Sentinel

Kinetic MVHR

Installation & Commissioning

Vent-Axia®

PLEASE RETAIN THESE INSTRUCTIONS WITH THE PRODUCT.

CE

IMPORTANT

⚠️ **PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE COMMENCING INSTALLATION.**

1. DO NOT INSTALL THIS PRODUCT IN AREAS WHERE THE FOLLOWING MAY BE PRESENT OR OCCUR:

  • EXCESSIVE OIL OR A GREASE LADEN ATMOSPHERE.

  • CORROSIVE OR FLAMMABLE GASES, LIQUIDS OR VAPOURS.

  • SUBJECT TO DIRECT WATER SPRAY FROM HOSES.

  • AMBIENT TEMPERATURES HIGHER THAN 40°C AND LOWER THAN -10°C.

  • POSSIBLE OBSTRUCTIONS THAT MAY HINDER ACCESS TO OR REMOVAL OF THE UNIT.

2. ALL WIRING MUST BE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS BS7671, OR APPROPRIATE STANDARDS OF YOUR COUNTRY. INSTALLATION SHOULD BE INSPECTED AND TESTED BY A SUITABLY QUALIFIED PERSON AFTER COMPLETION.

3. WHEN INSTALLING UNIT, TAKE CARE NOT TO DAMAGE ELECTRICAL OR OTHER HIDDEN UTILITIES.

4. THE INSTALLER IS RESPONSIBLE FOR THE INSTALLATION AND ELECTRICAL CONNECTION OF THE SENTINEL SYSTEM ON SITE. IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT THE EQUIPMENT IS SAFELY AND SECURELY INSTALLED AND LEFT ONLY WHEN MECHANICALLY AND ELECTRICALLY SAFE.

5. ALL REGULATIONS AND REQUIREMENTS MUST BE STRICTLY FOLLOWED TO PREVENT HAZARDS TO LIFE AND PROPERTY, BOTH DURING AND AFTER INSTALLATION, AND DURING ANY SUBSEQUENT SERVICING AND MAINTENANCE.

6. THE UNIT SHOULD BE PROVIDED WITH A LOCAL DOUBLE POLE ISOLATOR SWITCH HAVING A CONTACT SEPARATION OF AT LEAST 3 mm.

7. ENSURE THE MAINS SUPPLY (VOLTAGE, FREQUENCY AND PHASE) COMPLIES WITH THE RATING LABEL.

8. THESE UNITS MUST BE EARTHED.

9. SENTINEL AIR HANDLING UNITS ARE DESIGNED AND SPECIFIED FOR USE WITH VENT-AXIA CONTROLS, DAMPERS, GRILLES AND ACCESSORIES.

10. THE UNIT'S CONDENSATE DRAIN MUST BE CONNECTED TO THE BUILDING'S FOUL WATER DRAINAGE SYSTEM.

11. IF THE EXTRACT GRILLE ASSOCIATED WITH THE UNIT IS SITED IN A ROOM CONTAINING A FUEL BURNING APPLIANCE THE INSTALLER MUST ENSURE THAT AIR REPLACEMENT IS ADEQUATE FOR BOTH APPLIANCES.

12. CERTAIN APPLICATIONS MAY REQUIRE THE INSTALLATION OF SOUND ATTENUATION TO ACHIEVE THE SOUND LEVELS REQUIRED.

13. THE UNIT MUST NOT BE CONNECTED DIRECTLY TO A TUMBLE DRIER.

14. THE SUPPLY AND EXHAUST VALVES MUST BE FULLY OPENED PRIOR TO COMMISSIONING.

15. THE SUPPLY AIR MUST BE DRAWN FROM THE EXTERIOR OF THE PROPERTY.

16. THE INTERNAL CONDENSATE DRAIN AND ASSOCIATED PIPE WORK MUST BE CLEAR OF DEBRIS PRIOR TO COMMISSIONING.

17. THE SUPPLY AND EXHAUST CEILING VALVES MUST BE POSITIONED A MINIMUM OF 300 mm FROM A WALL TO ENABLE THE AIRFLOW MEASURING EQUIPMENT TO FIT CORRECTLY OVER THE VALVE.

18. THE UNIT SHOULD BE ALLOWED TO STABILISE DURING COMMISSIONING FOR A MINIMUM PERIOD OF 5 MINUTES WHEN CHANGING BETWEEN BOOST AND NORMAL SPEEDS.

19. WHEN FITTED TO A NEW BUILD PROPERTY THE SUPPLY AND EXHAUST FILTERS SHOULD BE CHECKED AT ONE MONTH INTERVALS FOR THE FIRST SIX MONTHS.

20. THIS APPLIANCE IS NOT INTENDED FOR USE BY YOUNG CHILDREN OR INFIRM PERSONS WITHOUT SUPERVISION.

21. YOUNG CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE.

22. WHEN THIS UNIT IS USED IN CONJUNCTION WITH AN OPEN FLUE APPLIANCE, AN ELECTRICAL DUCT HEATER MUST BE PLACED IN THE SUPPLY (COLD FRESH AIR DUCT COLOUR MARKED GREEN)

23. ENSURE THAT THE UNIT'S EXTERNAL GRILLE ARE A MINIMUM OF 2 m APART AND LOCATED AT LEAST 600 mm AWAY FROM ANY FLUE OUTLET.

24. IF THE DUCTWORK OR CONDENSATE PIPE PASSES THROUGH AN UNHEATED LOFT VOID OR SIMILAR LOCATION IT SHOULD BE INSULATED.

Disposal

This product should not be disposed of with household waste. Please recycle where facilities exist. Check with your local authority for recycling advice.

Contents

UK Building Regulations (Part F) Declaration of Conformance

The Sentinel Kinetic conforms to the 2006 Building Regulations (Part F - Means of Ventilation requirements) for installed performance of a ducted mechanical extract fan when installed in accordance with the instructions in this document.

Product Description

Sentinel Kinetic

The Vent-Axia **Sentinel Kinetic Mechanical Ventilation/Heat Recovery (MVHR)** is a heat recovery unit designed for the energy efficient ventilation of houses and similar dwellings, conforming to the latest requirements of the Building Regulations document F 2006.

The unit is designed for continuous 24-hour exhaust ventilation of stale moist air from bathrooms, toilets and kitchens. As the stale air is extracted, a heat exchanger within the unit retains up to 90% of the heat and transfers it to the supply air entering the bedrooms and lounge.
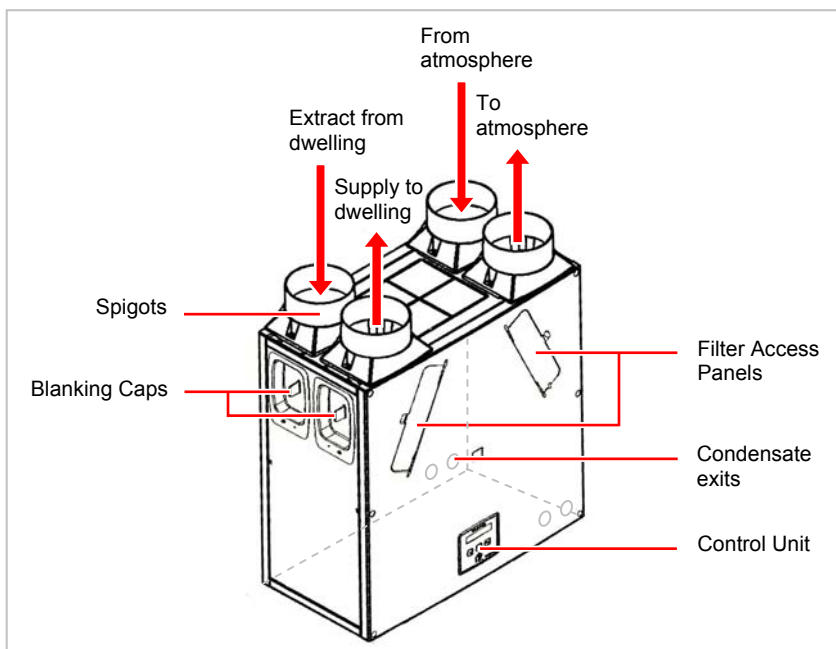

Figure 1: Sentinel Kinetic (Front of Unit as supplied)

Models

- **438222** - **Sentinel Kinetic B** with summer bypass. An internal damper is activated when the outside temperature is equal to, or greater than, the pre-set 'Comfort Temperature' (adjustable between 16 and 30°C). The damper opens allowing cooler fresh air to bypass the Heat Recovery Cell and reduce the internal temperature to the pre-set 'Comfort Temperature'. When the inside air temperature reaches the pre set 'Comfort Temperature' the bypass damper closes.
- **438342** - **Sentinel Kinetic V** without summer bypass.

Accessories

- **441838** - Plug-in integral humidity sensor.
- **441865** - Wireless enable kit (consists of wireless receiver and one wireless switch).
- **437827** - Additional wireless switch (up to four may be connected).
- **441780** - Vent-wise accessory pack.

A range of sensors can be used to manage system demand and control the ventilation rate. These include an internal humidity sensor, humidity sensors for independent mounting in rooms, wireless receiver and wireless boost switches, CO_2 sensor, manual switches and pull cords. For these alternative control options, see www.vent-axia.com

Technical Specification

Sentinel Kinetic Technical Specification

Performance	
Airflow (@0 Pa)	**Normal** 10% to 99% (default 32% = 104 m^3/hr) **Boost** 11% to 100% (default 51% = 144 m^3/hr) **Purge** 100% (max. = 204 m^3/hr)
Sound levels (@ 3 m)	20 dB(A) (normal), 36 dB(A) (boost)
Power	
AC Voltage Input	220-240 V AC (single phase)
AC Frequency Input	50 Hz nominal
Supply Fuse	3 A
Product Fuse	2 A
Rated Power	120 W (max.)
Physical	
Height (excluding spigots)	550 mm
Width (excluding spigots)	550 mm
Depth	285 mm
Weight	15 kg
Spigot diameter	125 mm
Condenste pipe diameter	22 mm
Environmental	
IP Rating	IP22
Operating Temperature	-10°C to +45°C
Air Intake Temperature	As above
Operating Humidity	0% to 95% RH
Storage Temperature	-10°C to +45°C
Storage Humidity	0% to 95% RH

For all other technical details, please see the Product Catalogue or our website at www.vent-axia.com

Weight : 15kg

360

140

Ø125

650
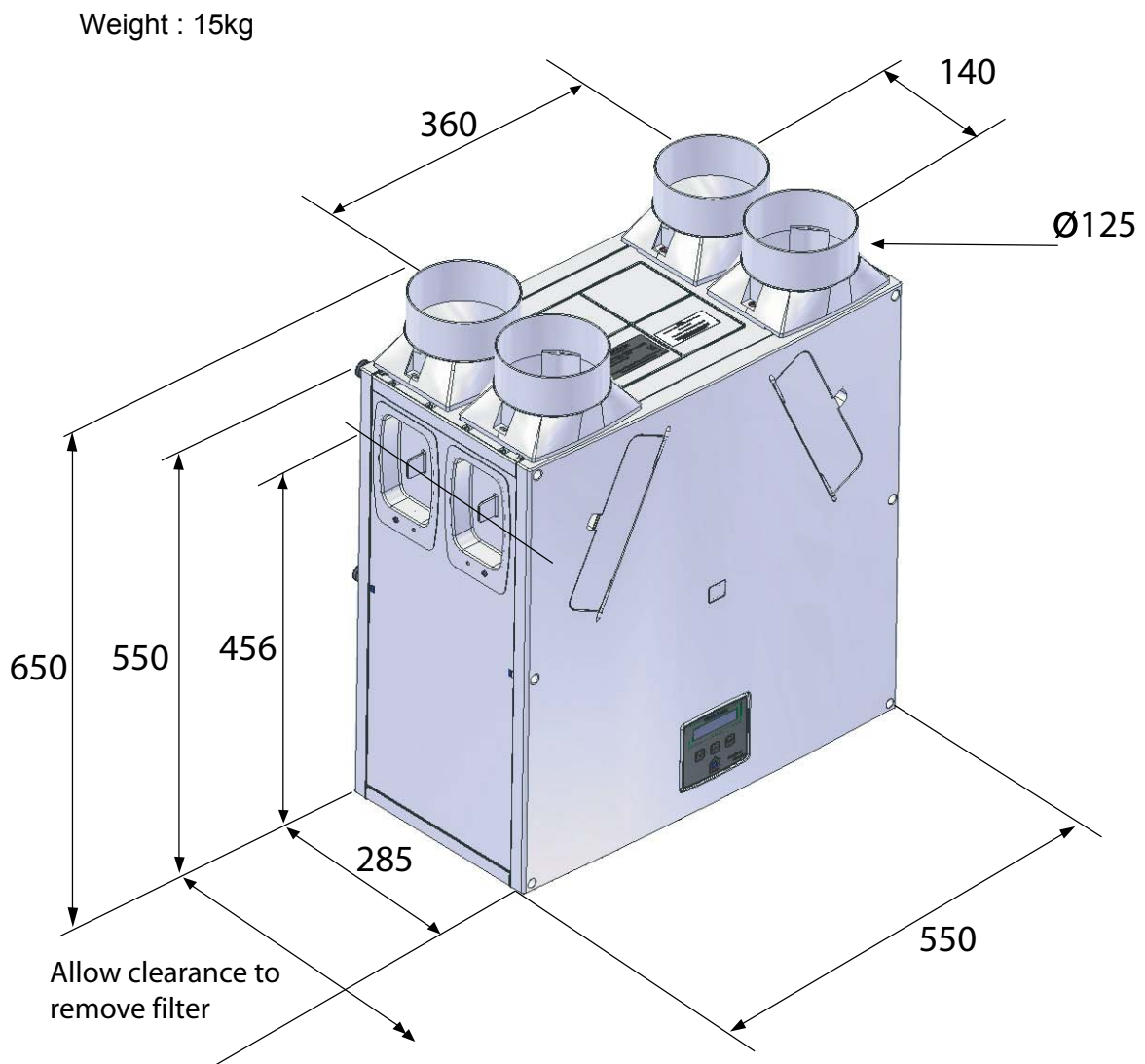
550

456

285

550

Allow clearance to remove filter

Figure 2: Sentinel Kinetic Dimensions

Installation

Overview

The following instructions are intended to help prevent potential hazards and should be carried out only by a qualified electrician and installer.

The figure below provides an overview of the installation procedure.
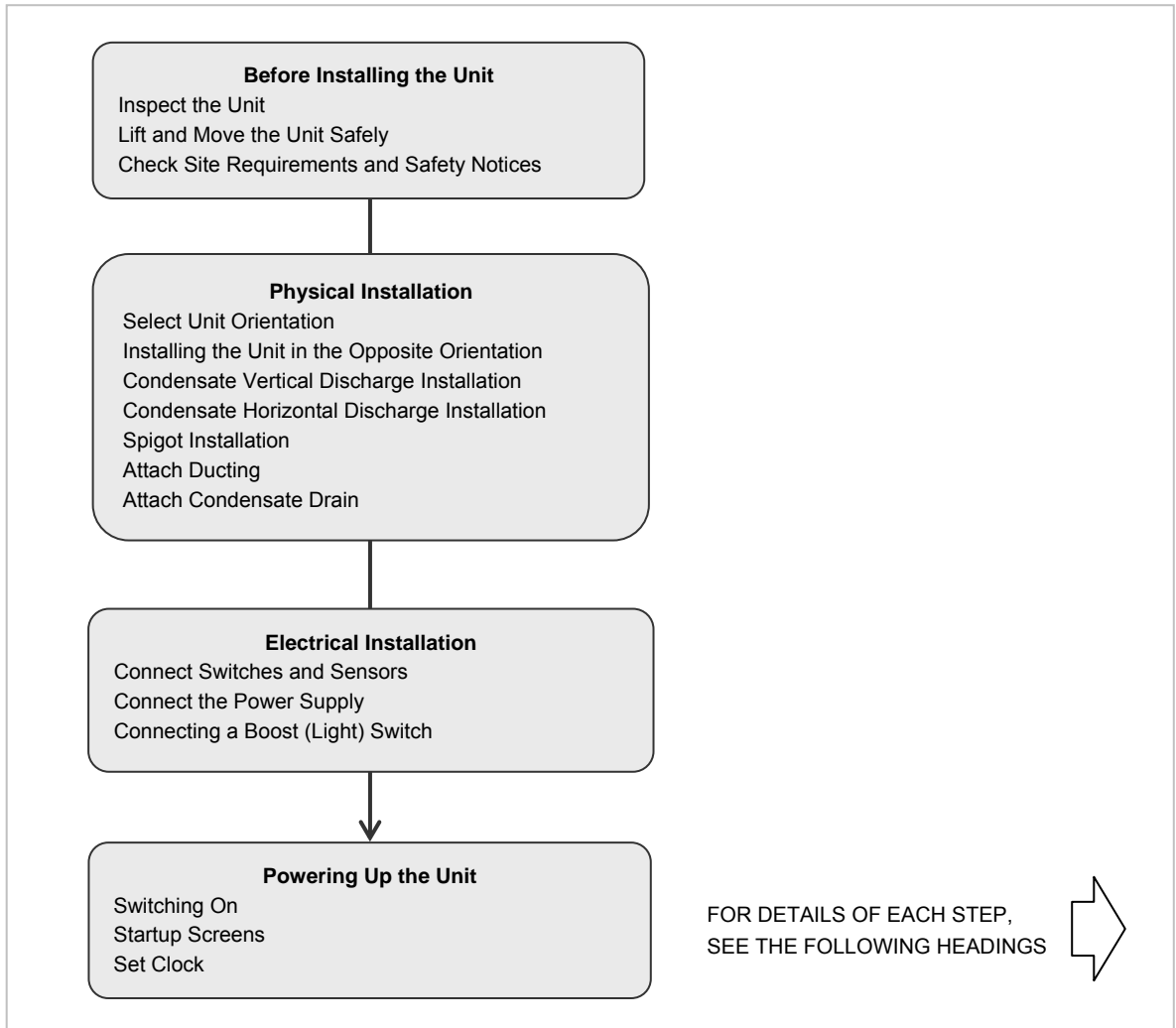

Figure 3: Installation Overview

Before Installation the Unit

Inspect the Unit

When taking delivery of the unit, check the items delivered against the enclosed delivery note. Inspect the unit for damage in transit. If in doubt, contact Customer Services. Each box contains a Kinetic HR unit and an accessory pack containing wall brackets, condensate drain link pipes, worm-drive clips, fixings and product documentation.

Lift and Move the Unit Safely

The weight of this unit is 15 kg. Always use appropriate lifting techniques and appliances when moving heavy equipment.

Check Site Requirements and Safety Notices

Check that the physical and environmental conditions for the site meet, or exceed, the requirements detailed in the *Technical Specification* on page 5.

Read and observe the safety notices listed in *IMPORTANT* on page 2.

Unit Installation

The unit is typically installed on a wall in a kitchen, airing cupboard, roof void, or similar. It will fit within a 600 mm kitchen cupboard carcass.

The wall should have sufficient strength to support the unit.

Take into consideration the position of the electrical services and the condensate drain.

Ensure there is adequate access for installation, operation and maintenance.

The unit MUST always be mounted vertically with ducting exiting vertically or horizontally. Do not use this unit as a support for any other equipment.

Select Unit Orientation

The unit is supplied from the factory with the condensate exit (and the atmosphere spigots) to the right of the unit, when viewed from the front. Access is required to the Control Unit on the front of the unit in order to commission, operate and maintain the unit. If the unit is to be installed as supplied, skip the following section and go to *Condensate Vertical Discharge* on page 11.

If the orientation of the condensate exit (and the atmosphere spigots) would be better suited on the left of the unit, the front Control Unit and the rear Cable Inlet Plate can be swapped over to allow the unit to be installed in the opposite orientation.

Installing the Unit in the Opposite Orientation (LH Condensate)

Installing the unit in the opposite orientation involves removing the front cover (and associated Control Unit Panel), and the rear cover (and associated Cable Inlet Plate), rotating the unit chassis and covers through 180 degrees and then re-attaching them.

This moves the condensate drain exit from the right (rear) corner of the unit to the left (front) corner of the unit, when viewed from the front (viewing the Control Unit).
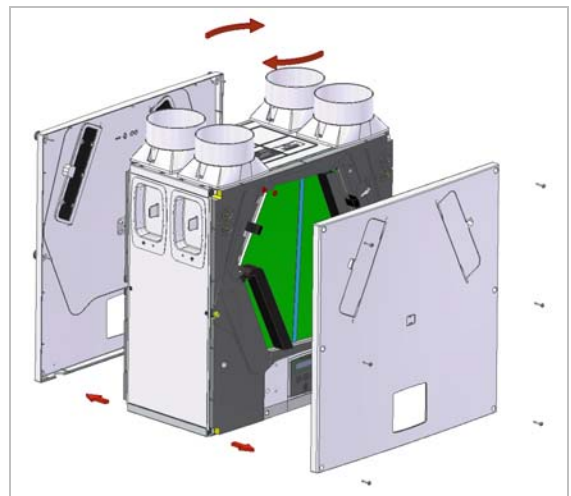

Figure 4: Installing the Unit in the Opposite Orientation

To install the unit in the opposite orientation:

1. Remove the front and rear covers by unscrewing the 6 fixing screws on each cover (see *Figure 4*).

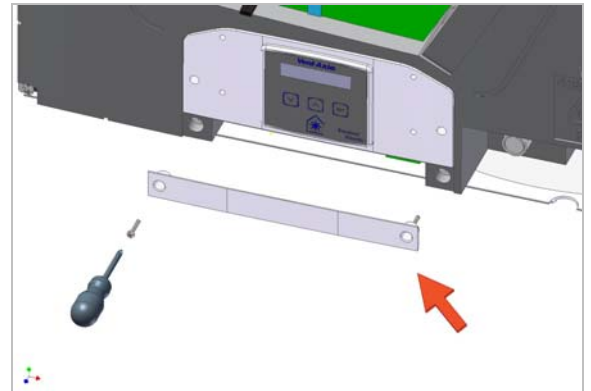2. Remove the 2 screws and detach the Electrical Cover from the front of the unit (see *Figure 5*).

Figure 5: Detaching the Electrical Cover (Front of Unit)

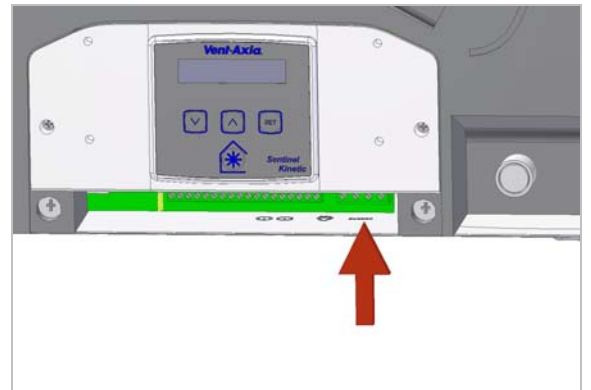3. Disconnect the mains cable from the terminal block: L, N, E (see *Figure 6*).

Figure 6: Disconnect mains cable Front of Unit)

4. Remove the 2 screws and detach the Control Panel (see *Figure 7*).
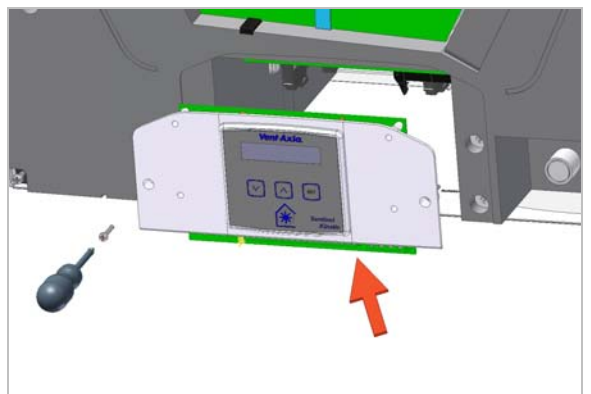
Figure 7: Detaching the Control Panel (Front of Unit)

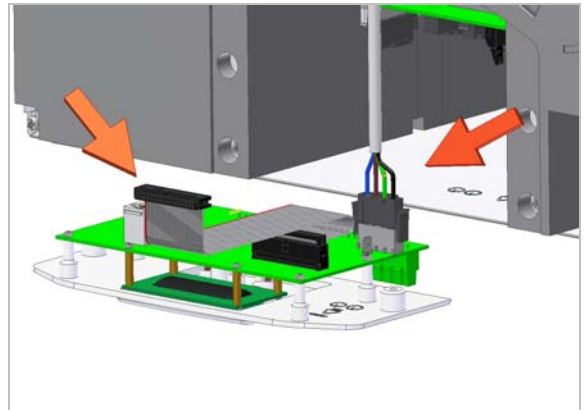**5.** Disconnect the ribbon cable (see *Figure 8*).

Figure 8: Disconnecting the Ribbon cable (Front of Unit)

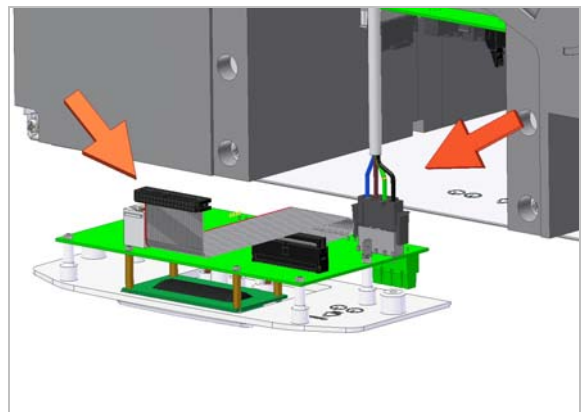**6.** Disconnect the 4-way connector (see *Figure 9*).

Figure 9: Disconnecting the Ribbon cable (Front of Unit)

7. Remove the 2 screws and detach the rear Cable Inlet Plate (see *Figure 10*).
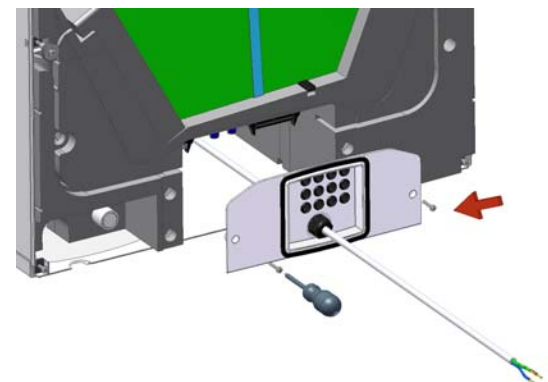

Figure 10: Removing the Cable Inlet Plate (Rear of Unit)

8. Fit the Control Panel on the opposite side of the unit. Taking care to reconnect the ribbon cable and internal 4-way connector before securing the panel to the unit.

9. Re-attach the Cable Inlet Plate on the opposite side of the unit.

10. Re-connect the mains cable: L, N, E.

11. Re-attach the Electrical Cover.

12. The unit may now be installed as described in *Condensate Vertical Discharge Installation*.

13. Leave the front and rear covers off the unit.

Condensate Vertical Discharge Installation

> **Note**
>
> The 22 mm diameter condensate pipe is suitable for standard 22 mm plastic push-fit fittings and can be connected vertically underneath the unit or horizontally at the rear of the unit (see Figure 1).

To install the condensate vertical discharge:

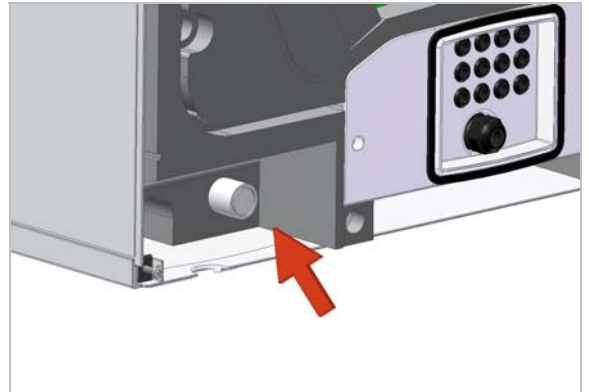1. For vertical discharge, remove the rear cover and locate the condensate stub at the rear of the unit (see *Figure 11*).

Figure 11: Condensate Stub Disk (Rear of Unit)

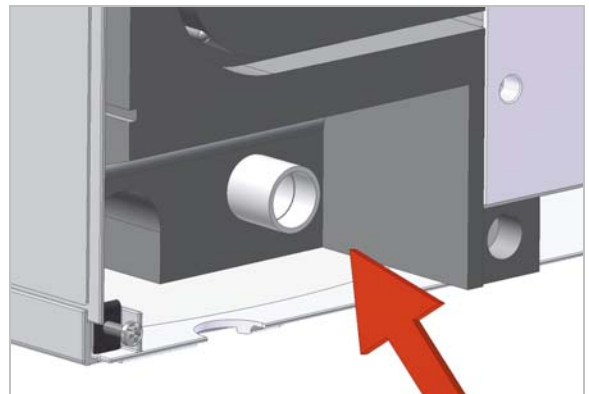2. Remove the knock-out disk from the end of the condensate stub at the rear of the unit (see *Figure 12*).

Figure 12: Condensate Stub Disk Removal (Rear of Unit)

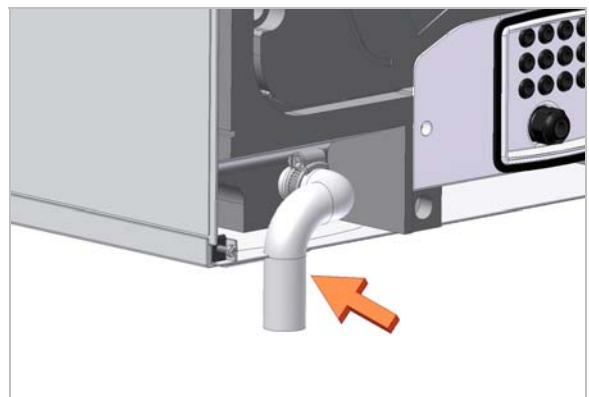3. Fit the vertical condensate pipe and secure with a worm-drive clip (see *Figure 13*).

Figure 13: Fit Condensate Pipe (Rear of Unit)

4. Go to *Spigot Installation on page 13*.

Condensate Horizontal Discharge Installation

Note

The 22 mm diameter condensate pipe is suitable for standard 22 mm plastic push-fit fittings and can be connected vertically underneath the unit or horizontally at the rear of the unit (see Figure 1)

To install the condensate horizontal discharge:

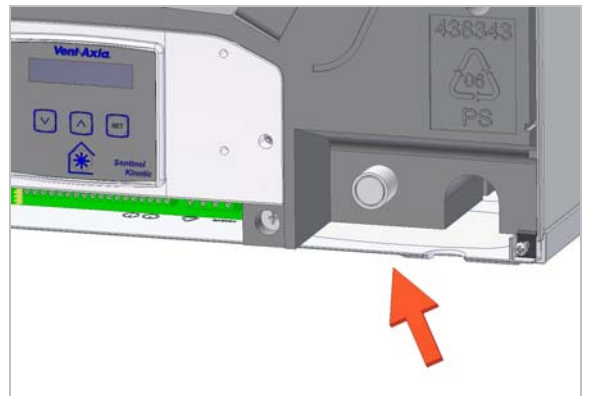1. For horizontal discharge, remove the front cover and locate the condensate stub at front of unit (see *Figure 14*).

Figure 14: Condensate Stub Disk (Front of Unit)

2. Remove the knock-out disk from end of condensate stub (see *Figure 15*).

Figure 15: Condensate Stub Disk (Front of Unit)

3. Fit the horizontal condensate U-pipe and secure with a worm-drive clip (see *Figure 16*).
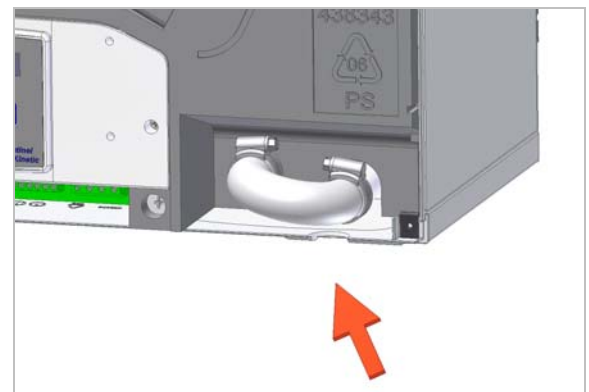

Figure 16: Fit U-pipe (Front of Unit)

4. Supply and fit the 22 mm pipe and secure with a worm-drive clip. This pipe connects to the condensate drain system (see *Figure 17*).
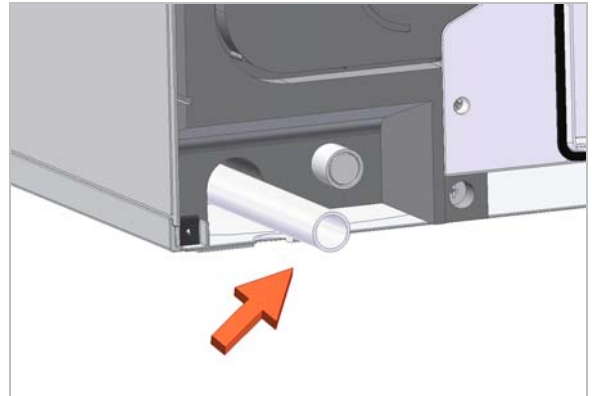

Figure 17: Fit 22 mm Pipe (Rear of Unit)

5. Cut a 32 mm hole (or nearest standard hole saw size) in rear cover for the 22 mm pipe to exit using the dimple in the panel as a guide (see *Figure 18*).
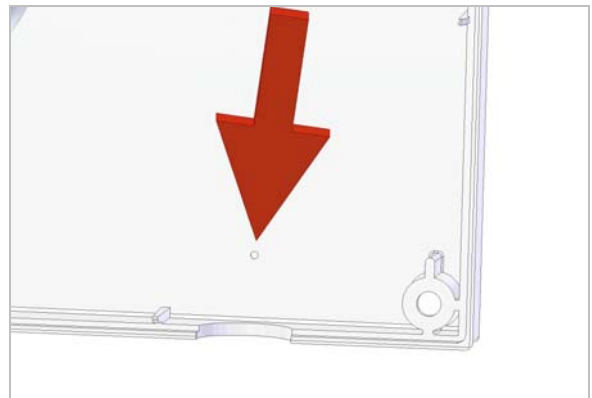

Figure 18: Cut 32 mm Hole for 22 mm Pipe (Rear of Unit)

Spigot Installation

Air entry/exit spigots may be fitted on either the top or the side of the unit for vertical or horizontal entry/exit, respectively. Attach the spigots, depending on the space available for the ducting and orientation of the unit. Always fit the blanking caps to the entry/exit hole not in use to ensure correct airflow into and out of the unit.

To move the spigots:

1. Remove the spigot by unscrewing the single screw securing it to the chassis. Then pull the spigot firmly from the entry/exit hole.

2. Remove the blanking cap by unscrewing the single screw securing it to the chassis. Then pull the blanking cap firmly from the entry/exit hole.

3. Swap over the spigot with the removed blanking plate.

4. Insert the spigot into the entry/exit hole and secure with the retained screw.

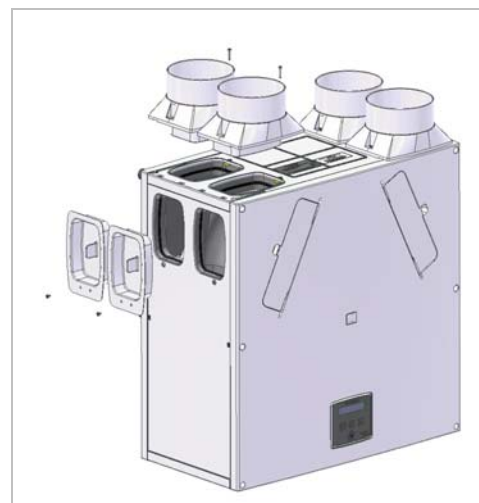5. Insert the blanking cap into the entry/exit hole and secure with the retained screw.

Figure 19: Spigot Removal and Installation

Wall Mounting

To wall mount the unit:

1. Refit the front and rear covers if they have been removed.

2. Ensure wall bushes are fitted to the rear cover.

3. Using the template provided, mark the condensate and wall bracket position.

4. Fit 2-off metal wall brackets (supplied) to the wall using appropriate fixings.

5. Lift unit and locate 4 wall bushes onto the 2 wall brackets. The unit should now be physically installed in its intended operating location (see *Figure 20*).
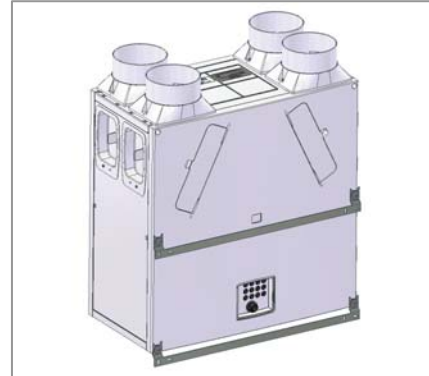

Figure 20: Wall Bushes (Rear of Unit)

Attach Ducting

To attach the ducting:

1. Always use a short piece of flexible duct (100 mm long and 125 mm diameter), extended to its full length when connecting to ductwork (see *Figure 21*).

2. Securely connect ducting to the spigots using worm-drive clips, cable ties or duct tape.

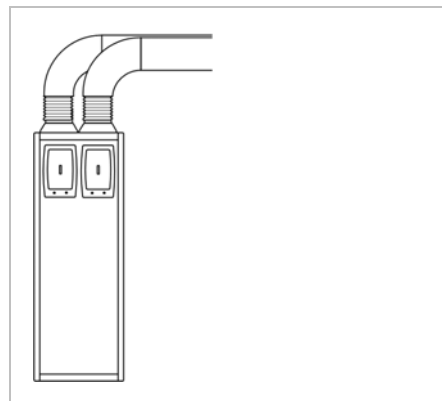3. Insulate any ducting passing through an unheated space to protect from frost damage.

Figure 21: Attaching Ducting

Attach Condensate Drain

To attach the condensate drain:

1. Ensure worm-drive clips fitted on flexible condensate U-pipes are tight (see *Figure 22)*.

2. Connect the condensate drain fitting to an appropriate waste system.
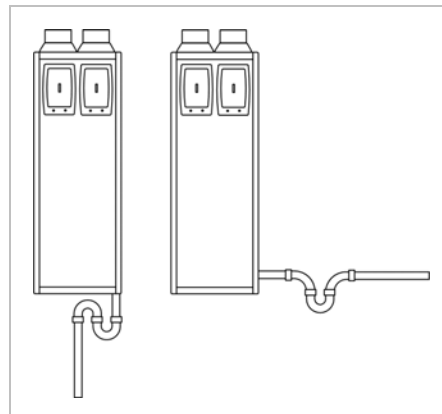

Figure 22: Attaching Condensate Drain

Electrical Installation

Connect Switches and Sensors

The unit can be switched to boost by a variety of methods:

- Applying 240 V to the light switch in the conventional manner.
- Switching across 1 of 5 pairs of switch terminals.
- Applying between 0 and 10 V as a proportional input to two input terminals.

In addition, fitting a Vent-wise Accessory to the unit means that switch terminals 1-3 can be connected to be switched by a current detector (for example, detecting a hob being switched on) or a temperature sensor (for example, detecting the flow of hot water).

Connect any switches or sensors required to control the unit by connecting to the terminal connectors at the bottom of the control unit as shown in *Figure 23* and *Table 1.* Please contact Vent-Axia regarding the fixing of accessories and sensors.
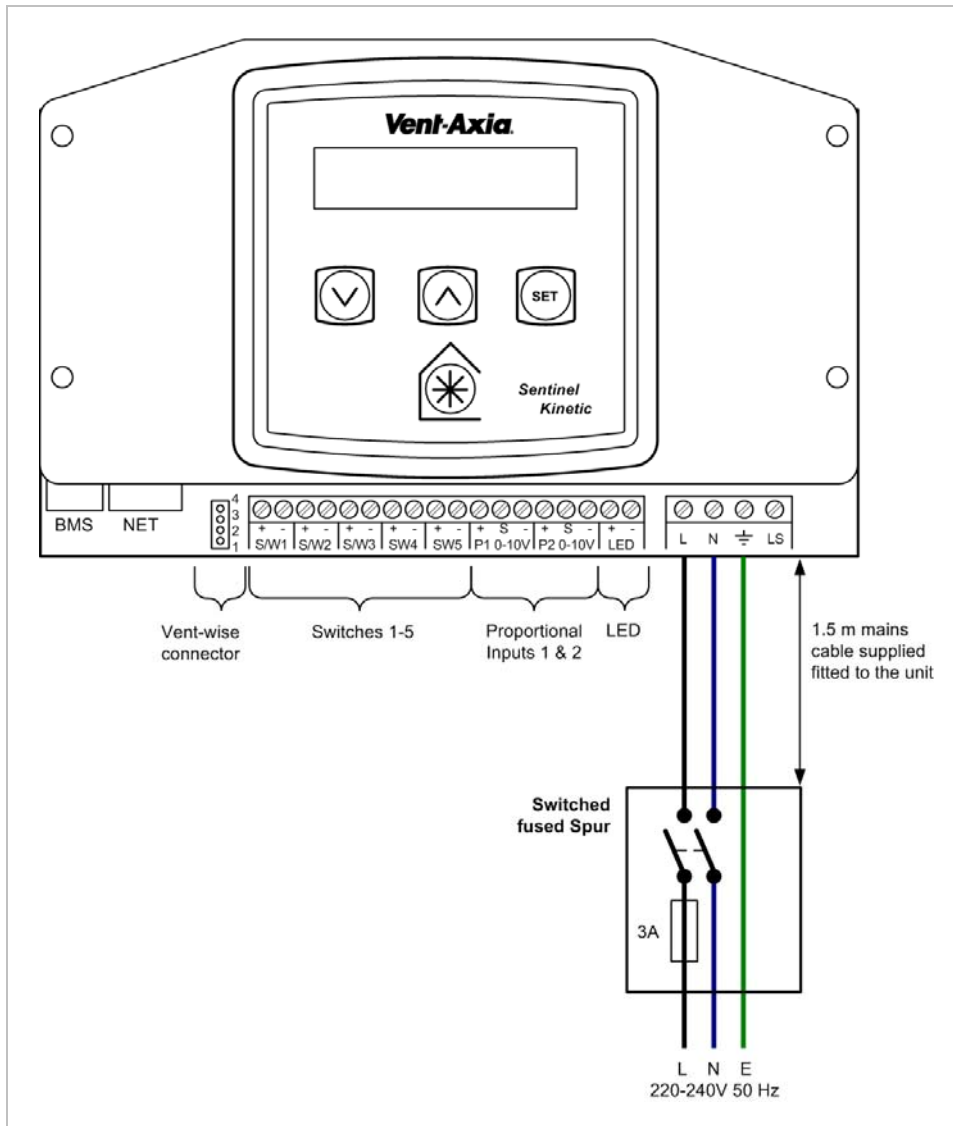

Figure 23: Terminal Connections

Table 1: Terminal Connections

Terminal No.	Name	Description
S/W1	Switch 1	Volt-free contact for sensor input between + and - terminals Also, Vent-wise SW1 when option fitted
S/W2	Switch 2	Volt-free contact for sensor input between + and - terminals Also, Vent-wise SW2 when option fitted
S/W3	Switch 3	Volt-free contact for sensor input between + and - terminals Also, Vent-wise SW3 when option fitted
SW4	Switch 4	Volt-free contact for sensor input between + and - terminals
SW5	Switch 5	Volt-free contact for sensor input between + and - terminals
P1 0-10V	Proportional 1	A 24 V DC sensor supply is output between the + and - terminals. A 10 V proportional sensor input is received between S and - terminals
P2 0-10V	Proportional 2	A 24 V DC sensor supply is output between the + and - terminals. A 10 V proportional sensor input is received between S and - terminals
LED	Light Emitting Diode Output	A 5 V LED driving signal output between the + and – terminals that enables remote indication of a unit fault. See the Control Panel for fault code (see *Service/Fault Code Screens* on page 30).
L	Mains Live	220-240 V AC, 50 Hz input
N	Mains Neutral	220-240 V AC, 50 Hz input
EARTH	Mains Earth	Earthing connector
LS	Light Switch	220-240 V AC, 50 Hz input

Connect the Power Supply

> **WARNINGS**
>
> 1. **MAINS SUPPLY VOLTAGES (220-240 V AC) ARE PRESENT IN THIS EQUIPMENT WHICH MAY CAUSE DEATH OR SERIOUS INJURY BY ELECTRIC SHOCK. ONLY A QUALIFIED ELECTRICIAN OR INSTALLER SHOULD CONNECT THE POWER SUPPLY TO THIS UNIT.**
>
> 2. **THIS UNIT MUST BE CORRECTLY EARTHED.**

This unit is designed for operation from a single-phase alternating current source (220-240 V AC). A 1.5 m cable is connected internally to the unit for connection to a switched fused spur.

To connect the power supply:

1. Ensure the local AC power supply is switched off.

2. One end of the power cable supplied is already connected to the unit and routed through the Cable Inlet Plate via a suitable gland to ensure the IP rating of the unit is not affected.

3. Connect the other end of the cable to the switched fused spur.

4. Use cable clamps and clips to secure the cable, as appropriate.

Connecting a Boost (Light) Switch

A Light Switch (LS) may be used to boost the airflow when a light is turned on, for instance in a bathroom. When commissioning the unit, a delay-on timer and an overrun timer can be set to control the operation (see *Set Clock Screen* on page 23).

The switched live output (230 V) from any switch or controller, such as a simple pull cord or push button switch, humidistat or PIR detector, can be connected to the light switch terminal.

Powering Up the Unit

Switching On

To switch the unit on:

1.   Switch on the power at the mains supply isolator feeding the unit.

2.   Following switch-on, the fan motors will start and the Control Unit will display a series of startup screens, described below (see *Startup Screens* on page 18).

Switching Off

To switch the unit off:

1.   At the unit's local isolator, turn the power off.

2.   If you are intending to carry out work or maintenance inside the unit, switch off the power at the mains outlet supplying the unit before you remove the covers.

Control Unit Display

The Control Unit is located at the front of the Sentinel Kinetic unit. The Control Unit provides the user interface for commissioning and monitoring purposes.
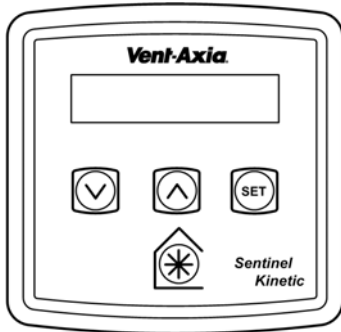

Figure 24: Control Unit

Display

The main display is a 16 character by 2-line liquid crystal display (LCD) with automatic backlight, which is turned off to minimise power consumption when the unit is operational (see *Control Unit Screens* on page 21)*.*

```
Normal Airflow
32%
```

Buttons

Four buttons on the Control Unit provide the controls for configuring and monitoring the unit.
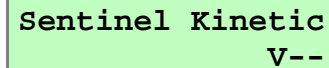
Table 2: Control Unit Buttons

Button	Function
(SET)	Press to adjust settings and press to save settings.
(∧)	Press to go to the above screen or to increase a parameter value. Press and hold for more than 2 seconds for fast scrolling.
(∨)	Press to go to the next screen or to decrease a parameter value. Press and hold for more than 2 seconds for fast scrolling.
(✳)	Press to activate Boost mode. Press and hold for 5 seconds to activate Purge mode.

Startup Screens

Sentinel Kinetic Version Screen

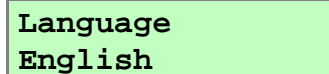The Sentinel Kinetic Version screen displays the unit name and firmware version number for 3 seconds.

No adjustments are possible on this screen.

```
Sentinel Kinetic
            V--
```

Language Screen

The Language screen displays the language used for the screens. It is typically displayed for 5 seconds, or longer if changing the setting.
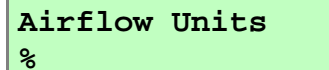
```
Language
English
```
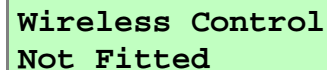
Airflow Units Screen

The Airflow Units is a percentage of the unit's maximum flow.

```
Airflow Units
%
```

Wireless Control Screen

The Wireless Control screen automatically displays whether the wireless boost control switch is fitted. It is typically displayed for 3 seconds, or longer if changing the setting.
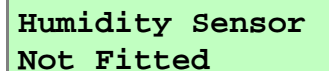
```
Wireless Control
Not Fitted
```

Humidity Sensor Screen

The Humidity Sensor screen displays whether the humidity sensor is fitted. It is typically displayed for 3 s, or longer if changing the setting.

Options are **Fitted** and **Not Fitted** (default).
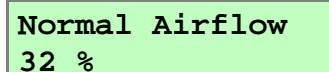
```
Humidity Sensor
Not Fitted
```

Normal Airflow/Boost Airflow Screen

When the startup screens are finished, the normal screen is displayed showing operating status (Normal Airflow X % or Boost Airflow X %).
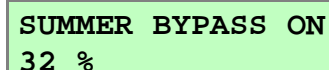
The Normal screen displays the rate of normal airflow (supply air) through the unit.

If the installation has proportional sensors or an internal humidity sensor fitted, an α symbol will be displayed when they are boosting the airflow.

```
Normal Airflow
32 %
```

When the summer bypass is active, the normal screen top line will alternate (for 3 seconds) with SUMMER BYPASS ON.

```
SUMMER BYPASS ON
32 %
```

Every 3 months the normal screen top line will include Check Filter as a reminder to check and, if necessary, clean or replace the filters.

```
Check Filter
32 %
```

When this has been done, press and hold the ⌃ and ⌄ buttons for 5 seconds to reset the automatic message.

Pressing the ✳ button activates boost airflow mode when extra ventilation is required. The unit will revert back to normal flow by pressing the ✳ button again. If the wireless boost option is fitted, this can be triggered from the wireless transmitter/boost switch.

```
Boost Airflow
51 %
```

If the installation has switch sensors, is wired to the lighting, has Ventwise sensors or if the internal time switch is set for periodic operation, operation will change from normal to boost automatically. Pressing the ✳ button will reveal a code to show which device has activated boost.

If running on boost due to pressing the ✳ button, a device will 'take over' the boost. Flow will return to normal when that device switches off. If a number of different devices are calling for boost flow, the unit will run at boost until the last one has reverted to normal.

Purge Screen

Pressing and holding the ✳ button for 5 seconds activates purge mode when you want to purge air from the building. The unit will revert to normal flow by pressing and holding the ✳ button again for 5 seconds. If the wireless boost option is fitted, this can be triggered from the wireless transmitter/boost switch.

```
Purge
120 m
```

Purge mode runs the fans at full speed for 2 hours (120 minutes). The Purge screen displays a countdown of the time remaining.
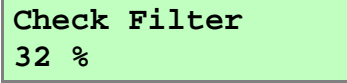
Set Clock Screen

From the Normal Airflow screen, simply press the ⌄ button to access the Set Clock screen.

```
Set Clock
Mon 12:30
```

The Set Clock Control screen enables you to change the clock settings. The clock retains its settings for approximately two weeks without mains power, after which it will need resetting when power is reconnected

Values are **DDD HH:MM**.

Return to the normal display by pressing the ⌃ button or leave to timeout and return automatically.
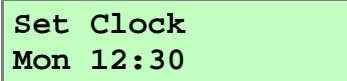
Summer Mode Screen

From the Set Clock screen, simply press the (∨) button to access the Summer Mode screen.

If the unit is a summer bypass model, the Summer Mode screen enables you to switch the summer bypass control on or off. This screen is only displayed when the bypass is fitted.

Options available are **On** and **Off** (default).

When Summer Mode is **On**, the unit's internal damper can open allowing the cooler fresh air from the outside to bypass the Heat Recovery cube and reduce the internal temperature to the required preset 'Indoor Temperature'.

The unit measures the airflow temperature and decides if cooling is available. Only then does the summer bypass open.

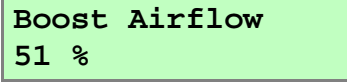If Summer Mode is set to **Off** the bypass remains closed.

```
Summer Mode
Off
```
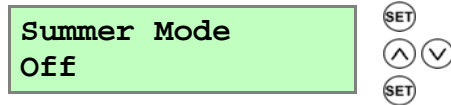
Indoor Temp Screen

From the Summer Mode screen, simply press the (∨) button to access the Indoor Temp screen.

The Indoor Temp screen enables you to choose the target room temperature in degrees Centigrade – only displayed when the bypass is fitted.

Selectable range is **16-30** (**21** default).

Return to the normal display by pressing the (∨) button or leave to timeout and return automatically.

```
Indoor Temp
21 C
```
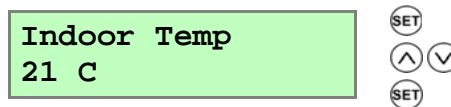
Commissioning

Overview

The instructions in this section are intended to provide configuration and operation information for setting up the equipment. In the event of problems, see *Troubleshooting* on page 30.

Follow good practice when commissioning the unit. Ensure vent valves are not closed, etc.

Control Unit Screens Summary

When the unit is switched on (see *Powering up the Unit* on page 17), the following Control Unit screens are available for monitoring and configuring the unit.
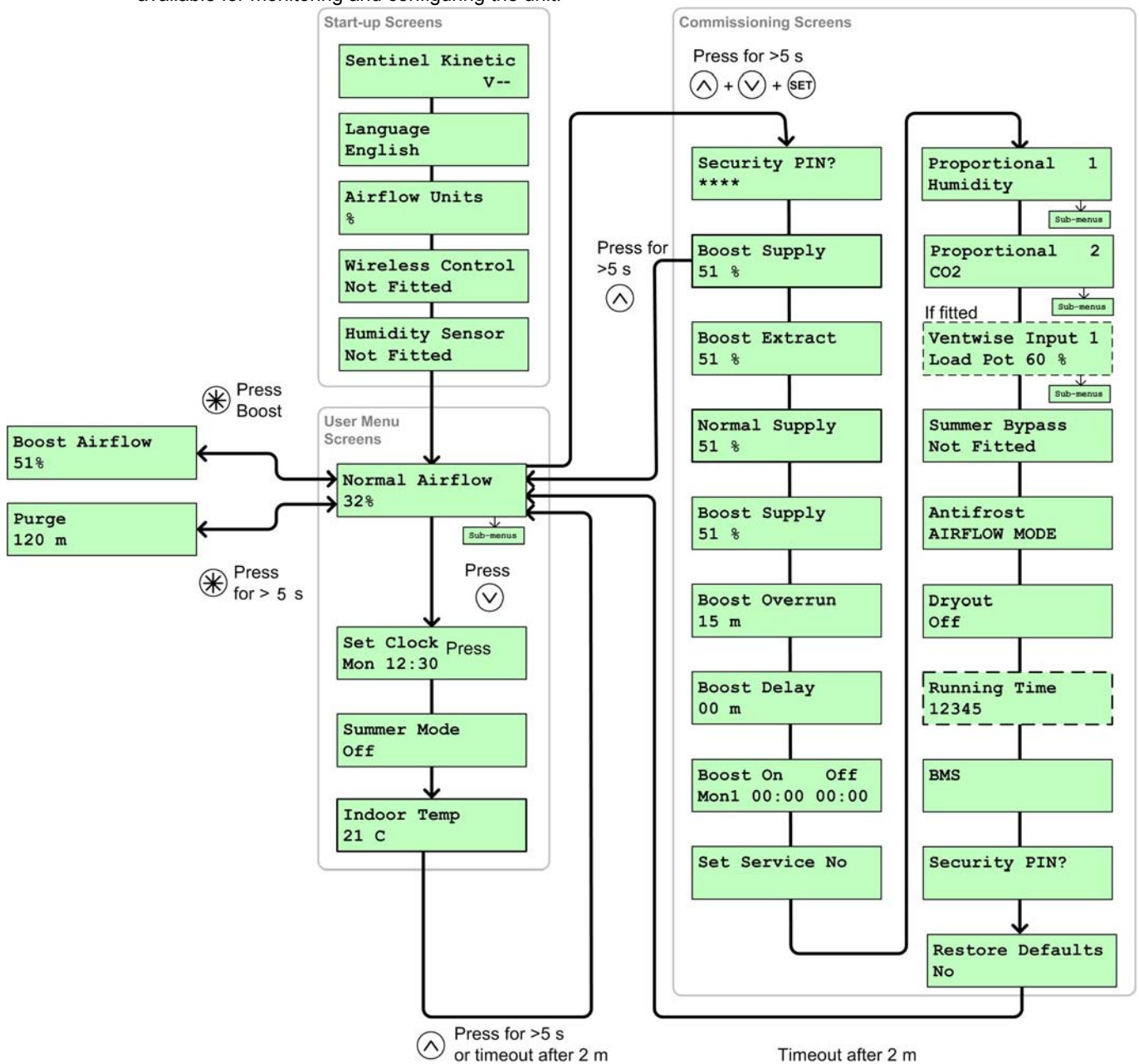
Figure 25: Control Unit Screens Overview

Commissioning Screens

The commissioning screens enable you to configure the operational settings of the unit. Settings are stored in a non volatile memory and will be retained irrespective of mains supply breaks.

> **Note:**
>
> Access to the commissioning screens is inhibited if showing **DEFROST ACTIVE**, **HEATING FAILURE** or **Fault Code**. In this event, switch the unit off and on again and access the screens within one minute. In this event, see *Troubleshooting* on page 30.

To access the commissioning screens: Press and hold the ⌃, ⌄ and (SET) buttons for 5 seconds.

To return to the normal screen, either press and hold the ⌃ button to reach the first menu item and then hold for a further 5 seconds. Alternatively, the normal display will resume if no buttons are pressed for two minutes.

Security PIN Screen

If a security PIN code has been previously set, this screen will display ****.

Enter the PIN using ⌃, ⌄ and (SET) buttons.

```
Security PIN?
****
```

> **Note**
>
> Whilst displaying the Boost Supply, Boost Extract, Normal Supply and Normal Extract screens, the fans will run at the displayed % flow and the bypass will remain shut. The two minute automatic return to normal display time is extended to four hours to allow time for measurements or adjustments.

Boost Supply Screen

The Boost Supply screen enables you to set the boost airflow settings for the supply fans in order to balance out any differences in ductwork or other installation features.

Selectable range: min. = **Normal Supply** setting**,** max. = **100 %** (204 m^3/h @ 0 Pa), default = **51 %** (144 m^3/h @ 0 Pa).

```
Boost Supply
51 %
```

Boost Extract Screen

The Boost Extract screen enables you to set boost airflow settings for the extract fans.

Selectable range: min. = **Normal Supply** setting**,** max. = **100 %** (204 m^3/h @ 0 Pa), default = **51 %** (144 m^3/h @ 0 Pa).

```
Boost Extract
51 %
```

Normal Supply Screen

The Normal Supply screen enables you to set normal airflow settings for the supply fans in order to balance out any differences in ductwork or other installation features.

Selectable range: min. = **1 %**, max. = **Boost Supply** setting, default = **32 %** (104 m^3/h @ 0 Pa).

```
Normal Supply
32 %
```

Normal Extract Screen

The Normal Extract screen enables you to set normal airflow settings for the extract fans.

Selectable range: min. = **1 %**, max. = **Boost Supply** setting, default = **32 %** (104 m^3/h @ 0 Pa).
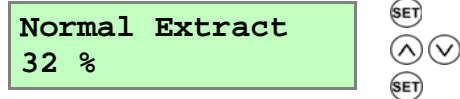
```
Normal Extract
32 %
```

SET
∧ ∨
SET

Boost Overrun Screen

The Boost Overrun screen enables you to set a time period for the fan to boost airflow (in minutes) after the light switch is turned off. It will then return to normal airflow.

Selectable range: minimum = **00,** maximum = **25**, default = **15**.

```
Boost Overrun
15 m
```

SET
∧ ∨
SET
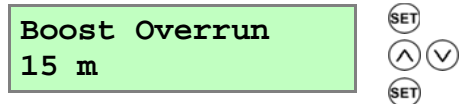
Boost Delay Screen

The Boost Delay screen enables you to set the time delay (in minutes) from the light switch being switched on to the airflow boost being activated. This is used to prevent the unit from boosting unnecessarily when the light switch is switched on for short periods.

Selectable range: min. = **00**, max. = **10,** default = **00**.

```
Boost Delay
00 m
```

SET
∧ ∨
SET
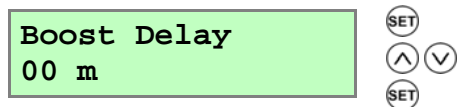
Boost On/Off Screen

The Boost On/Off screen enables you to set a time for boost to be activated for each day of the week.

You can set up to three **On**/**Off** times per day, shown as **Day1**, **Day2** and **Day3**. If **On** and **Off** times are the same, the unit will not change speed.

On time cannot be set earlier than a previous off time, Likewise, **Off** time cannot be set earlier than a previous **On** time.

To set a weekly schedule:
Setting starts at **Mon1** and uses SET to show, by flashing, which item is available for adjustment with the ∧ and ∨ buttons (a → b → c → d → e → **Mon2** and so on).

Mon1 10:01 11:11

↑   ↑ ↑ ↑ ↑

a   b c d e

When **Day** flashes, pressing ✳ (> 2 sec) will copy yesterday's times to today.

Setting finishes when the last off minutes for **Sun3** are accepted, at which point the screen will show the same as it started with **Mon1** on/off times and no flashing.

The last SET press for **Sun3** or holding SET > 2 sec will exit Boost on/off setting.

```
Boost On     Off
Mon1 00:00 00:00
```

SET (**Day**)
∧ ∨
SET (**Day**)
SET (**On**)
∧ ∨
SET (**On**)
Repeat for **Off**
Repeat for each **Day**.
Note: if same times are used on subsequent days, ✳ will copy times found.
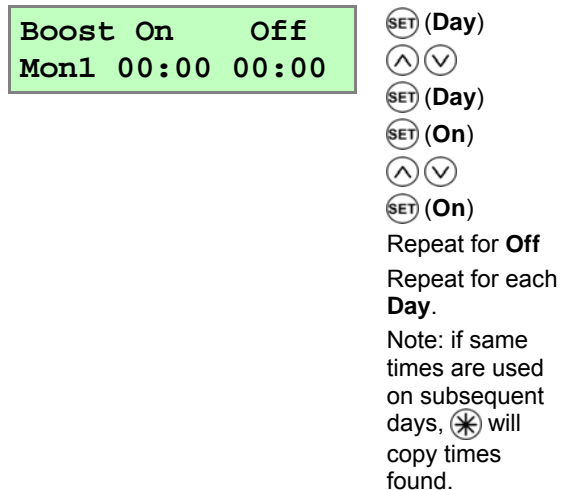
Set Service No Screen

The Set Service No screen enables you to enter the telephone number that should be called for service in the event the unit fault.

Initially the screen is blank. Press (SET) to get a **0**. Use (∧) and (∨) buttons to change between **0** and **9** (or blank). Repeat until the number is entered. Finally, select a blank and press (SET) to finish. Maximum **16** digits.

Press and hold (✳) for more than 2 seconds to clear service number.

```
Set Service No
```

Proportional 1 Screen

The Proportional 1 screen enables the conditions of the proportional sensors to be set.

The unit can receive a 0-10 V proportional signal from either a humidity, CO_2 or temperature external sensor, when connected to terminals P1.

By default, the Proportion 1 input is set for a humidity sensor operation.

```
Proportional    1
Humidity
```

> **Note:**
> **The internal humidity sensor is NOT adjustable.**

When you have selected the sensor type, screens for the appropriate boost and normal limits are displayed.

Press (SET) and use the (∧) and (∨) buttons to change the selection (**Humidity**-default, **CO2**, **Temperature**).

When the input signal is below the 'Normal Limit', the unit runs at normal airflow. When the signal is above the 'Boost Limit', the unit runs at boost airflow. Between these limits the unit runs at a proportional airflow.

For a humidity sensor, a percentage value must be entered for boost and normal settings. For range and default values, see *Table 3* below.

```
P1 Boost Limit
70 %
```

```
P1 Normal Limit
60 %
```

For a CO_2 sensor, a figure (in ppm) must be entered for boost and normal settings. For range and default values, see *Table 3* below.

```
P1 Boost Limit
2000 ppm
```

```
P1 Normal Limit
1000 ppm
```

For a Temperature sensor, a figure (in degrees C) must be entered for boost and normal settings. For range and default values, see *Table 3* below.

```
P1 Boost Limit
27 C
```
ⓈⒺⓉ ⊙⊙ ⓈⒺⓉ

```
P1 Normal Limit
17 C
```
ⓈⒺⓉ ⊙⊙ ⓈⒺⓉ

Table 3: Boost & Normal Limits – Defaults and Adjustment Range

Sensor	Humidity		CO2		Temperature	
	Default (%)	Range (%)	Default (ppm)	Range (ppm)	Default (°C)	Range (°C)
Boost limit	70	25-90	2000	200-2000	27	10-35
Normal limit	60	25-90	1000	200-2000	17	10-35

Proportional 2 Screen

By default, the Proportional 2 input is set to CO_2 sensor operation.

See *Proportion 1 Screen* for a description.

```
Proportional   2
CO2
```
ⓈⒺⓉ ⊙⊙ ⓈⒺⓉ

Vent-wise Screens

These screens are only displayed if a Vent-wise Card is fitted. Replacing J4 3-4 link with a Vent-wise board converts S/W1, S/W2 and S/W3 from switch inputs to Vent-wise inputs.

Vent-wise sensors measure current or temperature. When the current or temperature exceeds a 'trip' level, boost airflow is selected. Normal airflow is resumed after a timed delay once the current or temperature has dropped below the trip level.

Any of the sensor types can be connected to S/W1, S/W2 or S/W3 but once the Vent-wise Card is fitted, ordinary switches must not be used.

In use, the Vent-wise Card with three sensors will run hot to the touch albeit well below its maximum temperature. If any input is shorted (e.g. used with switch), the board will overheat and shut down.

Nominal trip level is with the Load Pot set to (60 %). A temperature sensor will trip with hot water at around 55ºC and a current one around 2.5 A. Time Pot setting is from 1 to 25 minutes with a default of 20 minutes.

Screens for each of the three switches are displayed. Enter a percentage value for the Load Pot setting.

Selectable range: min. = **5**, max. = **95**, default = **60**.

```
Ventwise Input 1
Load Pot 60 %
```
ⓈⒺⓉ ⊙⊙ ⓈⒺⓉ

Enter a time (in minutes) for the Time Pot setting.

Selectable range: min. = **1**, max. = **25**, default = **20**.

```
Ventwise Input 1
Time Pot 20 m
```
ⓈⒺⓉ ⊙⊙ ⓈⒺⓉ

Summer Bypass Screen

The Summer Bypass screen is factory set if one has been fitted. It will only need resetting if a replacement control board has been fitted.

Available options = **Not fitted** (default) and **Fitted**.

```
Summer Bypass
Not Fitted
```
ⓈⒺⓉ ⊙⊙ ⓈⒺⓉ

Antifrost Screen

The Antifrost screen is only displayed if a summer bypass is fitted. In installations where a negative pressure is not permitted during antifrost operation, set this to bypass mode.

Available options: **AIRFLOW MODE** (default) and **BYPASS MODE**.

```
Antifrost
AIRFLOW MODE
```
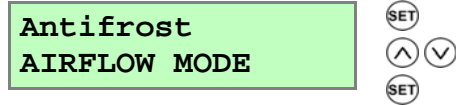
Dryout Screen

The Dryout screen enables the fans to be run at max speed for a week before returning to normal operation. This feature can help to dry out fresh plaster and paint enabling building work to be completed more quickly.

Filters may become fouled during this time and should be cleaned or replaced afterwards. Any dust/plaster dust will be extracted.

Available options: **Off** (default) and **On**.

```
Dryout
Off
```

Running Time Screen

The Running Time screen displays the total running time of the unit (in hours).

No changes may be made to this screen. In the event of power failure total time will be retained.

```
Running Time
12345
```
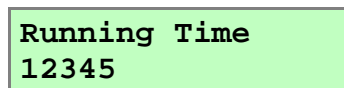
BMS Screen

The BMS screen displays byte count and first 16 bytes from the Building Management System (BMS) system. The information may be useful for testing.

No changes may be made to this screen.

```
BMS
```
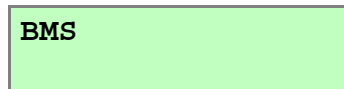
Security PIN Screen

The Security PIN screen enables you top set a four-digit personal identification number (PIN) to access the commissioning screens. This screen will show blank if security is disabled and no PIN is used.

Press (SET) to reveal **0000** with the first **0** flashing and use the (∧) and (∨) buttons to change the selection (**0-9**). Press (SET) again to accept the digit and move to the next. Repeat until all four digits are specified.

Press and hold (✱) for more than 2 seconds to clear security PIN.

```
Security PIN?
```
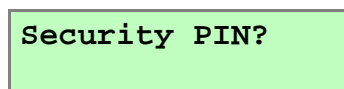
Restore Defaults Screen

The Restore Defaults screen enables you to restore the default settings for all screens.

Available options: **No** (default) and **Yes**.

The default commissioning settings are present when the unit is switched on and can be restored by setting the Restore Defaults screen to **Yes** (see *Table 4: Default Settings*).

To return to the Normal Airflow screen, press the ⌃ button repeatedly to return to the Boost Supply screen, then press and hold the ⌃ button again for 5 seconds.

```
┌──────────────────────────────┐
│ Restore Defaults             │
│ No                           │
└──────────────────────────────┘
```

Table 4: Default Settings

Parameters	Settings
Startup Screens	
Sentinel Kinetic	Sentinel Kinetic
Language	English.
Airflow Units	%.
Commissioning Screens	
Security PIN	Not set
Boost Supply/Extract	51 %
Normal Supply/Extract	32 %
Boost Overrun	15
Boost Delay	00
Boost On/Off	All days set to 0:00 (on), 00:00 (off)
Set Service No	Not set
Proportional 1	Humidity – Boost (60 %), Normal (60 %) *CO2 – Boost (2000 ppm), Normal (1000 ppm)* *Temperature – Boost (27 C, Normal (17 C)*
Proportional 2	CO2 – Boost (2000 ppm), Normal (1000 ppm) *Temperature – Boost (27 C, Normal (17 C)* *Humidity – Boost (60 %), Normal (60 %)*
Ventwise 1/2/3	Load Pot (60 %) Time Pot (20 m)
Summer Bypass	Not Fitted
Antifrost	Airflow Mode
Dryout	Off
Running Time	-
BMS	-
Security PIN	Not set
Restore Defaults	Off
User Screens	
Set Clock	Not set
Summer Mode	Summer Mode Off
Indoor Temp	21 C

Maintenance

Caring for the Unit

Heat recovery units, by their very nature, require regular maintenance. The Sentinel Kinetic has been designed to facilitate access to enable maintenance to be carried out easily.

> **WARNING**
>
> **THE FAN AND ANCILLARY CONTROL EQUIPMENT MUST BE ISOLATED FROM THE POWER SUPPLY DURING MAINTENANCE.**

3-Monthly Maintenance

The following 3-monthly maintenance is recommended:

Table 5: 3-Monthly Maintenance

Item	Action
Fan Filters	Clean/replace Fan Filters. 1. Open flaps and remove the 2 filters. 2. Insert replacement filters. 3. Close flaps. 4. Switch unit on.

6-12 Monthly Maintenance

The following 6-12 monthly maintenance is recommended:

Table 6: 6-12 Monthly Maintenance

Item	Action
Unit & Heat Exchanger Cell	Inspect and clean the unit 1. Isolate the mains power supply. 2. Open flaps and remove the 2 filters. 3. Remove front cover from the unit. 4. Slide out the heat exchanger. 5. Wash the outer cover and heat exchanger in warm water using a mild detergent (such as Milton Fluid) and dry thoroughly. **NOTE: Keep water away from all electrical components and wiring within the unit.**
Motors	Inspect the motors for build-up of dust and dirt on the impeller blades, which could cause imbalance and increased noise levels. Vacuum or clean if necessary.
Condensate Drain	Check the condensate drain tube is secure and clear of debris. Clean if necessary.
Fastenings	Check that all unit and wall-mount fastenings are sufficiently tight and have not become loose. Re-tighten if necessary.

Spares

The following spares may be ordered from Vent-Axia:

Table 7: Spares

Part No	Description
441768	Main Power Board
441767	Control Panel
441774	Filters, 2-pack (bypass version 438222)
441995	Filters, 2-pack (non bypass version 438242)
441764	Heat Recovery Cell (bypass version 438222)
441996	Heat Recovery Cell (non bypass version 438242)
441759	Supply Motor
441762	Exhaust Motor
441776	Summer Bypass

Troubleshooting

Diagnosing a Problem

In the event of a problem, always troubleshoot the unit according to:

- **Fault code** displayed on the Control Unit.
- **Fault LED** if connected.

If no indications are displayed, then troubleshoot problem according to the fault symptom as described in the following tables.

Service/Fault Code Screens

The Service screen is displayed, alternating with the Fault Code screen, when a fault has caused the unit to switch off and you must phone the telephone number displayed on the screen for assistance.

```
Service Phone
01293526062
```

The Fault Code screen is displayed, alternating with the Service screen, when a fault has occurred. Take note of the fault code when reporting a fault.

```
Fault Code
001
```

For assistance contact the service provider and quote the fault code number. The following fault codes numbers may be displayed. Code numbers are added together if more than one is detected.

Table 8: Fault Codes

Code	Problem
1	Supply Fan not running
2	Extract Fan not running
4	24 V fuse failure or short-circuit
8	Temperature sensor T1 (supply) faulty
16	Temperature sensor T2 (extract) faulty

Appendix A: Options and Accessories

CO$_2$ Sensor

An optional wall-mounted CO$_2$ Sensor (433257) may be used to control airflow. The CO$_2$ sensor measures the CO$_2$ level in ppm (parts per million) and the unit adjusts the fan speed accordingly. When the CO$_2$ level is below the lower threshold (adjustable), the fan will run at Normal speed. When the CO$_2$ level is above the upper threshold (also adjustable), the fan will run at Boost speed. If the CO$_2$ level is between the lower and upper thresholds, the fan will run at a speed between Normal and Boost proportional to the difference between the CO$_2$ level and the thresholds.

Normal/Boost Switch

An optional Normal/Boost Switch (455213) may be used to control airflow. Connecting a switch will enable a manual control to be used in conjunction with other boost controls.

Humidistats

An optional internal Relative Humidity Sensor PCB (441838) may be used to control airflow. The unit adjusts the fan speed proportionally depending on the temperature and relative humidity levels in the extracted air whilst avoiding nuisance tripping at nighttime when temperatures drop and relative humidity naturally rises. The unit does not just look for relative humidity levels above a set point, which can be unreliable in products that extract from multiple rooms, but it also looks for rapid increase in relative humidity typically generated by such activities as showering or cooking.

Wireless Boost Switch

The unit can also be controlled by an optional battery-powered, Wireless Transmitter/Boost Switch (439352) when an optional wireless receiver PCB (441778) is fitted to the unit. The system address is set by the 6-way DIP switch. The system address needs to match on the receiver PCB and all transmitter PCBs for any one system. For multiple systems in close proximity to each other, the system addresses need to be different in order to identify which transmitters are controlling which fans. The transmitter PCBs also have a 2-way DIP switch to set the transmitter address. Up to four transmitters can be used to control any one unit. The transmitter address needs to be different for each transmitter in a system.

Using the Wireless Boost Switch

To use the optional Wireless Boost Switch:

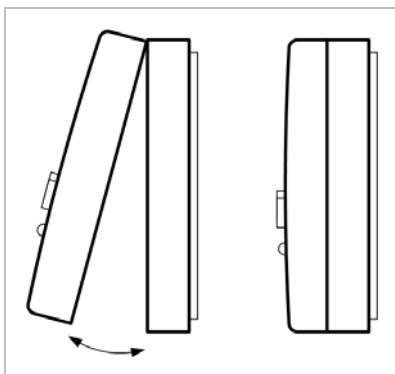1. Open the transmitter by inserting a flat bladed screwdriver in the slot at the bottom.

Figure 26: Opening the Wireless Boost Switch

2. Ensure that the system address, set by the 6-way DIP switch on the transmitter PCB matches that on the receiver PCB.

3. The transmitter address on each transmitter, set by the 2-way DIP switch, should be different if you have more than one transmitter.
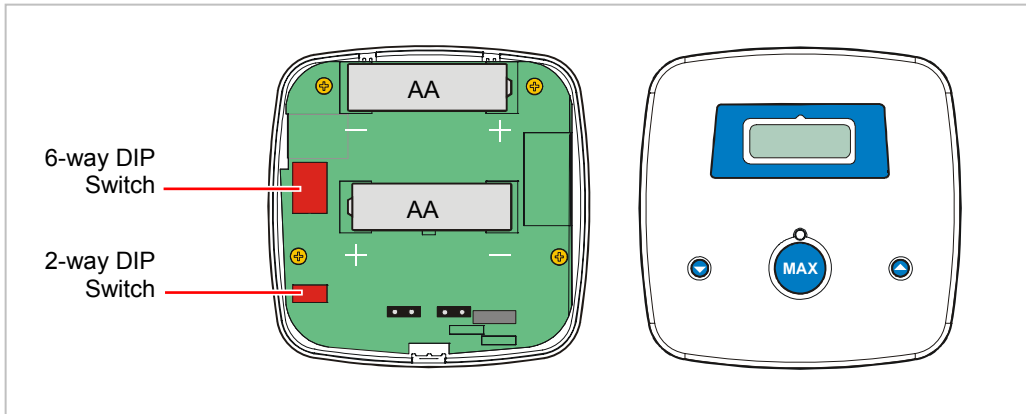

Figure 27: Using the Wireless Boost Switch

4. Fit two AA batteries to the transmitter, removing any plastic tabs between battery and terminal. Battery life will be dependent on the capacity of the battery (measured in mAh), how many times the transmitter buttons are pressed, how long the boost intervals are and whether or not the light switch connection is used.

5. Accessories can be connected to the volt-free and light switch connections so that the transmitter sends a boost signal on the accessory's behalf. The little light above the (MAX) button will light up when a button is pressed. Pressing the (MAX) button will send a signal wirelessly to the unit, telling it to run at Boost speed for 15 minutes. Pressing the (∧) and (∨) buttons will adjust the overrun time in 5 minute increments. The LCD will count down the time in minutes. If more than one of the wireless transmitters are calling for Boost speed, the unit will prioritise the longest overrun time period requested. The unit may continue to run at Boost speed after the timer has timed out if another accessory or switch is calling for Boost speed.

6. Purge Feature: Pressing and holding the (MAX) button for more than 5 seconds will send a signal telling the unit to run at maximum speed for 2 hours. Maximum speed is likely to be higher than Boost speed, depending on the size of the system installed.

Vent-Axia

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For details of the warranty and returns procedure please refer to www.vent-axia or write to Vent-Axia Ltd, Fleming Way, Crawley, RH10 9YX