



UNRIVALLED PERFORMANCE

in Heat Recovery Ventilation



Installation, maintenance & user manual

Applicable to the following aircycle 4.1 models:

PRODUCT CODE	DESCRIPTION
AS 90-0401-WIN-01	aircycle 4.1 c/w Integral Humidistat - Wall Mount
AS 90-0401-WINS-01	aircycle 4.1 c/w Integral Humidistat & Summer Bypass - Wall Mount
AS 90-0401-FIN-01	aircycle 4.1 c/w Integral Humidistat - Floor Mount
AS 90-0401-FINS-01	aircycle 4.1 c/w Integral Humidistat & Summer Bypass - Floor Mount

CONTENTS

PLEASE KEEP THESE INSTRUCTIONS WITH THE PRODUCT.
Please read this manual fully prior to installing the MVHR unit.

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IMPORTANT

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.

1.0 Introduction

The Brookvent aircycle 4.1 is a highly efficient Mechanical Heat Recovery Ventilation (HRV/MHRV) system, specifically designed for medium to large dwellings and apartments.

The system should be run continuously 24 hours a day, and should only be disconnected by a competent person during service or maintenance.

Heat Recovery ventilation works best in new homes, which are extremely airtight and have high efficiency ratings. These dwellings require a high level of fresh air to ensure a healthy living environment.

The system works by drawing stale air from 'wet rooms' such as Bathrooms, WC's and Kitchens, recovering up to 93% of the heat from this air using a highly efficient heat exchanger, before expelling waste air from the home. Simultaneously, fresh air is drawn into the home, filtered and warmed by the recovered heat and is supplied into the 'habitable rooms' such as bedrooms, dining rooms and living rooms.

1.1 Model Variations

This installation manual refers to the Brookvent aircycle 4.1 and pertains to the following models:

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1.2 Product Guarantee

This product is guaranteed against defects for a period of 5 years from date of purchase with the first year covering parts and labour and the remaining 4 years covering parts only.

In the instance of a defect, Brookvent may repair the product, replace the product free of charge or refund the cost of the product at Brookvent's own discretion. In terms of installation, operation and maintenance please follow all instructions provided. If this product has been misused, not properly installed, not properly maintained or handled carelessly it may lead to this guarantee being declared void.

Brookvent does not accept liability for damage caused by non-observance of the installation instructions. Service activities must be carried out by Brookvent or by competent installers using original Brookvent parts. This guarantee does not affect your statutory right as a consumer.

Brookvent operate a policy of continuous innovation and improvement and thus reserve the right to alter product specifications and appearances without notice.

2.0 Safety

The following information must be read carefully to ensure safe installation and operation of the Brookvent HRV system.

2.1 General Safety

- Do not use this appliance for functions other than those described in this booklet.
- Never touch the appliance with wet hands.
- The unit is only suitable for 230 VAC/50Hz electric mains.
- Never modify the fan or electronics, all repairs must be conducted by Brookvent.
- Never connect the power if electronics cover is not fitted.
- Do not store flammable products in close proximity to the unit.
- If cleaning/ dusting the external surface, do so with a dry cloth only.
- Isolate power before removing any panels/covers (excluding filters).
- Never remove the heat recovery core while the fans are running. NB. It can take some time for the fans to come to a stop once power has been isolated.

2.2 Responsibility of the Installer

- Correct Installation, balancing and commissioning of the MHRV unit as per the requirements of this document.
- Record measured air flow volumes on each of the valves at high and low rate.
- Compliance to requirements and local additional rules.
- Explanation of the ventilation system to the user.
- Warning for the user, to check or replace the air filters on time.
- All the above, as set out in the latest edition of the Domestic Ventilation Compliance Guide and the SAP Appendix Q – Installation Guide and Checklist specific to the UK market.

2.3 Responsibility of the Occupant

- Replacement of the filters as per the recommended/ required interval.
- Cleaning the valves in the rooms regularly to prevent blockage.
- To ensure that the system is functioning properly on a regular basis
- To use manual boost switches (where provided) to prevent build-up of pollutants or mould growth.

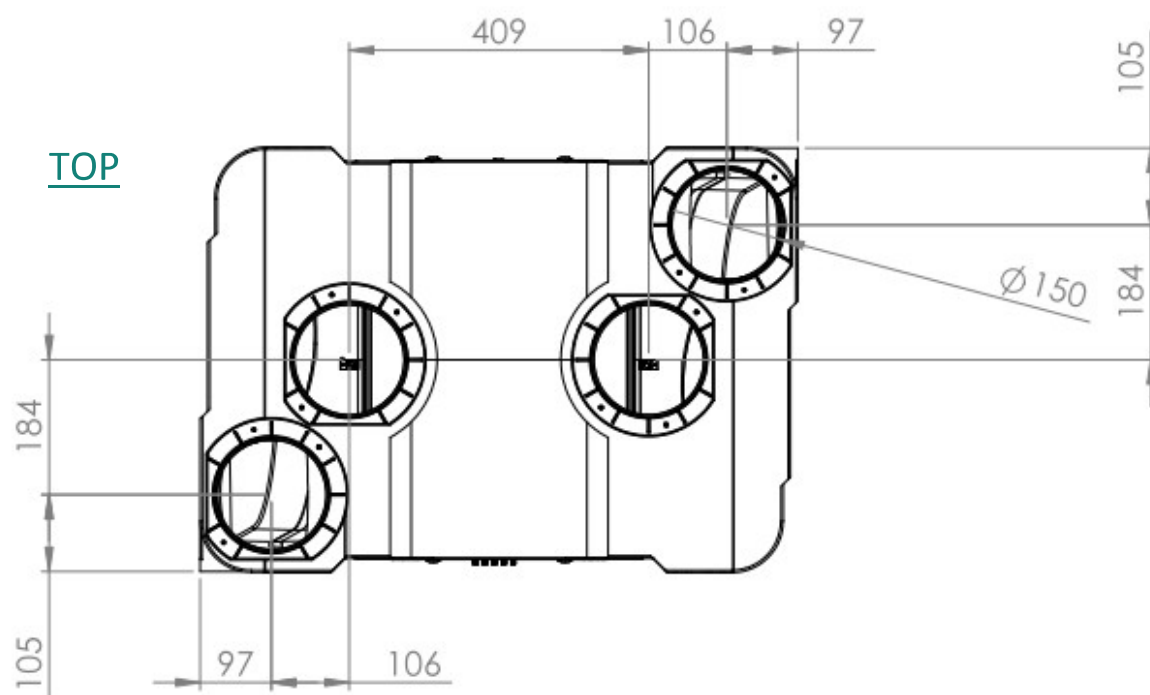
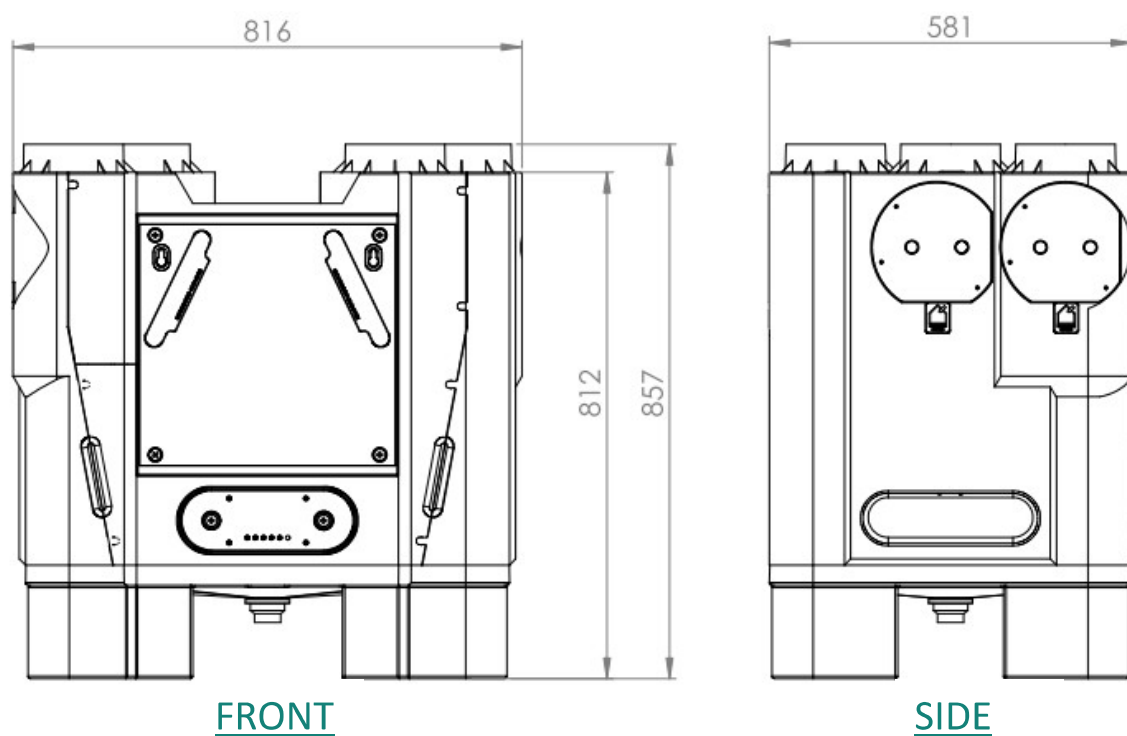
IMPORTANT

Dirty or clogged filters may cause inadequate ventilation in the home which may lead to air quality issues. It is important that the filters are changed at least once per year or as required.

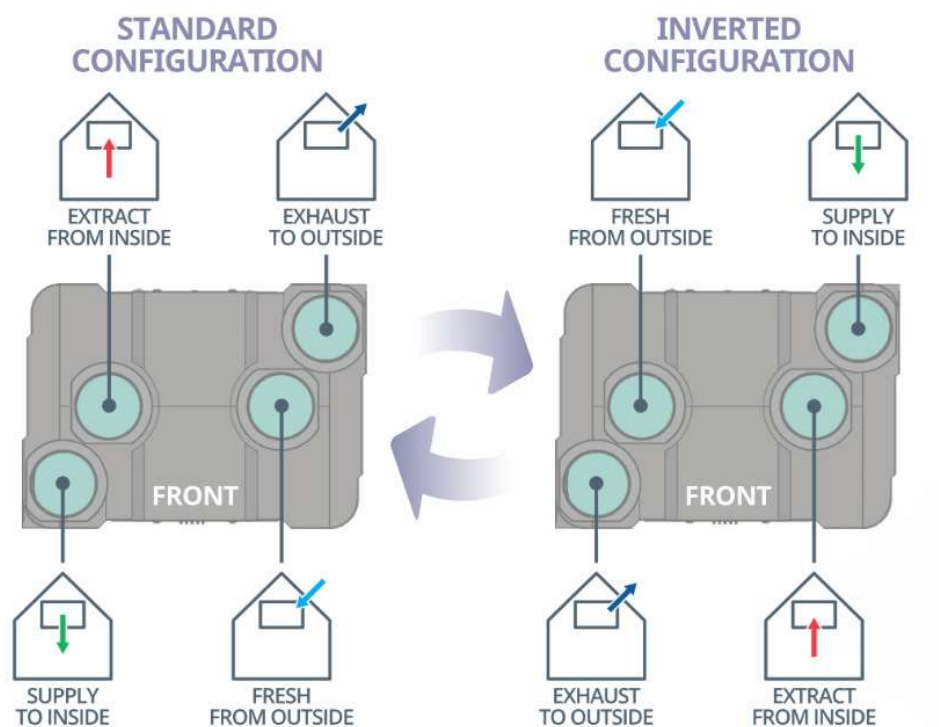
In new build properties it may be prudent to check/ change your filters after the first 3 months of occupancy depending on the amount of residual 'building dust' present within the property. Failure to do so will affect your warranty.

Filters can be purchased directly online from brookvent.co.uk

3.0 Specifications/ Dimensions (mm)



3.1 Duct Connections



3.2 Detailed Specification

Weight: 29kg

Materials:

- Main enclosure: High density, impact resistant EPP (Expanded Polypropylene)
- PCB & control panel enclosure: ABS FR
- Drainage tray: PP
- Filters: Polyester media (G3)
- Filter cover: Rubber
- Mounting Bracket: Zinc Plated Steel
- Fan Scrolls: ABS

Electrical:

- 230v EC Low energy, backward curved centrifugal fans
- PCB c/w potentiometer control
- Supplied complete with 4 core flying lead: (Live: Brown), (Neutral: Blue), (Earth: Yellow & Green), (230v Switched Live (Boost): Grey), (230v Switched Live 2 (Purge): Black)
- Plug and play components for easy maintenance

Controls:

- Independent fan speed control (Trickle and boost settings for each fan)
- Single 230v boost input (Light switch, humidistat, PIR, etc.)
- Boost over-run timer, adjustable between 0 - 15 min.
- In-built humidity sensor (Boost activation) Variable: 60% - 100% RH, factory set: 70%
- Frost protection, factory set at 5 degrees Celsius.
- Summer bypass (Automatic variation between 20 - 27 Degrees Celsius. Optional

Installation: Wall or Floor Mount

Standards:

Fully complies with Building Regulations for UK & Ireland
SAP Appendix Q Listed | Energy Savings Trust Best Practice | CE

Guarantee Period: 5 Years

3.3 SAP Appendix Q Results

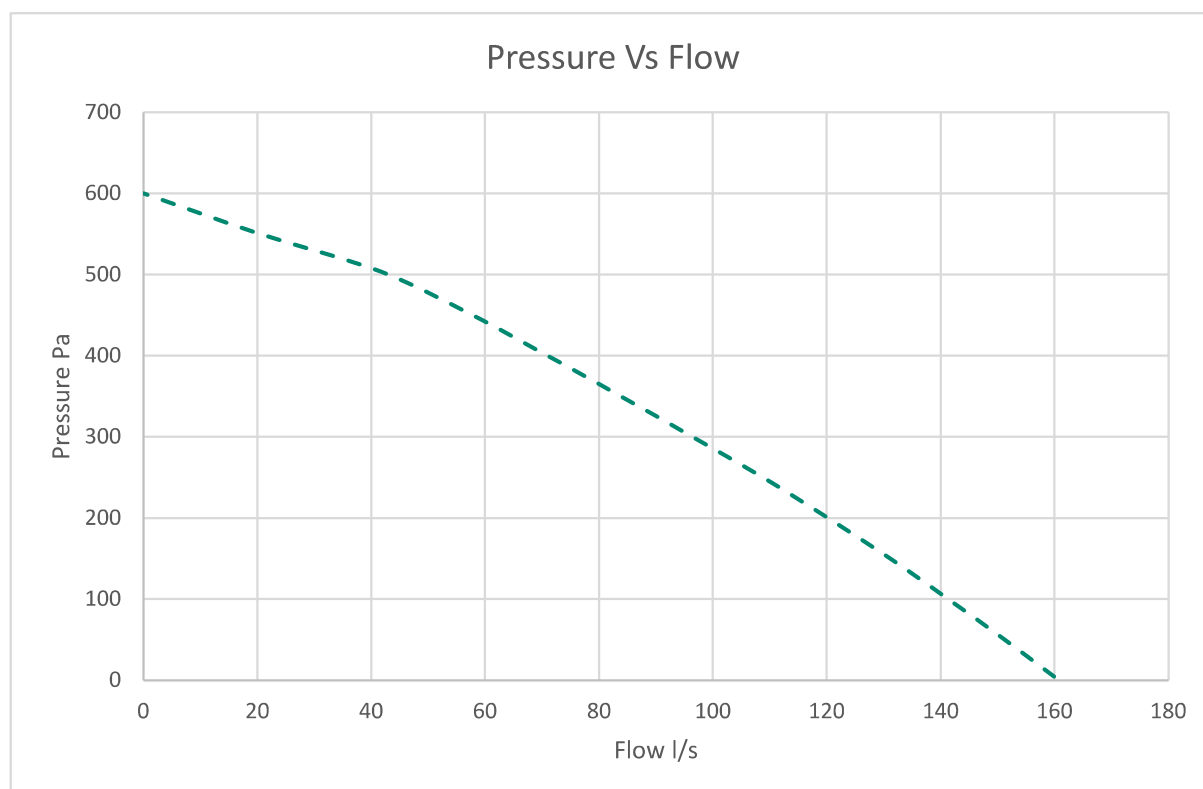
Exhaust Terminal Configuration	Airflow Rate (l/s) 100% Variable	Specific Fan Power (W/l/s)	Heat Exchange Efficiency (%)	Energy Savings Trust Best Practice Compliance
Kitchen + 1 Wet Room	15	0.48	94	YES
Kitchen + 2 Wet Room	21	0.42	93	YES
Kitchen + 3 Wet Room	27	0.41	92	YES
Kitchen + 4 Wet Room	33	0.45	91	YES
Kitchen + 5 Wet Room	39	0.49	90	YES
Kitchen + 6 Wet Room	45	0.56	90	YES
Kitchen + 7 Wet Room	51	0.65	89	YES

SAP 2005 (See SAP - PCDB for further details) <http://www.ncm-pcdb.org.uk/sap/>

Exhaust Terminal Configuration	Airflow Rate (l/s) 100% Variable	Specific Fan Power (W/l/s)	Heat Exchange Efficiency (%)	Energy Savings Trust Best Practice Compliance
Kitchen + 1 Wet Room	21	0.45	93	YES
Kitchen + 2 Wet Room	29	0.45	92	YES
Kitchen + 3 Wet Room	37	0.49	91	YES
Kitchen + 4 Wet Room	45	0.58	90	YES
Kitchen + 5 Wet Room	53	0.67	88	YES
Kitchen + 6 Wet Room	61	0.83	87	YES
Kitchen + 7 Wet Room	69	0.99	86	YES

SAP 2012 (See SAP - PCDB for further details) <http://www.ncm-pcdb.org.uk/sap/>

3.4 Airflow: Pressure/ Performance Curve



3.5 Acoustic Performance

Aircycle 4.1 Acoustic performance												
Airflow %	Measurement	Airflow l/s	Full octave Lw dB								Overall Sound power level (A Weighted)	Db A @3m
			63	125	250	500	1k	2k	4k	8k		
30	Inlet	47	50.0	40.0	36.7	40.8	34.6	20.7	13.5	16.9	40.1	25.6
	Outlet		50.2	29.9	29.8	34.3	27.3	15.3	13.7	17.0	33.9	19.4
	Breakout		48.4	30.2	31.1	32.0	23.0	11.9	12.7	17.5	31.7	14.2
50	Inlet	61	54.5	45.7	48.6	47.1	47.3	36.1	23.0	18.3	49.8	35.3
	Outlet		50.1	31.2	41.5	40.6	34.3	22.7	13.6	16.9	40.4	25.8
	Breakout		48.1	33.0	42.4	38.5	33.0	23.8	15.0	17.0	39.2	21.7
70	Inlet	118	56.3	50.1	50.5	51.4	50.7	46.6	33.9	25.7	54.2	39.7
	Outlet		51.4	34.0	43.8	45.2	37.9	32.2	16.8	17.4	44.5	30.0
	Breakout		48.6	37.5	46.0	43.2	37.9	34.3	21.0	16.5	44.1	26.5
80	Inlet	142	62.2	55.7	52.8	55.8	54.7	52.0	41.7	33.0	58.7	44.2
	Outlet		51.8	38.4	45.8	50.2	42.3	38.2	23.6	19.7	49.2	34.7
	Breakout		48.6	46.5	47.3	50.8	43.0	39.9	28.8	17.8	50.1	32.5
100	Inlet	167	63.6	58.7	54.5	58.9	57.1	54.2	45.9	36.8	61.3	46.8
	Outlet		51.5	49.8	48.0	40.4	50.0	46.7	47.5	48.4	54.8	40.2
	Breakout		48.9	48.7	48.3	53.1	45.2	41.7	32.8	19.5	52.2	34.7

Case Radiated sound at 3m is calculated on Hemi-spherical propagation.

Inlet and outlet sound at 3m is calculated based on uniform line source.

Airflow values shown are plotted from fan curves.

3.6 Acoustic Performance (Incl. Indicative pressure)

Aircycle 4.1 Acoustic performance												
Airflow %	Measurement	Pressure Pa	Full octave Lw dB								Overall Sound power level (A)	Db A @3m
			63	125	250	500	1k	2k	4k	8k		
30	Inlet	40	50.0	40.0	37.4	38.4	31.1	18.0	13.6	16.9	37.9	23.4
	Outlet		51.2	31.2	38.0	32.1	22.7	16.3	15.1	17.1	33.8	19.2
	Breakout		48.3	32.7	35.3	33.5	25.7	17.0	13.0	16.3	33.6	16.1
50	Inlet	100	53.4	47.8	55.1	46.4	40.4	30.4	21.5	18.3	48.9	34.3
	Outlet		51.3	41.7	48.8	42.0	37.1	29.9	29.4	24.7	44.1	29.6
	Breakout		49.4	37.1	49.1	41.8	34.4	29.3	18.9	16.6	43.5	25.9
70	Inlet	200	53.3	51.9	56.2	51.7	47.3	39.7	32.5	30.5	53.0	38.5
	Outlet		51.5	46.6	55.4	52.1	45.7	41.3	39.3	38.1	52.9	38.4
	Breakout		49.2	44.1	50.2	47.3	41.0	37.3	29.8	20.7	47.9	30.4
80	Inlet	200	55.6	54.2	56.4	54.7	50.8	46.0	37.5	33.2	55.9	41.4
	Outlet		52.0	49.1	58.7	52.8	46.1	43.9	41.4	38.6	54.6	40.0
	Breakout		48.6	49.1	55.2	52.4	44.9	40.8	33.2	23.1	52.5	35.0
100	Inlet	300	60.5	57.6	59.3	59.1	53.8	48.8	42.0	38.4	59.5	45.0
	Outlet		52.7	56.6	57.2	52.9	67.2	59.2	64.3	61.1	70.4	55.8
	Breakout		49.1	49.3	55.3	55.2	47.2	43.7	37.5	29.5	54.8	37.2

Case Radiated sound at 3m is calculated on Hemi-spherical propagation.

Inlet and outlet sound at 3m is calculated based on uniform line source.

Airflow values shown are plotted from fan curves.

4.0 Installation

It is important that the full installation of this system is carried out by competent persons, including all electrical works and connections being completed by a qualified electrician. The MVHR unit is designed to be installed indoors, within an attic, storage cupboard, or void space, away from exposure to frost, water, or intense heat. The system should be installed in a ventilated space.

A clear access space is required around the unit; this will ensure ease of installation relating to ductwork, wiring, and the connection of the condensate drain. It is important that filters to the system can also easily be accessed for replacement.

4.1 Mounting

The aircycle 4.1 is designed to be either wall or floor mounted. Please ensure that this method of fixing is suitable for the mounting surface and that it can safely bear the load.

4.1.1 Wall Mount

The unit should be attached to the wall as shown using the wall bracket provided, please ensure the mounting surface can safely bear the load of the unit using suitable screw fixings.

One bracket will be secured to the back of the unit as shown in **Fig. 1**, the second bracket should be secured to the mounting surface as shown in **Fig. 2**. Please ensure the brackets are level. The unit can then be set onto the mounting surface with the lip of each bracket intersecting as shown in **Fig. 3**.

Ensure the system is level when fully mounted.

Fig. 1

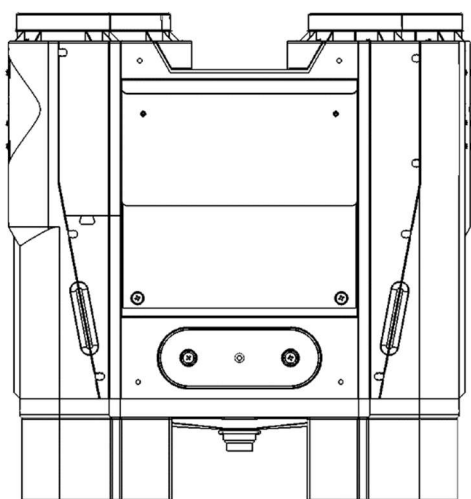


Fig. 2

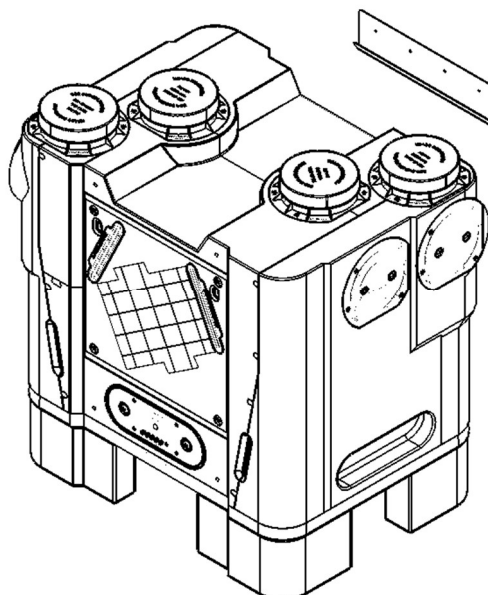
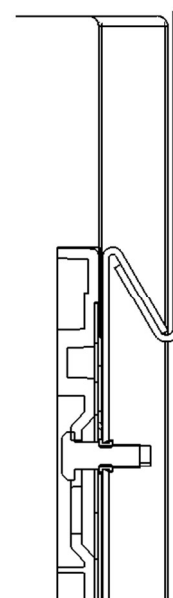
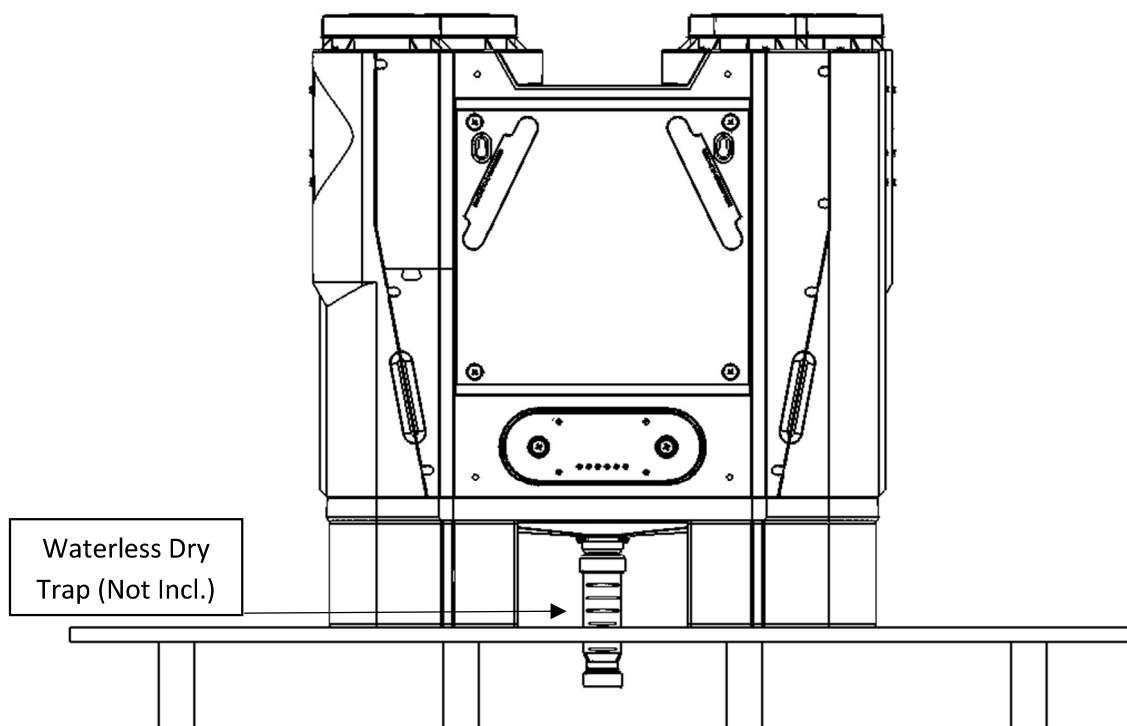


Fig. 3



4.1.2 Floor Mount

The unit should be mounted on the Floor, on a stable, level surface. Ensure the condensate connection at the bottom of the unit can be fitted to allow a minimum 5 degree fall to the internal drainage point.



4.2 Ductwork and Connections

To comply with SAP Appendix Q, and to facilitate the air flow performance, all ducting used should be rigid. If flexible ducting is required, it should be kept to a minimum (maximum length: 300mm) and kept taut as per the Domestic Compliance Guide (Part F: Eng and Wales 201

The spigots on the Brookvent aircycle 4.1 systems are suitable for connection to 150mm diameter round pipe.

The label on top of the unit clearly identifies which spigot should be connected to which ducting route within the dwelling. This is also shown clearly within this manual.

The aircycle 4.1 MVHR system can be inverted on-site, changing the external duct connections from the right to the left of the system as required for specific property types thus minimising ducting runs, system pressure and installation time. Please ensure to follow the inversion steps provided in this manual carefully (see page. 16).

For optimum efficiency and performance, it is recommended that 150mm diameter round pipe is used (where possible) to connect to the spigots and continue throughout the dwelling, this will assist in keeping pressure losses to a minimum. A minimum straight vertical run of 750mm should also be used directly off each spigot (where possible) based on CISBE guidance.

Where it is not possible to continue throughout the dwelling in rigid 150mm diameter round pipe due to the void spaces available, a conversion to rigid 220mm x 90mm flat rectangular ducting is recommended. Reducing further to 125mm diameter round pipe and/or 204mm x 60 flat rectangular ducting is possible when airflow rates have reduced sufficiently.

Connection to semi-rigid ducting via an appropriate air manifold system is also a suitable option.

It is recommended that the number of bends in the ducting system is kept to a minimum.

Each of the external roof terminals / wall terminals must be the equivalent to the open area of 150mm diameter ducting. Brookvent recommend the use of terminals with low pressure resistance.

To facilitate air circulation within the dwelling there must be a minimum of 10mm undercut on each of the doors (to the finished floor) within the dwelling (or grills placed at low level on the doors).

Extract air valves should be placed in all wet rooms (kitchen, utility, en-suite, etc.) and should be sited, where possible, close to the main source of humidity/ pollutant.

Fresh supply air valves should be placed in all habitable rooms (bedroom, living room, dining room, etc.).

Air valves should be locked upon commissioning so that they are tamper proof.

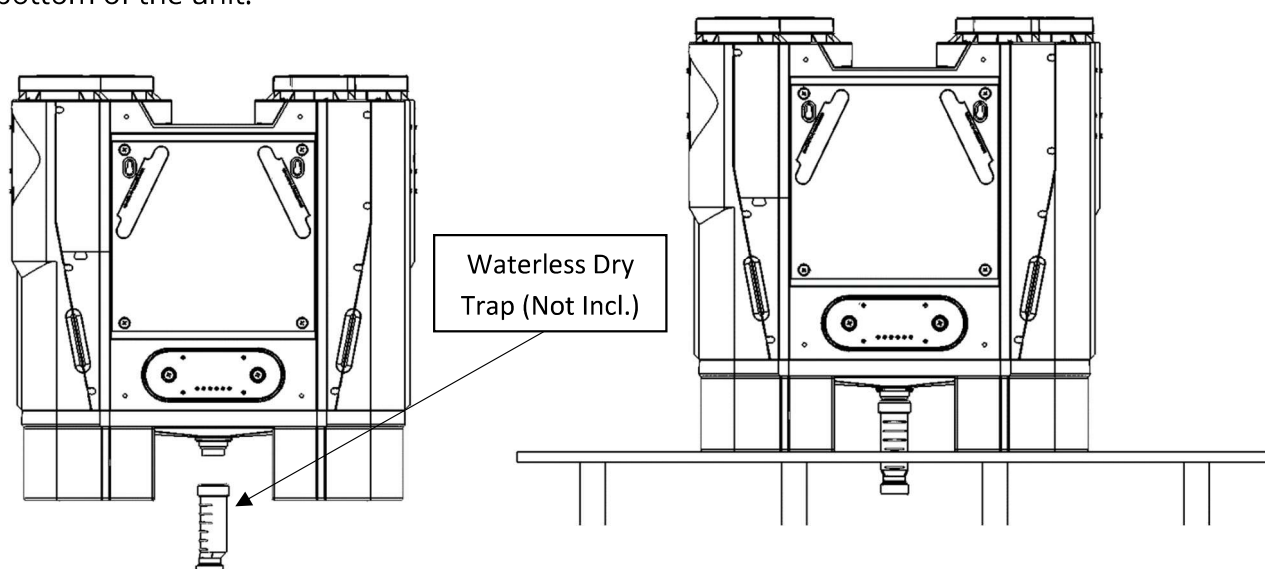
Duct designs/ layouts should always be adhered to if provided.

The Domestic Compliance Guide: Eng. and Wales 2010 or relevant equivalent dependent upon local guidelines, should be adhered to in terms of installation practices.

4.3 Connection of Condensate Drain

MVHR systems generate considerable amounts of moisture due to their high Heat Recovery Efficiency; this moisture must be drained from the system to a suitable discharge location.

The aircycle 4.1 is supplied complete with a centralised drainage connection on the bottom of the unit.



Brookvent recommend the use of a 32mm “Waterless Dry Trap” on HRV systems (as shown above) to prevent the back flow of air into the HRV unit from the waste discharge system.

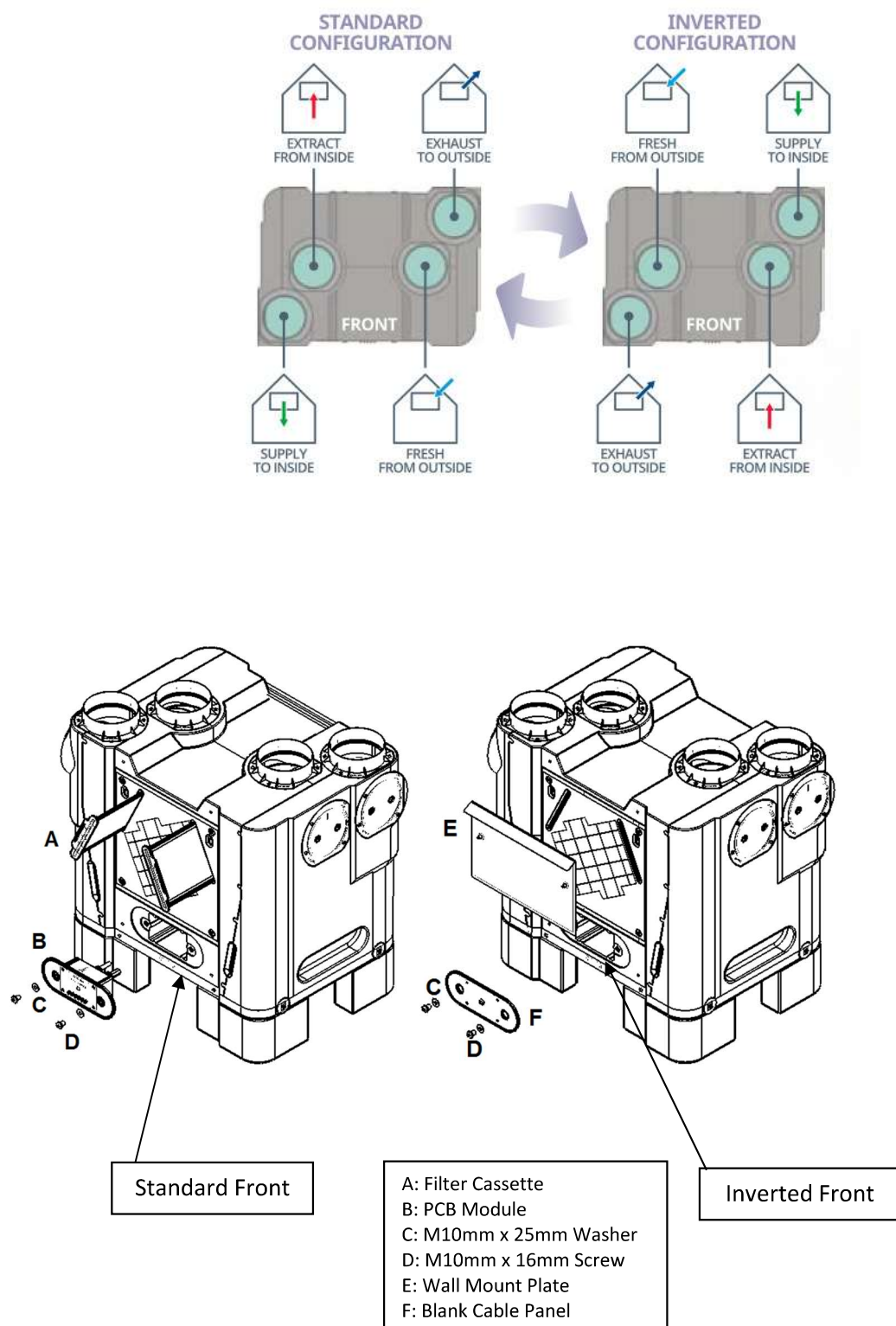
It is imperative that there is a gravitational fall from the unit to the discharge point ensuring that the water drains from the unit. A minimum fall of **5 Degrees** should be ensured throughout. Drainage piping/ connections should be insulated if located in cold roof spaces. NB. Dry trap (Not Incl.) must be fitted with a **10 Degree** fall at that point.

Drainage piping/ connections should be insulated if located in cold roof spaces.

DO NOT connect other condensate pipes from the system or other systems BEFORE the “Waterless Dry Trap”

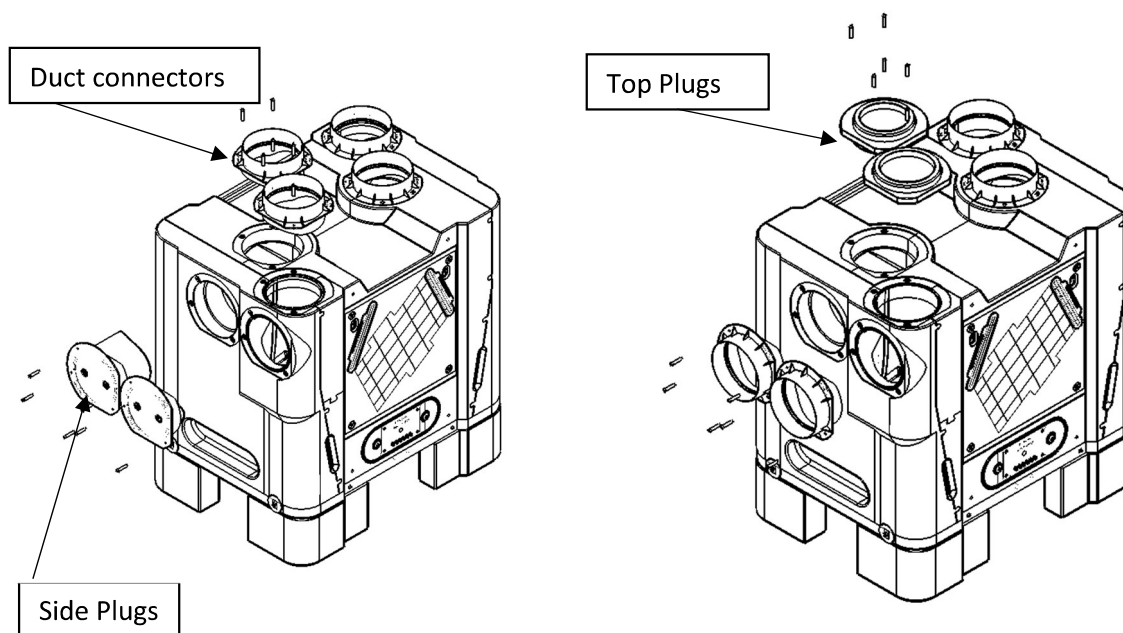
4.4 Inverting the unit

The aircycle 4.1 can be inverted, changing the external duct connections from the right to the left of the system as required for specific property types, where required.



- Step 1.** Isolate the unit from the mains and ensure all supply circuits are disconnected.
- Step 2.** Disconnect the mains from the fused spur.
- Step 2.** Unscrew the two large screws in the front of the control panel and pull out the PCB module (B).
- Step 3.** Unplug all the leads, the connectors are all marked to match up with their corresponding internal connections.
- Step 4.** Pull the mains cable through the unit.
- Step 5.** Remove the filters (A).
- Step 6.** At the face of the unit marked INVERTED; unscrew and remove the blank control panel (F).
- Step 6.** At the face of the unit marked INVERTED; unscrew and remove the wall mount bracket (E).
- Step 7.** Pull the fan cables and sensor cables through the unit and connect the leads to their colour coded lead on the PCB module (B).
- Step 8.** Push the PCB module (B) into the case and secure using the M10 screws (D) and washers (C).
- Step 9.** Place the filters (A) back into the unit from the face of the unit marked INVERTED.
- Step 10.** On the face of the unit marked STANDARD; fit the wall mounting bracket (E), even if it is a floor mounted unit. Take care to not over tighten the bracket.
- Step 11.** On the face of the unit marked STANDARD; pull the mains cable through the unit and feed it through the blank control panel (F).
- Step 12.** Secure the blank control panel using the M10 screws (D) and washers (C).

4.5 Changing from top spigot to side spigot



Step 1. Isolate the unit from the mains and ensure all supply circuits are disconnected.

Step 2. Unscrew any duct connectors from the top that are required to be ducted from the side.

Step 3. Unscrew and remove the side plugs where they are required to be ducted from the side. The side plugs can be discarded but the screws are still required.

Step 4. Screw the duct connectors that were removed from the top to the side of the unit where the side plugs used to be. Ensure that the screw holes line up to the inserts.

Step 5. With the duct connectors now fitted to the side of the unit the top plugs need to be fitted to the top of the unit. There will be 4 of these in each box.

Step 6. On each side of the top plug there is a ring, the ring on each side is a different diameter to the other. The larger diameter fits in the centre holes and the smaller diameter fits in the corner holes on the top of the unit.

Step 6. With the plug in the correct orientation; line up the screw holes with the screw inserts and push the plug into the hole (it should be a snug fit).

Step 7. Screw the top plug in place.

Step 8. The unit can be connected from the side with 1 to all 4 connections.

5.0 Electrical Connections/ Wiring

IMPORTANT

All the electrical connections must be carried out by a qualified electrician. Installations and wiring must conform to current IEE regulations (UK), local or appropriate regulations (applying to other countries).

Electrical Details:



Voltage: 230 V AC ~

Fuse rating: 3 A

Warning: This unit must be earthed.

Please Note: The core cable from the mains power supply must be connected to a fixed wiring installation, via a **3 amp** fused isolator, as to comply with current IEE wiring regulations.

A switch or circuit breaker must be used in the power supply circuit. It should be in close proximity to the HRV unit and should be clearly marked as the disconnecting device for the HRV Unit.

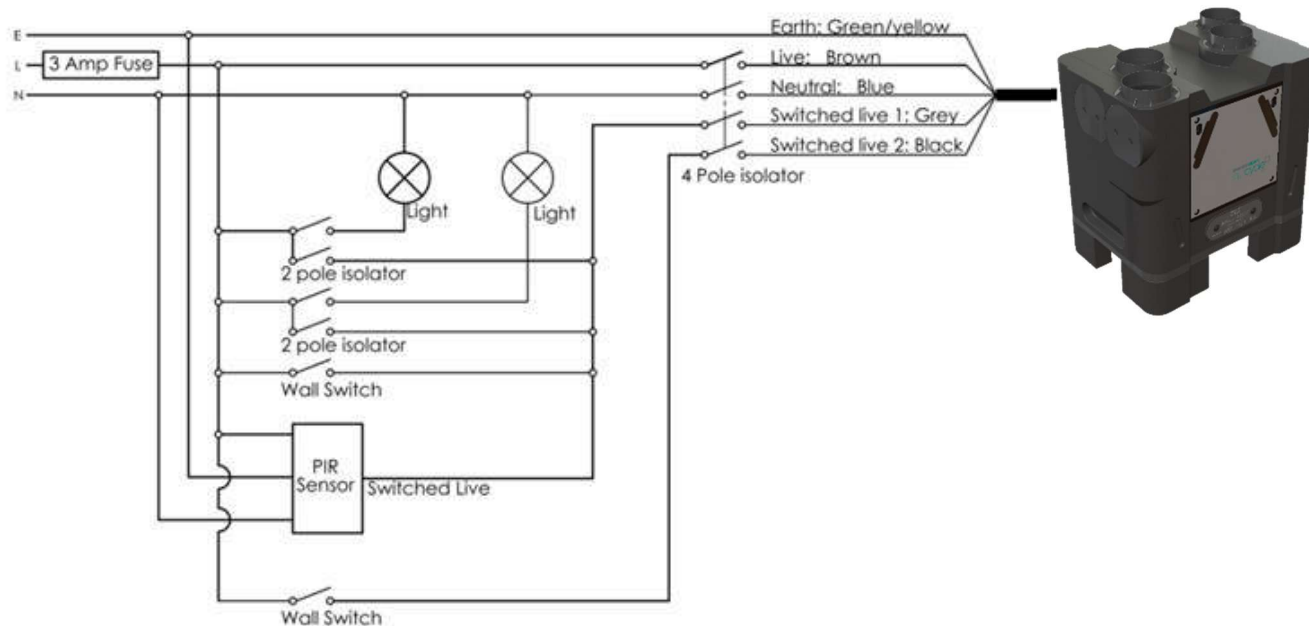
Connecting to mains:

The aircycle 4.1 unit comes pre-wired with 2m length of 4-core cable, which should be connected into a fan-isolation switch. In turn a 3-core mains cable should be used to connect to a **3A fused spur**, which should be located close to the unit. The unit should never be connected to a plug outlet.

Green/Yellow	= Earth
Brown	= Live
Blue	= Neutral
Grey	= Switch live 1 (boost)
Black	= Switch live 2 (purge)

The grey switch wire is used to boost the system. When a live 230v signal is applied, the Auto Boost function will be triggered.

5.1 Wiring Schematic



5.2 Colour code for internal wiring connectors

Connector	Loom	Colour
F1-Control (Extract Fan)	B	Green
F1-Power (Extract Fan)	D	Red
F2-Control (Supply Fan)	A	Blue
F2-Power (Supply Fan)	C	Black
HUMIDISTAT	B	Yellow
TEMPERATURE	B	Orange

6.0 Controls and Settings

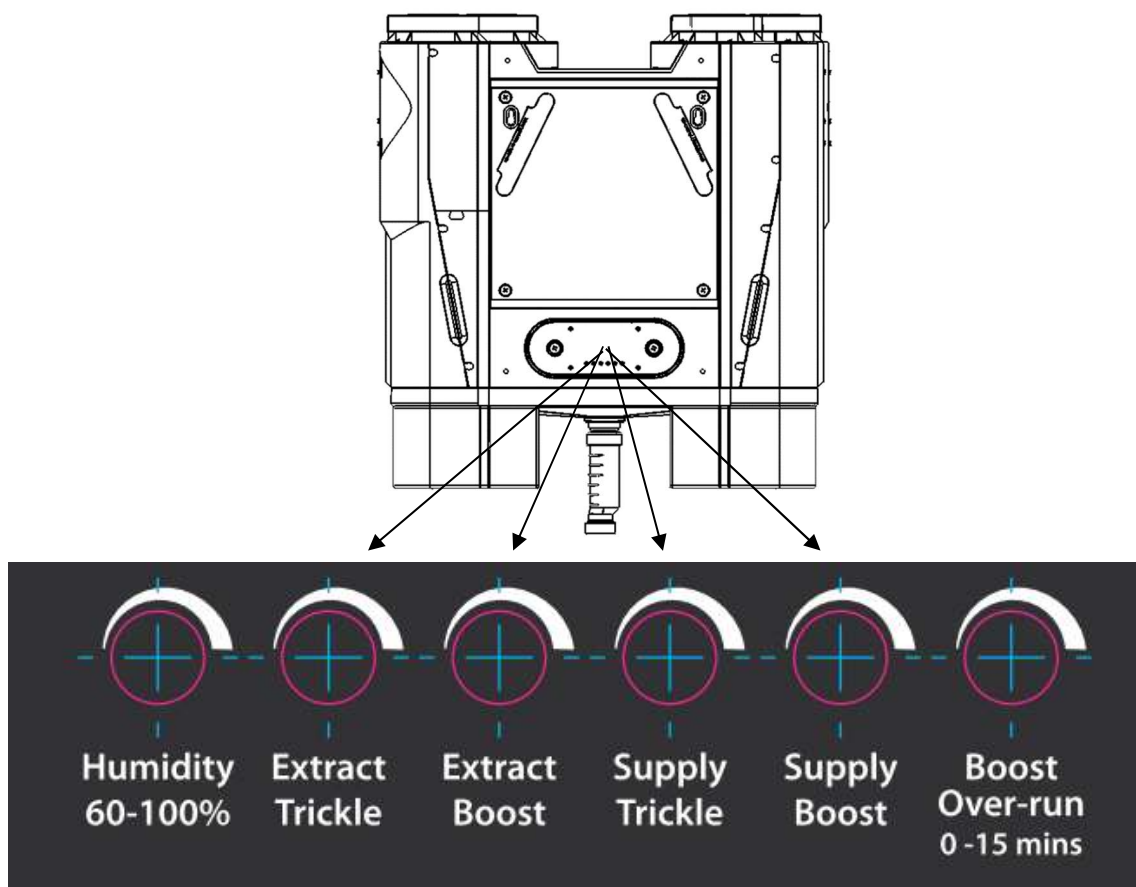
6.1 Fan Speed Control

The fan speeds of the unit are controlled by four potentiometers (Speed Pots) on top of the unit; these are clearly marked “Trickle” and “Boost”. These allow individual control of the trickle and boost rates for the supply and extract fans within the unit.

These separate speed options allow one speed to be set for normal day to day operation (i.e. Trickle) and an increased speed to be set (i.e. Boost) that operates only when the Grey switch wire is triggered by a 230v boost signal such as a Wall Switch or Passive Infrared (PIR) Sensor.

If the Boost for either fan is required to be set, it should always be set higher than the Trickle.

Turning these speed pots clockwise increases the fan speed.



6.2 Commissioning Fan Speeds

1. Turn all 4 fan control spindles up full (**Extract Trickle, Extract Boost, Supply Trickle, Supply Boost**).
2. Turn the **Extract Boost** spindle down until the minimum boost rate is achieved in all the wet rooms (extract valves) as per the BPEC process for commissioning.
3. Turn the **Supply Trickle** down until the whole dwelling ventilation rate has been achieved in all the habitable rooms (supply valves) as per the BPEC process for commissioning.
NB: The trickle rate cannot be higher than the boost rate.
4. Turn the **Extract Trickle** down until the total airflow balances the total supply trickle rate.
DO NOT ADJUST THE VALVES!
5. Turn the **Supply Boost** down until the total airflow balances the total extract boost rate.
DO NOT ADJUST THE VALVES!

Commissioning is carried out to ensure that the required air flows are achieved throughout the property. The volume airflow at each point should be measured using a suitably calibrated Airflow Meter (anemometer), this should be fitted with an adapter/hood to ensure all air is captured and measured by the device.

For the required airflow rates refer to the design specification for the property and or refer to Building Regulations (Part F: Means of Ventilation, England and Wales) or relevant equivalent dependent upon local guidelines.

If further guidance is required on the commissioning process, please contact Brookvent directly.

Example Commissioning (Based on Part F: Means of Ventilation, England and Wales)

Property – Area: 80sq.m

Airtightness: less than 5cu.m/hr @ 50Pa

Supply Rooms:

Living	11l/s
Dining	5l/s
Bedroom	8 l/s

Extract Rooms:

Kitchen	13l/s
Bathroom	8 l/s
En-suite	8 l/s

Whole dwelling ventilation rate = 24l/s *(the greater of Area x 0.3 or whole dwelling rate table in building regulations).*

Whole dwelling boost rate = 29 l/s *(the greater of the summation of the extract rates or the whole dwelling rate).*

As per the instructions above, turn all spindles up full. Turn the Extract boost spindle down until the extract boost rates are achieved (kitchen 13l/s, bathroom 8l/s, en-suite 8 l/s).

Lock the valves in place.

Turn the supply trickle spindle down to achieve the rates for the supply rooms (living 11l/s, Dining 5l/s, Bedroom 8l/s).

Lock the valves in place.

Turn the Extract trickle down until the whole dwelling rate i.e. 24l/s is achieved through the extract valves. **Do not adjust the valves**, only adjust the control on the unit.

Turn the Supply Boost down until the whole dwelling Boost rate i.e. 29l/s is achieved through the Supply valves. **Do not adjust the valves**, only adjust the control on the unit.

6.3 Humidity Control

This potentiometer control is located on the front of the unit and can be adjusted by hand and can be set between 60%-100% (Not active) relative Humidity, causing the unit to boost when it senses the set humidity level. Adjusting the speed pot anti-clockwise will cause the unit to become more sensitive thus boosting the system more often.

The factory setting for humidity is 70% RH. Turning this Speed Pot clockwise increases the humidity level at which the unit will boost.

NB. Upon start-up/ power-on the humidity sensor will be inactive for a period of 60mins due to calibration.

6.4 Boost Over-Run Timer

All Brookvent aircycle systems come complete with an automatic boost over-run timer of 15mins (factory set). The grey 'switch wire' on the aircycle 4.1 systems (See section '5.0 Electrical Connections/ Wiring') is used to boost the system.

When a live 230v signal is applied by a switch or sensor, the boost function will be triggered. When the signal stops, the boost will over-run for a minimum of 15 mins as to ensure the system has adequately cleared the pollutants that were present. This is also true for the internal humidistat feature in the aircycle 4.1.

The 15min boost over-run timer control is located on the front of the unit and can be adjusted by hand and can be set between 0 mins and 15 mins by rotating the control clockwise to increase the over-run timing.

6.5 Frost Protection

This is an automatic factory setting that causes the supply fan to turn off for 5 minutes every hour when it senses temperatures below the 5 °C the set level allowing the warm extract air from the home to pass through the core unaccompanied by the cold fresh intake air. This action succeeds in regularly raising the overall temperature within the Heat Recovery System preventing the potential formation of ice particles which could cause damage.

This feature is factory set, automatic, and requires no maintenance.

6.6 Activated Summer Bypass

Feature available on selected models only (AS 90-0401-**S-01).

This unit has been fitted with the activated summer bypass feature.

The activated summer-bypass, functions via thermostatically responsive solenoid which directs the air around the Heat Recovery Core as the temperature rises, thus comfortably regulating the indoor air temperature during warmer months.

The bypass is set to activate based on the internal and external conditions. The bypass will only activate when both conditions have been met.

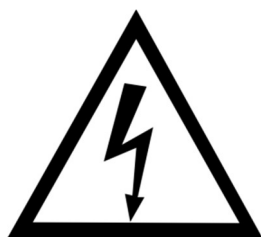
The settings for bypass activation are 17°C external temperature and 21°C internal temperature. When the temperature of the fresh air being drawn in from outside exceeds 17°C AND the temperature of the extracted air from the house exceeds 21°C then the bypass will open. The bypass will close when either of two temperatures drops below the set levels.

The activation temperatures are set in the software and cannot be changed.

6.7 Purge Mode

Requires a sperate switch or 230v signal. When activated this puts the unit to 100% fan power (factory set) to rapidly remove pollutants. It is intended that this feature is generally only used for short periods of time. therefore, Connection of this feature to a timed switch to avoid the unit being left in this mode should be considered.

7.0 Maintenance



Warning: Dangerous Voltage. Before completing any form of maintenance, ensure to isolate the unit from the mains and ensure all supply circuits are disconnected.

This HRV unit may contain connections/signal wires from multiple electrical circuits. **ISOLATING THE CONTROL BOX WILL NOT ISOLATE ALL CIRCUITS WITHIN THE UNIT- PLEASE ENSURE ISOLATION OF ALL CONNECTING CIRCUITS BEFORE ACCESSING THE UNIT.** Examples of other connecting circuits are: electric showers, lighting circuits, and humidistats. These connecting circuits may be used to trigger the auto-boost the system.

It is important to follow all guidelines relating to the maintenance of this HRV system to ensure the unit continues to perform to the levels required.

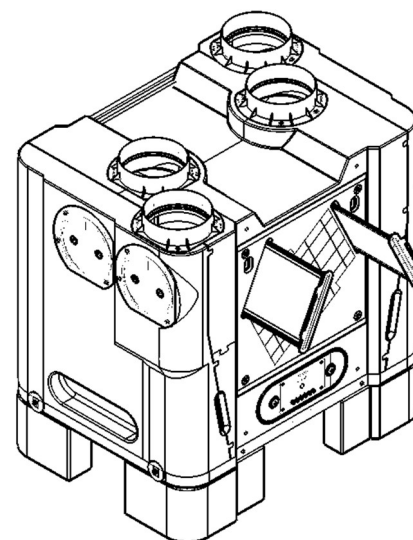
7.1 Filter Replacement

The filters of this HRV unit will usually need to be changed every 6 – 12 months depending on occupancy/ use, and the type of environment the dwelling is located in (I.e. urban/ rural, and their associated levels of airborne pollutants).

It is recommended that the filters are checked every 6 months. Replacement filters can be purchased online at brookvent.co.uk

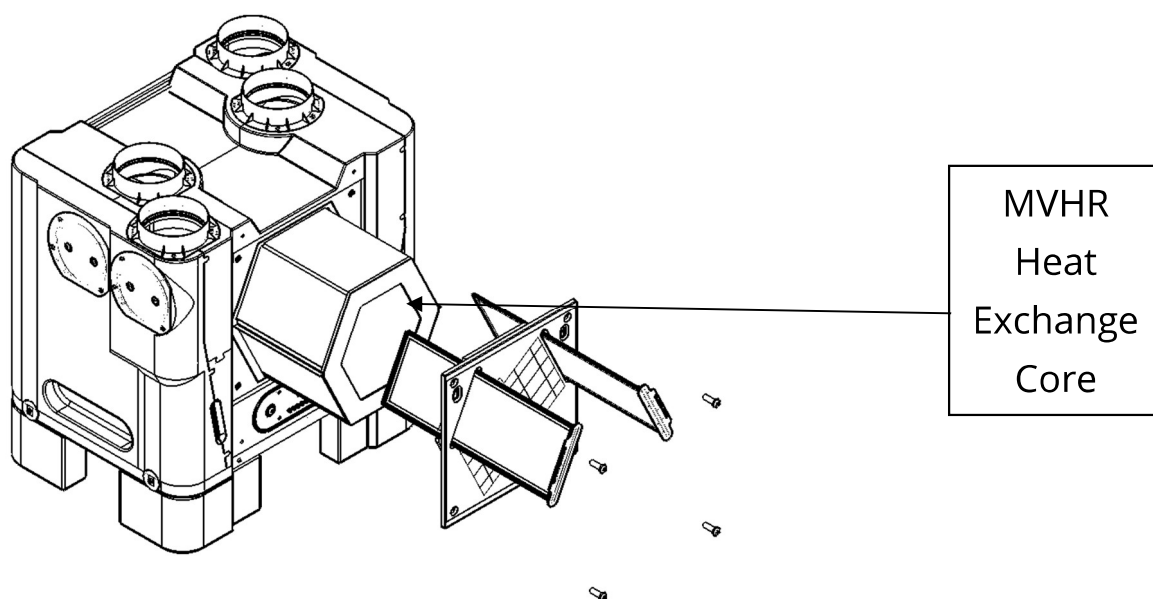
To change the filters, simply remove each filter cover cassette from the front of the unit and replace ensuring a press tight seal.

Important: Blocked filters will shorten the life span of your fan and increase the energy consumption. Never run the HRV system without filters as this will allow unfiltered material to build up in the heat recovery core and connected ductwork. In new build properties it may be prudent to check/ change your filters after the first 3 months of occupancy depending on the amount of residual 'building dust' present within the property.



7.2 Heat Exchange Core Check

The aircycle 4.1 heat recovery core is protected by 2 no. filters. As long as the filters are regularly changed as detailed in the previous section there should be no need to access the system's heat recovery core. However, should regular filter changes not be adhered to it may be advisable to access the system's heat recovery core, and where required, clear it of any debris that may have collected.



Step 1. Isolate the unit from the mains and ensure all supply circuits are disconnected. Never run the system with the MVHR heat exchange core removed.

Step 2. Remove the front door panel via its 4 screws.

Step 3. Remove both filters.

Step 4. Remove the heat exchanger from the unit by pulling the plastic strip running across the front of the heat exchanger.

Step 5. Carefully remove any dust from the heat exchanger with a household vacuum cleaner. Do not attempt to clean the heat exchanger with any fluids.

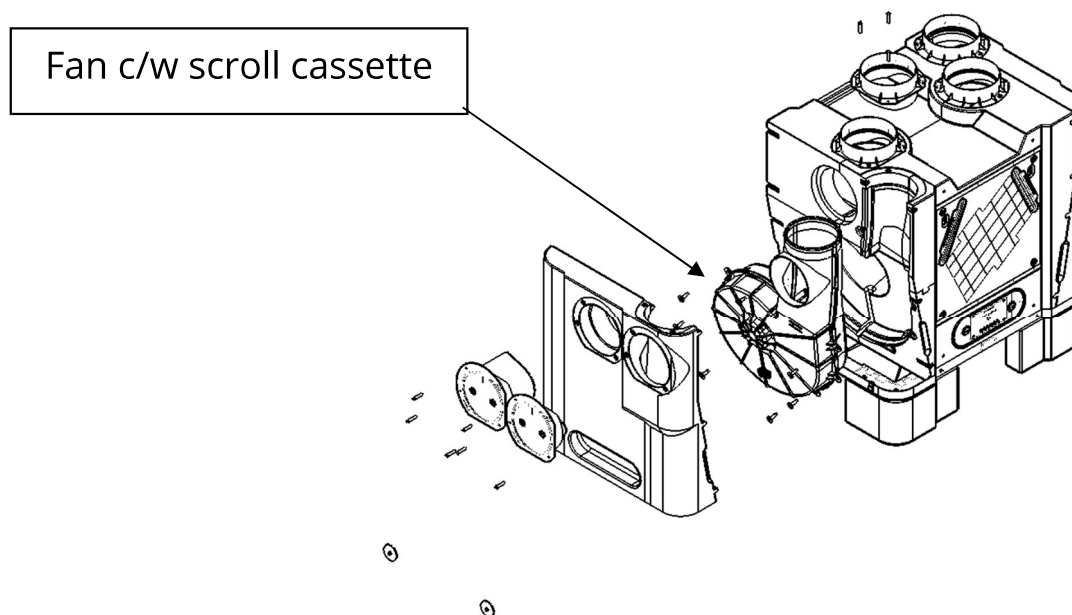
Step 6. Carefully reinsert the heat exchange core into the unit.

Step 7. Reinsert both filters (change if necessary) and replace the front door ensuring all four screws are securely fastened. Also ensure the filter tabs on the front of the unit are securely fitted.

Step 8. Power the unit on at the isolator and ensure any supply circuits are reconnected.

7.3 Fan Replacement

The aircycle 4.1 heat recovery system has a very straight forward fan replacement process should the unlikely event of a fan failure occur.



Step 1. Isolate the unit from the mains and ensure all supply circuits are disconnected.

Step 2. Unscrew the side plugs and remove.

Step 3. Remove the side panel.

Step 4. Unplug the two leads from the fan.

Step 5. Unscrew the scroll assembly from the casing and remove the scroll assembly. This Whole assembly should be returned to Brookvent.

Step 6. Place the new scroll assembly in the recess in the case and ensure the holes line up with the screw insert. Fix the scroll assembly to the case.

Step 7. Re-plug the connectors (they are two different types so they cannot be mixed up).

Step 8. Re-fit the end panel.

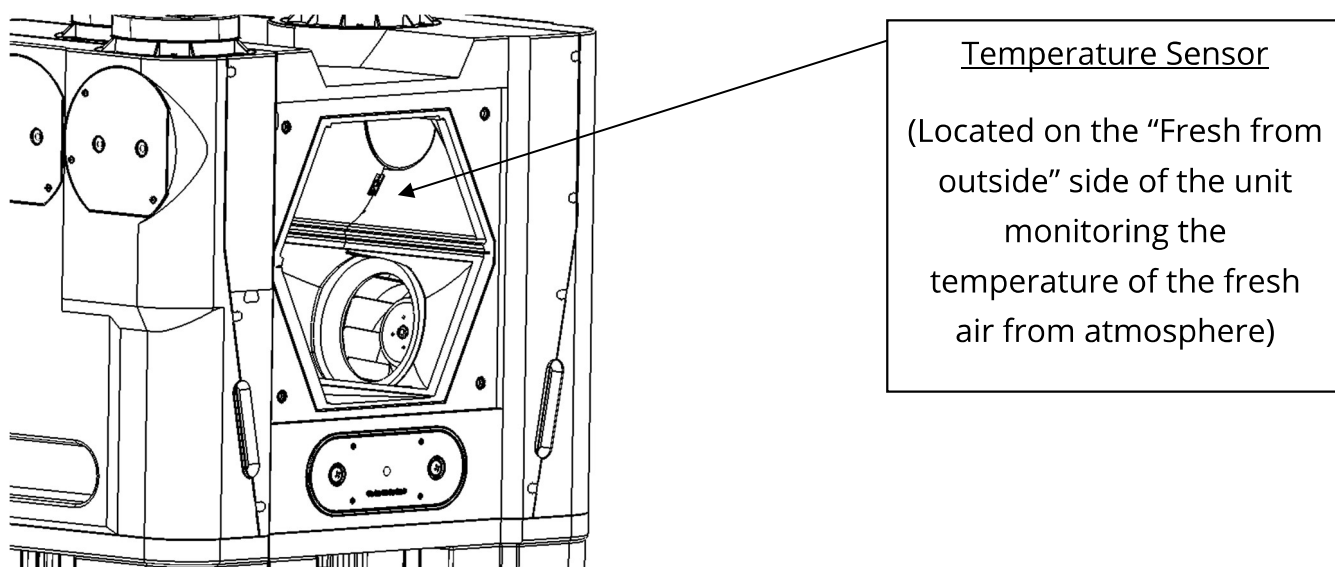
Step 9 fit the side plugs, (the long plug always fits in the centre hole), and screw to fix.

Step 10. Power the unit on at the isolator and ensure any supply circuits are reconnected. The unit will not need to be re-commissioned as the controller will hold the settings.

7.4 Sensor Replacement

Replacement of the aircycle 4.1's temperature sensor and/or humidity sensor is also very straight forward in the unlikely event of a failure occurring.

7.4.1 Temperature Sensor Replacement



Step 1. Isolate the unit from the mains and ensure all supply circuits are disconnected.

Step 2. Remove the front door panel via its 4 screws.

Step 3. Remove both filters.

Step 4. Remove the heat exchanger from the unit by pulling the plastic strip running across the front of the heat exchanger.

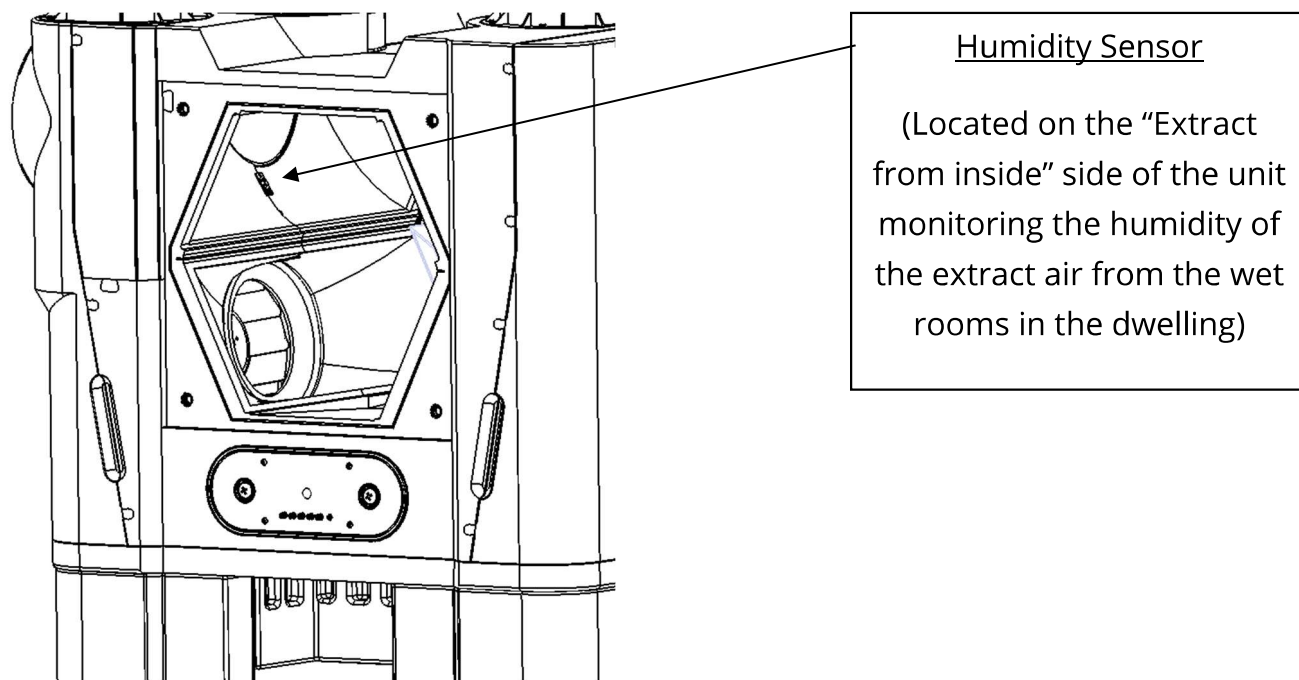
Step 5. Plug the new sensor in place and screw it to the case (care should be taken when handling the new sensor, to avoid Electro static discharge damaging the sensor, ensure you are earthed when handling).

Step 6. Carefully reinsert the heat exchange core into the unit.

Step 7. Reinsert both filters (change if necessary) and replace the front door ensuring all four screws are securely fastened. Also ensure the filter tabs on the front of the unit are securely fitted.

Step 8. Power the unit on at the isolator and ensure any supply circuits are reconnected.

7.4.2 Humidity Sensor Replacement



Step 1. Isolate the unit from the mains and ensure all supply circuits are disconnected.

Step 2. Remove the front door panel via its 4 screws.

Step 3. Remove both filters.

Step 4. Remove the heat exchanger from the unit by pulling the plastic strip running across the front of the heat exchanger.

Step 5. Unplug the sensor and unscrew it from the casing.

Step 6. Plug the new sensor in place and screw it to the case (care should be taken when handling the new sensor, to avoid Electro static discharge damaging the sensor, ensure you are earthed when handling).

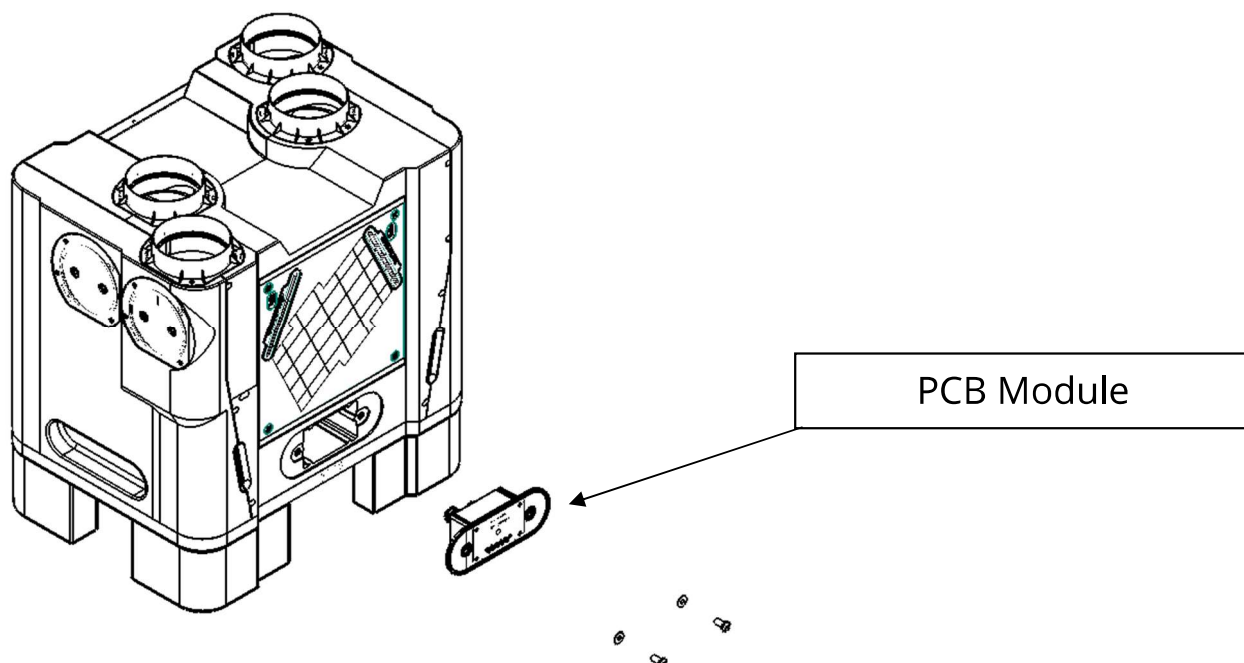
Step 7. Carefully reinsert the heat exchange core into the unit.

Step 8. Reinsert both filters (change if necessary) and replace the front door ensuring all four screws are securely fastened. Also ensure the filter tabs on the front of the unit are securely fitted.

Step 8. Power the unit on at the isolator and ensure any supply circuits are reconnected.

7.5 PCB Module Replacement

In the unlikely event of an electronic PCB failure, the Aircycle 4.1's PCB module can be easily disconnected and replaced.



Step 1. Isolate the unit from the mains and ensure all supply circuits are disconnected.

Step 2. Disconnect the mains from the fused spur.

Step 2. Unscrew the two large screws in the front of the control panel and pull out the PCB assembly.

Step 3. Unplug all the leads, the connectors are all marked to match up with their corresponding internal connections.

Step 4. Feed the mains cable from the replacement assembly through the unit and out the through the hole in the back plate.

Step 5. Connect all the cables back up ensuring to connect each cable to the correctly marked connector.

Step 6. Replace the assembly in the pocket and secure in place with the screws.

Step 7. Connect the mains to the fused spur.

Step 8. Power the unit on at the isolator and ensure any supply circuits are reconnected. The unit will need to be re-commissioned.

7.6 Additional Maintenance Checks

It is recommended that the following checks are also made when completing annual maintenance of the HRV unit:

- Condensate Drain: Ensure the condensation drain is firmly secured and is clear of any debris, remove/ clean if necessary.
- Fixings: Ensure that all of the unit fixings and the mounting fixings have not become loose over time and are kept sufficiently tight.

8.0 User Operation

The Brookvent aircycle 4.1 is an extremely compact and highly efficient Mechanical Heat Recovery Ventilation (HRV/MHRV) system, specifically designed for medium to large dwellings and apartments.

The system should be run continuously 24 hours a day, and should only be disconnected by a competent person during service or maintenance.

The system works by drawing stale air from 'wet rooms' such as Bathrooms, WC's and Kitchens, recovering up to **93%** of the heat from this air using a highly efficient heat exchanger, before expelling the waste air outside the home. Simultaneously, fresh air is drawn into the home, filtered and warmed by the recovered heat and supplied into the 'habitable rooms' such as bedrooms, dining rooms and living rooms.

How your system is configured upon installation will influence how it can be operated at the user level. Please ensure to refer to the commissioning certificate provided by your installer for full details.

General Guidance

Your system may be set up to boost from trickle speed automatically via sensors (e.g. Passive Infrared Sensors) or manually via simple switch controls. These may be timed switches or push/pull switches. Boost options, if provided and if required, should be used when excess pollutants are being generated within the home (Cooking, Bathing etc.)

With certain dwellings the system may be configured to operate at what is known as a "constant ventilation rate". This means that there is no boost required to adequately ventilate the home and the system operates at one set level at all times requiring no user input/control.

8.1 Typical Automatic Control Options

Your system commissioning certificate completed by your system installer should detail your automatic control options (if any).

Passive Infra-red (PIR) Sensors

These are motion sensing switches; these sensors trigger the system into boost mode when activity/ motion is detected in a particular room. They are typically put into sanitary accommodation or bathrooms.

Humidistat

These sensors detect humidity in the air and trigger the system into boost mode when humidity reaches a certain level. These are typically placed in bathrooms or in kitchens. Please note that the aircycle 4.1 system has an In-built humidistat that operates in the same fashion.

Light switch

The lighting circuit of the home can be used to boost the system meaning that when the occupier enters the room and turns the on the light, the system is triggered into boost mode. This is typically used in sanitary accommodation and bathrooms. A double pole switch should be used.

The items detailed above are examples of the types of Automatic Control Options that are typically used in conjunction with the Brookvent aircycle 4.1

8.2 Typical Manual Control Options

Your system commissioning certificate completed by your system installer should detail your manual control options (if any).

Spring loaded switch

This switch may be placed in any room within the house; however, it is typically used in sanitary accommodation, bathrooms and or kitchens. When pressed, it will trigger the system into boost mode for a defined time.

Trickle and Boost switch

This is a simple high/low switch with no determined time delay. When the switch is flicked to boost the system goes into its boost state, the switch then must be put back to trickle

by the occupier for standard operation. (Please note that the aircycle 4.1 system has an adjustable boost overrun time of up to 15mins).

*The items detailed above are examples of the types of Manual Control Options that are typically used in conjunction with the Brookvent aircycle 4.1 *

9.0 Trouble Shooting

The MVHR unit is not running?

1. Check that the unit is connected to a 3amp fused spur as per the wiring instructions.
2. Check that there is a live feed to the fused spur. This should only be completed by a qualified electrician.
3. Check that the 3-amp fuse has not tripped/blown. This should only be completed by a qualified electrician.
4. Check that all the spindles are in the full power position (fans can take a few seconds to start up).

The system is constantly in Boost mode?

New houses can be quite damp with items drying out; this can cause the inbuilt humidistat to activate. Turning the internal humidistat up to 100% RH will allow the unit to switch back to trickle speed (This may take 15min depending on the boost over-run setting which can be adjusted to 0min on the control panel to temporarily disable). Remember to turn the humidity stat back to its factory set of 70% RH upon achieving the commissioned and reset the boost over-run time, if required).

10.0 Customer Support

At Brookvent we pride ourselves on providing Gold Standard after sales and support to all customers. Please feel free to contact one of our specialist team about any query you may have and we will be more than happy to assist you.

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Dunmurry Industrial Estate,
Dunmurry,
Belfast
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It is important to retain this manual and make a copy available to any person using or working with (maintaining) the system.

Brookvent operate a policy of continuous innovation and improvement and thus reserve the right to alter product specifications and appearances without notice.