SmartVent balance

HOME VENTILATION SYSTEMS

better air = better health

User Manual

Your guide to a healthier home

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE USING THE UNIT.

1. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.
2. Do not attempt to remove the covers of this unit. High Voltage is present in this unit.

NEW PROPERTY FILTER MAINTENANCE

When fitted to a new build property the supply and exhaust filters should be checked at one month intervals for the first six months.

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

SmartVent Balance BAL225 and BAL405

The **SmartVent Balance** range includes heat recovery units designed for the energy efficient ventilation of houses and similar dwellings.

The units are designed for continuous 24 hour exhaust ventilation of stale moist air from your home. 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.

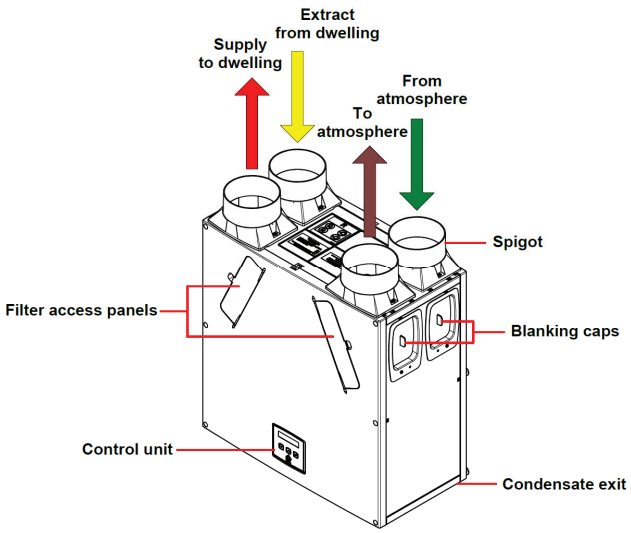


Fig 1: SmartVent Balance BAL225

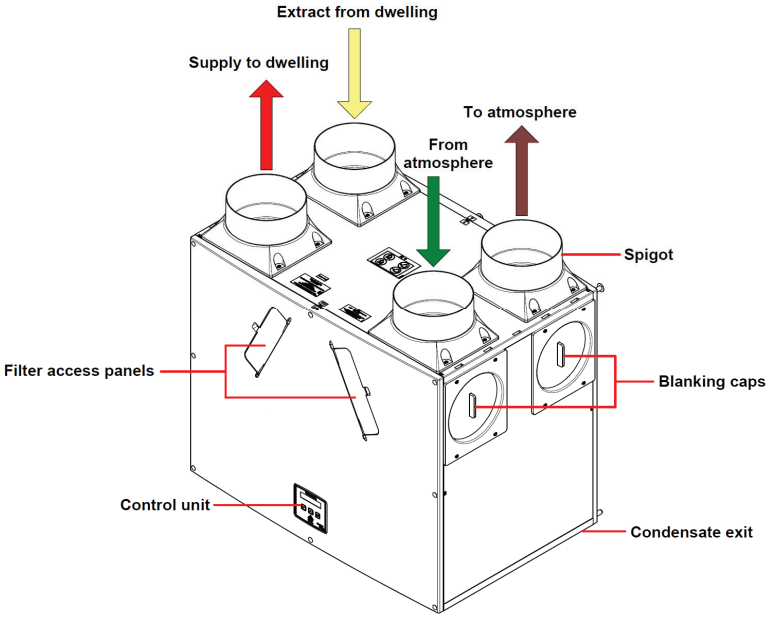


Fig 2: SmartVent Balance BAL405

Control Unit Display

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

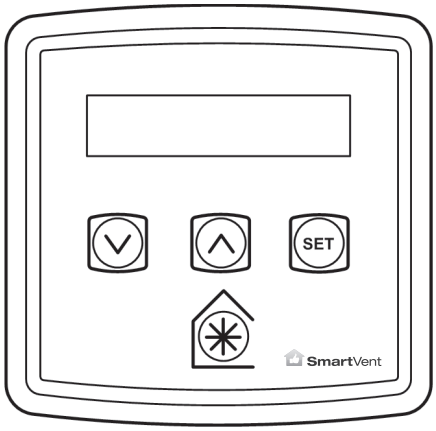
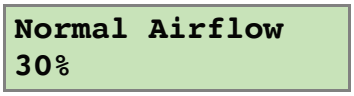


Figure 3: Control Unit

Display

The main display is an LCD with automatic backlight, which is turned off to minimise power consumption when the unit is operational *(see Overview on page 6)*.



Buttons

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

Table 1: 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.
v	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. 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 Press and hold for 5 seconds to activate Purge mode. (Press and hold for 5 seconds to cancel Purge).

Technical Specifications

Performance	BAL225	BAL405
Airflow	**Maximum, FID, 290 m3/h**	**Maximum, FID, 500 m3/h**
	Low default 20%	**Low** default 20%
	Normal default 30%	**Normal** default 30%
	Boost default 50%	**Boost** default 50%
	Purge 100%	**Purge** 100%
Sound Levels	20 dB(A) (normal)	24 dB(A) (normal)
(@ 3 m)	36 dB(A) (boost)	34 dB(A) (boost)
Power		
AC Voltage Input	220-240V AC (single phase)	
AC Frequency Input	50Hz nominal	
Supply Fuse	3A (located in fused spur)	
Product Fuse	2A (located on main PCB)	
Rated Power	150W (max.)	190W (max.)
Physical		
Height (excluding spigots)	550 mm	630 mm
Width (excluding spigots)	550 mm	775 mm
Depth	285 mm	524 mm including filter flap hinge protrusion
Weight	15 kg	24 kg
Spigot diameter	125 mm	150 mm
Condensate pipe diameter	22 mm	
Environmental		
IP Rating	IP22	
Operating Temperature	-20°C to +45°C	
Air Intake Temperature	As above	
Operating Humidity	0% to 95% RH	
Storage Temperature	-20°C to +45°C	
Storage Humidity	0% to 95% RH	
Software Version	V39	

Powering Up the Unit

Switching On (The unit is designed to run continuously)

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.

Switching Off

To switch the unit off: at the unit's local isolator, turn the power off.

Startup Screens

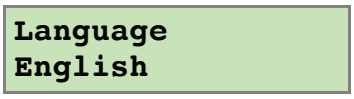
SmartVent Balance Version Screen

The SmartVent Balance Version screen displays the firmware version number for 3 seconds.

No adjustments are possible on this screen.

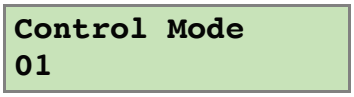
Language Screen

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



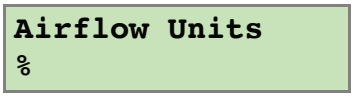
Control Mode Screen

Control Mode 01 operation is described herein. Control Mode 02 is not supported in this model.



Airflow Units Screen

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



Wireless Control Screen

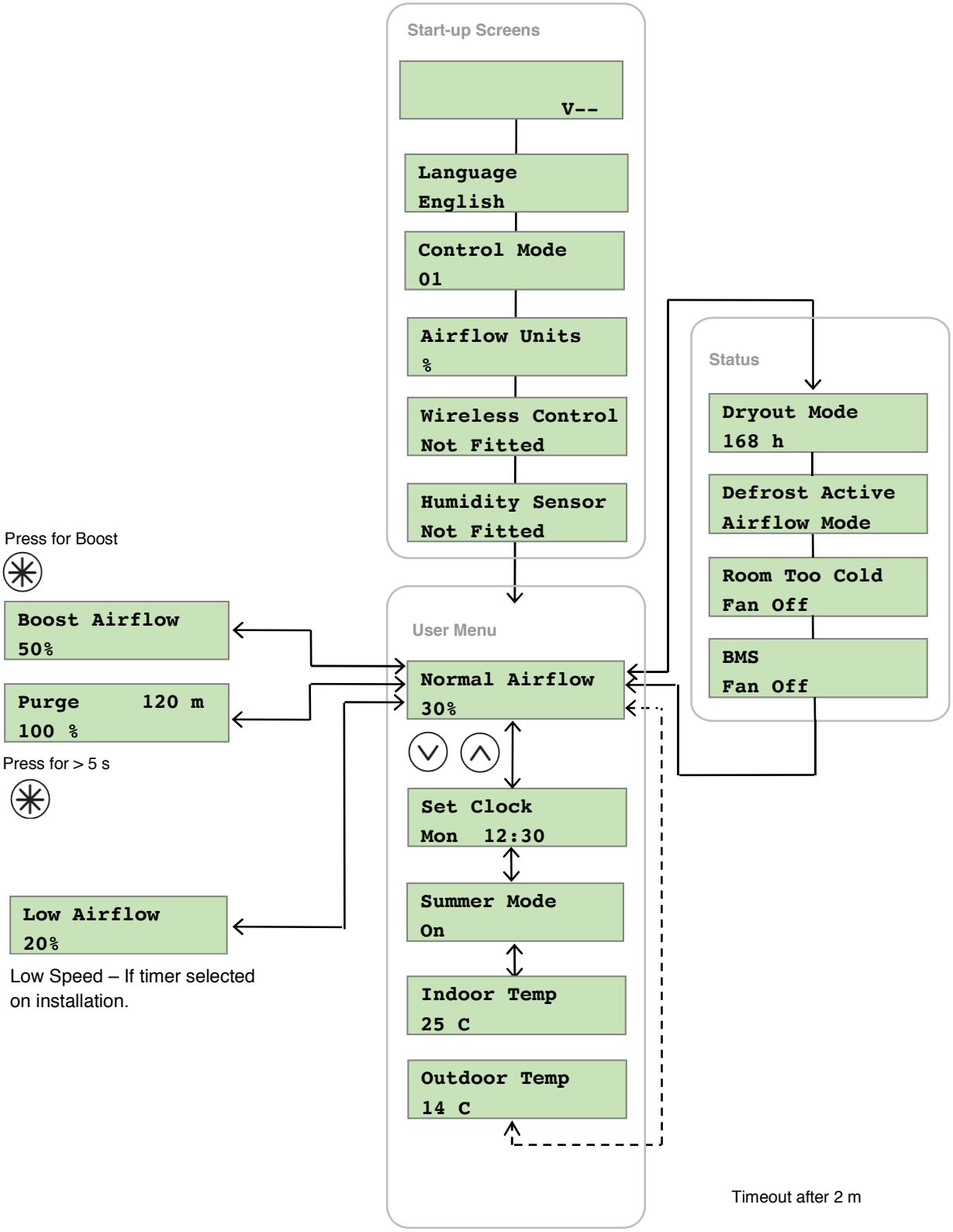
The Wireless Control screen automatically displays whether the wireless boost control switch is fitted. It is typically displayed for 3 seconds.

Humidity Sensor Screen

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

Overview

When your SmartVent Balance unit has been installed and commissioned it should require no further intervention in order to operate, unless external switches are used to control on/off/boost, etc, or BMS control requires user action.



User Menu Screens

From the Normal Airflow screen, press the ⌄ button to access the rest of the User Menu screens.

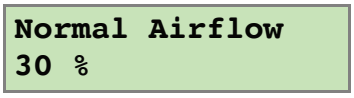
Changing the value of a setting (if adjustable) is typically a 3-step procedure:

1. Press SET to select the setting (the setting will flash).
2. Use the ⌃ or ⌄ buttons to adjust the value. To scroll quickly, press and hold the ⌃ or ⌄ buttons for more than 2 seconds.
3. Press SET again to enter the new settings and move to the next screen.

To return to the Normal Airflow screen, press the ⌃ button repeatedly or press and hold the ⌃ button for 5 seconds. Alternatively, the Normal Airflow screen will be restored if no buttons are pressed for two minutes (timeout). Settings are stored in a the memory and will be retained in the event of mains power supply failure.

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 %).

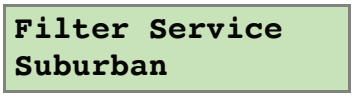


The Normal screen displays the rate of normal airflow (supply air) through the unit.

If the installation has proportional sensors or an internal humidity sensor fitted, and any of these are boosting the airflow, an α symbol will be displayed.

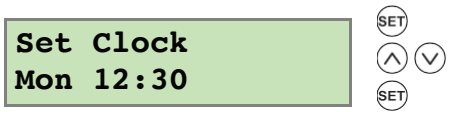
When the summer bypass is active, the normal screen top line will alternate (for 3 seconds) with Summer Bypass.

An interval can be set, (see page 39) of the Installation Manual, at which the unit reminds the user to check the filters. This will be 6, 12 or 18 months. The normal screen top line will include Check Filter as a reminder to check and, if necessary, clean or replace the filters.



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

Set Clock Screen



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

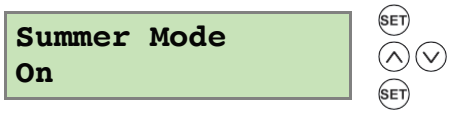
The Set Clock Control screen enables you to change the clock settings. The clock retains its settings for approximately two weeks without mains power, after which it will need resetting when power is reconnected

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.

Summer Mode Screen



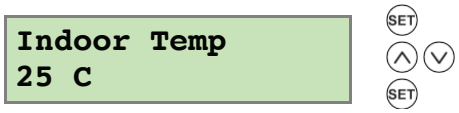
From the Set Clock screen, simply press the ⌄ button twice to access the Summer Mode screen.

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.

Indoor Temp Screen



From the Summer Mode screen, simply press the ⌄ button 3 times 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.

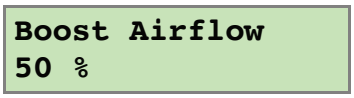
Selectable range is **16-40** (**25** default).

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

Boost, Purge and Low Airflow Screens

Boost Screen

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



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

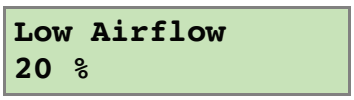
Purge Screen

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

Low Airflow Screen

Low Airflow mode is activated when the Normal Airflow is set to **Off**, (see page 27 in the Installation Manual for set up details).



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

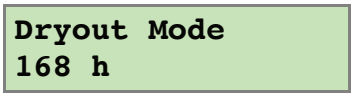
Status Message Screens

The status message screens override the Normal Airflow and other user screens, and display status and key operational conditions (temperatures or pressures, etc.) according to how the unit has been configured. If there is more than one status item to be displayed, the highest priority message is shown.

These screens are displayed in a loop during normal operation of the unit, either after displaying the start-up screens, or when commissioning has been completed. After a few seconds the display backlight is turned off in order to minimise power consumption. The ⌃ and ⌄ buttons can be used to stop the loop sequence in order to display individual screens for a longer period with the backlight turned on, if required.

Dryout Mode Screen

The Dryout Mode screen displays the time remaining for the building to dry out. The unit runs at maximum flow for 1 week.



Defrost Active Screen

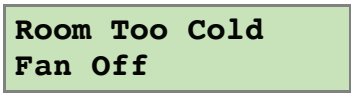
Available options: **Airflow Mode** (default) and **Bypass Mode**.

In installations where a negative pressure is not permitted during antifrost operation, set this to bypass mode.

Airflow Mode - When the supply air temperature is between 0°C 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 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.

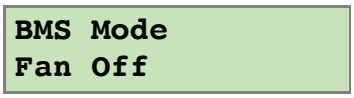
Room Too Cold Screen



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, (eg. 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**).

BMS Screen



The BMS screen shows if a Fan Off command has been received from a Building Management System (BMS), if used.

A **Fan Off** command could be received from the BMS in the event of a fire alarm.

Summer By Pass

SmartVent Balance systems are fitted with a Summer By Pass (SBP) and will provide energy-free cooling when the house temperature and ambient temperature allows.

Note that the volume of air provided by this ventilation system is a fraction of that required for space heating or space cooling and will not in itself be sufficient to cool a room. It will however, provide a contribution and make a difference.

There are three operating modes, Normal, Evening Purge and Night-time purge.

Normal Mode

Air flow rate is determined by sensors, boost and timing settings, otherwise is normal rate.

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.

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.

Evening Purge Mode

Intended for use as the outdoor temperature cools in the evening, but reverts to normal control after a set time so that any increase in noise is avoided overnight.

Air flow rate is always at boost.

The bypass closes and the purge stops if the temperature conditions described in Standard Mode are no longer met or 5 hours after the bypass opened.

Night-time Purge Mode

Intended for use as the outdoor temperature cools in the evening and continues through the night when cooling is a higher priority than any increase of noise. Note that the air noise in your system is influenced by the ducting design and layout and the size and type of vents used in the rooms. If improvements are required speak to your installer.

Air flow rate is boost.

The bypass closes and the purge stops if the temperature conditions described in Standard Mode are no longer met.

Caring for the Unit

Heat recovery units, by their very nature, require regular maintenance. SmartVent Balance systems have been designed to facilitate access to enable maintenance to be carried out easily.

Filter Maintenance

Item	Action
Fan Filters	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. 1. Open the filter flaps and remove the 2 filters. 2. Clean gently by tapping or carefully using a vacuum cleaner if necessary. 3. Replace the filters 4. Close the filter flaps. 5. Replace the inline supply air cartridge filter (visit: *www.smartvent.co.nz/filter-replacements* for instructional video) 6. Reset the automatic message, press and hold the ⌃ and ⌄ buttons for 5 seconds.

12 Monthly Maintenance

Item	Action
Fan Filters (Interval to suit environment)	Change the Fan Filters depending on which environment the unit has been installed; urban, suburban or rural. 1. Open the filter flaps and remove the 2 filters. 2. Insert the replacement filters. 3. Close the filter flaps. 4. Reset the automatic message, press and hold the ⌃ and ⌄ buttons for 5 seconds.
Unit & Heat Exchanger Cell	Inspect and clean the unit **1. Isolate the mains power supply.** 2. Remove front cover from the unit. 3. Remove the 2 filters. 4. Slide out the heat exchanger. 5. Wash the outer cover and heat exchanger in warm water using a mild detergent 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

Part No	Description	Part No	Description
BAL225 SPARES		**BAL405 SPARES**	
DCT2093	F7 Filter replacement	DCT2093	F7 Filter replacement
DCT2277	F7 Carbon	DCT2277	F7 Carbon
DCT2287	HEPA Carbon	DCT2287	HEPA Carbon
DCT4338	G3 Filters, 2 per pack	DCT2573	G3 Filters, 2 per pack

Troubleshooting

Diagnosing a Problem

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

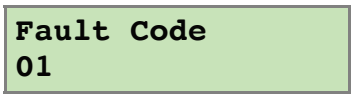
- **Fault code** displayed on the Control Unit or Remote Wired Control.

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 when a fault has caused the unit to switch off and you must phone 09 259 1662 for assistance.

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.



For assistance contact SmartVent 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 2: 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

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