

# Sentinel

Kinetic MVHR

and

Kinetic Plus MVHR

Installation & Commissioning



## Stock Ref. N°

438222 Kinetic B  
438222A Kinetic BS  
443319 Kinetic BH  
443319A Kinetic S BH  
438342 Kinetic V  
438342A Kinetic VS  
443028 Kinetic Plus B  
447938 Kinetic Plus BS  
443029 Kinetic Plus CVP

***Vent-Axia***<sup>®</sup>

PLEASE RETAIN THESE INSTRUCTIONS WITH THE PRODUCT.



## 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 -20°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 FUSED SPUR FITTED WITH A 3A FUSE HAVING A CONTACT SEPERATION OF AT LEAST 3mm.

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 AND EXTERNAL 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) WHEN USED IN BYPASS MODE.

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.

25. THIS PRODUCT AND ASSOCIATED DUCT INSTALLATION SHOULD BE CARRIED OUT IN ACCORDANCE WITH THE DOMESTIC VENTILATION COMPLIANCE GUIDE.

## Disposal



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

# About this Document

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## UK Building Regulations (Part F) Declaration of Conformance

The Sentinel Kinetic conforms to the 2010 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.

Note:

Read in conjunction with the Operating & Monitoring manual 442073

## Product Description

### Sentinel Kinetic & Sentinel Kinetic Plus

The Vent-Axia **Sentinel Kinetic & Sentinel Kinetic Plus 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 2010.

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 transfers up to 90% of the heat into the supply air entering the bedrooms and lounge.

In addition a Kinetic Plus unit is available that maintains a constant air flow independent of change in the system pressure.

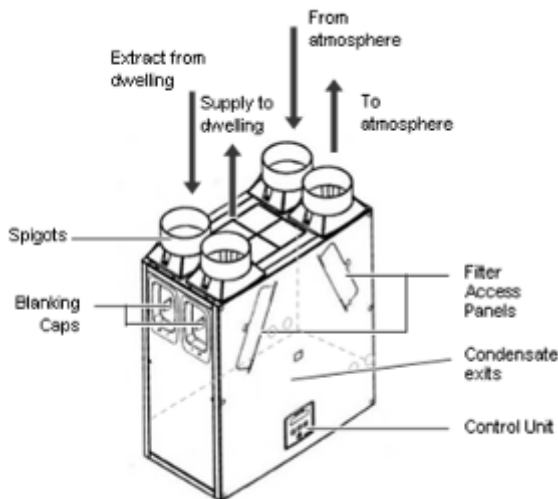


Fig 1: Sentinel Kinetic (Front of Unit as supplied)

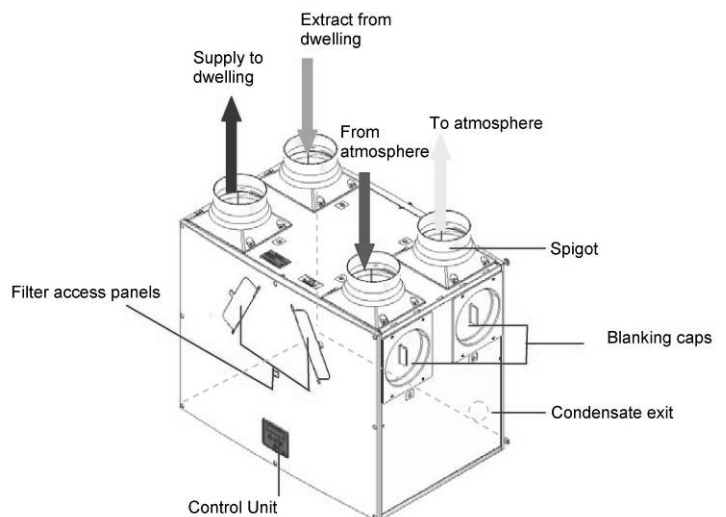


Fig 2: Sentinel Kinetic Plus (Front of Unit as supplied)

### Models

- 438222 - Sentinel Kinetic B with summer bypass.
- 438222A - Sentinel Kinetic BS with summer bypass.
- 443319 - Sentinel Kinetic BH with summer bypass and integral humidity sensor.
- 443319A - Sentinel Kinetic S BH with summer bypass and integral humidity sensor.
- 438342 - Sentinel Kinetic V without summer bypass.
- 438342A - Sentinel Kinetic VS without summer bypass.
- 443028 - Sentinel Kinetic Plus B with Summer Bypass and integral humidity sensor.
- 447938 - Sentinel Kinetic Plus BS with Summer Bypass and integral humidity sensor.
- 443029 - Sentinel Kinetic Plus CVP

### Accessories

- 441838 - Sentinel Kinetic 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 – requires sensors.
- 442367 - Monza System Cooker Hood 600mm wide
- 442368 - Latina System Cooker Hood 900mm wide
- 443283 - Wired Remote Control.
- 447340 - Opto-Coupler

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<sub>2</sub> sensor, Vent-Wise sensors, manual switches and pull cords. For these alternative control options, see [www.vent-axia.com](http://www.vent-axia.com)

## Technical Data

Performance	Sentinel Kinetic	Sentinel Kinetic Plus
<b>Airflow</b>	<b>Maximum, FID, 290 m<sup>3</sup>/h</b> <b>Low</b> default 20% <b>Normal</b> default 30% <b>Boost</b> default 50% <b>Purge</b> 100% (For commissioning graphs see page 8)	<b>Maximum, FID, 500 m<sup>3</sup>/h</b> <b>Low</b> default 20% <b>Normal</b> default 30% <b>Boost</b> default 50% <b>Purge</b> 100% (For commissioning graphs see 9)
<b>Sound levels (@ 3 m)</b>	20 dB(A) (normal), 36 dB(A) (boost)	24 dB(A) (normal), 34 dB(A) (boost)
<b>Power</b>		
<b>AC Voltage Input</b>	220-240 V AC (single phase)	
<b>AC Frequency Input</b>	50 Hz nominal	
<b>Supply Fuse</b>	3 A (located in fused spur)	
<b>Product Fuse</b>	2 A (located on main PCB)	
<b>Rated Power</b>	150 W (max.)	190 W (max.)
<b>Physical</b>		
<b>Height (excluding spigots)</b>	550 mm	630 mm
<b>Width (excluding spigots)</b>	550 mm	775 mm
<b>Depth</b>	285 mm	524 mm including filter flap hinge protrusion
<b>Weight</b>	15 kg	24 kg
<b>Spigot diameter</b>	125 mm	150 mm
<b>Condensate pipe diameter</b>	22 mm	
<b>Environmental</b>		
<b>IP Rating</b>	IP22	
<b>Operating Temperature</b>	-20°C to +45°C	
<b>Air Intake Temperature</b>	As above	
<b>Operating Humidity</b>	0% to 95% RH	
<b>Storage Temperature</b>	-20°C to +45°C	
<b>Storage Humidity</b>	0% to 95% RH	
<b>Software Version</b>	V28	

For all other technical details, please see the Product Catalogue or our website at [www.vent-axia.com](http://www.vent-axia.com)

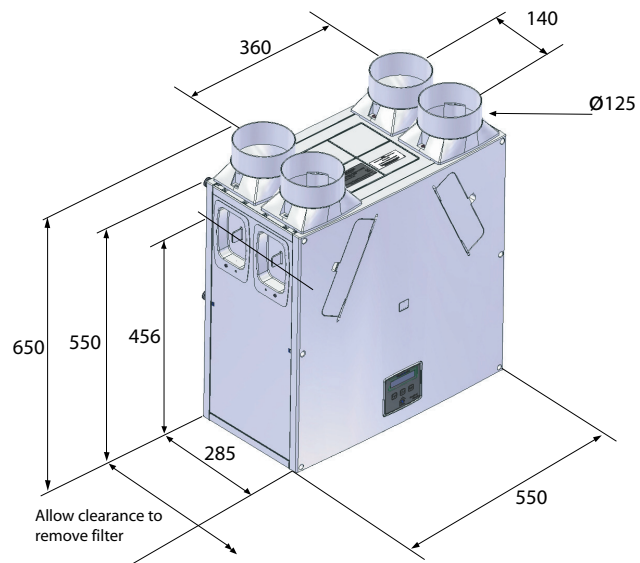


Figure 3: Sentinel Kinetic Dimensions

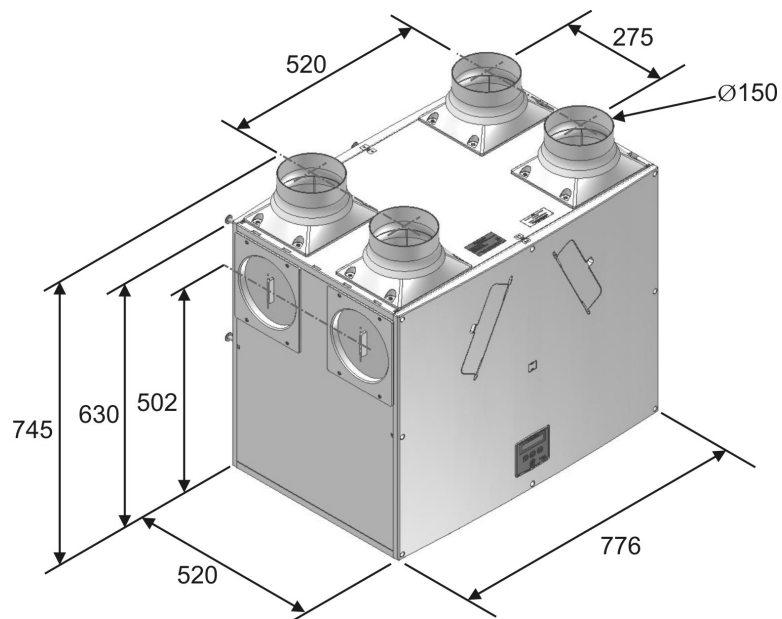


Figure 4: Sentinel Kinetic Plus Dimensions

### **Sentinel Kinetic Range Summer By Pass Models.**

The Sentinel Kinetic B, BH, Plus B, Plus BS, S BH, and Plus CVP are fitted with a Summer By Pass (SBP) and will provide energy-free heating and energy-free cooling when the house temperature and ambient temperature allows.

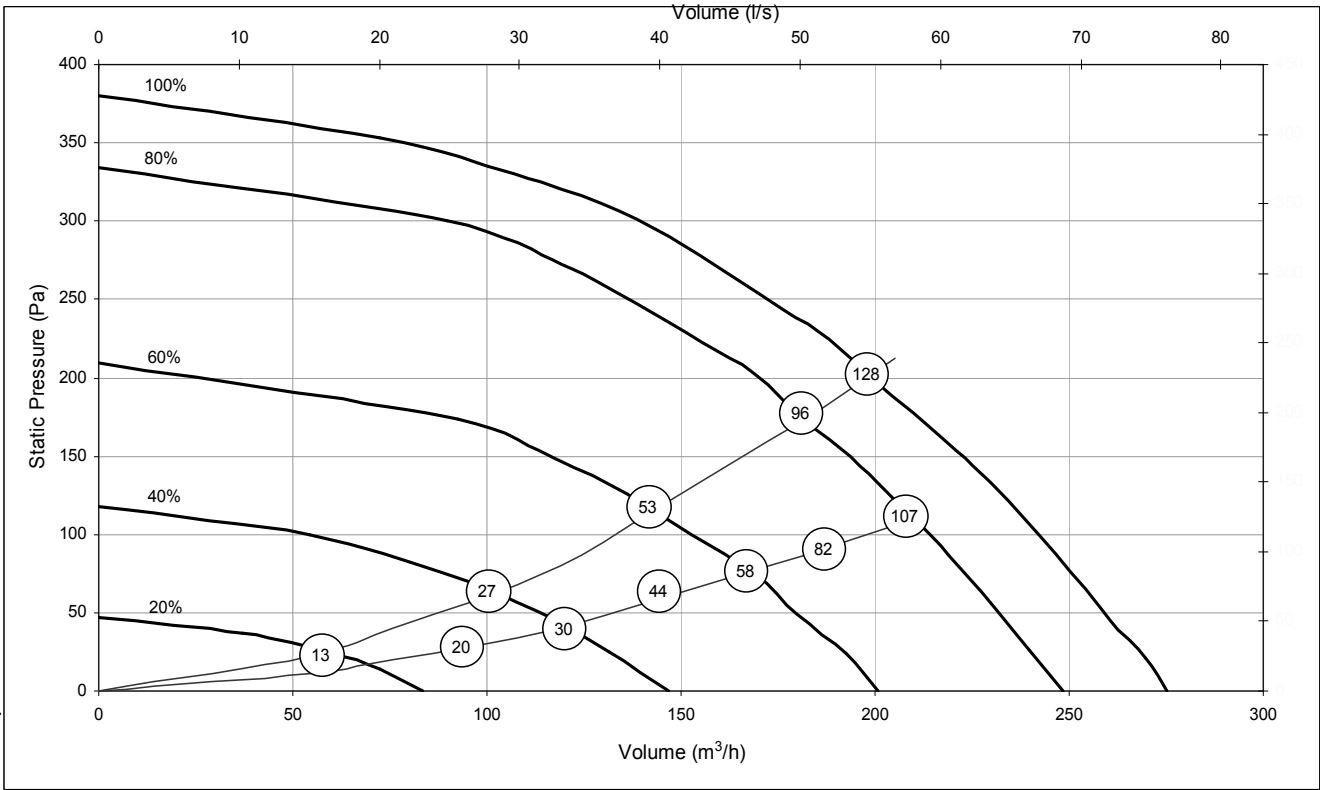
If the room is warmer than the set (shown as "indoor") temperature (i.e. you need the room to be cooler) and the outdoor air is cooler than the actual room temperature (i.e. the outdoor air could cool your room) then the SBP will open and the unit will supply cooler air to your room.

If the room is cooler than the set ("indoor") temperature (i.e. you need the room heating) and the outdoor air is warmer than the actual room temperature (i.e. the outdoor air could heat your room) then the SBP will open and the unit will supply warmer air to your room.

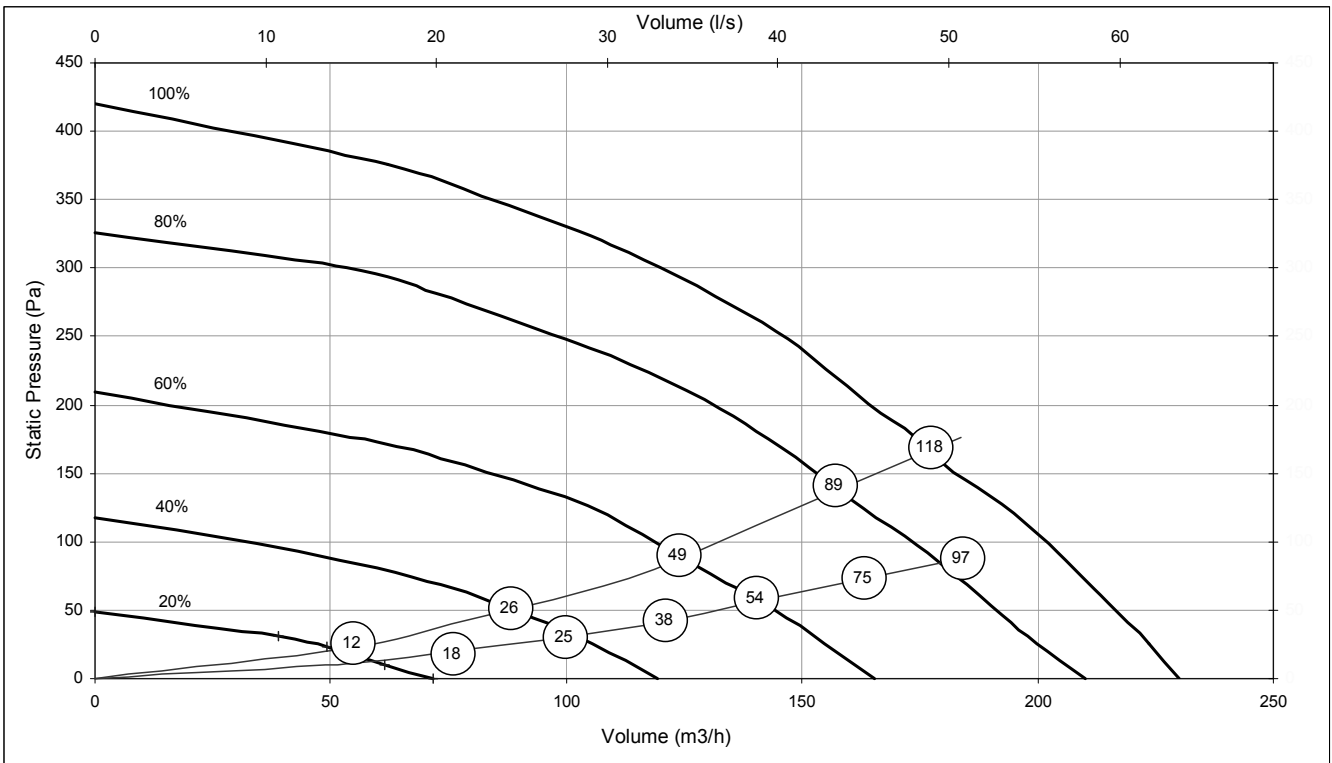
Note that the above only applies whilst the outdoor air temperature is above 14 C (adjustable) in order to prevent cold draughts.

The set ("indoor") temperature should be set 2 or 3 degrees higher than the central heating thermostat and 2 or 3 degrees below any air conditioning thermostat if fitted. This will prevent any clash between the separate systems.

## Sentinel Kinetic Performance graph for Vertical Discharge



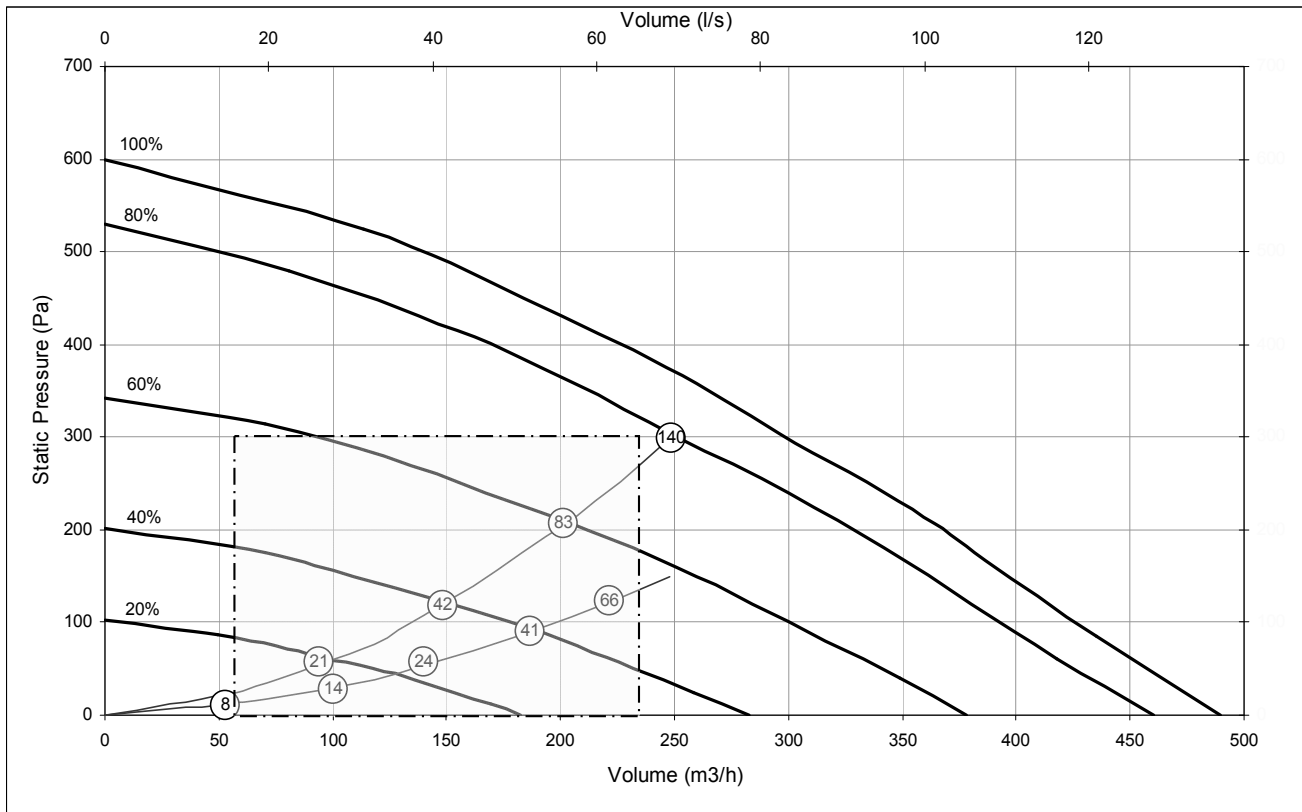
## Sentinel Kinetic Performance graph for Horizontal Discharge



Note: Graph show 2 typical system curves with total unit input power in Watts.



## Sentinel Kinetic Plus and Plus CVP Performance graph for Vertical and Horizontal Discharge



Note: Graph shows 2 typical system curves with total unit input power in Watts and the shaded area of the graph shows constant volume operation (CVP only).

## Installation

### Overview

The following instructions are intended to help prevent potential hazards and installation should only be carried out by a qualified electrician and installer. This booklet covers both the Kinetic and Kinetic Plus. The control systems are identical on all units. There are some differences during the physical installation that the installer needs to be aware of.

**NOTE: we advise installers to fix all mains and sensor wiring along with any internal accessories prior to fixing the MVHR unit in position, leaving approximately 500 mm tails to allow for internal routing.**

### Before Installation of 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 pipe, worm-drive clip, fixings and product documentation.

#### Lift and Move the Unit Safely

On page 5 check the weight of the unit that you are installing. 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 *Warnings and Safety Information* on page 2.

### Unit Installation

The Sentinel Kinetic unit is typically installed on a wall in a kitchen, storage cupboard, roof void, or similar. It will fit in a 600 mm (external) x 300 mm deep (internal) kitchen wall cupboard.

The Sentinel Kinetic Plus unit is typically installed on a wall in a utility room, storage cupboard, roof void, or similar.

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.

It is recommended that a local disconnection mains and sensor terminal box is installed within 1m of the unit to facilitate future 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 Vertical Discharge Condensate Installation on page 13.

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.

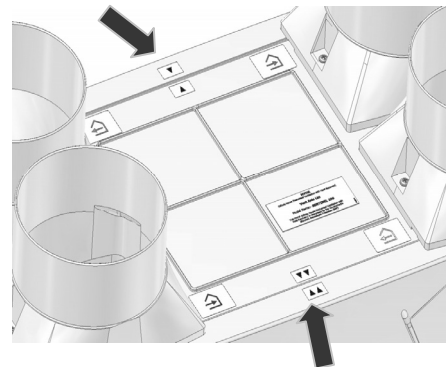
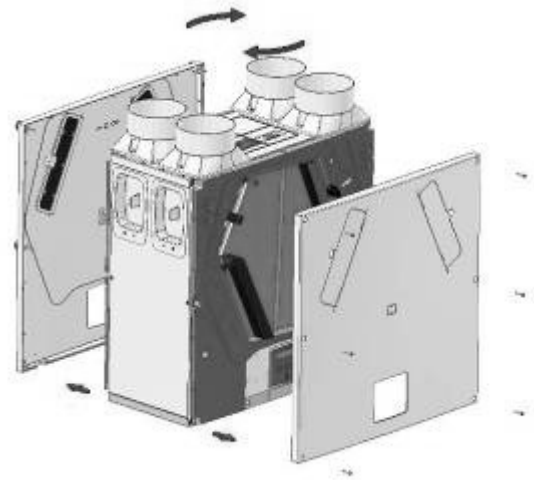
*Sentinel Kinetic Plus CVP is supplied with condensate drain exit to the right of the unit and cannot be installed in the opposite orientation (LH).*

## Installing the Unit in the Opposite Orientation (LH Condensate)

*This procedure for opposite orientation applies to all Sentinel Kinetic range named in this document, except Kinetic Plus CVP.*

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).

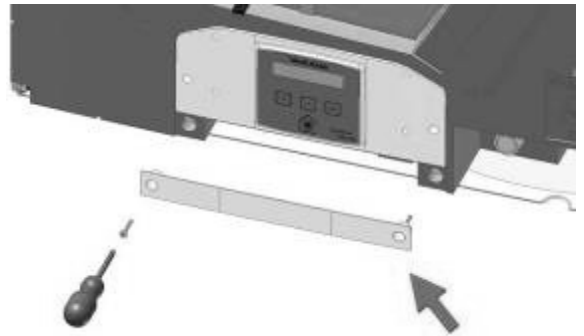


The arrow labels on the top edge of the Covers should be correctly matched to the arrow labels on the top of the Case.

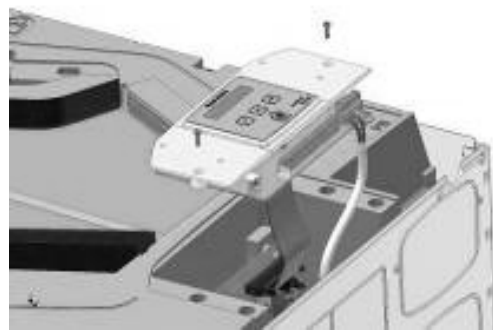
1. Remove the front and rear covers by unscrewing the) fixing screws on both covers.
2. Six screws for the Kinetic.
3. Eight screws for the Kinetic Plus

# Installation

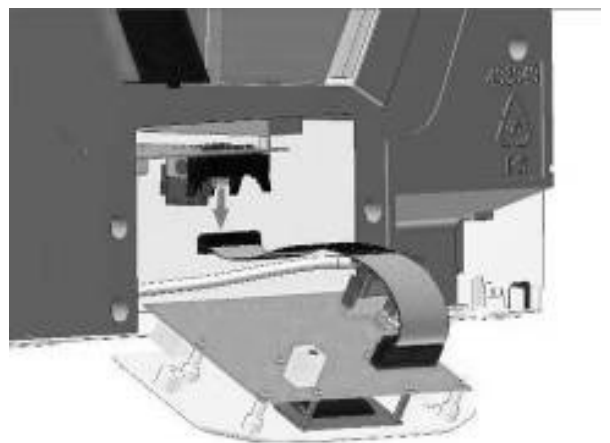
4. Remove the 2 screws and detach the Electrical Cover from the front of the unit.



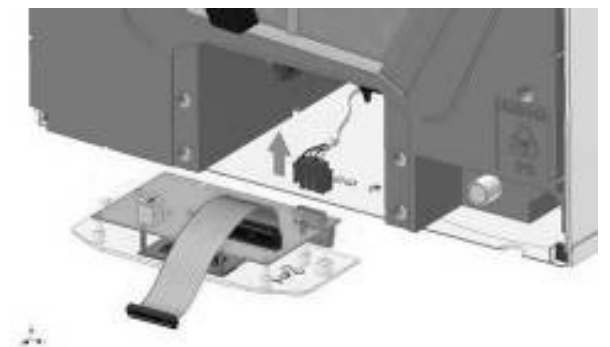
5. Remove the 2 screws and detach the Control Panel and disconnect the mains lead.



6. Disconnect the ribbon cable.

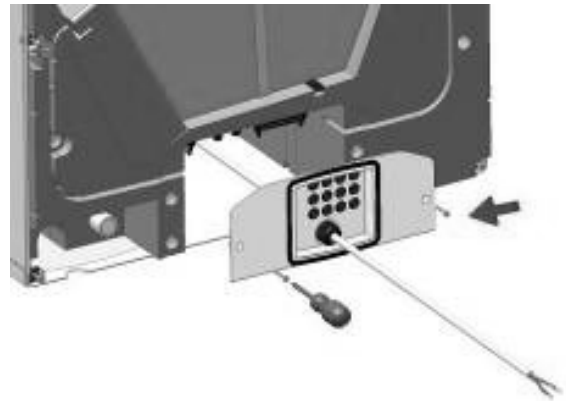


7. Disconnect the 4-way connector.



8. Remove the 2 screws and detach the rear Cable Inlet Plate.

Note that the grommets shown may be replaced by easy knock-out positions. If these are required ensure that you use a grommet or gland to protect against potential water ingress. See note in bold on page 20.



7. Re-attach the Cable Inlet Plate on the opposite side of the 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 to the control panel before securing the panel to the unit.

**Note: Cable ribbon connector is polarised to ensure correct fitting.**

9. Re-connect the mains cable: L, N, LS and E.
10. Re-attach the Electrical Cover.
11. Leave the front and rear covers off the unit.
12. For vertical discharge condensate connection continue as below and page 15, or for horizontal discharge condensate connection go to page 14.

## Vertical Discharge Condensate 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.

To install the vertical discharge condensate:

1. For vertical discharge, remove the rear cover and locate the condensate stub at the rear of the unit.



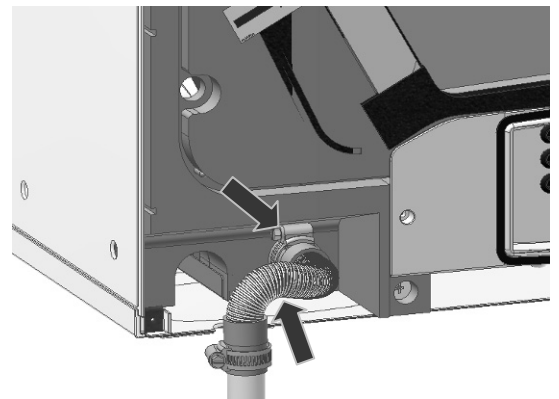
2. Remove the black Cap from the end of the condensate stub at the rear of the unit.



3. If not already fitted, fit the flexible condensate pipe and secure with worm drive clip

The condensate pipe can be attached with a worm drive clip to a 22 mm vertical pipe.

Fit a 'U' bend condensate drain having a minimum of a 60mm water seal or a HepVo valve to the building's foul water drainage system and ensure there is a minimum 3 degree fall to allow condensate drainage.

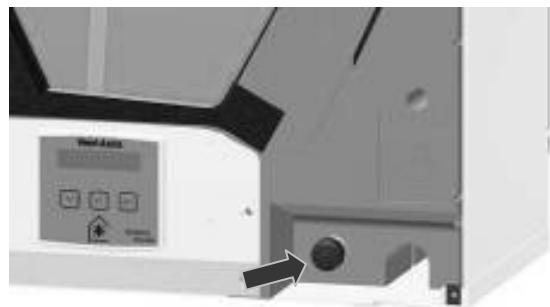


4. Go to Spigot Installation on page 16.

## Horizontal Discharge Condensate Installation

To install the condensate horizontal discharge:

1. For horizontal discharge, remove the front cover and locate the condensate stub at the front of the unit.

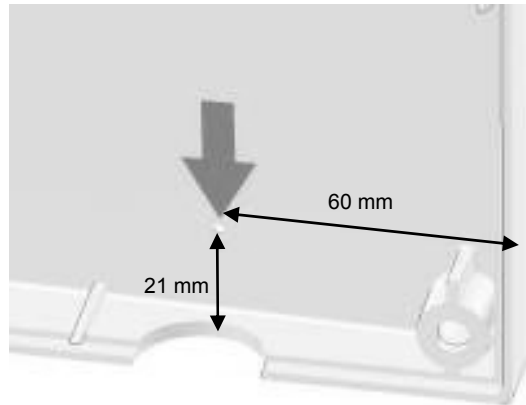


# Installation

2. Remove the Black Cap from end of condensate stub at the front of the unit.



3. On the Kinetic drill a diameter 32 mm hole where shown, right.  
On the Kinetic Plus drill a diameter 32 mm hole using the indent provided in the moulding as a guide.  
The hole is a clearance hole for a diameter 22 mm pipe and so may vary a little from this guidance.



4. **N.B. SEE “WALL MOUNTING” on page 17 for information on marking out the wall for the position of the condensate drain and wall mounting brackets.**

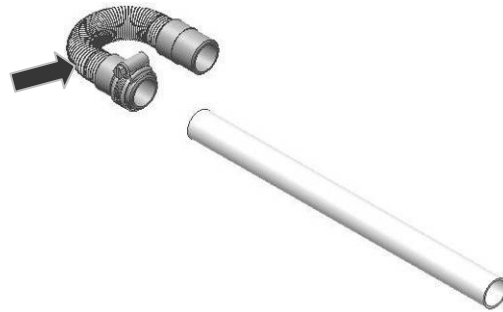
Fit Vertical discharge 32mm waste pipe (fitted with 22 / 32mm reducer ).

Fit a 'U' bend condensate drain having a minimum of a 60mm water seal or a HepVo valve to the building's foul water drainage system and ensure there is a minimum 3 degree fall to allow condensate drainage.



# Installation

5. Fit the flexible condensate pipe to a 22mm diameter x 280mm long condensate pipe with worm drive clip.



6. Fit pipe assembly into waste pipe and secure to condensate spigot with worm drive clip.



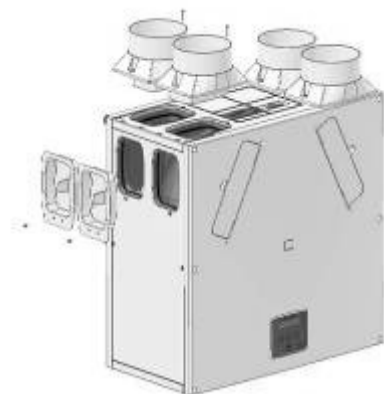
## Spigot Installation

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

Note: Sentinel Kinetic Plus units have spigots suitable for either diameter 150 mm ducting (UK model) or for diameter 180 mm ducting (rest of EU model). The diameter 180 mm spigots come complete with self adhesive foam adaptors to enable it to be used with either diameter 180 mm ducting or diameter 200 mm ducting. These foam adaptors are to be fixed to the outside of the spigot for diameter 200 mm ducting.

To move the spigots:

1. Remove the spigot by unscrewing the screw(s) securing it to the chassis. Then pull the spigot firmly from the entry/exit hole.
2. Remove the blanking cap by unscrewing the screw(s) 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 cap.
4. Insert the spigot into the entry/exit hole and secure with the retaining screw(s).
5. Insert the blanking cap into the entry/exit hole and secure with the retaining screw(s).

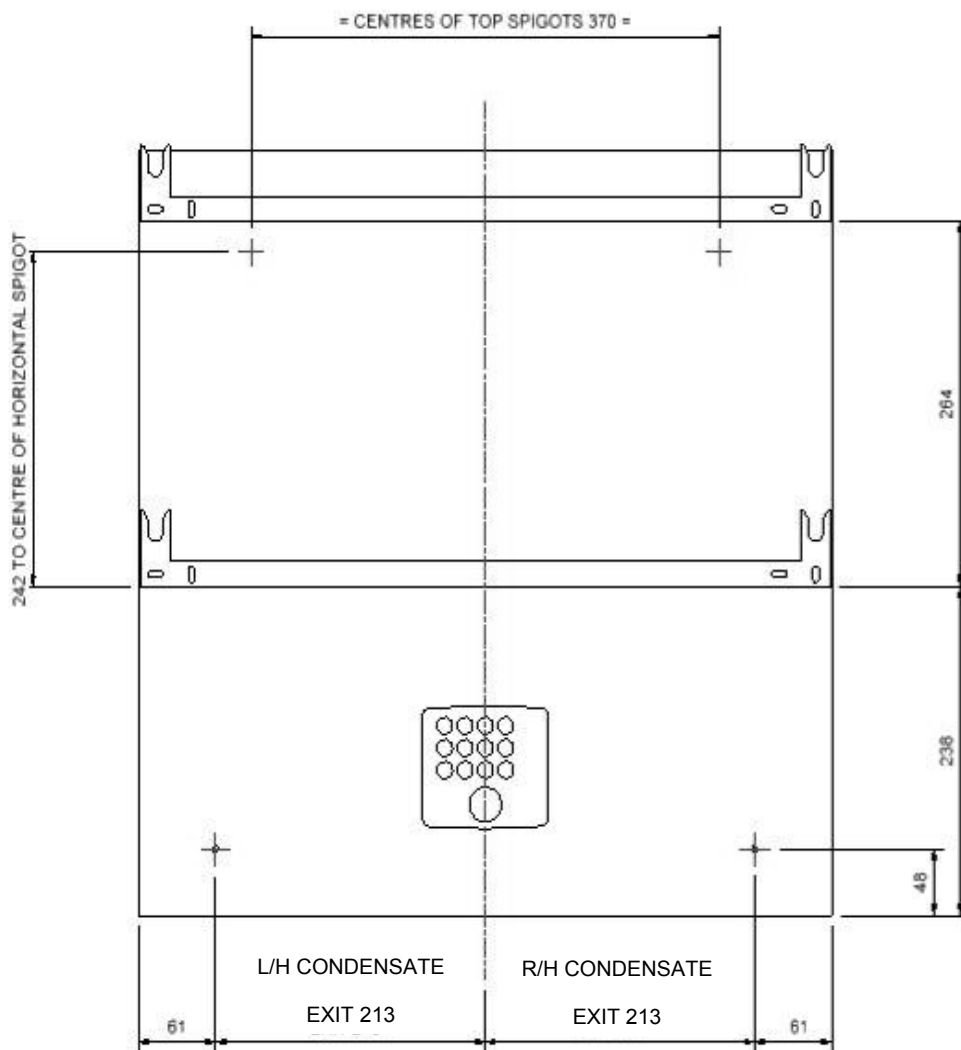
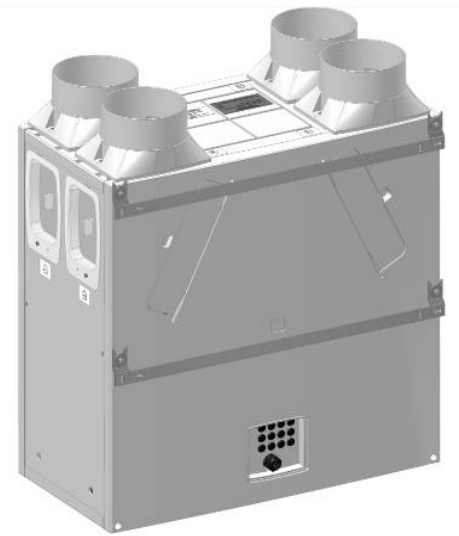


**N.B. Before finally fixing the unit into position it may be more convenient to make the electrical connections; including the mains connections and any wiring for sensor(s) or switch(es).**



## Wall Mounting Sentinel Kinetic

1. Refit the front and rear covers if they have been removed.
2. Ensure four off wall bushes are fitted to the rear cover across the middle and upper screws.
3. Mark the condensate and wall bracket positions.
4. Fit 2-off metal wall brackets (supplied) to the wall using appropriate fixings.
5. Lift unit and locate the wall bushes onto the 2 wall brackets. The unit should now be physically installed in its intended operating location.
6. Ensure that the condensate drain is connected as described on page 15.

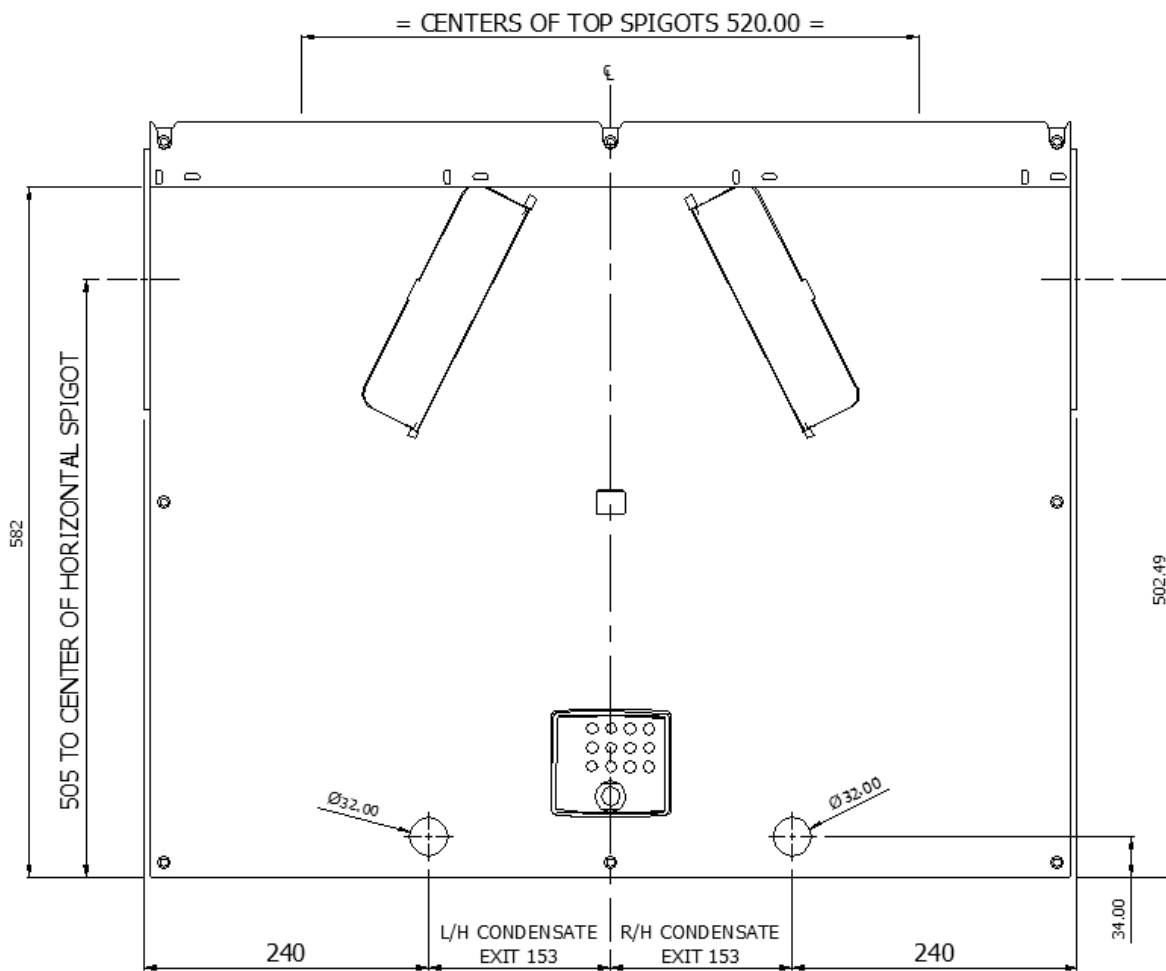
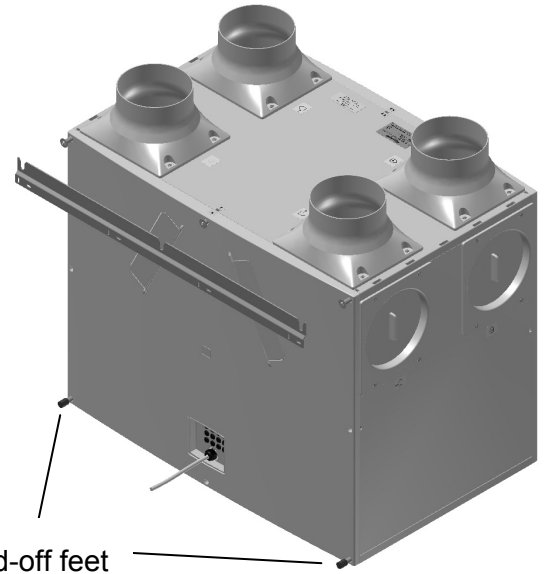


**Wall Mounting Sentinel Kinetic**

# Installation

## Wall Mounting Sentinel Kinetic Plus

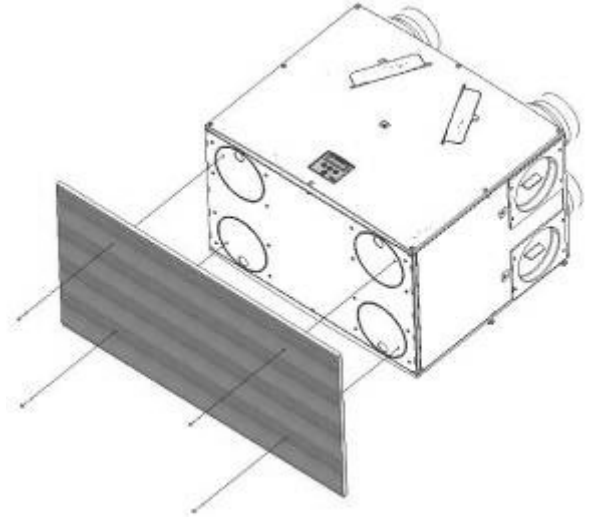
1. Refit the front and rear covers if they have been removed.
2. Ensure three off wall bushes are fitted to the rear cover, along the top row of screws.
3. Mark the condensate and wall bracket positions using the template below. A paper copy can be obtained from Vent-Axia Technical Support.
4. Fit metal wall bracket (supplied) to the wall using appropriate fixings.
5. Lift unit and locate the wall bushes onto the wall bracket. The unit should now be physically installed in its intended operating location. (Ensure black rubber stand-off feet are in place).
6. Ensure that the condensate drain is connected as described on page 15.



## Wall Mounting Sentinel Kinetic Plus

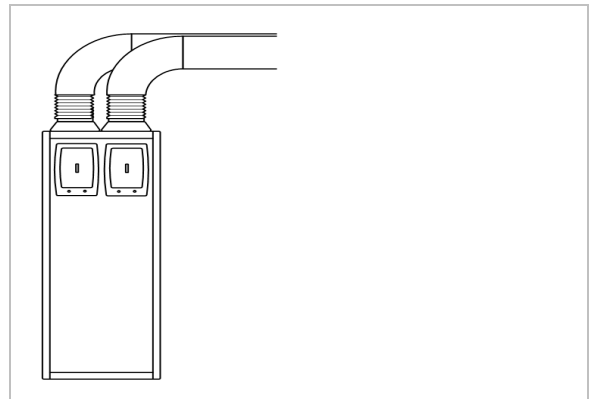
## Floor Mounting Sentinel Kinetic Plus

1. Remove the front and rear covers.
2. Ensure that a secure, firm, flat and level surface is provided to place the Kinetic Plus unit on.
3. Screw down through the white plastic base plate of the unit to a board which may then be screwed to joists, flooring or equivalent.
4. The unit should now be physically installed in its intended operating location.



## Attach the ducting:

1. Always use a short piece of flexible duct 100-150 mm long, extended to its full length when connecting to ductwork.
2. Securely connect this ducting to the spigots using worm-drive clips or cable ties and duct tape.
3. Insulate any ducting passing through an unheated space to prevent any heat losses and surface condensation.



## Electrical Installation

### Connect Switches and Sensors

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

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

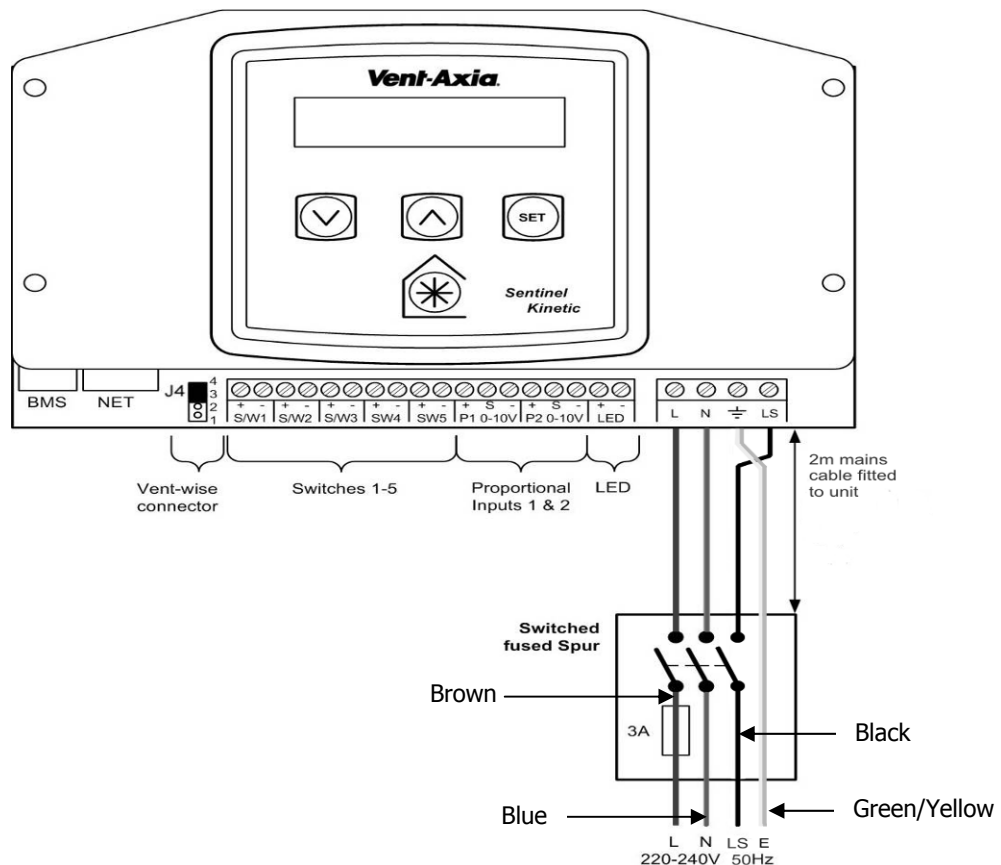
**N.B Alternative functions are assigned to SW/1, SW/2, SW/3 & SW/5 when Control Mode 02 is selected in the start-up screens see Appendix One for further details.**

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). Terminal 4 can be used in conjunction with a momentary switch or switches.

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 below and in Table 1. If necessary contact Vent-Axia regarding the wiring and fixing of accessories and sensors.

The cable entry back plate may have grommets or easy knock-out positions. If the knock-outs are used then ensure that you use a grommet or gland to protect against potential water ingress.

**When fitting external controls the appropriate cord anchorage and glands, according to country requirements for cable size should be fitted, these glands should have a minimum water ingress protection of IPX2.**



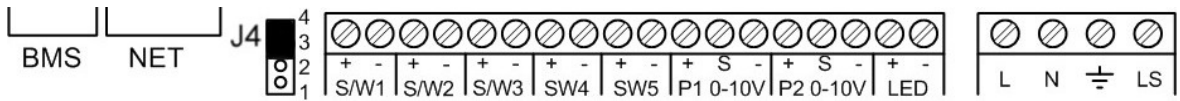


Table 1: Terminal Connections

Terminal No.	Name	Description (Control Mode 01)
S/W1	Switch 1	With link fitted on J4 - activates volt-free contact for sensor input between + and - terminals
S/W2	Switch 2	
S/W3	Switch 3	
		With Vent-Wise PCB fitted to J4 - enables Vent-Wise sensor input
		Note do not fit standard sensors or Volt- free switch contact in this mode.
SW4	Switch 4	Volt-free contact for sensor input between + and – terminals (Momentary if SW/4 if SW4 Commissioning Screen set On) With Vent-Wise PCB fitted to J4 - enables Vent-Wise momentary switch input
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	Red 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 <i>Service/Fault Code Screens</i> on page 44).
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	Switched Live	220-240 V AC, 50 Hz input

**N.B Alternative functions are assigned to SW/1, SW/2, SW/3 & SW/5 when Control Mode 02 is selected in the start-up screens see Appendix One for further details.**

## 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.

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.

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

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

## **Connecting a Boost (Light) Switch**

A Switched Live (LS) may be used to boost the airflow when a light is turned on, for instance in a bathroom or kitchen. If the LS core of the mains cable is not used it should be terminated in an appropriate manner.

Power supplied to the unit via a 3 pole isolating switch must be supplied via the same circuit as the LS connection. Alternatively an isolator relay controller, part number 442030, may be used.

## 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 start-up screens, described below (see *Start-up Screens* on page 24).

**N.B. 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.**

### Switching Off

To switch the unit off:

1. Turn the power off at the mains supply isolator.

## 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.



## Display

The main display is a 16 character by 2-line liquid crystal display (LCD) with automatic backlight, which is turned off to automatically minimise power consumption.

**Normal Airflow  
30%**

## Buttons

Four buttons on the Control Unit provide the controls for configuring and monitoring the unit.

Button	Function
	Press to adjust settings and press to save settings.
	Press to go to the previous 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. See page 25 for options. Press and hold for 5 seconds to activate Purge mode. (Press and hold for 5 seconds to cancel Purge).

## Start-up Screens

### Sentinel Kinetic Version Screen

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

No adjustments are possible on this screen.



### Language Screen

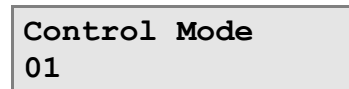
The Language screen displays the language used for the screens. It is typically displayed for 5 seconds, or longer if changing the setting.

(To re select a new language disconnect and then reconnect to the mains supply).



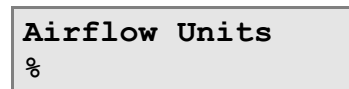
### Control Mode Screen

Selects between Control Mode 01 operation described herein and the alternative Control Mode 02 described in Appendix One.



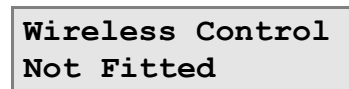
### Airflow Units Screen

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



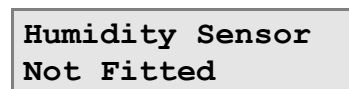
### Wireless Control Screen

The Wireless Control screen automatically displays whether the wireless boost control switch is fitted. It is typically displayed for 3 seconds.



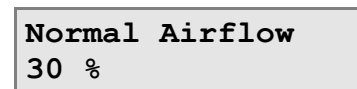
### Humidity Sensor Screen

The Humidity Sensor screen displays whether the humidity sensor is fitted. It is typically displayed for 3 seconds.



### Low Airflow / Normal Airflow / Boost Airflow Screen

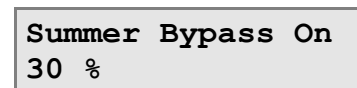
When the start-up screens are finished, the low or normal screen is displayed showing operating status (Low Airflow X % or Normal Airflow X % or Boost Airflow X %).



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  $\alpha$  symbol will be displayed when humidity sensor is boosting the airflow.



When the summer bypass is active, the normal screen top line will alternate (for 3 seconds) with Summer Bypass On.






An interval can be set, see page 38, at which the unit reminds the user to check the filters. The normal screen top line will include Check Filter as a reminder to check and, if necessary, clean or replace the filters.


**Check Filter**  
30 %

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


Pressing the  button activates the boost airflow mode when extra ventilation is required.

**Boost Airflow**  
50 %

No. of presses	Boost action (Control Mode 01)
1	Boosts for 30 minutes
2	Boosts for 60 minutes
3	Boosts continuously
4	Back to Normal flow rate

**N.B Additional airflow modes are available from the  button when Control Mode 02 is selected in the start-up screens see Appendix One for further details.**

If the wireless boost option is fitted, this can be triggered from the wireless transmitter/boost switch.

If the installation has switch sensors, is wired to the lighting, has Vent-Wise sensors, Vent-Wise momentary switch 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.

s1 = Switch S/W1

s2 = Switch S/W2

s3 = Switch S/W3

s4 = Switch SW4

s5 = Switch SW5

v1 = Vent-Wise Input S/W1


v2 = Vent-Wise Input S/W2

v3 = Vent-Wise Input S/W3

ls = Switched live (LS)



w1-4 = Wireless controller

c1-3 = Internal Time switch

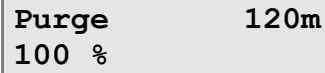
If running on boost due to pressing the  button, another device may 'take over' the boost. Flow will return to normal when that device switches off. If a number of different devices are calling for boost flow, the unit will run at boost until the last one has reverted to normal.

**N.B Alternative functions are assigned to SW/1, SW/2, SW/3 & SW/5 when Control Mode 02 is selected in the start-up screens see Appendix One for further details.**

## Purge Screen

Pressing and holding the  button for approximately 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, purge can be triggered from the wireless transmitter/boost switch.


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



Purge 120m  
100 %

## Cooker Hood Boost Screen

Cooker Hood mode is activated when the J12, LS input is activated, see page 32 for details.

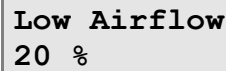


Cook Hood  
100 %

## Low Airflow Screen


Low Airflow mode is activated when the Normal Airflow is set to **Off**, (see page 31 for set up details).

The Normal Airflow mode can be set to run during the daytime i.e. from 6am to 11pm, the Low Airflow mode will then run during the night from 11pm to 6pm.




Low Airflow  
20 %

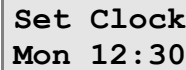
## Set Clock Screen

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

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 after 2 minutes.


The unit will not automatically switch for daylight saving time.



Set Clock  
Mon 12:30




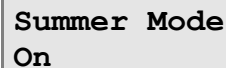
## Summer Mode Screen

From the Normal Airflow screen, simply press the  button twice 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** (default) and **Off**.


Return to the normal display by pressing the  button or leave to timeout and return automatically after 2 minutes.



Summer Mode  
On




## Indoor Temp Screen


From the Normal Airflow screen, simply press the  button until the Indoor Temp screen is displayed.

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 **16-40** (**25** default).

Return to the normal display by pressing the  button or leave to timeout and return automatically after 2 minutes.




This function will only work when the Summer Mode is set to on.



Indoor Temp  
25 C




## Outdoor Temp Screen

From the Normal Airflow screen, simply press the  button until the Indoor Temp is displayed. Press  button to choose the required temperature and then press  button again to confirm the entry and this will call up Outdoor Temp.

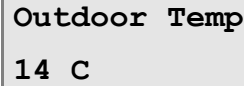
The Outdoor Temp screen enables you to choose the minimum outdoor temperature at which the bypass will operate in degrees Centigrade – only displayed when the bypass is fitted.

Use this to prevent cold draughts being introduced.

Selectable range is **5C – 20C** (**14C** default).

Return to the normal display by pressing the  button or leave to timeout and return automatically after 2 minutes.

This function will only work when the Summer Mode is set to on.



Outdoor Temp  
14 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 44

Follow good practice when commissioning the unit. Ensure that the system is installed according to the system designers intent incorporating any acoustic ducting, that all joints are air tight, ducting is well supported, bends are avoided close to vents, and that the vent valves are fully open at the start of the commissioning process.

The following is attached to the unit and should be used as a check list prior to setting the air flows.







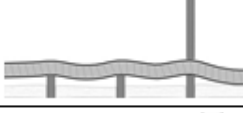
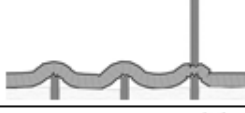
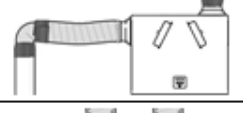
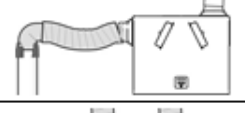




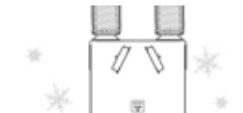
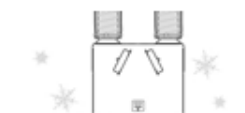
## Vent-Axia

### MVHR Installation Checklist

REQUIRED TO BE COMPLETE TO COMPLY WITH CONDITIONS OF WARRANTY,  
but does not affect statutory rights.

This is a short check list of good practice do's and don'ts that may affect the safety or functionality of the installation. It is not a complete list of what is required. They must be complied with in order to ensure that the installation performs as expected.

Unit Serial number: \_\_\_\_\_ Installer's name: \_\_\_\_\_

Check			Date and initials
1. Is the unit stable and horizontal with room around it to allow maintenance?			
2. Is any flexible ducting pulled taut to prevent moisture collection and avoids airflow issues?			
3. Is any flexible ducting crushed which will cause airflow issues?			
4. Are all joints in the ductwork sealed to prevent air leakage?			
5. Is the ducting insulated to prevent condensation and cooling or heating of the air?			
6. Does the condensate drain a) have the correct slope to ensure water runs away and b) is fitted with a trap to prevent smells coming back into unit?			
7. If the condensate drain passes through a cold space is it insulated to prevent freezing?			

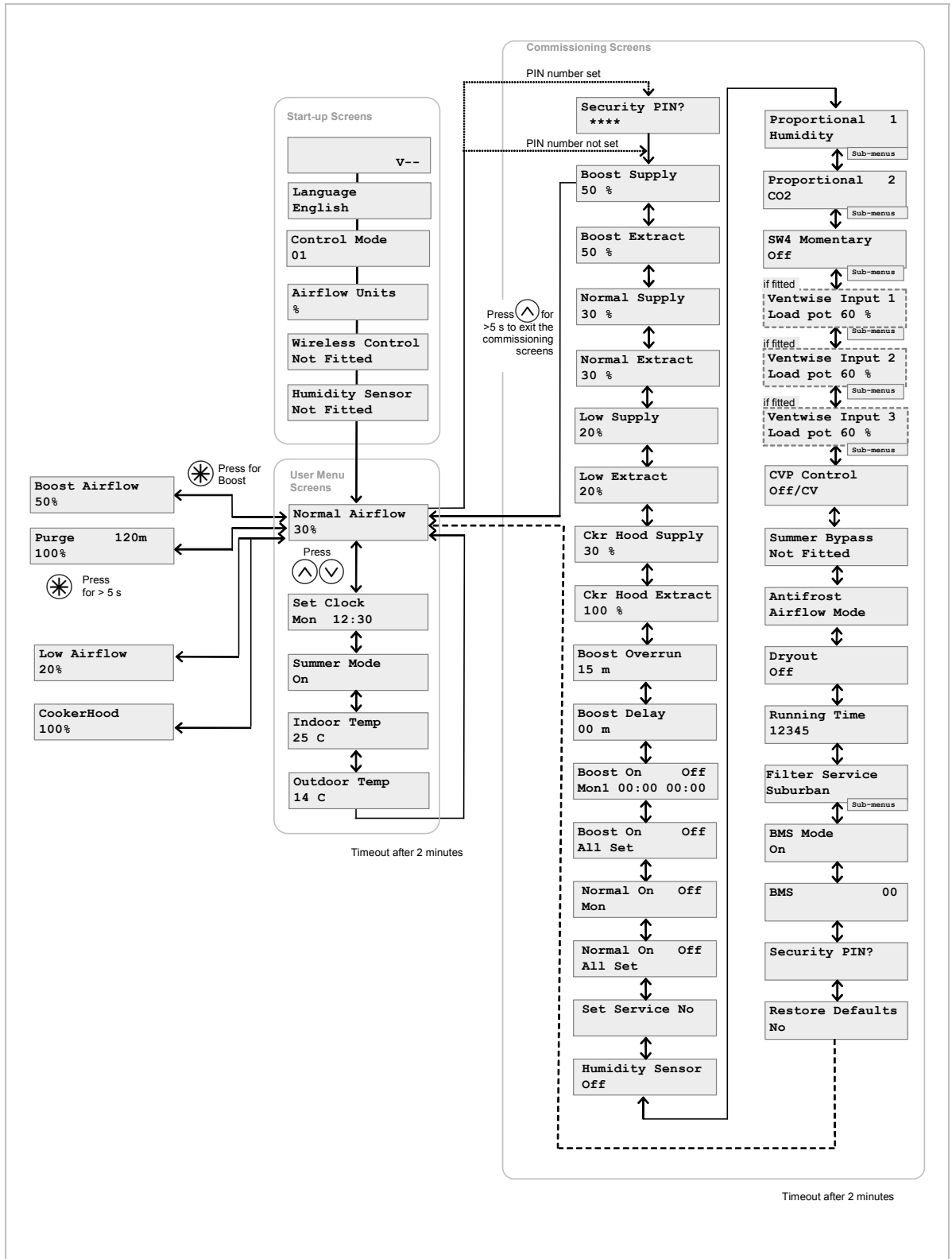
See the Installation Guide and Checklist at: [http://www.vent-axia.com/files/dom-estic-ventilation-compliance-guide\\_2010.pdf](http://www.vent-axia.com/files/dom-estic-ventilation-compliance-guide_2010.pdf)

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## Control Unit Screens Summary




When the unit is switched on (see *Powering up the Unit* on page 23, the following Control Unit screens are available for monitoring and configuring the unit.






## 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 prevented if the display shows **Antifrost Active**, **Room Too Cold** or a **Fault Code**. In this event, switch the unit off and on again and enter the commissioning screens within one minute. If you are within the commissioning screens the Antifrost and Room Too Cold Failures modes will not operate allowing the flow rates to be adjusted even in a property which is below 5C. For further information see *Troubleshooting* on page 44.

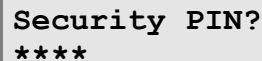
To access the commissioning screens: Press and hold the  button immediately followed by the   buttons together; continue to hold down all three buttons for 5 seconds.

To scroll through the Commissioning Screens use the   buttons.

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 \*\*\*\*.



Security PIN?  
\*\*\*\*

Enter the PIN using ,  and  buttons.

#### Note 1

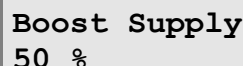
Whilst displaying the Low, Normal, Boost Supply, Low, Normal, Boost Extract screens the fans will run at the displayed % flow and the bypass will remain shut. The two minute automatic return to normal display time is extended to four hours to allow time for measurements or adjustments.

#### Note 2

Generally the speed % selected is the speed signal to the motor and can be set up to 100%. The Sentinel Kinetic Plus CVP model can run in Constant Volume mode where the volume flow is independent of the system pressure.

### Boost Supply Screen

The Boost Supply screen enables you to set the Boost airflow speed for the Supply fan in order to balance out any differences in ductwork or other installation features.



Boost Supply  
50 %

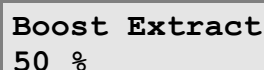


Default Boost speed = 50%. See graph on either page 8 or 9 for setting the Supply airflow.

The Boost speed cannot be set above the Cooker Hood speed or below Normal speed setting.

### Boost Extract Screen

The Boost Extract screen enables you to set the Extract airflow speed for the Extract fan in order to balance out any differences in ductwork or other installation features. Default Boost speed = 50%. See graph on either page 8 or 9 for setting the Extract airflow.



Boost Extract  
50 %



The Boost speed cannot be set above the Cooker

Hood speed or below Normal speed setting.

## Normal Supply Screen

The Normal Supply screen enables you to set the Normal airflow speed for the Supply fan in order to balance out any differences in ductwork or other installation features.

Default Normal speed = 30%

See graph on either page 8 or 9 for setting the Supply airflow.

The Normal speed cannot be set below Low speed or above Boost speed setting.

**Normal Supply**  
30 %



## Normal Extract Screen

The Normal Extract screen enables you to set the Normal airflow speed for the Extract fan in order to balance out any differences in ductwork or other installation features.

Default Normal speed = 30%

See graph on either page 8 or 9 for setting the Extract airflow.

The Normal speed cannot be set below Low speed or above Boost speed setting.

**Normal Extract**  
30 %



## Low Supply Screen

The Low Supply screen enables you to set the Low airflow speed for the Supply fan in order to balance out any differences in ductwork or other installation features.

Default Low speed = 20%

See graph on either page 8 or 9 for setting the Supply airflow.

The Low speed cannot be set below 1% or above Normal speed setting.

**Low Supply**  
20 %



## Low Extract Screen

The Low Extract screen enables you to set the Low airflow speed for the Extract fan in order to balance out any differences in ductwork or other installation features.

Default Low speed = 20%.

See graph on either page 8 or 9 for setting the Extract airflow.

The Low speed cannot be set below 1% or above Normal speed setting.

**Low Extract**  
20 %



## Cooker Hood Supply Screen

The Cooker Hood Supply screen enables you to set the Boost speed for the Supply fan.

Default Cooker Hood supply speed = 30%

**Ckr Hood Supply**  
100 %



## Cooker Hood Extract Screen

The Cooker Hood Extract screen enables you to set the Boost speed for the Extract fan.

Default Cooker Hood speed = 100%

Cooker Hood extract speed cannot be set below Boost speed.

**Ckr Hood Extract**  
100 %



## Boost Overrun Screen

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

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

Boost Overrun screen does not function for inputs

S/W1 to S/W3 and SW4, SW5

**Boost Overrun**  
15 m



## Boost Delay Screen

The Boost Delay screen enables you to set the time delay (in minutes) from the light switch (LS input) 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





## 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 now show

**All Set** or holding the **SET** button for 3 seconds.

<b>Boost On</b>	<b>Off</b>
<b>Mon1 00:00</b>	<b>00:00</b>

**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.

<b>Boost On</b>	<b>Off</b>
<b>All Set</b>	

## Normal On/Off Screen

The **Normal Airflow** mode can be set to run during the daytime i.e. from 6am to 11pm, the **Low Airflow** mode will then run during the night from 11pm to 6pm.

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

You can set up to one **On/Off** time per day, 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 **Mon** and uses **SET** to show, by flashing, which item is available for adjustment with the **▲** and **▼** buttons (a → b → c → d → e → **Mon** and so on).

**Mon 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 **Sun** are accepted, at which point the screen will now show

**All Set** or holding the **SET** button for 3 seconds.

Normal On	Off
Mon 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 faults.

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.

Normal On	Off
All Set	

Set Service No
----------------

**SET**

**▲** **▼**

**SET**

## Internal Humidity Sensor Screen (if fitted)

The Humidity Sensor screen enables you to switch the Sensor **On** and adjust the trigger point between 60% and 90%. (default setting 70%).

Humidity Sensor
Off

**SET**

**▲** **▼**

**SET**

## 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<sub>2</sub> or temperature external sensor, when connected to terminals P1.

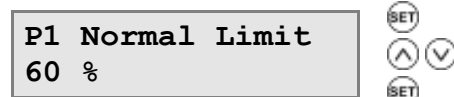
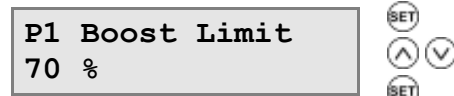
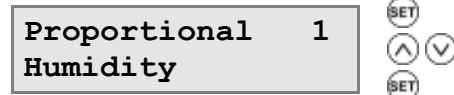
By default, the Proportion 1 input is set for a humidity sensor operation.

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

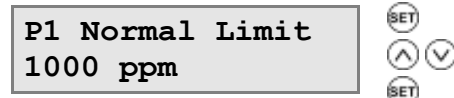
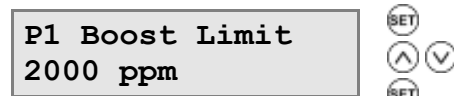
Press **SET** and use the **▲** and **▼** buttons to change the selection (**Humidity**-default, **CO<sub>2</sub>**, **Temperature**).

When the input signal is below the 'Normal Limit', the unit runs at low / 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.

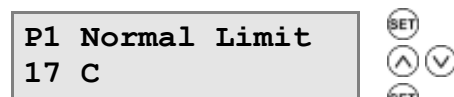
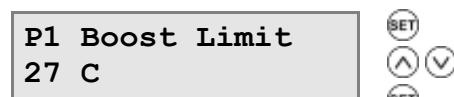
For a humidity sensor, a percentage value must be entered for boost and normal settings. For range and default values, see *Table 2* below.



For a CO<sub>2</sub> sensor, a figure (in ppm) must be entered for boost and normal settings. For range and default values, see *Table 2* below.



For a Temperature sensor, a figure (in degrees C) must be entered for boost and normal settings. For range and default values, see *Table 2* below.



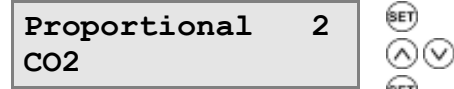
*Table 2: Boost & Normal Limits – Defaults and Adjustment Range*

Sensor	Humidity		CO <sub>2</sub>		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<sub>2</sub> sensor operation.

See *Proportion 1 Screen* for a description.

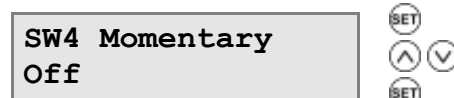


## SW4 Screen

Momentary closure (1 sec) starts or stops boost for set time.

Selectable range: min. = **15**, max. = **30**.

Default = **Off** when no Vent-Wise card fitted.



## 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. In addition SW4 can be used by a momentary switch.

Vent-Wise sensors measure current or temperature. When the current or temperature exceeds a 'trip' level, boost airflow is selected. Low / 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 40°C and a current one around 1.5 A. Time Pot setting is from 1 to 25 minutes with a default of 20 minutes.

A one-second push on a momentary switch wired to SW4 will run boost for up to 25 minutes. The overrun timer can be set from 15 to 30 mins. A second one-second push will cancel the boost as would a "cancel boost" signal from one of the sensors. Multiple momentary switches may be wired in parallel to SW4.

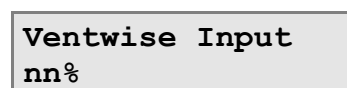
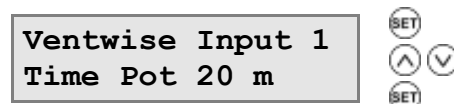
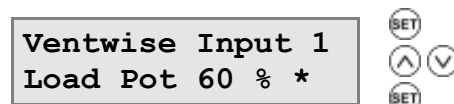
Screens for each of the three switches are displayed. Enter a percentage value for the Load Pot setting.

\* Shows Vent-Wise signal and indicates the unit is running in Boost mode

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

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

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



Momentary closure (1 sec) starts or stops boost for set time.

Selectable range: min. = **15**, max. = **30**.

Default = **25** when Vent-Wise card fitted



## CVP Control

This screen by default displays CV mode. The unit can operate by choosing Constant Volume or Constant Pressure, or can be set to Off to run on fan curve. Default for standard unit is Off and for CVP unit is CV.

CVP Control  
Off



## 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**.

**Airflow Mode** - When the supply air temperature is between 0° and -20°C, antifrost will automatically activate. This will reduce the supply airflow rate and increase the extract airflow rate to prevent frost forming on the heat exchanger. During antifrost operation the supply motor can stop for 15 minutes hour and run for 45, depending on the temperature below 0°C. If the supply air temperature is -20°C or below the supply fan switches off and the extract fan continues to run at reduced rate to prevent frost forming on the heat exchanger.

**Bypass Mode** - While the supply air temperature is below 0°C, the antifrost mode will automatically activate. This mode will open the bypass to prevent frost forming on the heat exchanger.

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.

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

## Filter Service

Press **SET** and then use the **▲** and **▼** push-buttons to select the time between Filter Services. The options are Urban (6 months), Suburban (default: 12 months) or Rural (18 months).

**Filter Service**  
**Suburban**

## BMS screen

**On** for BMS (default) or **Off** for Wired Remote Control, automatically set up by BMS signal or Wired Remote Control when either is plugged into BMS RJ11 socket.

**BMS Mode**  
**On**

The BMS screen displays byte count and first 16 bytes from the Building Management System (BMS) system. The output may be controlled by a BMS system to switch the unit on or off for example in conjunction with a smoke alarm.

**BMS**                      **00**

No changes may be made to this screen.

## Security PIN Screen

The Security PIN screen enables you to 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.

**Security PIN?**

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.

## Restore Defaults Screen

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

**Restore Defaults**  
**No**



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**

**Table 3: Default Settings**

Parameters	Settings
<b>Start-up Screens</b>	
Sentinel Kinetic	Sentinel Kinetic
Language	English.
Control Mode	01
Airflow Units	%.
<b>Commissioning Screens</b>	
Security PIN	Not set
Boost Supply/Extract	50 %
Normal Supply/ Extract	30 %
Low Supply/Extract	20%
Cooker Hood supply / extract	30% / 100%
Boost Overrun	15
Boost Delay	00
Boost On/Off	All days set to 0:00 (on), 00:00 (off) – inactive
Normal On Off	All days set to 0:00 (on). 00:00 (off) – inactive
Set Service No	Not set
Humidity	70%
Proportional 1	Humidity – Boost, 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, Normal (60 %)
SW4	Off, or with Vent-Wise card fitted 25 mins
Vent-Wise 1/2/3	Load Pot (60 %) Time Pot (20 m)
CVP Control	Off, or when pressure sensors fitted CV/CP
Summer Bypass	Not Fitted
Antifrost	Airflow Mode
Dryout	Off
Running Time	-
Filter Service	Suburban (default) 12 months, or can be set to Urban and Rural
BMS	On
Restore Defaults	Off
<b>User Screens</b>	
Set Clock	-
Summer Mode	Summer Mode On
Indoor Temp	21 C
Outdoor Temp	14 C

## Maintenance

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.**

### Filter Maintenance

Item	Action
Fan Filters	<p>When the unit displays “Check filters”. This is a reminder to ensure that the filters are not so dirty that they are blocking the airflow or allowing dirt to pass through. The rate at which the filters become dirty will vary hugely depending on the environment and the activity within the property.</p> <ol style="list-style-type: none"> <li>1. Open the filter flaps and remove the 2 filters.</li> <li>2. Clean gently by tapping or carefully using a vacuum cleaner if necessary.</li> <li>3. Replace the filters</li> <li>4. Close the filter flaps.</li> <li>5. Reset the automatic message, press and hold the  and  buttons for 5 seconds.</li> </ol>

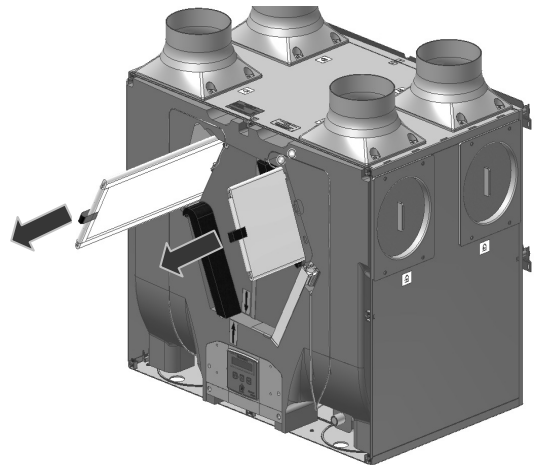
### 12 Monthly Maintenance

Item	Action
Fan Filters (Interval to suit environment)	<p>Change the Fan Filters depending on which environment the unit has been installed; urban, suburban or rural.</p> <ol style="list-style-type: none"> <li>1. Open the filter flaps and remove the 2 filters.</li> <li>2. Insert the replacement filters.</li> <li>3. Close the filter flaps.</li> <li>4. Reset the automatic message, press and hold the  and  buttons for 5 seconds.</li> </ol>
Unit & Heat Exchanger Cell	<p>Inspect and clean the unit</p> <ol style="list-style-type: none"> <li>1. Isolate the mains power supply.</li> <li>2. Remove front cover from the unit.</li> <li>3. Remove the 2 filters.</li> <li>4. Slide out the heat exchanger. <i>For Sentinel Kinetic Plus CVP refer to pages 41 and 42.</i></li> <li>5. Wash the outer cover and heat exchanger in warm water using a mild detergent (such as Milton Fluid) and dry thoroughly.</li> </ol> <p><b>NOTE: Keep water away from all electrical components and wiring within the unit.</b></p>
Motors	<p>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.</p>
Condensate Drain	<p>Check the condensate drain tube is secure and clear of debris. Clean if necessary.</p>
Fastenings	<p>Check that all unit and wall-mount fastenings are sufficiently tight and have not become loose. Re-tighten if necessary.</p>

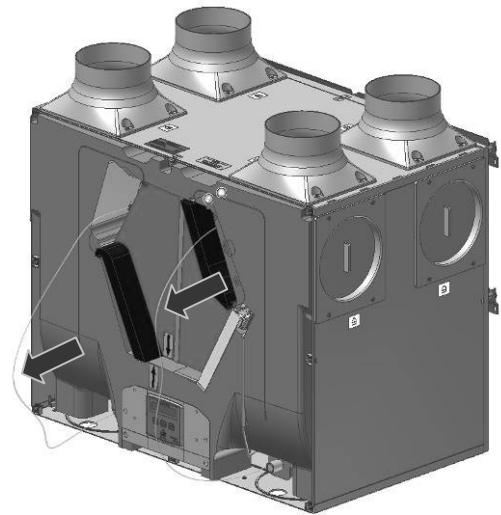


## Heat Exchanger Removal Instruction for CVP Unit

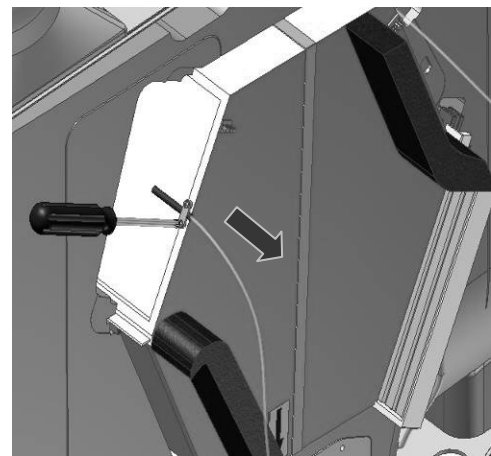
1. Remove the 8 screws and detach the front cover and then pull out both filters.



2. Remove both pressure tubes from their channels and let them remain suspended in the air as shown opposite.

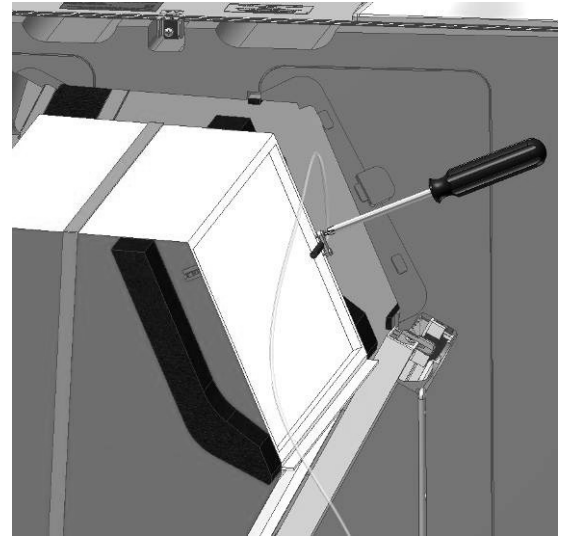


3. Pull out the Heat Exchanger Cell to gain access to the 2 screws on the cell as shown opposite. Loosen up the both screws (no need to remove them completely) to be able to remove the pressure tube and its rubber grommet strip.



4. Pull out the cell and make sure that the rear bottom of the cell is securely resting on the lower edge of the foam so you can access the rear pressure tube. Repeat step 3 to detach the rear pressure tube. When the rear pressure tube is removed then the cell is free to clean.

**Once the cell is cleaned then attach the pressure tubes in reverse order starting from step 4 to 1. Do not over tighten the screws for securing clips. The clips should just slightly grip the rubber grommet strips as over tightening of the clips can block the air pressure.**

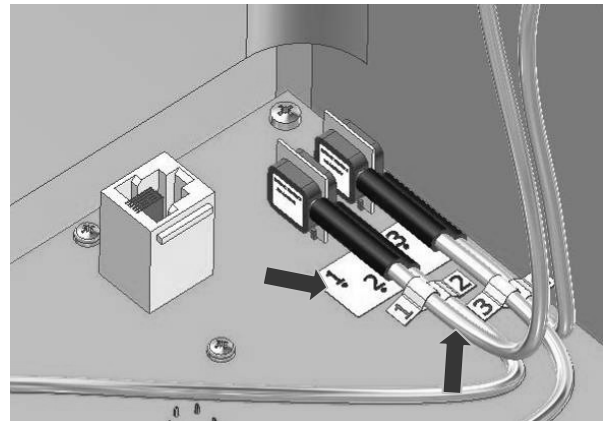


### Sentinel Kinetic Plus CVP Control, Microbore tube connection to PCB

Sentinel Kinetic Plus CVP control PCB includes two pressure sensors with Microbore tubes (pressure tubes) connected to them. A pressure port identification label is used adjacent to the pressure sensors with dots and numbers 1 to 4 representing the pressure ports and labels 1 to 4 on the Microbore tubes.

Note:

Wrong connection of the Microbore tubes will cause failure in constant volume operation.



## Spares

The following spares may be ordered from Vent-Axia:

Part No	Description
441768	Main Power Board
441767	Control Panel
443430	Temperature Sensor T1 (Extract air from room)
443431	Temperature Sensor T2 (Supply air from outside)
<b>SENTINEL KINETIC SPARES</b>	
441774	Filters, 2 per pack (bypass version 438222 & 438222A)
442356	Filters, 2 per pack (non bypass version 438242 & 438242A)
441764	Heat Recovery Cell (bypass version 438222 & 438222A)
441996	Heat Recovery Cell (non bypass version 438242 & 438242A)
441759	Supply Motor
441760	Exhaust Motor
441776	Summer Bypass
438378	Spigot, one per pack
<b>SENTINEL KINETIC PLUS SPARES</b>	
443351	Filters, 2 per pack
443352	Heat Recovery Cell
443353	Supply Motor
443354	Extract Motor
443355	Summer Bypass
444057	Spigot diameter 150 mm, one per pack
446523	Spigot diameter 180 mm, one per pack, complete with foam adaptor to make 200mm spigot.
<b>SENTINEL KINETIC PLUS CVP SPARES</b>	
447206	Heat Recovery Cell
447207	Control Panel

## 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**  
01293nnnnnn

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**  
01

The Fault Code screen is displayed when the Constant Volume stops working.

**CV Control Switched Off**

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 4: Fault Codes

Code	Problem
01	Supply Fan not running
02	Extract Fan not running
04	Control PCB 24 V fuse (FS1) failure
08	Temperature sensor T1 (supply) faulty
16	Temperature sensor T2 (extract) faulty
32	Wired Remote Control failure
CV Control Switched Off	This can be caused by either a trapped pressure tube/s or faulty sensors.

## Room Too Cold Screen

The Room Too Cold screen displays the status of the fan. If the heating system in the building fails or is switched off and the internal temperature drops below 5°C, the unit will stop running so as to not bring cold air into an already cold house. The unit will start up every hour and will run for a short time to measure the temperature of the property. When the temperature rises, e.g. the heating system is switched back on, the unit will restart and continue normal operation.


Bottom line of display may be ( **Fan Off, Fan Restarting**).

**Room Too Cold  
Fan Off**

Note: Access to the commissioning screens is prevented if the display shows **Antifrost Active, Room Too Cold** or a **Fault Code**. In this event, switch the unit off and on again and enter the commissioning screens within one minute. If you are within the commissioning screens the Antifrost and Room Too Cold Failures modes will not operate allowing the flow rates to be adjusted even in a property which is below 5C.

## Appendix One: Control Mode 02 Description

### Overview

The functional differences described in this Appendix are available when Control Mode 02 is selected from the start-up screens. Control Mode 02 assigns alternative functions to certain wiring Terminal Connections and allows additional airflow settings to be accessed via the  button on the front of the Kinetic unit or remote control.

### Terminal Connections and Functions


The following switching Functions are available with Control Mode 02:




Terminal No.	Name	Description (Control Mode 02)
S/W1	Switch 1	With link fitted to J4 – Volt- free switch – Low Mode
S/W2	Switch 2	With link fitted to J4 – Volt- free switch – Normal Mode
S/W3	Switch 3	With link fitted to J4 – Volt- free switch – Boost Mode
S/W4	Switch 4	Volt-free contact for sensor input between + and – terminals (Momentary if SW/4 if SW4 Commissioning Screen set On) With Vent-Wise PCB fitted to J4 - enables Vent-Wise momentary switch input
S/W5	Switch 5	Fire System or SW/5 open Stop
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	Red 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 <i>Service/Fault Code Screens</i> on page 44).
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	Switched Live	220-240 V AC, 50 Hz input

**N.B** If control mode 02 is selected then S/W5 must have a link connecting the + and – terminals or a normally closed device such as a fire system.


## Airflow Mode Selection

The following switching Functions are available via the  button with Control Mode 02:

No. of presses	Airflow Mode (Control Mode 02)
1	Low
2	Normal
3	Boosts 30 minutes
4	Boosts 60 minutes
5	Boosts continuously
6	Cancel

Press  10 seconds after last press to cancel and return to normal operation.

If the wireless boost option is fitted, this can be triggered from the wireless transmitter/boost switch.

If the installation has switch sensors, is wired to the lighting, has Vent-Wise sensors, Vent-Wise momentary switch 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.

s4 = Switch SW4

v1 = Vent-Wise Input S/W1


v2 = Vent-Wise Input S/W2

v3 = Vent-Wise Input S/W3

ls = Switched live (LS)

w1-4 = Wireless controller

c1-3 = Internal Time switch

If running on boost due to pressing the  button, another device may '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.

### Appendix Two: Options and Accessories

#### CO<sub>2</sub> Sensor

An optional wall-mounted CO<sub>2</sub> Sensor (433257) may be used to control airflow. The CO<sub>2</sub> sensor measures the CO<sub>2</sub> level in ppm (parts per million) and the unit adjusts the fan speed accordingly. When the CO<sub>2</sub> level is below the lower threshold (adjustable), the fan will run at Normal speed. When the CO<sub>2</sub> level is above the upper threshold (also adjustable), the fan will run at Boost speed. If the CO<sub>2</sub> 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<sub>2</sub> 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.

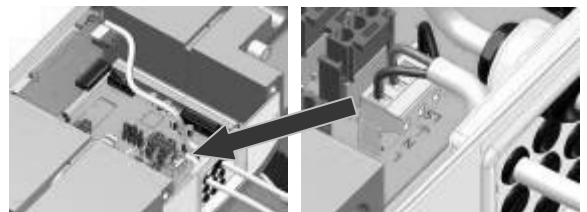
#### Humidistats

An 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 night time 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.

#### Connecting a System Cooker Hood

A system cooker hood that has a Switched Live output to trigger the unit from normal to cooker hood boost can be connected as follows. The cooker hood must be double insulated.

1. Remove a blind grommet from the Cable Inlet plate and insert the 3 core cable from Cooker hood.
2. Connect the 3 wires to the terminal block marked J12  
Brown = L  
Grey = N  
Black = LS



#### Connecting an opto-coupler (447340)

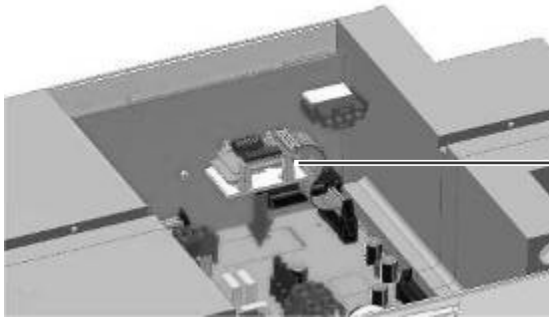
The LED terminals are intended to drive a remote LED to indicate that a fault has occurred. They provide a 5 V LED driving signal output between the + and – terminals that enables remote indication of a unit fault. See the Control Panel for fault code (Refer to installation and commissioning guide listed above). This signal could also be used by a BMS system so that it is informed that a fault has occurred. If a volt-free contact is required then use this opto-coupler to provide electrical separation.

Connect the flying leads of the opto-coupler pcb into the LED terminals, + to + and - to -  
Connect the pair of leads from the BMS to the terminal block of the opto-coupler pcb. Polarity does not matter here.



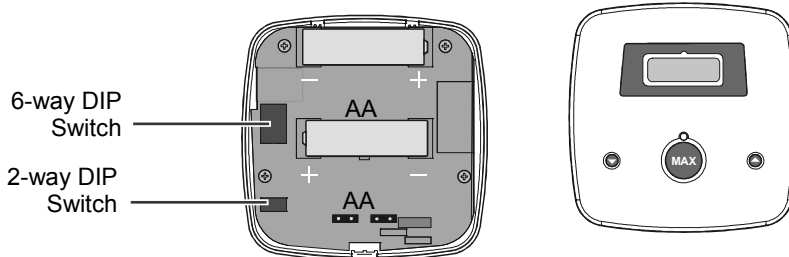
### Wireless Enable Kit (consists of Wireless Receiver and one Wireless Switch) (441865)

1. To fit the Wireless Receiver remove the Front, Rear and Bottom Case panels, insert the ribbon cable plug into terminal J9 and fit the Receiver assembly to the main PCB with the double sided pads provided.



Wireless Receiver

2. Open the Wireless Switch by inserting a flat bladed screwdriver into the slot at the bottom and fit two AA batteries to the transmitter, removing any plastic tabs between battery and terminal.



3. Ensure that the system address, set by the 6-way DIP switch on the Wireless Switch PCB matches that on the Wireless Receiver PCB. For multiple systems in close proximity to each other, the system addresses need to be different. The Wireless Switch PCBs also have a 2-way DIP switch to set the transmitter address. Up to four Wireless Switch's can be used to control any one unit. The Wireless Switch address needs to be different for each Switch in a system.
4. 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 LED light above the MAX button will illuminate 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 v 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.
5. Purge Feature: Pressing and holding the MAX button for more than 5 seconds will send a signal telling the unit to run at Purge speed for 2 hours.

## Wired Remote Control (443283)



1. The Wired Remote Control uses 15 metre long cable and has the same functionality as the control mounted on the unit, it can be permanently mounted in a living space for the end user or used for commissioning the unit.
2. To fit the Wired Remote Control remove the Front, Rear and Electrical covers, using the cable assembly supplied insert the RJ11 plug into the socket marked BMS and feed the remaining cable through cable inlet plate, refit all covers.



3. Connect the cable assembly (4 wires numbered 1 to 4) to the Remote Control terminal block and mount onto a single gang recessed wall box with the 2 screws provided. The Wired Remote Control will automatically be detected.



## Isolator Relay Controller (442030)

The isolating relay controller allows several LS signals to be combined from independent circuits. For instance, from lighting circuits on different floor levels.



## The **Vent-Axia** Guarantee

Applicable only to products installed and used in the United Kingdom. For details of guarantee outside the United Kingdom contact your local supplier.

Vent-Axia guarantees its products for two years from date of purchase against faulty material or workmanship. In the event of any part being found to be defective, the product will be repaired, or at the Company's option replaced, without charge, provided that the product:-

- Has been installed and used in accordance with the instructions given with each unit.
- Has not been connected to an unsuitable electricity supply. (The correct electricity supply voltage is shown on the product rating label attached to the unit).
- Has not been subjected to misuse, neglect or damage.
- Has not been modified or repaired by any person not authorised by the company.

### IF CLAIMING UNDER TERMS OF GUARANTEE

Please return the complete product, carriage paid to your original supplier or nearest Vent-Axia Centre, by post or personal visit. Please ensure that it is adequately packed and accompanied by a letter clearly marked "Guarantee Claim" stating the nature of the fault and providing evidence of date and source of purchase.

The guarantee is offered to you as an extra benefit, and does not effect your legal rights

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