

“WHHR250DC”

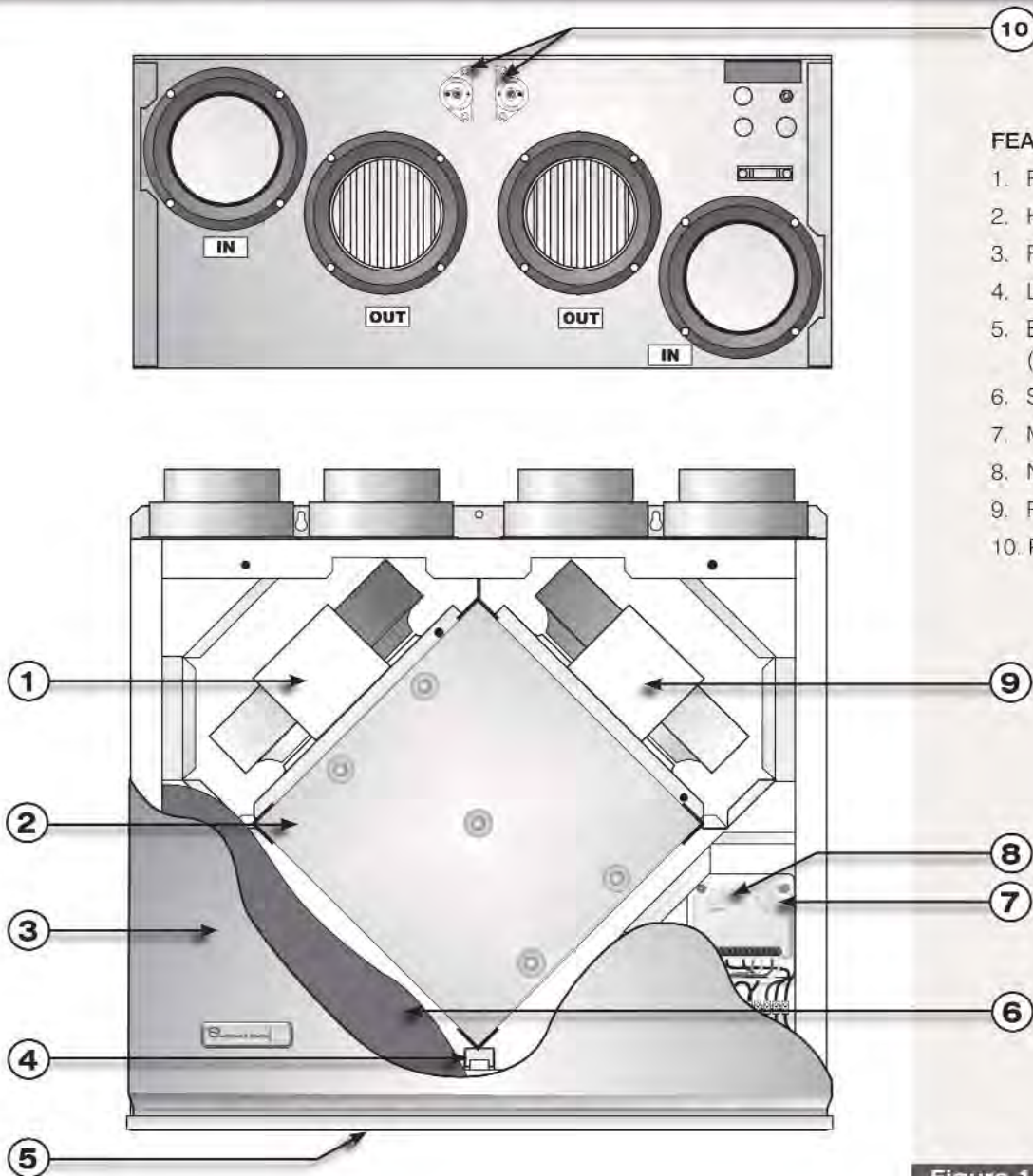
Whole House Ventilation System Installation, Commissioning & Servicing Instructions



CONTENTS

1	Features	3
2	Brief Description	3
3	General Information	4
4	Positioning & Preparation	4
5	Mounting & Installation	5
6	Duct & Ducting Connections	7
7	Electrical	8
8	Fan Performance Graphs	9
9	Circuit Diagram	10
10	Commissioning	11
11	Servicing & Maintenance	12
12	Dimensions	13

1. FEATURES



FEATURES

1. Fan (low watt)
2. Heat Exchanger
3. Front decor panel
4. Locking wedge
5. Bottom Blanking plate (where fitted)
6. Sealing Plate
7. Min/Max Control
8. Normal/Boost control
9. Fan (low watt)
10. Pressure Switches

Figure 1

2. BRIEF DESCRIPTION

ITEM	DESCRIPTION	QUANTITY
1	Heat Recovery Unit	1
2	Grommet	2
3	Installation, Commissioning & Servicing Instructions	1
4	User Instructions	1
OPTIONAL		
CHW-1 & CHS-1	Slimline Cooker Hood	1
RSC	Remote Speed Control	1

Note: For additional ancillary equipment (e.g. ducting, grilles etc.) contact the Sales Dept.

- 2.1 The **WHHR250DC** provides whole house mechanical ventilation to living areas and bedrooms. The heat from the unit is recovered from stale contaminated air drawn from bathrooms and utility rooms in conjunction with stale air from the kitchen; drawn through a cooker canopy if fitted. The unit uses a high performance heat exchanger that recovers heat and uses it to temper the incoming fresh air. The unit is supplied assembled for right hand configuration but may be changed to left hand configuration.

3. GENERAL INFORMATION

- 3.1 Installation shall be in accordance with the current editions of:
Building Standards (Scotland) (Consolidation) Regulations
Building Regulations
BS 5720 Mechanical ventilation and air conditioning in buildings
BS 7671 Requirements for Electrical Installations. Wiring Regulations
- 3.2 The design, material Specification and Installation must only be carried out by "competent persons".
- 3.3 **IMPORTANT: It must be ensured that flue gasses from fuel-burning equipment are not drawn into a living area. If any room where air is extracted contains a fuel burning appliance, such as a central heating boiler, then:**
- 3.3.1 its flue must be of the room sealed or balanced flue type, or,
- 3.3.2 allowance must be made for an adequate supply of air into the room.

4. POSITIONING & PREPARATION

4.1 POSITIONING

- 4.1.1 The unit is best installed in a kitchen above the cooker, but if this is not practicable it can be positioned in the loft or any suitable location.

NOTE: Installation height is subject to local regulations, but the height (H) of a cooker canopy must not be less than 600mm from the top of an ELECTRIC cooker, or less than 700mm from the top of a GAS cooker (refer to Figure 6).

- 4.1.2 When the unit is installed in the loft or a heated area, it may only be positioned on its back (as shown in Figure 5).
- 4.1.3 It is not advisable to install the unit so that it is directly above a bedroom or living room ceiling, or in an area that is part of a living area or bedroom. If this is likely to cause a problem, please contact Johnson and Starley Ltd.
- 4.1.4 Consideration must be given to access for servicing, as servicing of the fans and cleaning of the heat exchanger, which should be carried out annually.

4.2 REMOTE SPEED CONTROL POSITION (optional)

- 4.2.1 The speed control is a remotely fitted control which can be fitted in a position of your choosing. The control comes with a single 32mm deep back gang box which can be surface mounted. The front plate assemble can be fitted to an existing back box if required.
- 4.2.2 Remove the 2 screws securing the front plate assembly, and retain.

4.3 PREPARATION OF SPIGOTS

- 4.3.1 The unit is supplied with 100/125mm spigots and for satisfactory operation of the unit where the airflow rate is above 120m³/h, (see performance curves on page 9) it is recommended that the centre part of the spigot is removed and 125mm ducting used.
- 4.3.2 The centre part of the spigot can easily be removed by placing a flat piece of wood (or similar) over the centre part and applying a sharp tap with a hammer (see Figure 2).

NOTE:- In situations where it is either not possible or not desirable to use 125mm ducting, 100mm ducting can be used but it MUST be noted, in 'BOOST' mode might increase noise levels.

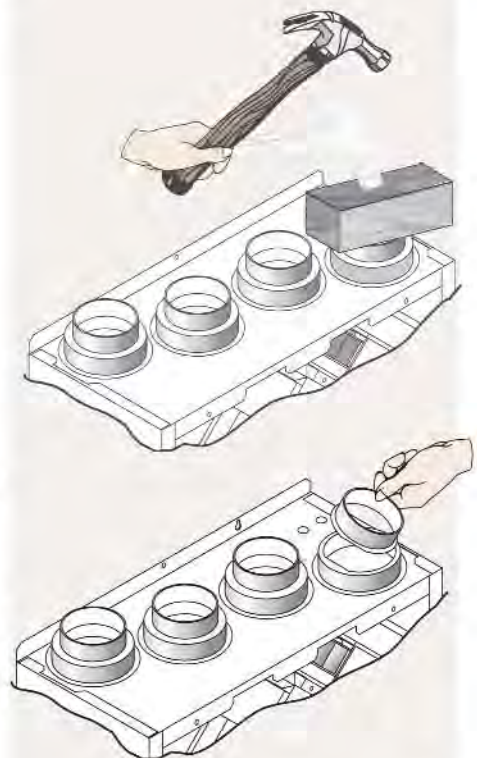


Figure 2

Use a block of wood and hammer to tap out 100mm spigots

4.4 GENERAL PREPARATION

- 4.4.1 With reference to Figures 3 & 4 decide whether the unit is to be installed in the right or left handed configuration. If the handing of the unit is to be changed, proceed as follows:
- Remove the four screws securing the blanking cover on the base tray and transfer the cover to the other extract aperture.
 - Swap the positions of the condensate drain blanking grommet, and the condensate drain elbow fitting complete with plastic washer. Access to the drain elbow nut may be gained through the extract aperture.
 - Refer to Figure 8 interchange the following connections

Yellow wire from terminal 1 - 8 to 1 - 7.

4.5 CONDENSATE

IMPORTANT: At times the unit might produce condensate which **MUST** be drained away. The unit is provided with a drain elbow allowing a condensate drain hose with a 10mm bore to be push connected.

- 4.5.1 The drain pipe, which must have a continuous minimum fall of 6mm per 1m run, can either be chased into the wall or run downwards from the unit, to terminate outside the building into the nearest drain or gutter.
- 4.5.2 In some instances a condensate connecting point will already be provided as part of the building design. The position of this point, relative to where the heat recovery unit is to be installed, is to be checked for any appreciable connection misalignment and necessary adjustment made before proceeding any further.
- 4.5.3 Decide from which exit the condensate drain pipe is to be connected and remove the knockout from the appropriate side panel. If necessary, loosen the condensate elbow fitting, rotate it to face the knockout hole and re-tighten.

Note: The WHHR250DC is pre-configured for drainage from the left hand lower exit.

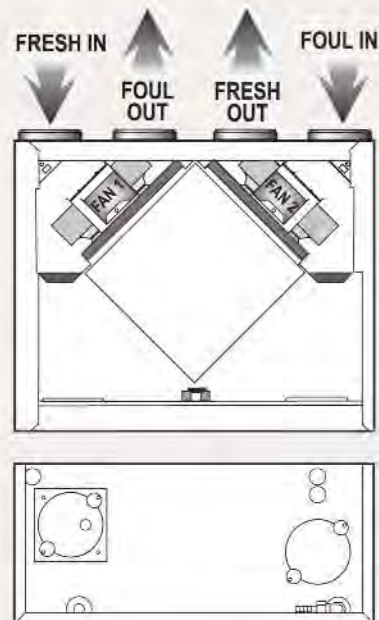


Figure 3

Left Hand configuration

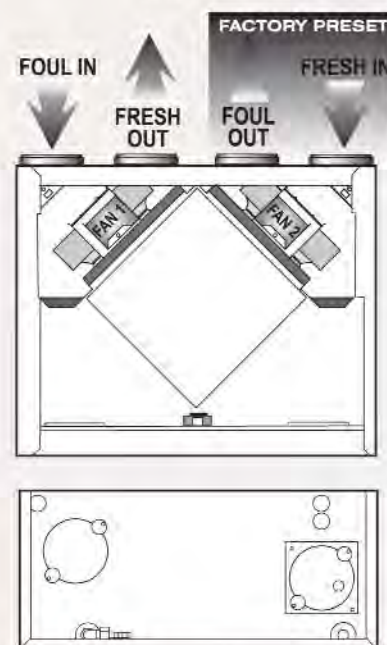
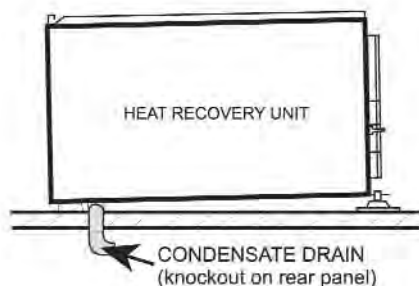


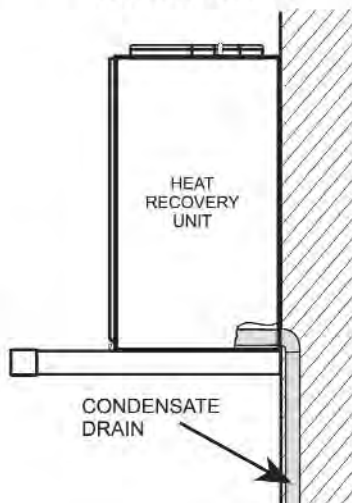
Figure 4

Right Hand configuration

LOFT INSTALLATION (Horizontal)



WALL & COOKER HOOD INSTALLATION



OPTIONAL WALL MOUNTED INSTALLATION



Figure 5

Condensate Drain Routeing

5. MOUNTING & INSTALLATION

5.1 WALL MOUNTED (not in loft)

- 5.1.1 Hang the unit onto the two top wall fixings. Mark through, drill and plug the remaining fixing holes.
- 5.1.2 Referring to Figure 5, determine the method to be used and make the condensate drain pipe connection to the unit.
- 5.1.3 Secure the unit to the wall, using washers under the screw heads if necessary, and complete the condensate drain system.

IMPORTANT: There must be a sufficiently large visible gap between the condensate drain pipe termination and the collection point, to prevent ice buildup.

- 5.1.4 Fit the blanking plate to the base of the unit and secure using 8 of the self-lapping screws provided.

5.2 WALL MOUNTED WITH SLIMLINE COOKER HOOD

Note: Refer to the Instructions provided with the Slimline Cooker Hood

- 5.2.1 Referring to Paragraph 4.1.1 and Figure 6, determine the height (H) of the cooker hood from the cooker top. Mark the base datum line for the Heat Recovery unit at $H + 50$ mm.
- 5.2.2 Position the HR unit such that the base of the unit aligns with the base datum previously marked and mark the position of the 2 x keyhole fixing points. Remove the HR unit.

Note: It is important that the unit is mounted perfectly horizontally, in order that the condensate drain shall function effectively.

- 5.2.3 Drill and plug the 2 x fixing holes and secure the Heat Recovery unit to the wall using suitable screws (not provided).

Note: For wall types other than masonry, prepare the wall to suit a purpose made fixing.

- 5.2.4 Referring to Figure 1, remove the front decor panel and gain access to the electrical panel by removing the electrical panel cover.
- 5.2.5 Referring to the Installation and User Instructions, fit the CHW or CHS Cooker Hood to the underside of the HR unit.
- 5.2.6 Referring to Figure 8, connect the canopy electrical cable as follows:
 - Brown** connector to Terminal Block 'BN',
 - Blue** connector to Terminal Block terminal marked 'BL',
 - Green/Yellow** connector to the common **Earth Point**.
- 5.2.7 Refit the electrical panel cover and decor panel to the heat recovery unit.

5.3 MOUNTING IN A LOFT

Mounting Kit MK150 is required for loft applications. These instructions are to be read in conjunction with those supplied with MK150.

- 5.3.1 Connect the drainage hose to the condensate drain connection (see paragraph 4.5.1 for minimum fall) and ensure that steps are taken to minimise the risk of mechanical damage to the drainage pipework. Run the pipe internally as far as possible and insulate to protect against freezing.
- 5.3.2 The drain pipe must terminate outside of the building and must be run as near vertical as possible into the nearest drain or gutter.

IMPORTANT: There must be a sufficiently large visible gap between the condensate drain pipe termination and the collection point, to prevent ice buildup.

6. DUCT AND DUCT CONNECTIONS

(Refer to design drawing)

- 6.1 Four 100/125mm nominal diameter spigots are provided for connection of the ducting (see paragraph 4.3). These must be connected to the supply and exhaust ducts according to left or right hand configuration (refer to Figures 3 & 4).
- Note:** Flexible or rigid ducting may be used, but must fit OVER the spigots. If 125mm ducting is used, the 100mm section MUST be removed as shown at paragraph 4.3.
- 6.2 Where ducts are exposed in unheated areas, they must all be insulated with at least 25mm of polyurethane foam or equivalent, except for the exhaust duct from the unit to the atmosphere.
- 6.3 The duct layout must be designed to suit the requirements of the ventilation/recovery system and building layout, and suitable fire dampers **MUST BE FITTED** to protect against fire being transmitted through the ducting.
- 6.4 Where rigid ducting is used, it should be installed using the least number of fittings to minimise resistance to air flow. Where possible, final connection to grilles and the unit should be made with a flexible connection.
- 6.5 Where flexible ducts are used, ensure that:
- 6.5.1 ducting lengths are kept to minimum;
 - 6.5.2 ducting is stretched so that it is smooth and straight;
 - 6.5.3 where bends are necessary, their radius is as large as possible to avoid sharp corners;
 - 6.5.4 where ducting is run in restricted areas, the ducting is not crushed.
- 6.6 The inlet for the fresh air supply can be direct from outside or from within a ventilated roof space. If the supply is direct from outside, it must have an external wall baffle fitted if supplied through a wall, or a recognised roof terminal if supplied through a roof.
- 6.7 The exhaust air must exit to outside through either a wall or a roof and must be protected by a wall baffle or recognised roof terminal.
- 6.8 Kitchen extracts must be filtered.



Figure 6

Typical Cooker Hood Installation

7. ELECTRICAL

WARNING: THIS APPLIANCE MUST BE EARTHED. ALL WIRING MUST CONFORM TO INSTITUTE OF ELECTRICAL ENGINEERS (I.E.E.) REGULATIONS 488 (CURRENT EDITION)

- 7.1 The unit is suitable for a 230V, 50Hz single phase supply fused at 3A.
- 7.2 The unit is supplied with a mains flexible cord (PVC sheathed, 4-core black brown, blue & green/yellow 0.75mm² to BS 6500,) connected to a terminal block and exiting through a grommet and cable clamp at the right hand top of the unit.

NOTE: If no external switched line is to be used black wire is not connected.

- 7.3 A fused spur, or double pole switch having a minimum contact separation of 3.0mm, must be used to provide isolation for the unit.
- 7.4 **IMPORTANT:** If the unit is required opposite hand to that supplied, then the YELLOW lead to terminal 8 (yellow wire from terminal 1 - 8 to 1 - 7, i.e. move from 8 - 7) must be swapped.

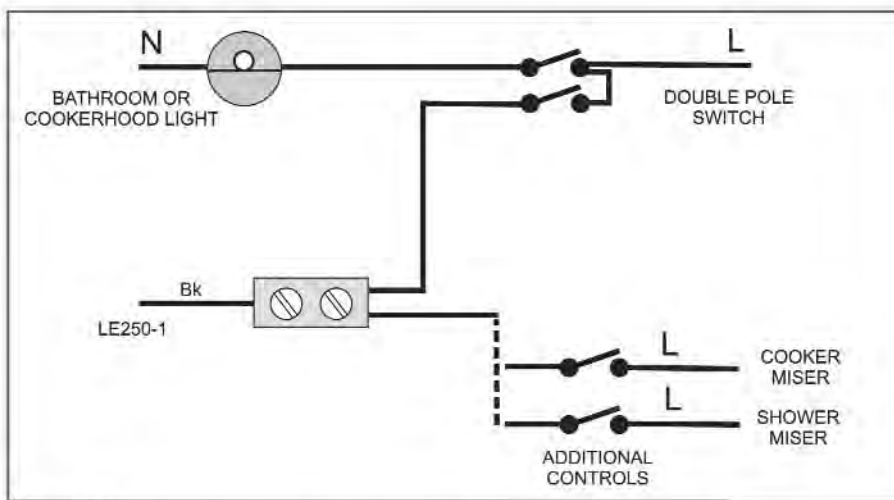


Figure 7
CIRCUIT DIAGRAM FOR BOOST SPEED CONTROL (optional)

7.5 CONNECTING THE PRESSURE SWITCH

- 7.5.1 The pressure switch can be connected to the existing management system using either
- If 3 wires are available see Figure 8. This connection is for the individual fans
 - If 2 wires are available see Figure 9. This is if either fan fails it will trigger an alarm.
- 7.5.2 These switches are normally closed when the fans are running, and open when the fans fail.
- 7.5.3 Terminal connection needed are 6.3 x 0.8 receptacles. The manufacturers recommended minimum current is 5mA 4V oc.

7.6 RELAY SELECTION OPTIONAL FOR MANAGEMENT SYSTEMS

- 7.6.1 The relay coil should be rated at 24V DC to have the highest resistance possible. This will minimise current demand from management system.
- 7.6.2 At minimum, contact should be single pole and Normally open (SPNO). Relays with single pole change over contacts (SPNO) can be used,

WIRING DIAGRAM FOR PRESSURE SWITCHES

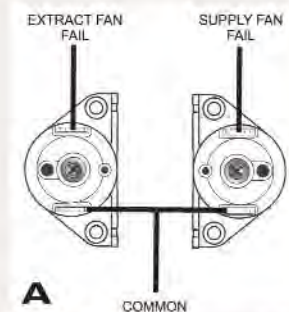


Figure 8

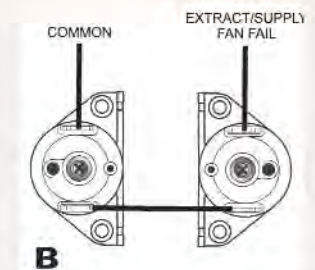


Figure 9

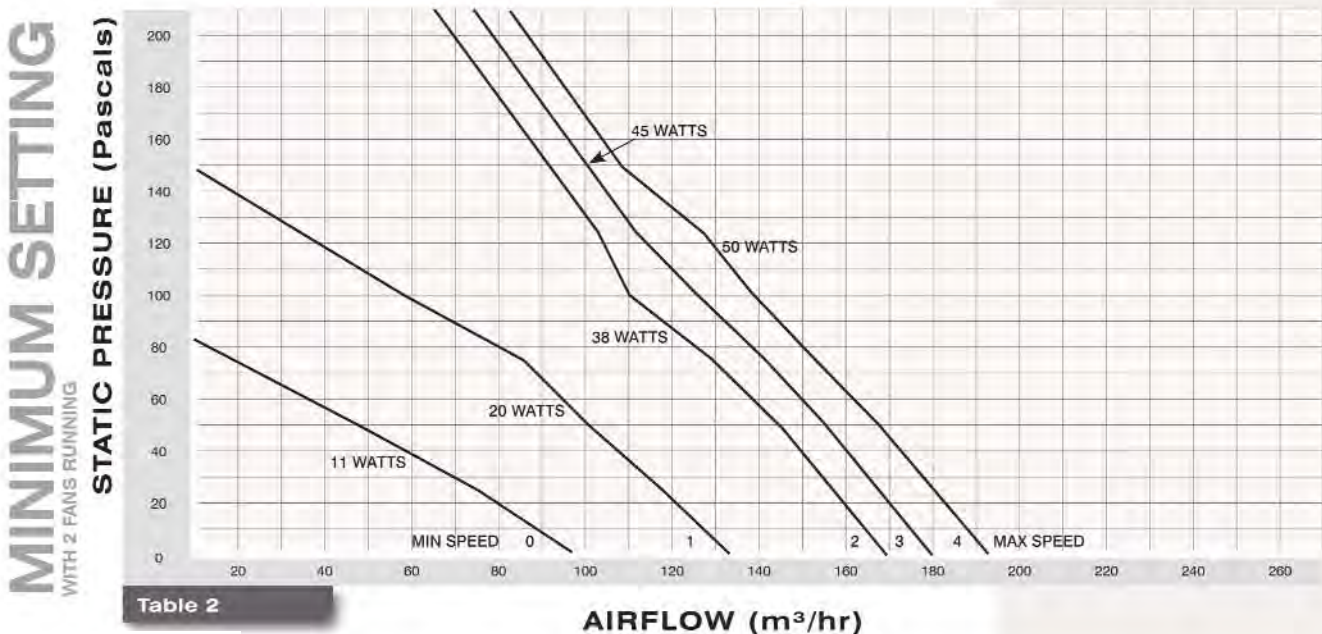
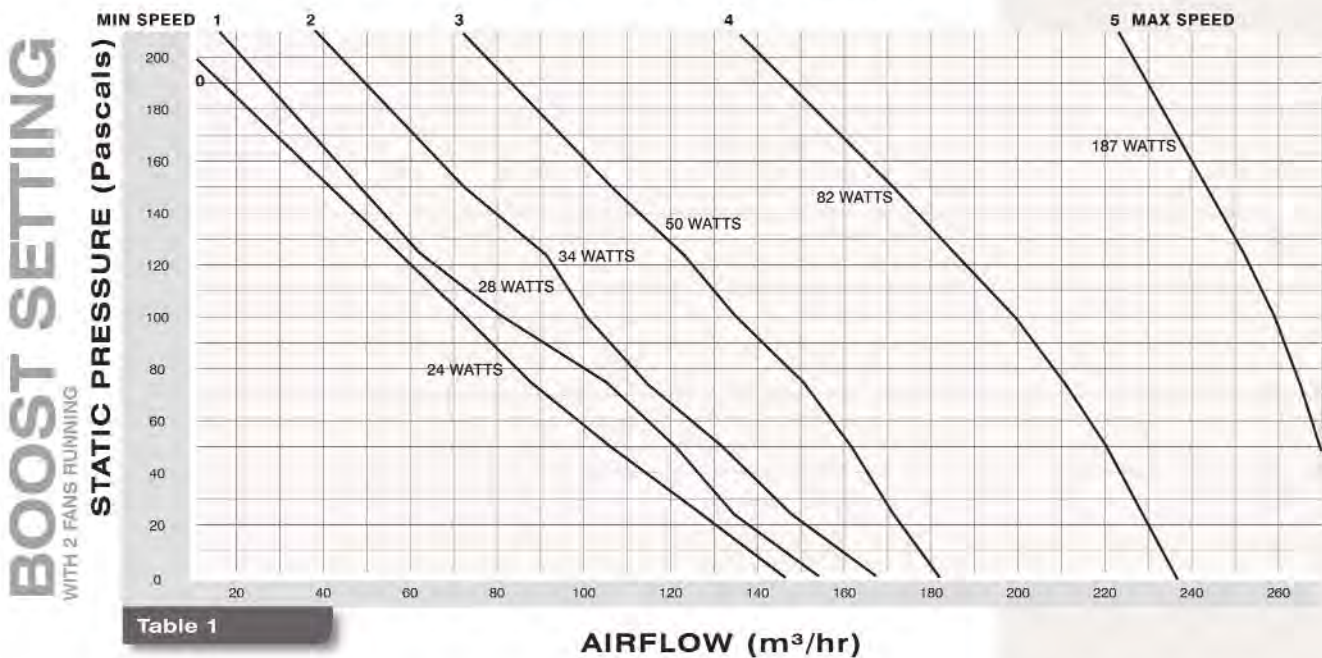
7.7 CONNECTION TO THE CONTROL MANAGEMENT UNIT (OPTIONAL)

- 7.7.1 If a 24V output from the control management unit is required to power up the heat recovery unit:
- 7.7.2 One side of the open contacts are connected to the fuse side of the fused spur and other the open contacts are connected to the brown mains wire of the heat recovery unit. These contacts act as the ON/OFF switch for the unit.
- I) On is when the 24V DC is applied to the coil of the relay.
 - II) Off is when there is NO voltage present across the relay coil.

IMPORTANT: A 1N4004 diode must be connected in parallel with the relay coil, to provide back EMF protection to 24V DC control management unit. Band (Cathode) of diode must be connected to +24V. It is vital the correct orientation of the diode is observed. If not it will cause damage to the control management unit. A diode must be omitted if 24 AC coil is used on 24V AC supply from management unit. (See Figure 10 circuit diagram)

8. FAN PERFORMANCE GRAPHS

(NOTE:- Performance graphs shown for two extracts, kitchen & bathroom)



9. CIRCUIT DIAGRAM

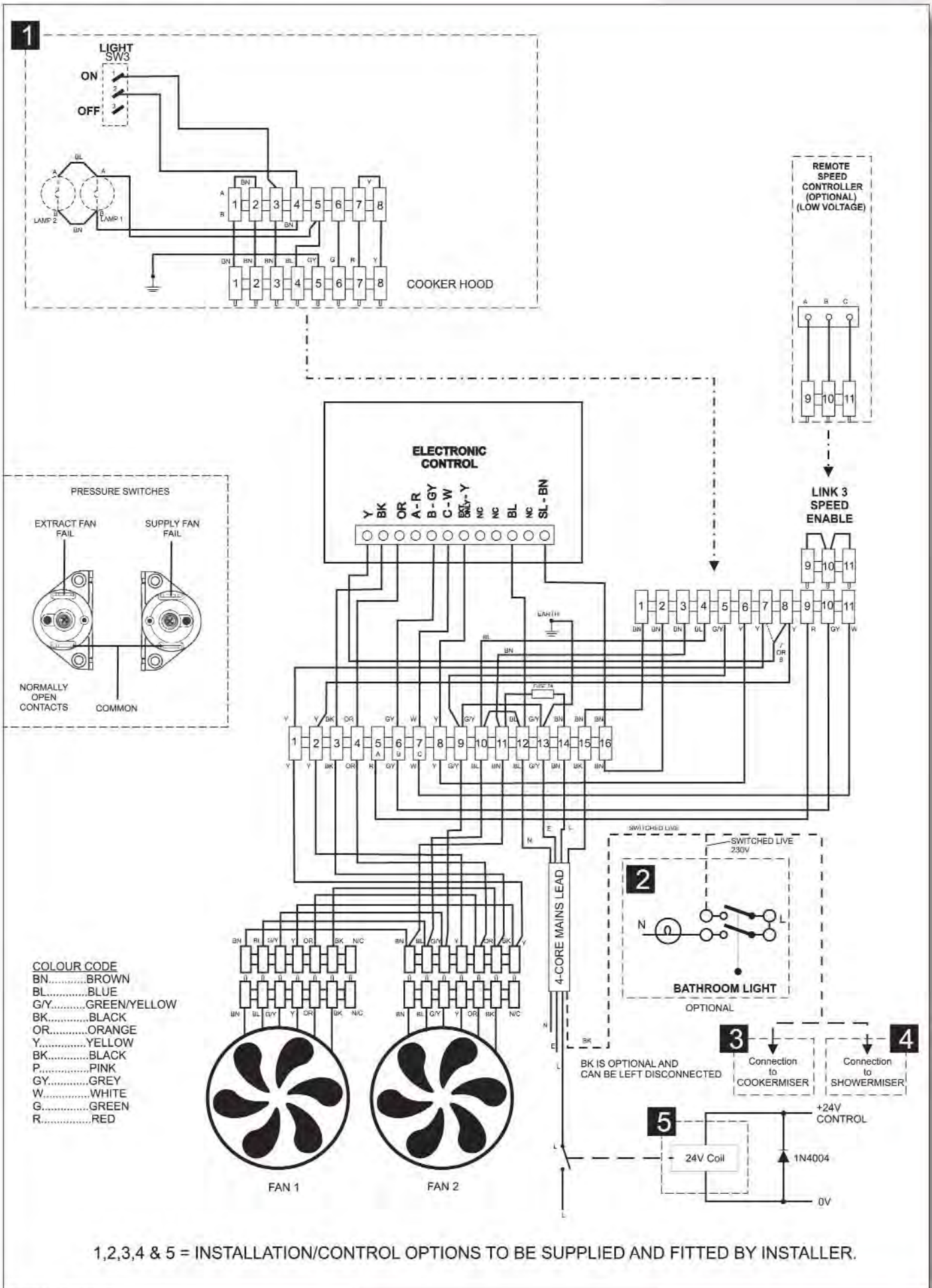


FIGURE 10
WHHR250DC CIRCUIT DIAGRAM

10. COMMISSIONING

- 10.1 The unit operates by extracting warm, stale air from kitchens, toilets/ bathrooms etc., passing it through a heat exchanger and out to atmosphere. A second fan draws in cool fresh air and passes it through the same heat exchanger where it absorbs heat from the outgoing stale air.
- 10.2 The unit must be set up as detailed in section 9.3, so that the NORMAL setting on the fan speed control enables the INLET fan to deliver the designed volume airflow. The switching from NORMAL to BOOST allows the unit to extract at a greater rate to cope with any increase in the build up of condensation or foul air, e.g. when cooking etc.
- 10.3 Before commencing the commissioning procedure, refer to the design drawing for correct air flows.

Note: Extract air and supply air volumes will not always be equal, therefore, when setting up, the extract system should be the datum.

- 9.3.1 Ensure that the exhaust and supply grilles or valves are open and the minimum setting is on '0' (A).
- 9.3.2 Check the airflows at the grilles or valves, and adjust to suit the design figures by turning the centre of the grille clockwise to decrease the airflow, and anti-clockwise to increase the airflow.

10.4 SETTING THE CONTROLS

The fan is designed to run continuously in the TRICKLE mode with occasional BOOST airflow (A High Speed Setting) as and when required.

- 10.4.1 **NORMAL** - Continuous running minimum ventilation requirement. This speed is easily and fully adjustable by the installer on commissioning.
- To set the minimum setting first ensure the LE250-1 is not in boost mode. Turn the boost speed to off. Refer to fan performance graph and read off airflow and guide minimum set point (A) on the speed control and set to the required number.
 - Measure the airflow at the terminals to confirm required minimum airflow.
 - Increase or decrease minimum airflow by re-adjusting the minimum set point (A) on the speed module.
- 10.4.2 **BOOST** - Higher Airflow setting when additional short term ventilation is required.
- The Boost Speed options are adjusted by turning the control knob on the remote boost switch (B) to a higher setting.

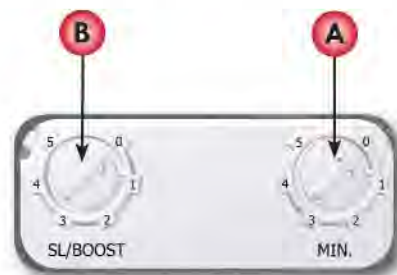


Figure 11

SWITCH LIVE BOOST AND MINIMUM SET POINT

11. SERVICING & MAINTENANCE

IMPORTANT: Before commencing any servicing or component replacement, ensure the **ELECTRICAL SUPPLY** to the unit is **ISOLATED**.

Cleaning of the extract and supply fans and heat exchanger is required annually. Filters on the cooker canopy or kitchen extract may require cleaning more frequently. Clean in accordance with their relevant instructions.

11.1 HEAT EXCHANGER REMOVAL AND SERVICING

11.1.1 Remove the front decor panel. Release the 6 screws securing the sealing cover, swing the electrical cover panel forward and remove the sealing cover, taking care to avoid damage to the gasket.

11.1.2 Release the heat exchanger by withdrawing the wedge at the bottom of the heat exchanger, and remove the heat exchanger from the unit, **taking care to avoid damaging the heat exchanger air passages**.

11.1.3 Check that all the air passages are free from obstruction. If not, clean by washing in a soapy solution, or with a light brush.

Note: Under no circumstance must any sharp implement, that is likely to distort or puncture the air passage walls, be used.

11.1.4 Refitment or replacement is in reverse order. Ensure that the retaining wedge firmly secures the heat exchanger.

11.2 FAN ASSEMBLY REMOVAL AND SERVICING

11.2.1 Referring to section 10.1, remove the heat exchanger.

11.2.2 Disconnect the wiring from the electrical panel to the fan, at the fan terminal block.

11.2.3 Release the 4 screws (using a torx screw driver) securing the fan assembly to the heat exchanger compartment, and withdraw the fan assembly.

11.2.4 Remove all dust etc. from both the impeller and the motor, taking care not to disturb the balance of the fan.

11.2.5 Refitment or replacement is in reverse order.

11.3 SYSTEM MAINTENANCE

11.3.1 Clean any in-line filter that may be fitted in accordance with the filter's instructions.

11.3.2 Clean the kitchen extract grille filter (if fitted) by washing in a soap solution.

11.3.3 Clean the filter in the cooker hood (if fitted) in accordance with the instructions provided with the cooker hood.

12. DIMENSIONS

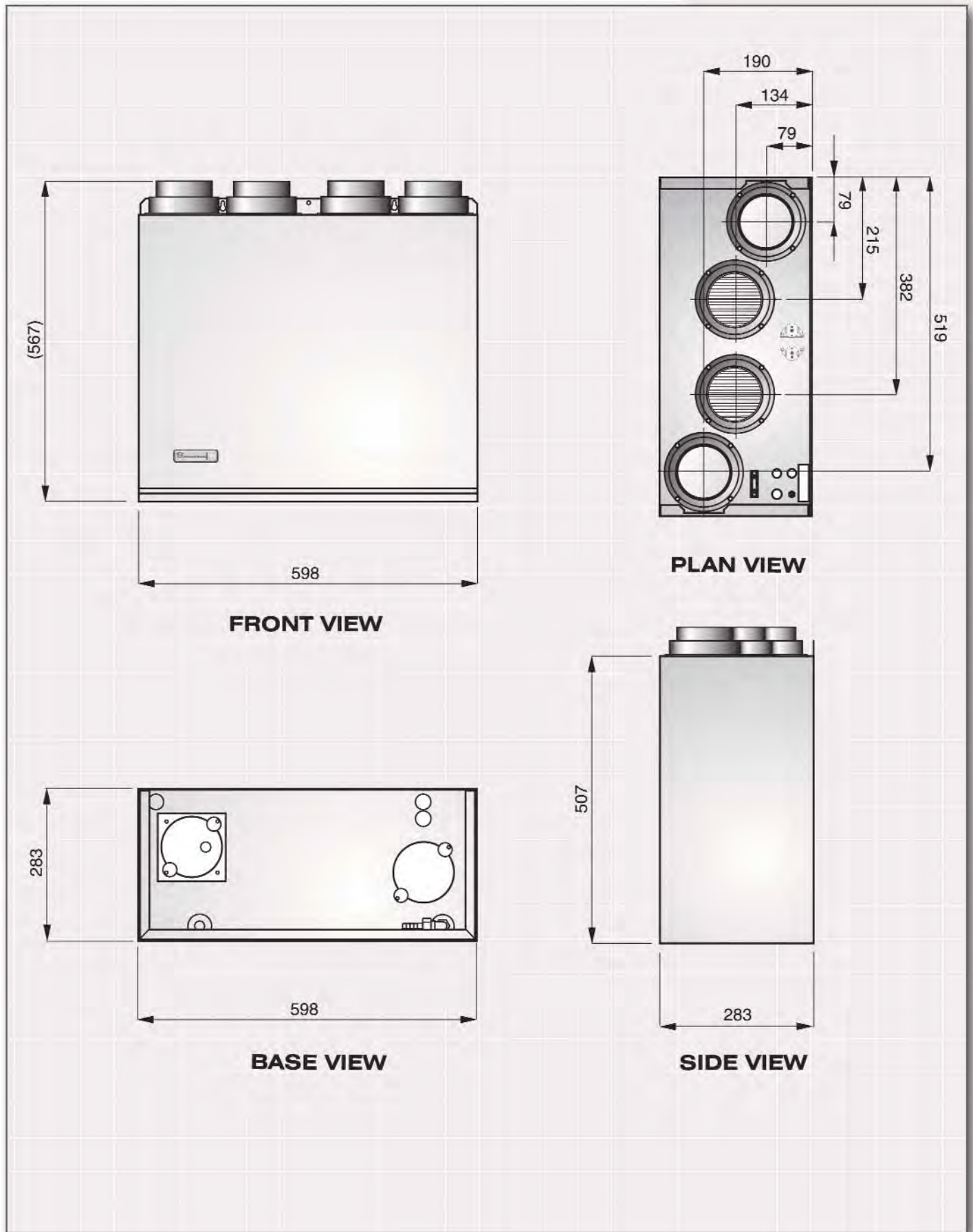


Figure 12

WHHR250DC Dimensions