit.

2. Lay the cable (not supplied) between the room sensor ❶ and the unit.

Note:
Use a cable of at least 0.5 mm^2.

Note:
In an assembly involving several units, connect the cable to the master unit, which can be recognised by the addition 'Auto' on the type designation on the type plate.

Take the following into account, otherwise errors may occur:

- Keep the length of the cable as short as possible.
- Keep the cable away from electromagnetic fields and interference sources, such as high-voltage cables and fluorescent light starters, for example.

3. Feed the cable into the unit.
4. Connect the cable to terminal block X540, in accordance with the wiring diagram.

2.11.3 Connecting the alarm signal

Units with automatic *CHIPS* control are always equipped with an alarm signal that gives a message in the event of an error in the fan.

Units with a basic control can optionally be equipped with this alarm signal.

Caution:
The contact of a unit which has basic control (Basic type) may be loaded with a maximum of 250 VAC and 2 A.

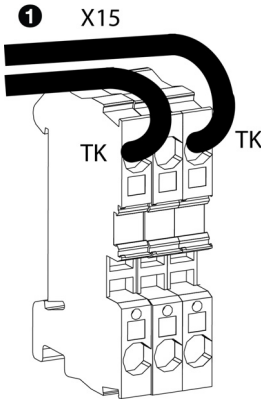
Note:
Contact is made only if the unit is connected to a power source and there are no errors.

Connecting the alarm signal to the unit

For models with automatic control (Auto type)

The alarm signal can be received via an output, ModBus or another building management system. Establish the required connection.

For models with basic control (Basic type)



1. Lay the alarm cable (not supplied) between the unit and the appliance on which the alarm signal is received.

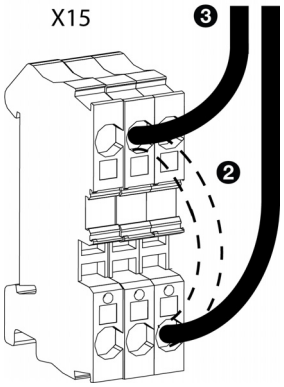
Note:
If the alarm signal is to be connected in series with several other units: Lay the cable to the unit which is going to serve as the master.

2. Connect the alarm cable to the appliance on which the alarm signal must be received.
3. Connect the alarm cable in the unit to the TK clamps on terminal X15 ❶.

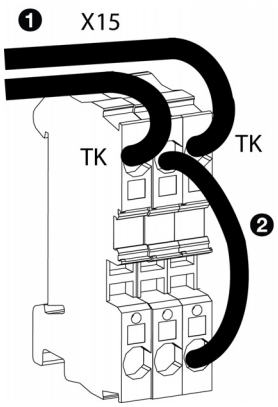
Multiple units with a single alarm signal

In a multiple-unit setup, the alarm signal is connected in series between the units.

Note:
In a setup consisting only of units having a basic control (Basic type), each unit can also be connected independently to an alarm signal.



1. Lay the alarm cable between the units.
2. Connect the alarm cable to terminal X15 on the first unit to which the alarm signal is already connected (Auto or Basic master):
   - Remove the bridge ❷.
   - Connect the cable ❸.



3. Connect the alarm cable in the unit which is to be to be connected in series to the TK clamps on terminal X15 ❶.
4. Repeat steps 1 to 3 for each unit to be connected in series.

Note:
Leave the bridge in place on the final unit ❷.

2.11.4 Connecting the unit to Modbus

Opmerking:
A detailed manual for the connection and usageof ModBus (and possibly BACnet) is available at:

www.biddle.info.

Communication parameters

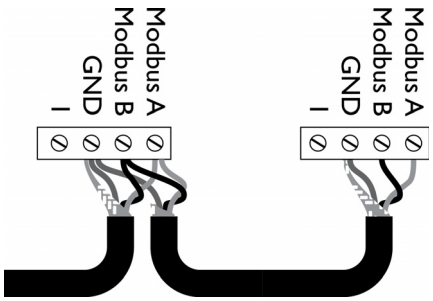
The Modbus system must comply with the following communication parameters:

COMMUNICATION PARAMETER	VALUE
Baud rate	9600
DATA	8
Parity	none
Stop bits	1

The turnaround time between the unit and Modbus is 4.2 msec.

Wiring

A twisted-pair cable must be used for connection to the Modbus system. The cable must also have a third core for the GND (grounding). Normally, a four-pole, twisted-pair cable is used; one pair is used for communication and one core from the other pair is used as the GND.



Modbus A = -

Modbus B = +

GND = ground

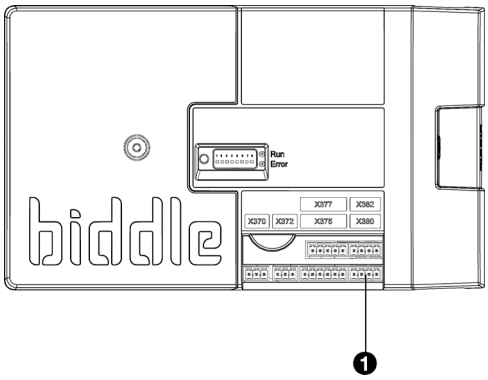
Note:
If there is no communication, this may be caused by incorrectly connected wiring. Swap the A- and B+ wires.

Connecting the unit to Modbus

1. Lay a cable between the Modbus system and the unit.

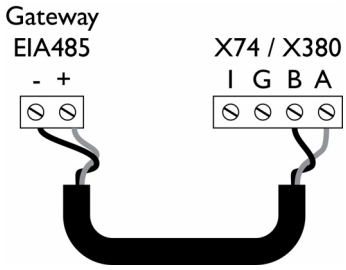
Note:
In an assembly involving several units, connect the cable to the master unit, which can be recognised by the addition 'Auto' on the type designation on the type plate.

In the case of BACnet: Lay the cable between the gateway and the unit.



2. Attach the cable to the unit, in accordance with the wiring diagram supplied:

In the case of BACnet: Use the circuit diagram below.

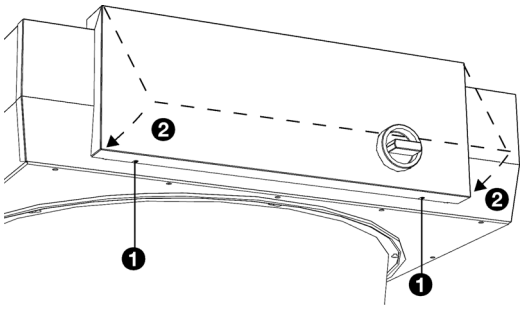


- Feed the cable into the electronic housing.
- Connect the cable to terminal X380 ❶ of the unit's control circuit board.

Note:
For a more reliable signal, it is possible to connect a 120 Ohm resistor. For this purpose, place a bridge between positions I and B of terminal X382 on the control circuit board in the unit.

Note:
The *b-touch* control panel is no longer necessary for purposes of operation. After you have gone through the installation guide, it can be removed. However, do keep it, so as to be able to adjust settings at a later stage.

2.12 Unit finishing



1. Close the electronics housing: replace the cover ❷ and fasten the screws ❶ at the bottom of the housing.

2.13 Switching ON and checking operation

For all models:

1. Check the following connections:
   - power supply;
   - control cable(s) between control panel and unit(s);
   - **If applicable:**
     external control components.

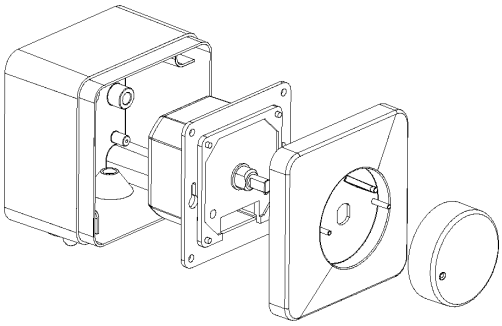
For all models:

1. Switch the mains supply on.

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.

2. Set the isolation switch to 1. (if applicable: on all units)



For models with *b-control* continuously variable controller

1. If so desired, adjust the output voltage of the controller:
    1. Remove the adjustment button.
    2. Remove the hexagonal nut.
    3. Remove the shut-off cap.
    4. Attach a multimeter to 'Vout'.
    5. Set the switch to the minimum voltage:
    - Turn the switch all the way to the left;
    - Turn it to the right until the switch clicks;
    - Carefully turn it to the left until you feel resistance, but the switch does not quite click.
    - Set the desired minimum voltage, using a screwdriver.

    Note:
    Set the minimum voltage to at least 2V.

    6. Turn the switch all the way to the right.
    7. Set the desired maximum voltage, using a screwdriver.

    Note:
    The set max. voltage must be greater than the set min. voltage.

    8. Fit the shut-off cap.
    9. Fasten the hexagonal nut.
    10. Fit the adjustment button: Press this on firmly and set to position '0'.
2. Turn the unit on, using the controller.

For models with *b-touch* control panel

1. Place the control panel back into the wall holder.

   When you connect the control panel, the control panel searches for connected units and then briefly displays the number of connected units.

Caution:
If the number of units displayed does not match the number connected, check the wiring and power supply of the units and reconfigure the system via menu > Maintenance > Reset system.

Optional:
Lock the control panel with the screw on the underside.

   During the first start-up, the installation guide is initiated. Go through this in order to make the most necessary settings.

   If the installation guide is not displayed, it can be started via menu > Maintenance > Installation.

   If the control panel does not work, or if the display shows an error message, there is an error: consult the relevant section.

Note:
The settings of the *b-touch* control panel can be copied to another *b-touch* control panel. See 7.9 Copying the settings.

Note:
After installation, the control panel may possibly be removed. See 2.10.1 Special points regarding the control panel for the conditions.

For all models:

1. Check whether the fans are rotating.

For water-heated models (type H):

1. Check whether the heat exchanger is connected correctly.
2. Make sure that the central heating system has been turned on.
3. *If the b-touch control panel is implemented:* Make sure that the heating is enabled on the control panel.
4. Feel whether the discharged air stream becomes warm. This may take some time and is dependent on the need for heating.
5. Vent the heat exchanger.
6. Adjust the unit on the water side:

Caution:
For models with basic control (type Basic) without application of water-side control: Ensure that at the lowest fan speed the maximum discharge temperature is not exceeded. For the maximum discharge temperature, see section 1.3.5 Field of application.

Caution:
In the case of a combination of models with a control circuit board (type Auto) and models without control circuit board (Basic): Adjust all units on the water side. Ensure that all units have the same discharge temperature.

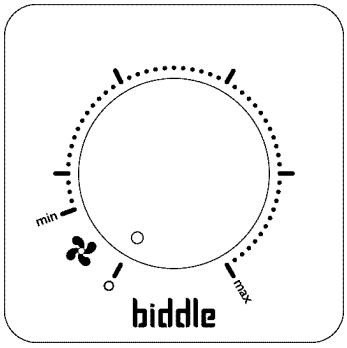
3. . Operation with *b-control*

Various control units are available for the NOZ_2 air heater. This chapter describes operation with the *b-control* continuously variable controller that is used on units having a basic control (Basic type).

3.1 Introduction

This section describes the functions of the *b-control* continuously variable controller which are necessary for the operation of the unit. The isolation switch on the unit is only needed during maintenance and servicing.

3.2 Switching ON and OFF



When the controller is set to strength 0, the unit is switched OFF.

Turn the knob of the controller clockwise in order to switch the unit ON.

Note:
The unit switches on commencing at the minimum strength 'min'.

3.3 Regulating the strength

The fan speed can be regulated in a continuously variable manner with the controller.

The most optimal speed is the minimum strength at which the airflow touches the ground and there is no draught across the ground. This may vary per day and during the course of the day.

4 . . Operation with *b-touch*

Various control units are available for the NOZ_2 air heater. This chapter describes operation with the *b-touch* control panel, that is used on units having an automatic control (Auto type).

4.1 Introduction

This section describes the functions of the *b-touch* control panel, which are required for setting up the unit.

Note:
After installation, the control panel may possibly be removed. See 2.10.1 Special points regarding the control panel for the conditions.

For the purpose of altering setting easily, the control panel can remain present.

The illustrations show screens for a unit with ventilation. For units without ventilation, the parts relating to ventilation are not visible.

4.1.1 Control panel

The *b-touch* control panel is equipped with a touch screen (touch screen) with which all the functions can be set:

- Turning the unit ON and OFF;
- Adjusting the strength of the unit;
- Switching the heating ON and OFF;
- Entering settings to adjust the operation of the unit to your situation.

4.1.2 Multiple units operated from a single control panel

If multiple units are connected to the *b-touch* control panel, the settings on the panel are the same for all units.

4.1.3 Settings

Select ✓ to save the settings and return to the previous screen.

Select ✗ to return to the previous screen without saving the changes.

4.2 The Home screen

The settings of the unit and the room temperature can be adjusted on the Home screen.

- Touch the parts of the symbol to select manual or automatic and to adjust the strength of the unit or the room temperature.
- With fan units, touch the part of the symbol to adjust the ventilation percentage.
- Touch the 'i' to obtain concise information about the operation of the unit.
- Touch menu to open the main menu.

4.2.1 Help function

At any time, you can call up additional information concerning the point in the operation where you are, by touching Help.

4.2.2 Turning the unit ON and OFF

You can switch the unit ON and OFF manually, using the control panel.

- Touch on/off in order to turn the unit ON or OFF.

If the unit is on, the screen will become darker after some time, in order to save energy. When the screen is touched, it lights up again. This function cannot be deactivated.

If the unit is switched off, the screen will go black after some time. Touch the screen to activate it again.

The unit can also be switched ON and OFF in other ways:

- Using external controls (see function 65. Control panel input and 60. Function of inputs).
- Via the internal timer or via an external release signal on the unit.

  In these cases, the ON/OFF button can be hidden via Configuration > 21. User interface options > Display on/off button.

4.2.3 The CHIPS control

By default, the unit operates with fully automatic control. Depending on the selected settings, the unit can also be controlled manually. In automatic mode, the unit operates under CHIPS control. This control matches the strength and heat of the unit to changing weather conditions. This reduces energy consumption and improves comfort through selection of the optimum setting under all circumstances. CHIPS stands for "Corrective Heat and Impulse Prediction System".The unit works on the basis of the room temperature and the temperature of the discharged air near the unit.

4.2.4 Automatic or manual control

The unit has an automatic mode and a manual mode. You can select these by touching the uppermost part of the symbol. When the unit is switched on, it is always in automatic mode. If you wish to use the unit in manual mode only, switch off the automatic mode via menu > Settings > 1. Select modes.

In the manual mode, the unit operates with a fixed set fan speed, possibly influenced by the settings of function 26. Manual: Door response.

Recommended setting of the unit

To obtain the greatest possible comfort with the least possible energy consumption, Biddle recommends use of the fully automatic CHIPS control.

4.2.5 Regulating the strength

Adjusting the automatic strength control

In automatic mode, the strength and temperature of the airflow are regulated automatically. in certain circumstances you might want to adjust the automatic setting.

Manual setting of the strength

With the manual setting, you can select the strength. To achieve maximum comfort with minimum energy consumption, Biddle recommends selecting the lowest strength at which the airflow touches the ground. This setting may possibly need to be changed during the course of the day.

4.2.6 Required room temperature

You can set the temperature to a comfortable level. This is the temperature near the room sensor.

Temperature adjustments made via the home screen of the *b-touch* control panel only apply until the starting time of the following period. The default value can be set via menu > Settings > 5. Room temperature.

4.2.7 Errors

The symbol ⚠ indicates that there is an error. The error message is also displayed alongside.

- Touch this message for further information on the error and for instructions as to how to react.

Warning:
Some errors may cause damage or danger to persons if they are disregarded. If ⚠ is displayed, follow the instructions on the control panel concerning how to act.

Note:
The symbol ⚠ and the error message remain displayed as long as the error has not been remedied.

If an error has remedied itself, a corresponding message will be displayed. Touch this message to display the Error history and to read out the errors and the times of their occurrence. This list can also be read out via Maintenance > Error history.

See also:
5.2 "Error messages on the control panel" on page 66

4.2.8 Symbols

The symbol ⏲ indicates that the timer is switched on.

The symbol 'i' indicates that there is currently a tip to be read. Touch the symbol in order to read the tip.

4.3 Main menu

Touch menu in order to open the Main menu. Here you can enter settings for a number of frequently used functions; in submenus you can enter settings in order to adapt the operation of the unit to your specific situation.

- Touch home in order to return to the Home screen.
- Using ▲ and ▼ you can browse through the list.

If the control panel is not operated for some time, it returns automatically to the Home screen without saving the changes.

Lock screen

Select Lock screen in order to prevent unauthorised access. The 🔒 symbol appears on the screen.

Unlocking

Touch the screen for 5 seconds to unlock it.

Turning the heating on and off

The unit's heating can be switched on and off manually.

Switching the heating off disables the room temperature control and any Heating on output functions.

This function can be deactivated via setting 21 in the configuration menu.

- Select Heating.

The heating can also be switched off by the control itself:

- by an external signal on the unit's input, see menu > Configuration > 60. Function of inputs, setting Heating off;
- when the room temperature is higher than the setting of function 41. Heating OFF temperature.

Cleaning display

Using the touch screen can leave marks or fingerprints on the screen. The screen can be cleaned using a damp, soft cloth.

Use this function to disable the touch screen for 20 seconds in order to be able to clean it.

Timer

The b-touch control panel has a week timer. You can set two start and stop times for each day of the week. The unit is on between the start time and the stop time. The second start and stop times are optional. When the ON/OFF button is displayed on the screen, the unit can also be switched ON or OFF manually. From the next switching moment, the unit follows the timer again. When the timer is switched on, the symbol ⏲ is displayed on the Home screen.

4.4 Preferences

Preferences

The menu Preferences allows you to make settings for the use of the control panel.

Set language

The control panel offers a choice of languages. Choose your preferred language from the list.

Set date and time

The date and time are necessary for the timer function and for tracking usage statistics of the unit.

The automatic summer time function switches the clock to summer or winter time in accordance with the applicable European rules. If you do not use this function, you can switch to summer time manually. The clock is then set one hour forward.

Celsius / Fahrenheit

Choose between a temperature display in degrees Celsius or degrees Fahrenheit.

Display brightness

Set the brightness of the screen to your personal preferences or to the specific situation.

Show tips

The control panel can show tips about the usage of the unit. The display of these tips can be enabled or disabled.

4.5 Settings

The Settings menu allows you to enter settings which influence the day-to-day use of the unit.

1. Select modes

The control panel has an automatic mode and a manual mode. With the function Select modes, you can set which of these modes can be selected in the HOME screen.

5. Room temperature

Here, set the temperature which is to be used by default as the room temperature when starting up the unit.

The desired room temperature can temporarily be adjusted on the home screen until the next start-up moment.

6. Minimum air temperature

Set the minimum difference between the room temperature and the discharge temperature.

This difference can be increased for more comfort. A smaller difference saves energy.

8. Night temperature

The night temperature is used when the unit is switched off. When the room temperature drops below this set value, the unit will start working in order to keep the room at the night temperature.

Note:
This function only operates when the heating is switched on.

Warning:
Be aware that the airflow of the unit can set objects in motion. This might set off an alarm system in the building at night time.

9. Calibration

An unfavourable positioning of the room sensor or use of the temperature sensor in the unit may be the reason why the displayed temperature deviates from the actual temperature.

Use this function to adjust the temperature reading.

4.6 Configuration

The menu Configuration allows you to enter settings in order to adjust the operation of the unit to the room and the system. Usually, this menu is used only for installation, maintenance and service purposes.

20. Access control

Pin code

Access to the entire control panel or to the menu only can be protected with a four-digit PIN code.

The default PIN code is 0000.

Access level

The control panel can be safeguarded at different access levels.

21. User interface options

Display on/off button

The unit can be switched ON and OFF manually. This can also be done via the internal timer or via an external release signal on the unit. In this case you can disable the manual on/off option. The on/off button is then not displayed on the Home screen.

Temperature display

By default, the room temperature is displayed. With this function, you can select another temperature to display or switch off the temperature display.

If the temperature display is switched off, there is no temperature control.

Heating OFF option

Use this function to enable or disable the option which allows the user to switch the heating ON/OFF manually.

Error display

Some error messages may be caused by external factors such as the central heating system and do not necessarily have an influence on the functioning of the unit.

Use this function to suppress these messages. Safety-related warnings will always be displayed.

31. Maximum strength

In order to restrict the sound level, the maximum fan speed can be limited. This function only has effect on the automatic mode.

Use of this function can reduce comfort.

32. Deceleration time

You can set a post-rotation time for the fan. Here, set the period of time it should take for the fan to decelerate from maximum speed to standstill.

33. Boost function

If there is a great difference between the desired room temperature and the actual room temperature, the fan speed can be increased in order to reach the desired temperature more quickly.

Set the temperature difference at which the boost function should be activated and what the fan's increase in speed should be.

35. Ventilation settings

Only for models with ventilation

Ventilation control

The relationship between ventilation air and recirculated air can be determined in various ways:

- Manual selection: Manual switching between ventilation and recirculation.
- Valve regulation: Manual regulation of the position of the ventilation valve.

Maximum position of ventilation valve

The maximum opening percentage of the ventilation valve can be limited.

Minimum fan speed during ventilation

Set the minimum percentage of the fan speed for ventilation.

Maximum fan speed during ventilation

Set the maximum percentage of the fan speed for ventilation.

46. Maximum discharge temperature

The controller limits the discharge temperature to a maximum of 50°C. Possibly set a lower value in order to save energy.

47. Overheat protection

If the actual room temperature becomes higher than the preset room temperature, the heating can be switched off in order to prevent the room from becoming too warm.

Set the temperature above which the heating must be disabled.

Note:
This function can only be used if the unit is set to automatic.

Note:
If this function is activated, then function 6. Minimum air temperature is ignored.

50. Installation height

In order to use the automatic control as efficiently as possible and with minimum energy consumption, it is necessary to set the installation height of the unit correctly.

Note:
Use values in metres.

The installation height is the distance from the floor to the underside of the unit.

52. Nozzle angle

For optimal operation of the unit, the nozzles must be set at the correct angle. Section 2.6 Regulating the discharge direction describes how the correct nozzle angle is determined.

In order to use the automatic control as efficiently as possible and with minimum energy consumption, it is necessary to set the nozzle angle in the control panel.

60. Function of inputs

The unit has three inputs (terminal block X520) which can be used to enable a function to be controlled by an external accessory such as a thermostat or a signal from a building management system.

Values for inputs 1 and 2

VALUE	OPTION	DESCRIPTION
0	No function	The input has no function.
1	Unit off locally – NO	The unit is switched OFF when the contact is closed. (This only works with the units to which the input signal is directly connected (locally).)
6	Heating off	The heating is switched OFF when the contact is closed.
9	Release – NO	The user is allowed to switch the unit on and off when the contact is closed.
10	Dirty filter – NO	Displays a "dirty filter" warning if the contact is closed.
21	Switch all units on	All units are switched ON when the contact is closed.
51	Unit off locally – NC	The unit is switched OFF when the contact is open. (This only works with the units to which the input signal is directly connected (locally).)
56	Heating on (dependent on soft-ware version)	The heating is switched ON when the contact is closed.
59	Release – NC	The user is allowed to switch the unit on and off when the contact is open.
60	Dirty filter – NC	Displays a "dirty filter" warning if the contact is open.
71	All units off	All units are switched OFF when the contact is closed.

The function of input 3 is set via other functions in the *b-touch* control panel. In addition, the function of this parameter (60.3) is controlled via the settings file or via Modbus.

Values for input 3

VALUE	OPTION	DESCRIPTION
21	Switch all units on	All units are switched ON when the contact is closed.
71	All units off	All units are switched OFF when the contact is closed.

Release delay input 1

When you use input 1, you can make the effect of an input signal persist for some time after the signal has been given ('release delay').

61. Function of outputs

The unit has a connection (terminal block X510) for three output signals: these can be used for controlling the central heating system, for example, or for transmitting status reports to a Building Management System (BMS).

By default, output 3 is used for error messages.

The outputs work independently of each other.

Multiple units operated from a single control panel.

The outputs always have a global effect: the signals are always the same in all units connected to the control panel.

Values

VALUE	OPTION	DESCRIPTION
1	Error – NO	The contact is closed as soon as an error occurs.
2	Dirty filter – NO	The contact is closed as soon as the maximum filter lifespan has expired.
3	Heating deficit	The contact is closed when the unit cannot reach the desired air temperature.
4	Error or dirty filter – NO (if filter present)	The contact is closed as soon as an error occurs or when the maximum filter lifespan has expired.
8	Unit on	The contact is closed as soon as the unit is switched on.
10	Error local – NO	The contact is closed as soon as an error occurs in the unit in question.
11	Fan active – NO	The contact is closed when the fans are running.
13	Heating on	The contact is closed when the unit requires heating. Use this to switch the heating system ON or OFF via the unit.
15	Risk of freezing	The contact is closed when the temperature inside the unit drops below 7 °C.
17	Use boost function	The contact is closed when the difference between the desired temperature and the room temperature is greater than the value set for 33. Boost function.
31	Copy input 1	The output follows the contact on input 1
32	Copy input 2	The output follows the contact on input 2
33	Copy input 3	The output follows the contact on input 3
40	Overheating protection	The contact is opened as soon as the high-limit thermostat has been activated (only for output 3, only for models with electrical heating)
41	Fan malfunction – NC	The contact is opened when there is a malfunction in the fan. (only for output 3, only for types L and XL)
51	Error – NC	The contact is opened as soon as an error occurs.
52	Dirty filter – NC	The contact is opened as soon as the maximum filter lifespan has expired.
60	Error local – NC	The contact is opened as soon as an error occurs in the unit in question.
61	Fan active – NC	The contact is opened when the fans are running.

71. Indoor temperature sensor

Select the sensor which the system must use for the indoor temperature:

It is possible to limit the room temperature that can be set by the user. Set a minimum and a maximum room temperature.

4.7 Maintenance

The menu Maintenance contains information on the use of the unit and offers a number of functions which are necessary for remedying errors.

Status

The status screen displays general information about the installation and specific information per group and per unit connected.

Current errors

Gives an overview of current errors. The error messages can also be deleted here.

Error history

Gives an overview of the errors which have occurred.

Capacity test

Use this function to test the capacity of the unit and your heating installation.

The unit will run for 120 minutes at the highest fan speed and with the highest heating capacity. You can check the discharge temperature and the heating capacity per metre of unit length. The discharge temperature is limited to 50°C.

For units with water heating:
if the heating capacity is too low, check the supply and return water temperatures and the water flow.

Valve check

Use this function to check the operation of the water valve:

1. Set the opening percentage of the valve to 0%;
2. Press start. The fans will start rotating at the highest speed;
3. Check whether the discharged air is cold;

Note:
It may take some time before the valve reaches the adjusted opening percentage.

4. Repeat steps 1 and 2 for the percentages 50% and 100% as well. In doing so, check whether the discharged air gets warmer per step.

Installation

This installation guide leads you through the most frequently required settings.

The installation guide is started up automatically during the first start-up of the unit or after the resetting of the factory configuration.

Unit code

For entering the unit code after replacement of the control circuit board in a unit.

Default settings

Restores the default factory settings of the setup menu. The settings entered in the configuration menu are retained.

Factory configuration

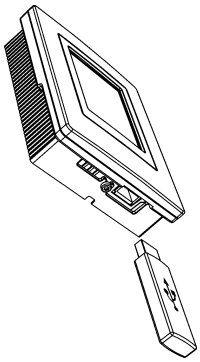
Restores the standard factory configuration. All settings are then lost.

Note:
The installation guide will be restarted.

Reset system

The control panel searches for connection with the attached units again. Use this function when remedying errors and during connection or disconnection of units.

4.8 USB



The control panel is equipped with a USB port to which only a USB flash drive can be connected. This is used for:

- updating the software
- importing and exporting settings
- exporting usage data

This menu is automatically activated when a USB flash drive is connected. The menu is closed again when the USB flash drive is removed.

Caution:
Do not remove the USB flash drive during the updating or during the importing or exporting of data. This can take several minutes.

Warning:
Connection of other electronic devices to the USB port can cause serious damage to the control panel or to other electronic components.

Software update

Biddle is working continuously on improving its products and recommends that you update the software of the control panel when updates become available. Consult www.biddle.info/software to see if updates are available.

- The installed version of the software can be read out from Maintenance > Status.
- Download the latest version of the software via Biddle's website.

See also: 7.10 Updating the software

Upload logo

It is possible to use your own logo or image as background for the display.

Requirements for the image:

- Windows bitmap;
- Filename: logo.bmp;
- Dimensions: maximum 240 x 320 pixels;
- Colour depth: 8-bit grayscale or 24-bit colour.

Note:
Uploading your own logo replaces the standard Biddle logo.

Export/import settings

For copying settings between control panels.

See also: 7.9 Copying the settings

Exporting system info

Export the file 'system_info' for an overview of all connection control circuit boards and control panels with corresponding software versions.

Export log...

The Export log functions write data concerning the operation of the unit to the USB flash drive. These files can then be analysed on a computer.

The files contain the following data:

- log_func: Data concerning the operation of the unit.
- log_error: Error report history.
- log_user: User settings history.
- log_stat: *not in use.*
- system_info: Overview of connected control circuit boards and control panels.

Note:
The process of exporting can take several minutes. Repeat if 100% is not achieved.

5. . Errors

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.

See also:
1.5.2 "Safety issues relating to installation, maintenance and servicing" on page 12

5.1 Resolving simple problems

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

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

Some problems can be resolved simply by resetting the system once. (see5.2.3 Error messages on the control panel-Reset system)

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit does not work.	The unit has not been switched on	Switch the unit on
	The unit has no power supply.	Check the mains supply: • isolation switch,
	The unit has been switched off by external control components	Check external control components, if present:

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit is not discharging much air.	The nozzles are not working optimally.	Check the nozzles: • Are the openings free of obstacles? • Is the unit hanging at the correct height? • Are the nozzles adjusted to the correct angle?
	The unit is set at too low a strength.	Switch the unit to a higher strength.
	Only for models with heating: The heat exchanger has become dirty.	Clean the heat exchanger.
The unit is not heating or not heating sufficiently.	The unit is set at too low a strength.	Switch the unit to a higher strength.
	Only for water-heated models: The central heating system is not working properly.	Check the central heating system. • Check the connections. • Check the operation. • Check the capacity.
For units which have automatic regulation and *b-touch* control panel:		
The control panel display is black.	The control unit has no power supply.	Check the mains supply: • plug in the power socket, • isolation switch,
The display is on, but does not react to touch.	*If the 🔒 symbol is shown on the display:* The display is locked.	Touch the screen for 5 seconds to unlock it.
The display flickers	The power supply is too low or not constant	Reduce the brightness of the display to a level at which flickering no longer occurs, via menu > Preferences > Display brightness.
The unit discharges cold air .	The heating has been switched off manually.	Turn the heating on via menu > Heating.
	The (set) room temperature has been reached. The unit is ventilating unheated.	This is not an error.
	The heating has been switched off by a signal to the unit's input.	This is not an error. If this is considered a problem, the function of the input can be changed via 60. Function of inputs.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit is discharging air harder than expected	If there is a big difference between the set temperature and the actual temperature, a unit may temporarily operate at a higher setting in order to attain the pre-set temperature faster.	This is not an error. If this is considered a problem, you can switch off function 33. Boost function or set it to a different temperature difference or a different increase in the fan setting.
	The nozzles are not working optimally.	Check the nozzles: • Is the unit hanging at the correct height? • Are the nozzles adjusted to the correct angle?

5.2 Error messages on the control panel

5.2.1 Reading out errors

Current errors

Current errors are displayed on the Home screen. If an error has remedied itself, a corresponding message will be displayed.

When the error message is touched, the screen displays an explanation, together with a list of the actions to be taken. The message will disappear from the Home screen only when the error has been remedied.

More than one error may occur at the same time. You can read out a list of current error codes via menu > Maintenance > Current errors.

No-longer-current errors

If an error has remedied itself, a corresponding message will be displayed. Touch this message to display the error history and to read out the last five errors and the times of their occurrence. This list can also be read out via menu > Maintenance > Error history.

This message will disappear when touched or when the unit is switched on again.

5.2.2 Deleting errors

Most error messages will disappear automatically when the problem is resolved. Certain errors have to be remedied, however, by deleting the error message via menu > Maintenance > Current errors.

5.2.3 Reset system

Some errors can be remedied by resetting the control panel via menu > Maintenance > Reset system: the panel will then search for connected units again.

In this process, all settings are retained.

5.3 Remedying errors that are accompanied by an error message

For models with b-touch control panel: *Try to remedy errors that are accompanied by an error message, making use of the error codes table. Technical expertise is required for this.*

CODE	PROBABLE CAUSE	WHAT TO DO
E1	The control panel does not communicate with one or more connected units. This error may occur: • when a connected unit is removed or replaced, • due to a brief error in the power supply of a connected unit, • due to incorrect cabling, • due to a fault.	1. Check whether all connected units are provided with mains supply. 2. Check whether the dummy plug on terminal X535 of the last connected unit is present. 3. Check the control cables: • are they correctly connected and free of breaks? • are they stretched out or rolled up in a bifilar coil? • are they shielded from magnetic fields? 4. Check the fuses. 5. Check the wiring between the control panel and connections X530 and X535 and X60 in the unit. 6. Reset the system if the error message does not automatically disappear.
E2	There are units connected that have an invalid or unknown unit code, or an invalid combination of unit types.	Check and compare the unit types on the type plate. The units must have the same battery type and preferably the same capacity.
	The control panel software is outdated.	Check the version number of the software via menu > Maintenance > Status.
	The control panel does have power but is not communicating with any unit.	1. Check the control cables: • are they properly connected and fully intact? • are they stretched out or rolled up in a bifilar coil? • are they shielded from magnetic fields?

CODE	PROBABLE CAUSE	WHAT TO DO
E6	*For water-heated models:* Risk of freezing because discharge temperature is too low. Frost protection has been activated. **Freezing may cause damage to the heat exchanger.**	1. Clear the error message. 2. Ensure that the temperature in the room rises above 8 °C(47 °F). 3. Follow the instructions for error code F3 You can prevent this error by setting the unit to switch on the central heating system when there is a risk of freezing (Function 61. Function of outputs on Heating on).
E7	Fan error.	1. Clear the error message 2. Check the fans. If one or more fans do not work, then check: • the fan wiring; • the connections on the control circuit board (X344); • the transformer fuse; • the transformer itself. If these are in order, then replace the fan.
F2	*For water-heated models:* There is too much heating. This error may occur if the control valve does not work correctly.	1. Switch the unit OFF using the control panel, wait for one minute, and switch it ON again. 2. Check that the connections of the supply and return pipes have not been interchanged. 3. Check the wiring and connectors of the valve drive (X67/X370) and the discharge temperature sensor (X350). 4. Remove the drive from the valve and check the interior for mechanical operation and defects.

CODE	PROBABLE CAUSE	WHAT TO DO
F3	*For water-heated models:* The central heating system switches on later than the unit.	You can: • switch on the central heating system earlier; • set the unit to turn on the central heating: Set function 61. Function of outputs to Heating on and connect the relevant output to the central heating system. • turn off this error message: Set function 21. User interface options > Error display to Disable.
	For water-heated models: There is too little heating. This error may occur: • if not enough hot water is supplied; • if the control valve does not work correctly.	1. Check the central heating system: • is it turned on? • is it able to supply enough hot water? 2. Check whether the battery only becomes partially warm: if so, it needs venting. 3. Check the wiring and connectors of the valve drive (X67/X370) and the inlet temperature sensor (X360). 4. Remove the drive from the valve and check the interior for mechanical operation and defects.
	For all models: If the fans do not rotate:	1. Check whether the fans are rotating. If one or more fans do not work, check: • the wiring of the fans; • the connections on the printed circuit board (connectors X60); • the transformer fuse; • the transformer itself.
F5	The temperature sensor in the unit's discharge section does not work.	1. Check the sensor's wiring and connection (connector X350). 2. Replace the sensor.
F6	The temperature sensor in the unit's inlet section does not work.	1. Check the sensor's wiring and connection (connector X360). 2. Replace the sensor.
F13	*On models with ventilation:* The temperature sensor in the ventilation air inlet does not work.	1. Check the wiring and connection of the sensor (connector X354). 2. Replace the sensor.

CODE	PROBABLE CAUSE	WHAT TO DO
F14	The room sensor does not work. The indoor temperature is now based on the temperature sensor in the inlet section of the unit (corrected with an estimated temperature difference between the height of the room sensor and the installation height of the unit)	1. Check the sensor's wiring and connection (connector X540). 2. Replace the sensor.
F16	*For models with Daikin direct expansion system and electrical heating (type DKE):* Heating medium sensor does not work. The electrical heating is not switched on in the defrost mode.	1. Check the wiring and the connection of the medium sensor (connector X354) 2. Possibly, replace the sensor. 3. Possibly, activate the electrical heating via function > Hybrid heating

5.4 Remedying errors that are not accompanied by an error message

If you suspect an error but no error message is displayed:

1. Referring to the preceding sections, check whether you can easily resolve the problem.
2. Try to resolve the problem using the table below. Technical expertise is required for this.

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The control panel works normally but the unit does not respond.	The unit is being operated by a signal from an external control.	1. Check functions 60. Function of inputs and Release delay input 1 in the menu Configuration.
	The fans may be switched off if there is only a small difference in temperature between indoors and outdoors.	This is not an error. If this is considered a problem, the value of the function can become 42. Fan OFF temperature.
The display flickers	The length of the control cable between the control panel and the first unit is too great	Remove excessive length of cable

PROBLEM	PROBABLE CAUSE	WHAT TO DO
The unit is not functioning, the display is black and does not react to touch.	The unit is not receiving power.	Check the mains supply: • isolation switch, • unit has power. • connections and wiring of the power supply.
	The connection between the control panel and the control circuit board is not good.	1. Check the control cable. 2. Check the wiring between the connector plate and the control circuit board (connectors X530 and X60).
	The control circuit board is not working; the LEDs on the control circuit board are not lit.	1. Check fuse F141. 2. Check the mains power cable (connector X01). 3. Replace the control circuit board.
	The control panel is faulty.	Check the control panel by connecting it to another unit with another cable. Replace the control panel if it is not working.
One fan does not work.	The fan is not receiving a power supply or is faulty.	1. Check the wiring of the fan. 2. Check the transformer fuse. 3. Replace the fan.
The fans do not work at a particular speed level.	The connection to the relevant branch is not good.	1. Check the transformer connections. 2. Check connector X60.
The earth leakage circuit breaker switches the unit off.	The earth leakage circuit breaker present is not compliant.	Ensure that an earth leakage circuit breaker **type B** is present, preferably 300 mA.

6. . Maintenance

6.1 Introduction

This chapter comprises those maintenance activities that the user himself can perform. Maintenance activities and repairs that must be performed by an installer are described in chapter 7 Service.

6.2 Safety instructions

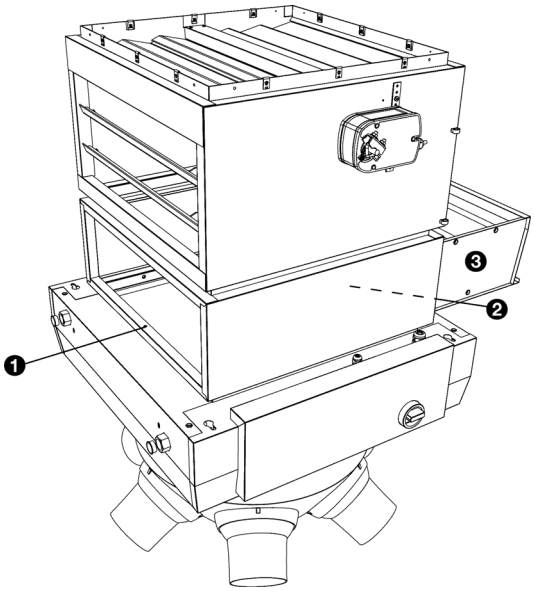
Before opening the unit, follow the safety instructions in section 1.5.2 Safety issues relating to installation, maintenance and servicing.

6.3 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.

6.4 Replacing or cleaning the filter



A filter module is available as an accessory. This is mounted on top of the unit.

This module contains a tray, inside which is the filter material. By default, the filter tray contains a class G2 filter material. You can clean the filter material with a vacuum cleaner, for instance. After several cleanings, however, you must replace it. New filters are available from Biddle.

1. Undo screws ❶ and ❷ (❷ is not visible in the drawing, but, just like ❶, is located half-way along the side).
2. Remove tray 3 from the unit.
3. Clean or replace the filter material.

Caution:
When replacing the filter material, you must ensure that you place the material with the correct side facing upwards.

4. Place the tray back into the unit.
5. Fasten the screws again.

7. . Service

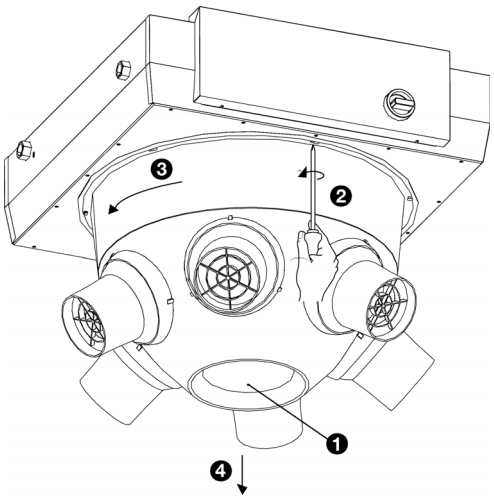
Warning:
Servicing activities may only be carried out by personnel who are technically qualified to do so.

Warning:
Before you begin: read the safety instructions.

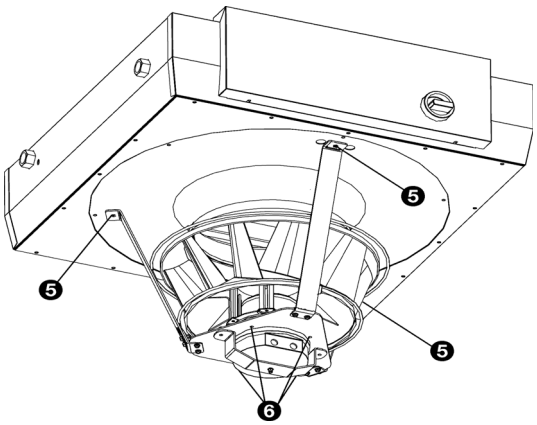
See also:

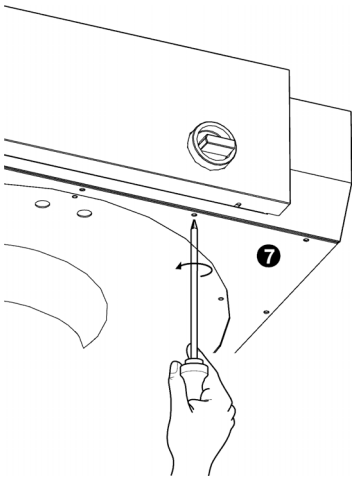
1.5.2 "Safety issues relating to installation, maintenance and servicing" on page 12

7.1 Replacing the fan



1. Switch the unit off using the control unit.
2. Set the isolation switch to 0.
3. Detach the fan's mains power cable from the isolation switch.
4. Undo the screw ❶ in the base of the cone and remove the screw.
5. Loosen the six screws of the cone somewhat ❷, turn the cone so that the screws fall through the wide part of the keyhole ❸ and remove the cone ❹.





6. The fan is attached to the cabinet via a frame (three brackets and a 'fan seat'). Loosen the three bolts ❺ which attach this frame to the cabinet.

Caution:
The fan is heavy, and will fall if you unfasten these bolts. Take firm hold of the fan.

7. The fan is attached to the frame with four bolts ❻. Loosen the bolts.

8. The base plate is attached to the cabinet with 16 (NOZ_2 25) or 20 (NOZ_2 50) screws. Loosen these screws ❼ and remove the base plate.

9. Mount the whole thing in reverse order to the dismantling. If necessary, extend the mains power cable.

See also:

I "Replacing the isolation switch" on page I

7.2 Electronics module

Only for units which have automatic *CHIPS* control

The unit contains one electronics module. Depending on the version, one can find on this such things as:

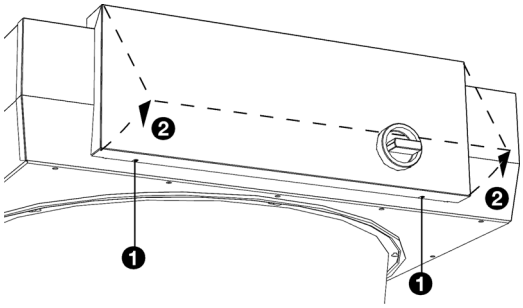
- the transformers;
- the control circuit board;
- the connector plate;
- the fuses.
- the filters
- the reactor

7.3 Removing the control circuit board

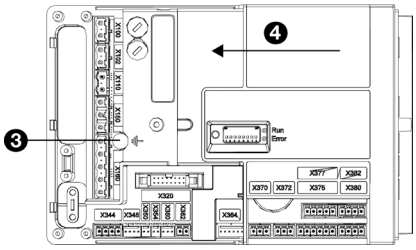
1. Switch the unit off using the control panel.

Warning:
Shut off the mains supply.

The unit is fitted with 2 mains power cables. Ensure that the power supply to the control circuit board is also shut off.



2. Open the electronic housing: undo the screws ❶ at the bottom of the housing, tilt the cover ❷ and lift the cover off the unit.
3. Disconnect all connectors attached to the unit and earth connections from the control circuit board.



4. Remove the screw ❸.
5. Slide the control circuit board ❹ loose and lift it out of the unit.

7.4 Connecting the control circuit board

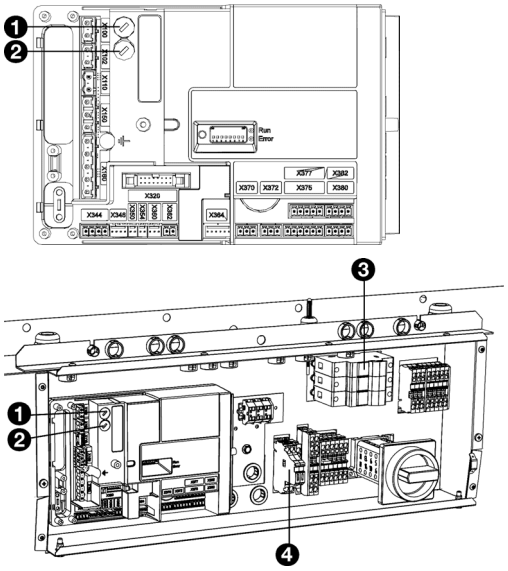
Warning:
Make sure that the mains supply is switched off

1. Slide the control circuit board into its place and screw it in firmly.
2. Connect all connectors and earth connections to the control circuit board again.
3. Switch the unit on and check the operation.

Note:
With a new control circuit board, an E1 error may occur because the old control circuit board can no longer be found. Resolve this by reconfiguring the system via menu > Maintenance > Reset system

Note:
If you are asked to designate a new master unit, then preferably select a unit whose control circuit board has not been replaced. In that event, the settings will be preserved.

7.5 Fuses

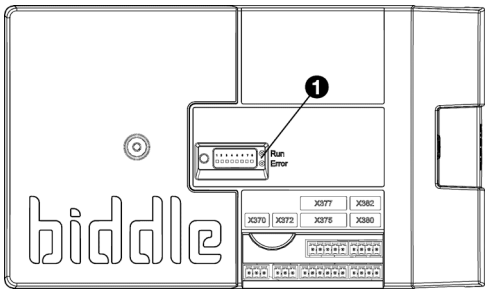


The control circuit board of the unit is fitted with the following fuses:

- fuse F140 ❶ of the transformer.
- fuse F141 ❷ of the control circuit board.
- fuses for the fans ❸.
  - for the NOZ_2 25, there are 2 fuses.
  - for the NOZ_2 50, there are 3 fuses.
  - for the $IndAC_2$ ST, there are 2 fuses.
  - for the $IndAC_2$ MX, there are 3 fuses.

The values are indicated on the fuses.

7.6 LEDs



The LED lights ❶ on the control circuit board indicate the following:

- *continuous green:* The control circuit board is receiving a power supply.
- *flashing green:* The unit code can be entered.
- *continuous red:* There is a local error.

Note:
This does not necessarily always result in an error message on the control panel.

7.7 Setting the unit code

The unit code must be set after replacement of the control circuit board in the unit. The unit code depends on the unit type and is indicated on the type plate.

To set the unit code, there are two methods:

- directly via the control panel if a single unit is connected;
- via the control circuit board and the control panel if more than one unit is connected.

Warning:
Entering an incorrect code will result in poor performance of the unit.

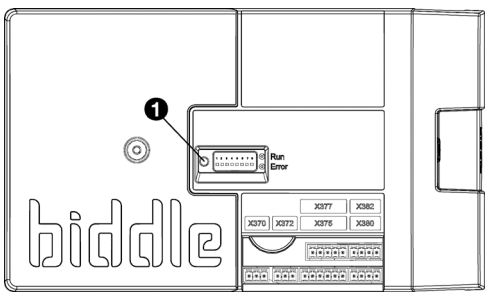
7.7.1 Setting the unit code via the control panel

Caution:
Setting the unit code using this method will only work if just a single unit is connected to the control panel. If necessary, connect the control panel separately to the unit in question.

1. Select menu > Maintenance > Unit code.
2. Enter the unit code via the control panel and press ok.

   The control panel will now search for the unit again.

7.7.2 Setting the unit code via the control circuit board and the control panel



1. Connect the mains supply (insert the plug into the socket or move the isolation switch to ON).

Warning:
Do NOT touch any live parts.

2. Press down the microswitch ❶ on the control circuit board.

   The LED next to the microswitch will start flashing.

   The control panel displays eight numbers: these comprise the unit code.

3. Enter the unit code via the control panel and press ok.

4. Press down microswitch.

   The LED next to the microswitch will stop flashing.

   The unit code is now set.

5. Reset the control panel.

7.8 Resetting the PIN code

The PIN code of the control panel can be reset using a USB flash drive:

1. Connect a USB flash drive to the control panel.

   The USB menu is activated

2. Press ▼ for 10 seconds.

   The PIN code is reset and a new PIN code has to be entered.

3. Exit the USB menu by removing the USB flash drive.

7.9 Copying the settings

The settings of the unit can be copied to another unit.

7.9.1 What you need

Before copying the setting, check that you have the following:

- An empty USB flash drive. The USB flash drive must be formatted for FAT or DOS. Do not use a USB hard disk for the software update.

7.9.2 Step 1: Copying the settings of the correctly-set unit

1. Check whether the settings to be copied on the original b-touch control panel are all correctly set.
2. Connect the USB flash drive to the USB port of the b-touch control panel.

Note:
If the USB flash drive is not detected, disconnect it and then connect it again.

The control panel detects the USB flash drive and displays the USB menu

3. Select Export Settings

   The progress percentage is displayed.

4. When this has been completed, disconnect the USB flash drive from the control panel.

7.9.3 Step 2: Copying the settings to another unit

1. Connect the USB flash drive (with the settings that are to be copied) to the USB port on the other control panel.
2. Keep the function Import settings pressed down until the progress of the process is displayed.

   The settings are now being imported.

Note:
Below the progress percentage, the name of the file to be imported is visible:'settings_export.txt'

3. When this has been completed, disconnect the USB flash drive from the control panel.
4. Repeat steps 1 to 3 for each control panel to which you wish to apply the same settings.

7.10 Updating the software

Biddle is working continuously on improving its products and recommends that you update the software of the control panel and of the control circuit board when updates become available. Consult Biddle's website for availability.

7.10.1 What you need.

Before updating the software of the control panel, check that you have the following:

- An empty USB flash drive. The USB flash drive must be formatted for FAT or DOS. Do not use a USB hard disk for the software update.
- A PC with Internet access.

7.10.2 Step 1: Check the current software version

Before you update the software of the control panel or of the control circuit board, you must check the existing software version. If the software version is the same as that of the most recent update file on Biddle's website, you do not need to update the software.

1. Press menu in the Home screen.
2. Select Maintenance. The version of the current software is displayed in the status overview.

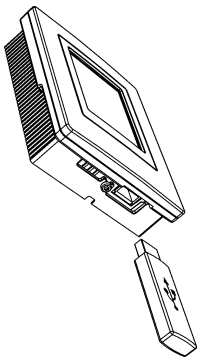
7.10.3 Step 2: Download the most recent software

1. Connect the USB flash drive to a USB port on your PC.
2. On your PC, go to Biddle's website and look under Downloads.
3. Look for your product and the available software for your unit.
4. If the software version is more recent than the version on your control panel, click on the software update.
5. Accept the licence agreement and save the file to the main directory of the USB flash drive.
6. Disconnect the USB flash drive from the PC.

7.10.4 Step 3: Updating the software

Warning:

Do not switch off the unit or disconnect the USB flash drive during the software update. Do not disconnect the USB flash drive from the control panel even if there is a power failure during the update. The update will resume as soon as the power returns. If an error occurs during the update, start the procedure again. If the error continues to occur, contact Biddle.



1. Connect the USB flash drive (with the software update) to the USB port on the control panel.

   Note:
   If the USB flash drive is not detected, disconnect it and then connect it again.

   The control panel detects the USB flash drive and displays the USB menu

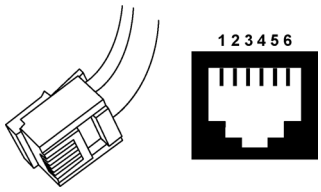
2. Select Software update to update the software.
3. When this has been completed, disconnect the USB flash drive from the control panel.

7.11 Composition of the Biddle control cable

The control cable for the control system is constructed as follows:

- The plugs are modular connectors of the type 6P4C.
- Connectors are untwisted, i.e. at both ends of the cable, cores are connected to the same electrode.

Colour coding of Biddle cables

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

8. Dismantling

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

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

9 . . Addresses

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

Biddle bv
P.O. Box 15
9288 ZG Kootstertille
The Netherlands

T +31 (0)512 33 55 55
E info@biddle.nl
I www.biddle.nl

Biddle Air Systems Ltd.
11 King St. Unit #3
Barrie, ON L4N 6B5
Canada

T 705 797 0007
E biddle@biddle.ca
I www.biddle.ca

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Copyright and Trademarks

Warranty and liability

For the warranty and liability provisions and terms, please refer to the terms & conditions of sale and supply.

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

Liability as regards the manual

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

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

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

For more information

If you have any comments or queries relating to this product, please do not hesitate to contact Biddle. You will find the contact information for your Biddle branch in chapter 9 Addresses.

Biddle bv
P.O. Box 15
9288 ZG Kootstertille
The Netherlands

T +31 (0)512 33 55 55
E info@biddle.nl
I www.biddle.nl

Name and telephone number of installer: