FLATMASTER-PLUS

Whole-Home Positive Input Ventilation Unit

Installation and Maintenance Manual



1.0 IMPORTANT SAFETY INFORMATION

- The provision of the electrical supply and the connection of the unit to the electrical supply must be carried out by a qualified electrician in accordance with latest edition of the wiring regulations.
- Isolate from power supply before removing any covers. If the unit is a FLATMASTER-PLUS-HEAT, allow for 20 minutes of cool down time. During installation or maintenance ensure all covers are fitted before switching on the mains supply.
- In the event of a fire, industry best practice is to cut the power to the unit.
- All-pole disconnection from the mains as shown in the wiring diagram must be incorporated within the fixed wiring and shall have a minimum contact separation of 3mm in accordance with latest edition of the wiring regulations.
- This unit must be earthed.
- The FLATMASTER-PLUS range requires a 3A fuse to BS1362 at the fused spur.
- Ducting must be securely fixed with screws to the spigot to prevent access to hazards. Duct runs terminating close to the FLATMASTER-PLUS must be adequately protected by suitable guards.
- This unit **MUST** be wall mounted in the orientation as shown in Fig 12 to Fig 14), and is **NOT** suitable for mounting upside down, or flat on a floor or ceiling surface. This is to ensure the thermal protection device will operate correctly.
- This unit should not be installed in uninsulated spaces and cold roof constructions such as lofts.
- Precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances.
- This appliance should not be used by children or persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning the safe use of the appliance by a person responsible for their safety. Children shall not play with the appliance. Cleaning and user maintenance shall not be carried out by children.
- All maintenance & installation conducted upon this product, including filter cleaning or change, must be completed by a competent, qualified service engineer with reference to all guidance within this document.

1.1 HAZARD SYMBOLS



GENERAL WARNING

Signifies a general warning regarding hazard specified by supplementary information.



ELECTRIC SHOCK

This unit must be completely electrically isolated before any panels are removed. Check mains supply and control connections.



ROTATING PARTS

This unit contains fast moving rotational parts which may start automatically. It is the sole responsibility of the installer to adequately guard these components.



REFER TO INSTRUCTION MANUAL

Read and understand the installation and maintenance manual before installing, operating or maintaining this product.

1.2 IMPORTANT INFORMATION

This manual contains important information on the safe and appropriate assembly, transport, commissioning, operation, maintenance, disassembly and simple troubleshooting of the product.

While the product has been manufactured according to the accepted rules of current technology, there is still a danger of personal injury or damage to equipment if the following general safety instructions and the warnings contained in these instructions are not complied with.

- **Read these instructions completely and thoroughly before working with the product.**
- **Keep these instructions in a location where they are accessible to all users at all times.**
- **Always include the operating instructions when you pass the product on to third parties.**

1.3 PERSONAL PROTECTIVE EQUIPMENT

The following minimum Personal Protective Equipment (PPE) is recommended when interacting with Nuaire product:

- **Protective Steel Toe Capped Footwear** - When handling heavy objects.
- **Full Finger Gloves (Marigold PU800 or equivalent)** - When handling sheet metal components.
- **Semi Fingerless Gloves (Marigold PU3000 3DO or equivalent)** - When conducting light work on the unit requiring tactile dexterity.
- **Safety Glasses** - When conducting any cleaning/cutting operation or exchanging filters.
- **Reusable Half Mask Respirators** - When replacing filters which have been in contact with normal room or environmental air.

Nuaire would always recommend a site specific risk assessment by a competent person to determine if any additional PPE is required.

2.0 INTRODUCTION

The Nuaire Drimaster/Flatmaster range has been curing severe condensation problems for over 20 years in some of the worst affected properties throughout the world. Its successful operation depends entirely upon the unit being installed strictly in accordance with these instructions. We would, therefore, respectfully suggest that you read through this guide in its entirety before commencing installation and then go through this guide step by step to ensure a satisfactory completion.

The FLATMASTER-PLUS range includes two variants:

1. **FLATMASTER-PLUS** - standard positive input ventilation
2. **FLATMASTER-PLUS-HEAT** - positive input ventilation with air tempering.

The units come with 6 speed options as standard to accommodate various levels of airflow.

Both the FLATMASTER-PLUS and FLATMASTER-PLUS-HEAT may be installed in either left or right hand orientations. The required airflow direction should determine what orientation should be chosen.

Whilst the installation of the unit may be achieved by a suitable craftsman, the provision of the electrical supply and the connection of the unit to the mains must be carried out by a qualified electrician.

3.0 MECHANICAL INSTALLATION

Installation must be completed by competent persons, in accordance with good industry practice and should conform to all governing and statutory bodies i.e. IEE, CIBSE, etc.

IMPORTANT

Isolate from power supply before removing any covers. If the unit is a FLATMASTER-PLUS-HEAT, allow for 20 minutes of cool down time.

During installation/maintenance ensure all covers are fitted with the provided suitable fixings before switching on the mains supply.

Where the systems are installed in flats, ensure all regulatory provisions are adhered to. Where the systems are installed in flats where these regulatory provisions do not apply, good installation practice should be observed.

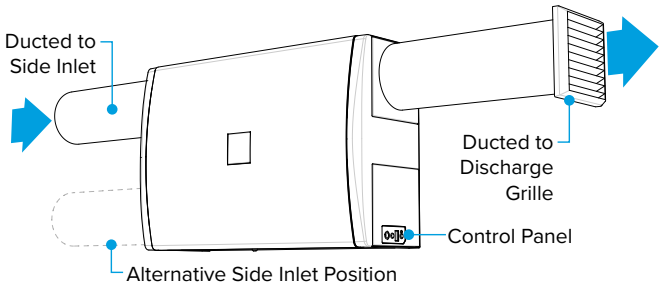
For more information, please refer to the Building Regulations, Approved Document B (Fire safety) – Volume 1: Dwelling houses (2019 Edition).

Before commencing installation decide the best position for the unit and where the fresh air is to come from and be discharged to.

The unit can be installed in many different configurations and is supplied with enough interchangeable spigots to enable it to be used with either circular (100mm) or rectangular ducting (121mm x 60mm).

All possible spigot positions MUST be blanked if not in use.

Fig 1: Typical Ducted Installation - Right-Handed Discharge Configuration



3.1 SETTING UP THE CORRECT AIRFLOW DIRECTION

3.1.1 SETTING UP THE FLOW PATH

To set up the flow path during handing of the unit, the transformation piece and scroll cap must be positioned following the guidance in Fig 2 or Fig 3.

See Fig 17 & Fig 18 for guidance on changing the impeller direction.

Fig 2: Right Hand Discharge Flow Path

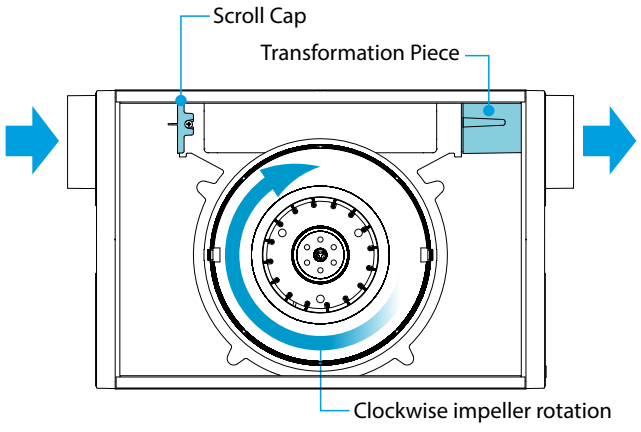
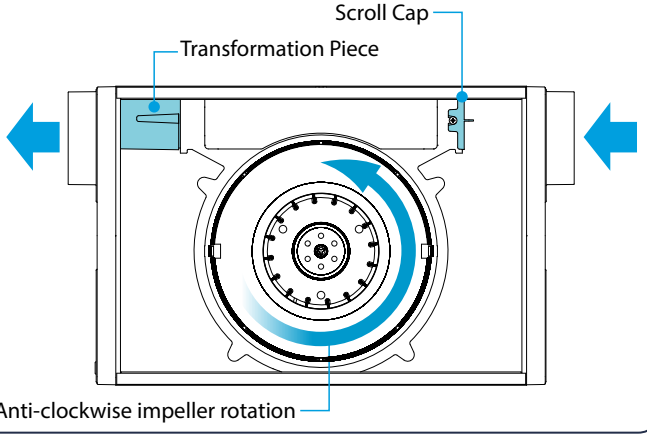


Fig 3: Left Hand Discharge Flow Path



3.1.2 ORIENTATING THE CIRCUIT BOARD AND ELECTRONICS

Upon handing, it may be necessary to adjust the position of the printed circuit board and electrical connections depending on the required access to the controls. This will involve disconnecting the circuit board from all connections, and positioning the mains lead and Earth to the chosen side.

Additionally, If using the FLATMASTER-PLUS-HEAT, the thermistor and heating element leads will need to be positioned following the guidance in Fig 4 or Fig 5.

It is critical to ensure that the thermistor cable is returned to the intended position and secured neatly using the zip ties provided.

Fig 4: FLATMASTER-PLUS With Left-Hand Discharge - Electrical Connections

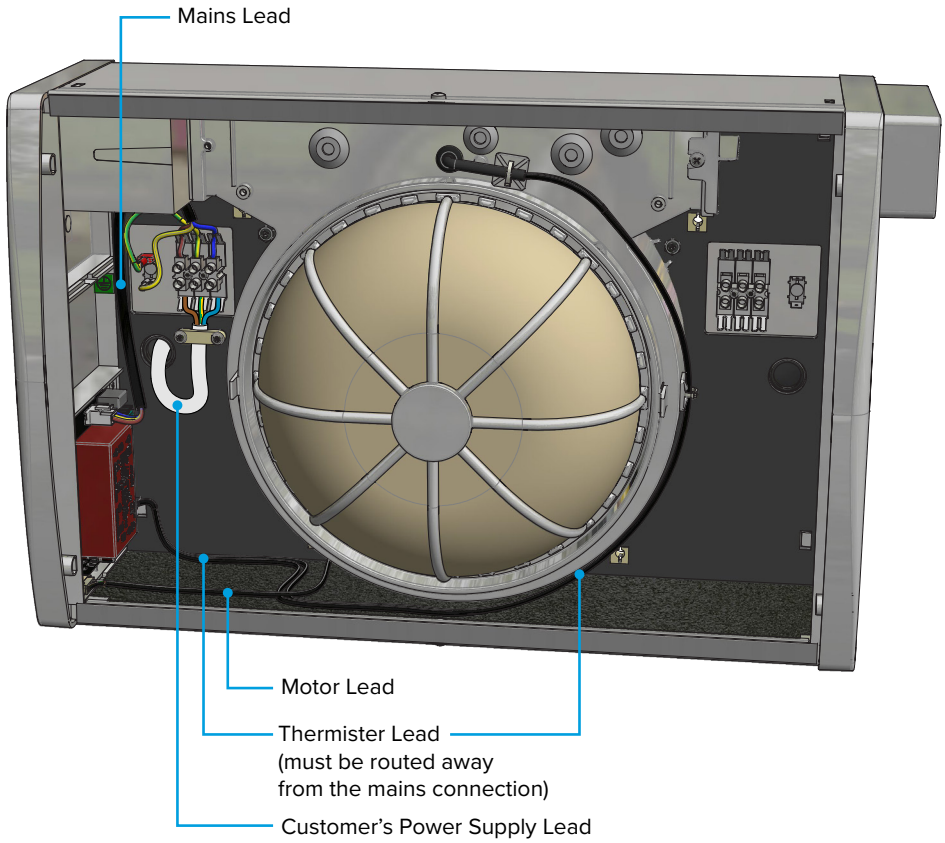


Fig 5: FLATMASTER-PLUS With Right-Hand Discharge - Electrical Connections

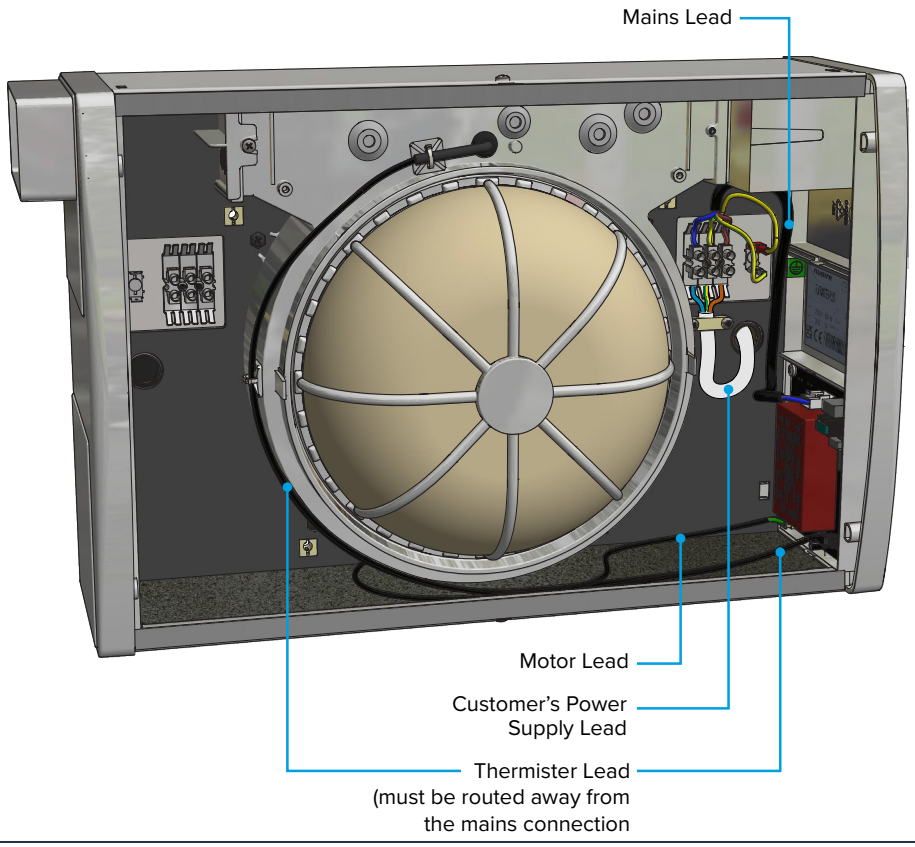


Fig 6: FLATMASTER-PLUS-HEAT With Left-Hand Discharge - Electrical Connections

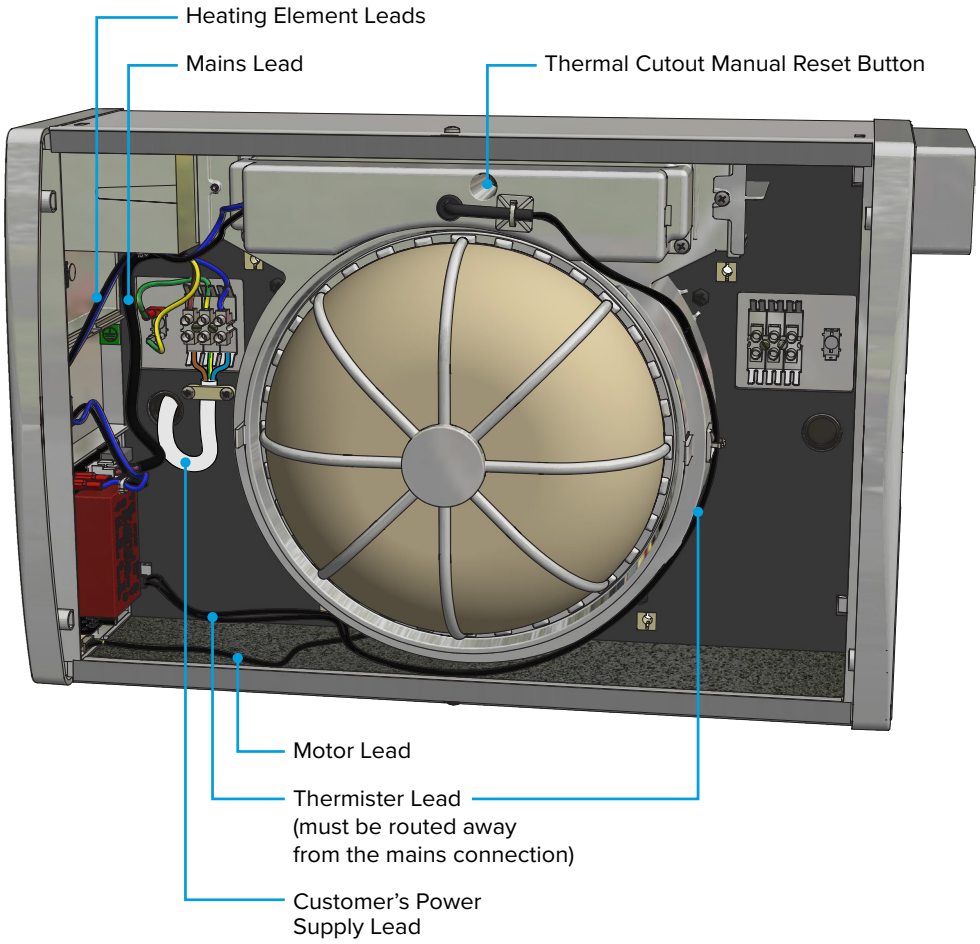
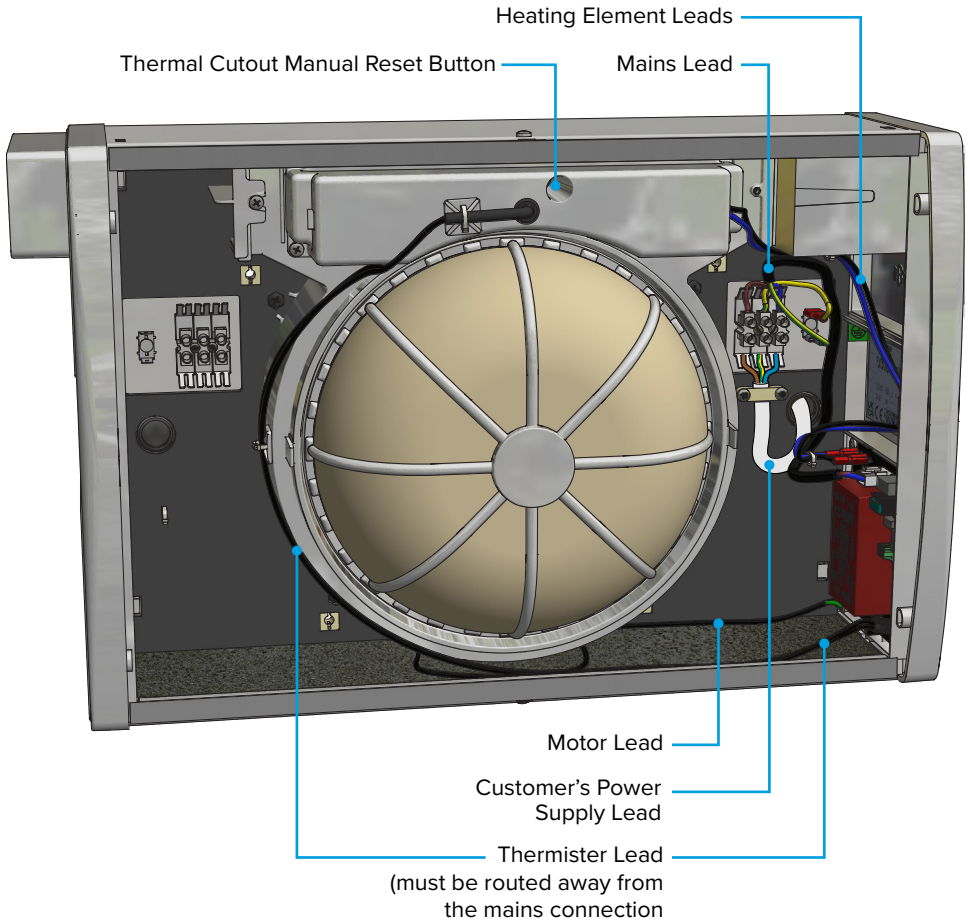


Fig 7: FLATMASTER-PLUS-HEAT With Right-Hand Discharge - Electrical Connections



3.1.3 CABLE MANAGEMENT

The cable management example in Fig 8 shows a right-handed FLATMASTER-HEAT. The same cable routes should be adopted by the non-heat variant where appropriate, and mirrored for the left-handed variant.

IMPORTANT

The thermistor lead must be routed away from the mains connection. See Fig 8 for our recommendation.

Fig 8: General Cable Management

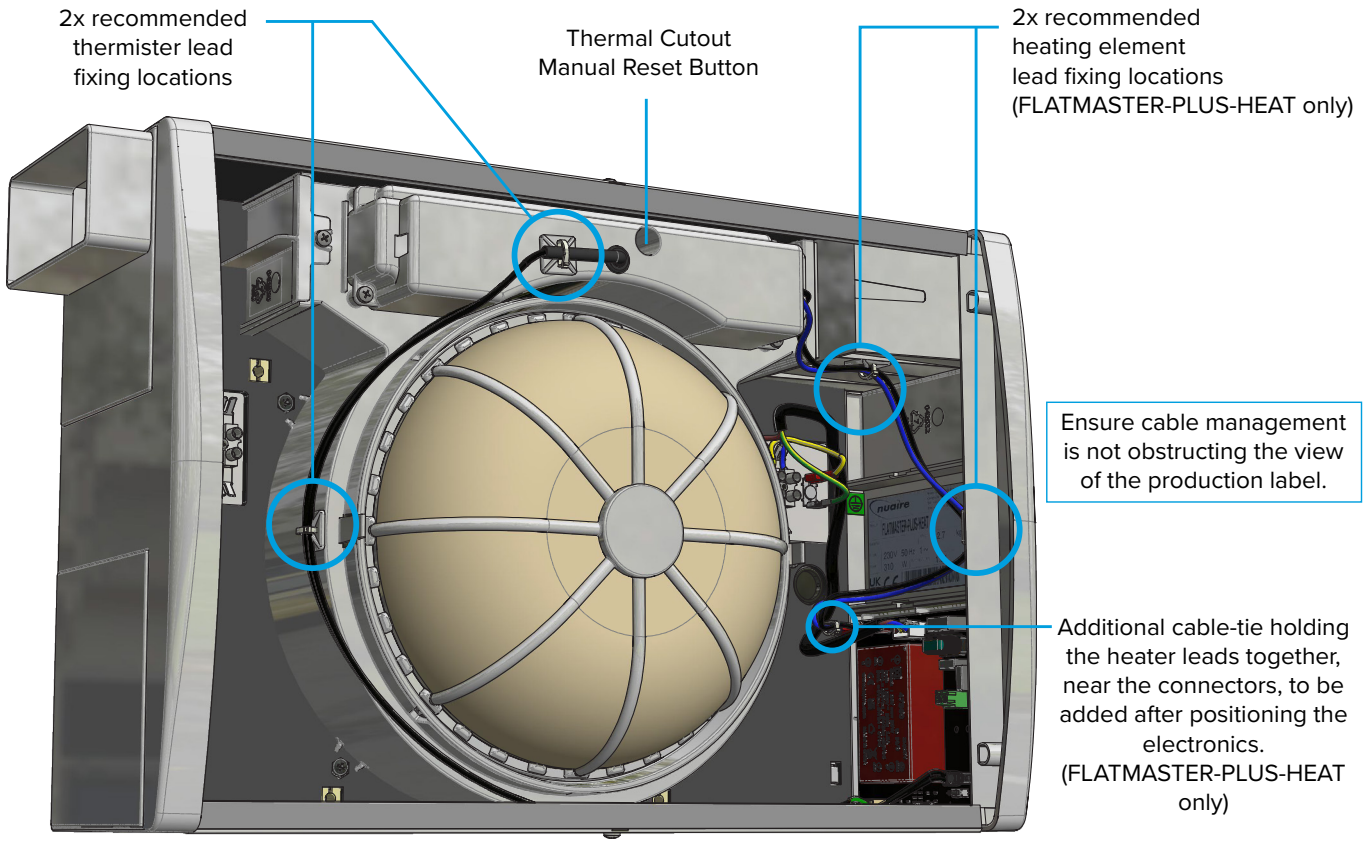
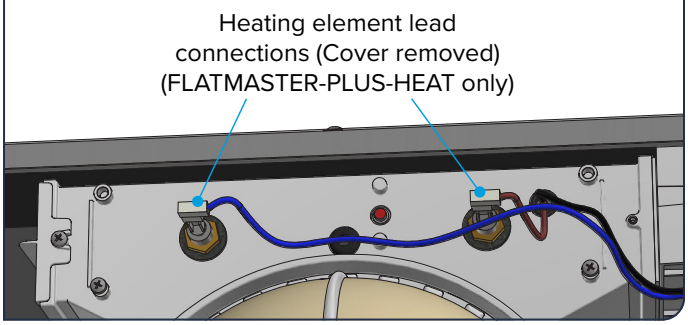


Fig 9: Cable Management - Heating Element Leads



3.1.4 SETTING THE FLOW DIRECTION CONTROLS

IMPORTANT

Isolate from power supply before removing any covers. If the unit is a FLATMASTER-PLUS-HEAT, allow for 20 minutes of cool down time.

During installation/maintenance ensure all covers are fitted with the provided suitable fixings before switching on the mains supply.

Airflow direction is controlled via the direction selector switch present on the printed circuit board (See Fig 17 on page 9).

3.2 SPIGOT OPTIONS

The unit is designed to accommodate a range of inlet and outlet configurations. This includes on site handing and rear inlet entry.

3.2.1 SPIGOT INSERTS

The unit comes with both circular (100mm) or rectangular (121mm x 60mm) spigot inserts that can be mounted on the sides for both inlet and outlet use.

The unit is designed to be used with rigid ducting only. Ensure that when the ducting is fitted it is secured in place using wall brackets and screws on the duct as close to the spigots as possible to prevent the spigot inserts (Fig 10) or rigid ducting from being removed or accidentally knocked off. If it is necessary to fit flexible ducting then the spigot inserts should be glued in place, using super glue Loctite 454 Gel, at the clip points 1, 2, 3 & 4 for all spigot inserts (Fig 11).

If the round spigot is used as an outlet, the 115 x 55mm transparent blanking plate will need to be fitted (Fig 10). This plate should be prevented from movement by the use of silicone sealant.

Fig 10: Fitting Transformation Piece and Blanking Plate

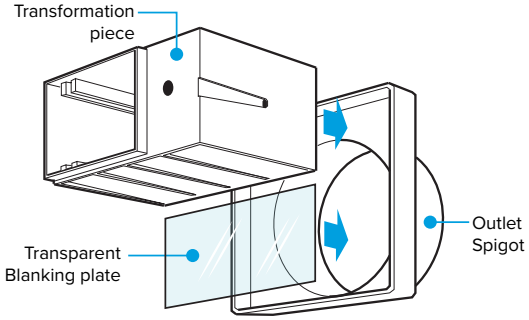
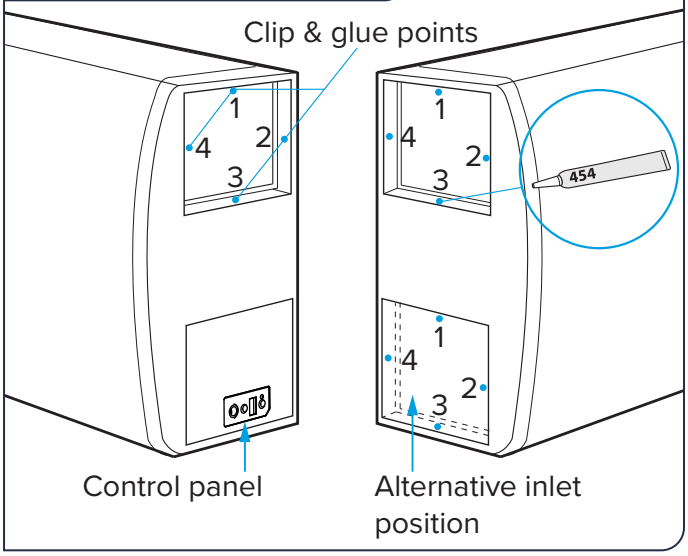


Fig 11: Spigot Insert Installation



3.2.2 REAR SPIGOTS - INLET ONLY

Alternatively, circular (100mm) inlet connections are provided on the rear of the unit (Fig 15 on page 8). These can only be used for inlet duct connections and only a single inlet connection should be used at one time.

To use the rear duct connections, cuts must be made in the foam using the guide on the rear. The blanking metal plate must be removed by carefully snipping the connecting joints with pliers. Ensure care is taken during the installation, cuts to the metal may result in sharp edges.

When using rear spigot entry, it is recommended to position the circuit board on the side opposite the fixed spigot. Please refer to section 3.1.2 for guidance.

The spigot and required fixings are provided as part of a small parts bag with each unit. Ensure the rear spigots are fixed securely.

3.3 FIXING THE UNIT TO THE WALL

3.3.1 POINTS TO CONSIDER

Prior to fixing the unit, the following should be considered:

- Handing and spigot choices should be decided upon and changed prior to fixing the unit to the wall.
- The inlet ducting should be kept as short as possible to avoid condensation build up on the ducting surface.
- Find the shortest, most direct route from outside of the unit and then to the discharge grille using the least number of bends (these bends increase the airflow resistance).
- Note the location of any joists, pipes, electrical cables etc.
- Allow adequate access to the front cover to allow filter cleaning.
- This unit MUST be wall mounted in the orientation shown in Fig 12, Fig 13 or Fig 14. The unit is NOT suitable for mounting upside down, on a floor or ceiling surface.
- This unit **MUST** be mounted at a minimum height of 1.8m from the floor.

3.3.2 FIXING

Before fixing the unit feed the electrical supply cable through the grommet hole in the rear of the unit closest to the terminal block in use. Standard 1mm^2 three core lighting cable is recommend as a minimum specification. Installers must ensure the grommet provided or other suitable insulated grommet/bushing is used for cable entry.

The unit has four mounting feet located on the back plate. All four are accessible by removing the front cover (fixed by two screws). Position the unit on the wall where it is to be mounted and mark through the feet. Drill and plug the wall with suitable fixings.

Screw the unit to the wall, ensure all cables are correctly and securely installed, and refit the front cover using the provided screws.

Refitting the front cover screws after installation is critical for maintaining tool-necessary access.

3.4 FITTING OF DUCTS

3.4.1 NECESSARY DUCTING

A full range of ductwork and ductwork ancillaries are available. Please contact Nuaire for further details.

Care must be taken during installation and maintenance to ensure that ductwork is kept clear from debris, fixed and supported appropriately.

3.5 INLET / OUTLET GRILLE INSTALLATION

The unit comes supplied with a flush mounted internal discharge grille as standard and the capability for a duct mounted grille as an alternative.

Any internal grilles must not be placed within 1.5m of a smoke alarm.

When installing the ducted internal grille, the louvres must slant upwards to ensure the correct air circulation and the avoidance of unpleasant down draughts. The outside wall input grille louvres must slant downwards.

When making duct connections to input and discharge grilles, standard 100mm diameter ducting or 121 x 60mm ducting must be used.

Any air intake terminal MUST be installed in accordance with the appropriate regulation.

As a guide, the BS5440 series of British Standards deals with this issue and currently states that an air intake must be at a minimum distance of 300mm from a gas boiler balanced flue. Installers are advised to be aware of the requirements of this standard when installing ‘through the wall’ supply air ducting. Similarly, supply and extract air grilles should be at least 300mm apart.

Fig 12: Installation Example: Side Ducted Inlet, Louvre Outlet

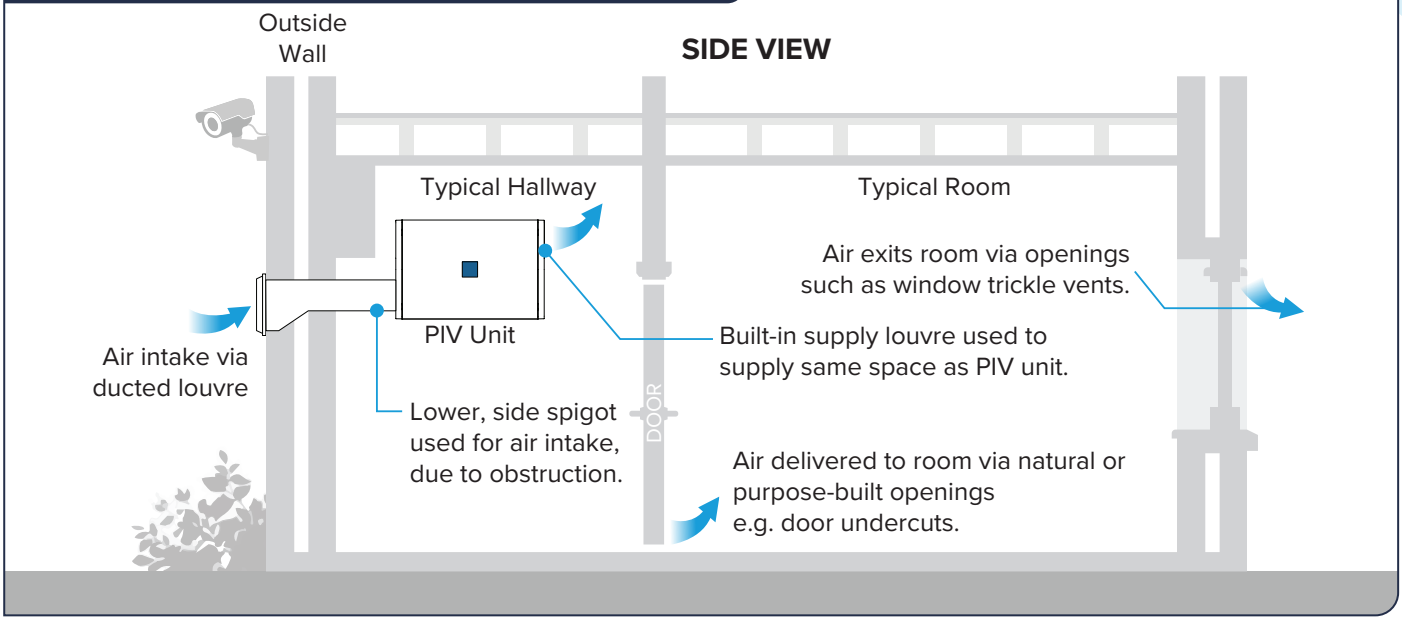


Fig 13: Installation Example: Side Ducted Inlet, Side Ducted Outlet

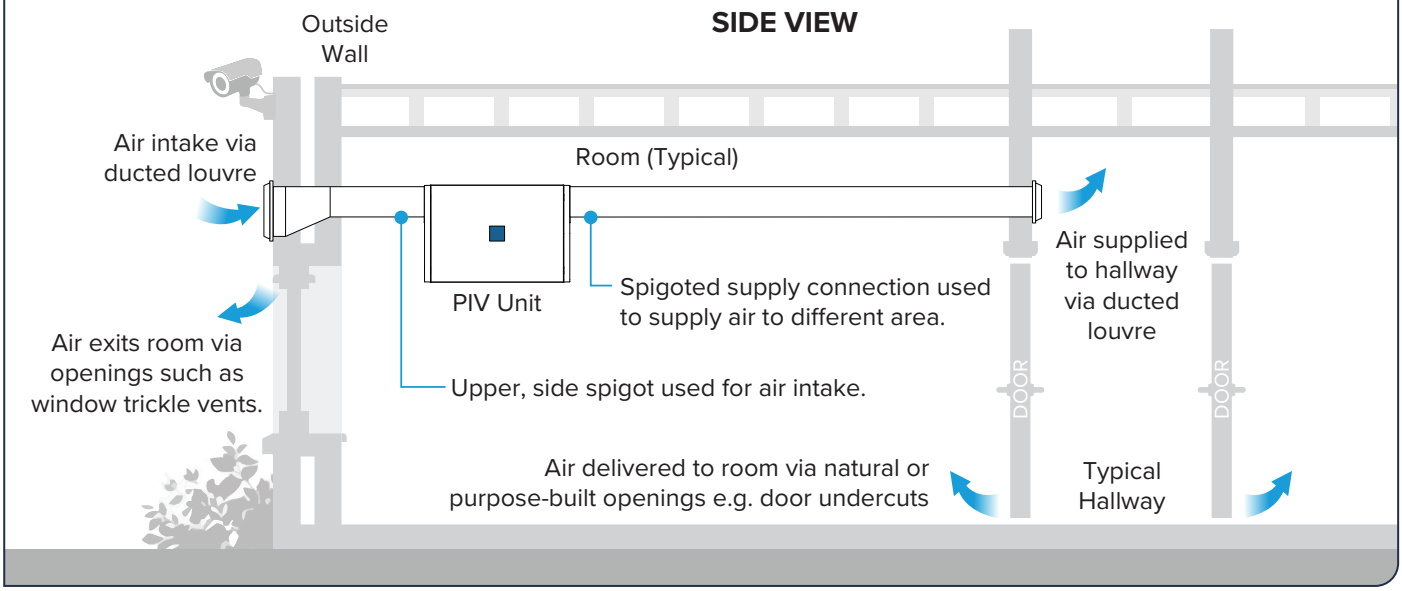
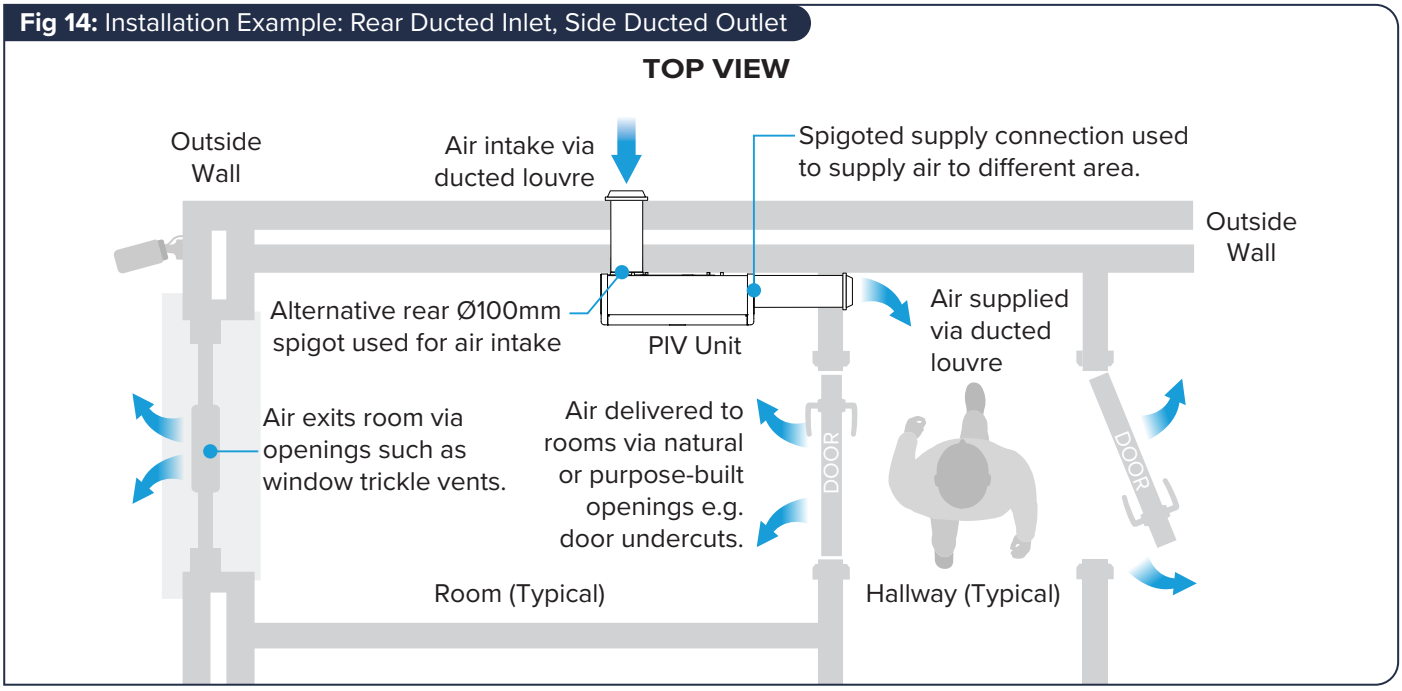


Fig 14: Installation Example: Rear Ducted Inlet, Side Ducted Outlet



4.0 DIMENSIONS

Dimensions for the installation space required can be determined from the unit dimensions shown in Fig 10 below.

Allow an additional 32mm for the length of each end spigot and any additional room for installation and maintenance e.g. access to screws on top and bottom of unit for front cover.

Fig 15: FLATMASTER-PLUS Dimensions (Right-handed Airflow Configuration)

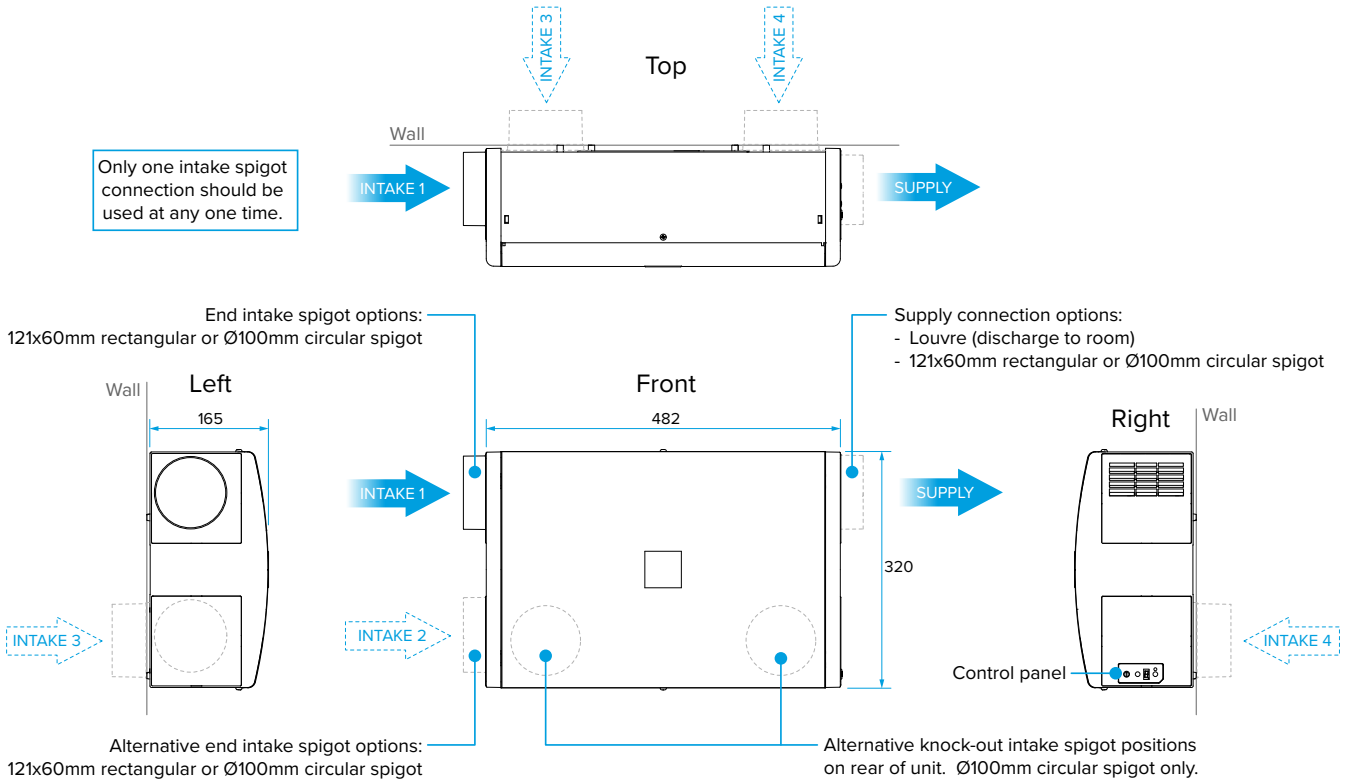
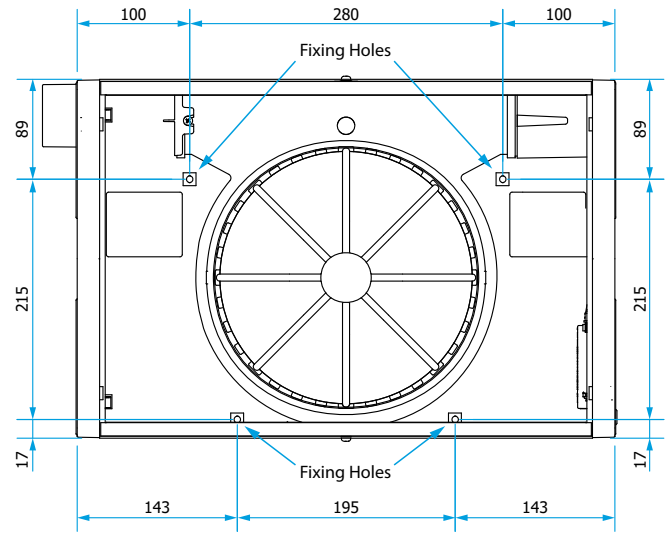


Fig 16: Fixing Hole Positions - Front Cover Removed



5.0 ELECTRICAL INSTALLATION

IMPORTANT

Isolate from power supply before removing any covers. If the unit is a FLATMASTER-PLUS-HEAT, allow for 20 minutes of cool down time.

For good EMC engineering practice, any sensor cables or switched live cables should not be placed within 50mm of other cables or on the same metal cable tray as other cables.

5.1 ELECTRICAL INFORMATION

- **Supply** - 230V, 1 phase, 50Hz

Speed Setting	Power Consumption (W) at Free Air (0Pa)		
	FLATMASTER-PLUS	FLATMASTER-PLUS-HEAT	
		Heater Off	Heater On
1	1.7	2.0	302.1
2	2.0	2.1	302.4
3	3.2	3.7	302.8
4	5.3	5.7	304.7
5	6.6	7.4	305.1
6	8.4	9.4	310.0

It is necessary to allow all pole disconnection of the appliance from the supply by incorporating a switch in the fixed wiring in accordance with current IEE wiring regulations.

5.2 ELECTRICAL CONNECTION

The electrical connections to the unit should be carried out by a qualified electrician. Wiring connections can be seen in Fig 19 & Fig 17. Ensure a 3A fused spur to BS1362 is fitted on the supply along with a 2-pole isolator.

Ensure the use of an appropriate protective residual current device (RCD), upon installation.

When installing the mains lead connection, the cable clamp and cable grip provided must be used to secure the lead.

5.2.1 PRINTED CIRCUIT BOARD CONNECTIONS

Upon handing, it may be necessary to adjust the position of the printed circuit board and electrical connections depending on the required access to the controls. This will involve disconnecting the printed circuit board from all connections, and positioning the mains lead and Earth to the chosen side.

Ensure the flow direction switch is in the correct position.

Fig 17: FLATMASTER-PLUS Circuit Board Connections Diagram

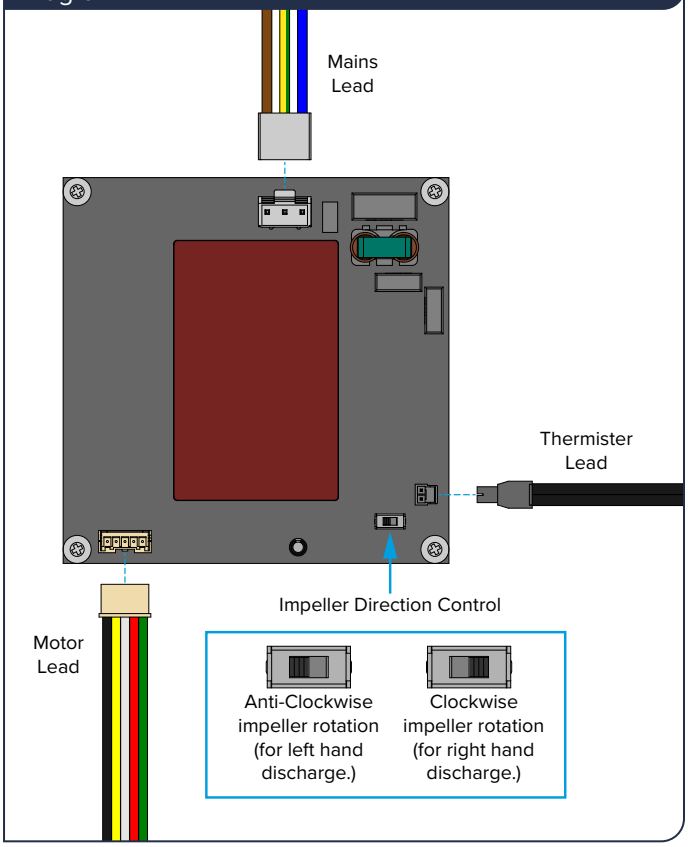
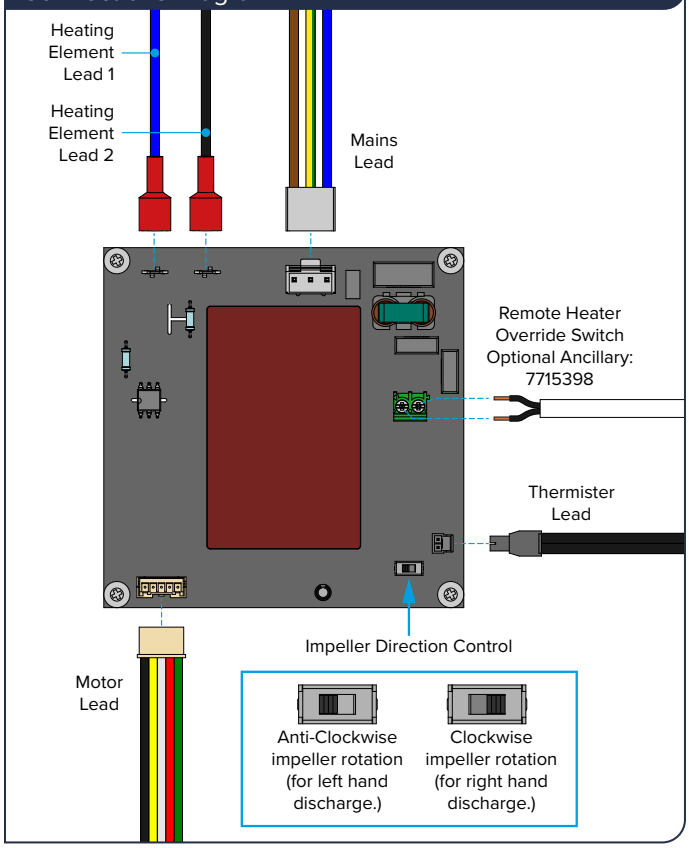


Fig 18: FLATMASTER-PLUS-HEAT Circuit Board Connections Diagram



5.3 WIRING DIAGRAMS

Fig 19: Unit Wiring Diagram

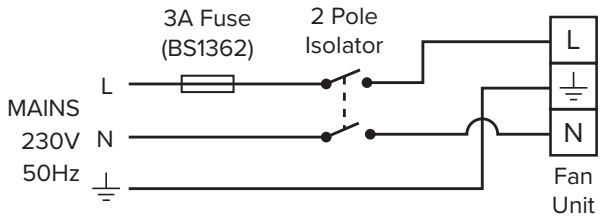
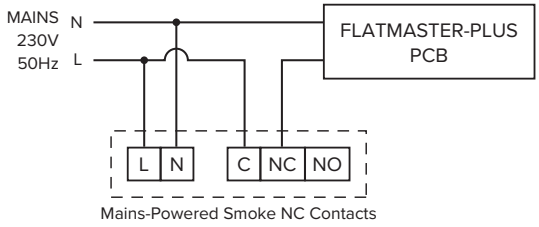


Fig 20: Typical Smoke Alarm Wiring (Refer to Manufacturer's Instructions)



IMPORTANT

It is critical to ensure that the thermistor cable is returned to the intended position and secured neatly using the zip ties provided (see Fig 8).

5.3.1 SMOKE ALARM AUTOMATIC SHUT DOWN

If the unit is required to switch off in the event of smoke detection, separate smoke alarms automatic shut down is required (not available from Nuaire).

5.3.2 OPTIONAL REMOTE HEATER OVERRIDE SWITCH

Nuaire Part Code: 7715398

An optional heater override switch can be used to shut off all air tempering. This connection must be installed using mains voltage type double insulated cable 0.5mm^2 e.g. **H03VV-F 2182Y**.

IMPORTANT

This connection is only to be made to 7715398 or equivalent 10AX switch using the two connecting terminals. Do not connect these terminals to mains.

6.0 CONTROLS

Fig 21: Controls Interface - FLATMASTER-PLUS

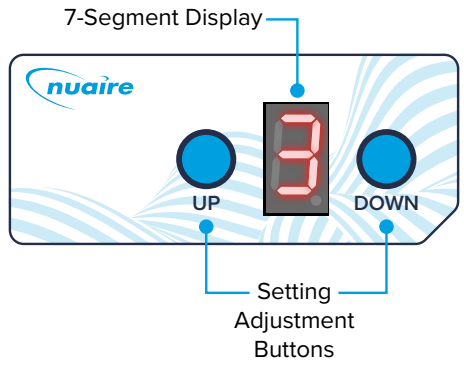
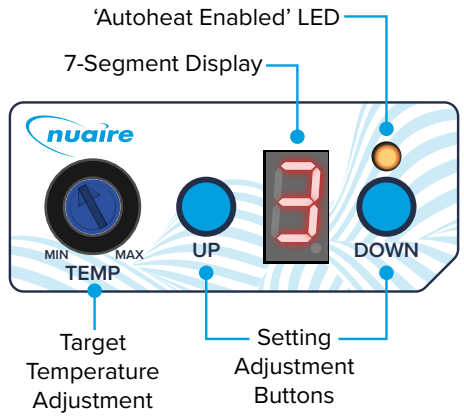


Fig 22: Controls Interface - FLATMASTER-PLUS-HEAT



6.1 START-UP PROCEDURE

When powered on the unit will request confirmation of the preferred temperature control mode. These modes are to be used when it is desirable to prevent the supply of warm, outside air in warmer months. 3 modes are available and can be toggled between using the "**UP**" button and confirmed using the "**DOWN**" button. Once confirmed, or after 2 minutes without a selected option, the unit will return to the set fan speed.

Temperature Control Mode	Behaviour
1 (default)	When inlet temperatures exceed 23°C, the unit will go into standby.
2	When inlet temperatures exceed 27°C, the unit will go into standby.
3	The unit will run at the set speed 7 days a week, 24 hours a day, independent of temperature.

6.2 SETTING UNIT SPEED

The unit has a choice of six speeds. By default, the unit is factory set at speed setting 3. We recommend that the unit is operated at speed setting 3 and the setting reduced or increased if and when necessary in the future.

When operating under normal conditions, the seven-segment display will display the current speed setting. This speed setting can be changed using the up and down buttons.

Speed Setting	Flow Rate (l/s)
1	11
2	13
3	19
4	26
5	29
6	33

The flow rates given are independently tested and based on a typical installation including:

- 300mm circular ducting (100mm diameter)
- 400mm rectangular ducting (120x60 mm)
- Transition piece
- Supply grille.

6.3 ENABLING THE HEATER (FLATMASTER-PLUS-HEAT)

An integral heater is provided with the **FLATMASTER-PLUS-HEAT** variant in this range. It targets maintaining the supply air at a comfortable temperature which can be controlled using the potentiometer on the control panel between a minimum of 5°c and 15°c.

When the orange LED on the diffuser control panel is illuminated (See Fig 22), the heater is active in '**autoheat**' mode and is controlled by the temperature setpoint. When the orange LED is not lit, the heater is unable to activate.

The heater controls can be overridden through the use of the optional ancillary (**7715398**) heater override switch. This switch allows for the heater to be switched from standard behaviour to enforced '**OFF**', preventing it from activating at any temperature.

The temperature sensor will not measure the internal air temperature of the property. It measures the incoming fresh air temperature and will activate the heater to temper the supplied air to the temperature set on the potentiometer, between 5°C and 15°C

6.4 ADDITIONAL OPTIONS

The control interface (Fig 21 & Fig 22) also provides some options for diagnostics and advance controls. These can be accessed by holding one, or both **UP** and **DOWN** buttons for a set period as per the following table:

Control Option	Button Hold Sequence	
	Duration (seconds)	Required Button
Display hours run	3 to 7	Up
Fan speed regime options selection	8 to 13	Up
Auto heat mode enabled/disabled	2 to 5	Down
Change filter state update	10 to 20	Both

7.0 MAINTENANCE

All maintenance & installation conducted upon this product, including filter cleaning or change, must be completed by a competent, qualified service engineer with reference to all guidance within this document.

IMPORTANT

Isolate from power supply before removing any covers. If the unit is a FLATMASTER-PLUS-HEAT, allow for 20 minutes of cool down time.

During maintenance ensure all covers are fitted before switching on the mains supply.

It is important that maintenance checks are recorded and that the maintenance schedule is always adhered to, in all cases, the previous report should be referred to. The maintenance requirements for this product can be found in the "**Product Safety - Essential Operational Checks**" on page 12.

7.1 REPLACING THE FILTER

The replacement of the filter (part number: **FLAT-FILTERKIT**) should be conducted every 12 months; this interval may need to be shortened if the unit is operating under adverse environmental conditions. Failure to do so may impair the performance and energy efficiency of this unit.

After 12 months, the seven-segment display will flash '**C**'. This indicates a filter change is required, and the message can be reset following the Change Filter state update instructions in section 6.4 of this document.

7.2 TROUBLESHOOTING

If the heater does not seem to be operating, the internal over temperature cut-out may have tripped. To reset, switch unit off at the isolator / mains. remove the front cover retaining screws and the cover itself, and press the red reset button accessible through the channel at the top of the scroll.

After performing maintenance, ensure all covers are fitted before switching on the mains supply.

This may be triggered by significantly reduced airflow, therefore, checks should be made to the filter and inlet / outlet grilles for blockages

If a fault occurs, the unit will enter standby and flash an error code on the seven-segment display.

A flashing '**F**' indicates Fan error.

All other error codes are formatted as '**E**' followed by 3 numbers. If an error code occurs, record it and contact the Nuaire aftersales department, this error code can help with diagnostics when a fault is present.

8.0 WARRANTY

The 5 year warranty starts from the day of delivery and includes parts and labour for the first year. The remaining period covers replacement parts only.

This warranty is void if the equipment is modified without authorisation, is incorrectly applied, misused, disassembled, or not installed, commissioned and maintained in accordance with the details contained in this manual and general good practice.

The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Failure to maintain the unit as recommended will invalidate the warranty.

9.0 END-OF-LIFE AND RECYCLING

Ensure that Nuaire product is made safe from any electrical / water / refrigerant supplies before dismantling commences. This work should only be undertaken by a qualified person in accordance with local authority regulations and guidelines, taking into account all site based risks.

Where possible Nuaire use components which can be largely recycled when the product reaches its end-of-life:

- Fans, motors, controls, actuators, cabling and other electrical components can be segregated into WEEE recycling streams.
- Sheet metal parts, aluminium extrusion, heating/cooling coils and other metallic items can be segregated and fully recycled.
- EPP, plastic ducting, nylon corner pieces, plastic heat exchangers, packaging material and other plastic components can be segregated into mixed plastic and widely recycled.
- Cardboard packaging, wood, used filters and other paper components can be largely recycled or fully processed in energy from waste centres.
- Remaining Items can be further segregated and processed in accordance with the zero waste hierarchy. Please call After Sales Support for further information on items not listed above.

10.0 AFTER SALES AND REPLACEMENT PARTS

For technical assistance or further product information, including spare parts and replacement components, please contact the After Sales Department.

If ordering spares please quote the serial number of the unit together with the part number, if the part number is not known please give a full description of the part required. The serial number will be found on the identification plate attached to the unit casing.

Telephone 02920 858 400
aftersales@nuaire.co.uk

Technical or commercial considerations may, from time to time, make it necessary to alter the design, performance and dimensions of equipment and the right is reserved to make such changes without prior notice.

CE

EMC Directive
2014/30/EU

LVD Directive
2014/35/EU

PRODUCT SAFETY - ESSENTIAL OPERATIONAL CHECKS

Project Address

Date Of Check DD/MM/YYYY

Unit Code

Unit Serial Number

- No action required
- Remedial action required
- Make safe and corrective action required

Unit With Cover Installed



PRODUCT CONDITION

DATE OF LAST MAINTENANCE

- Within last 12 months
- 12-24 months ago
- >24 months ago
- Unknown

GENERAL CONDITION

- General condition
- Ductwork intact
- Casing damaged
- Ductwork damaged

GENERAL CLEANLINESS EXTERNAL

- Clean
- Light contamination
- Heavy contamination

GENERAL CLEANLINESS INTERNAL

- Clean
- Light contamination
- Heavy contamination

CONDITION OF FANS

- Operational
- Clean
- Light contamination
- Heavy contamination
- Non-operational

CONDITION OF FILTERS

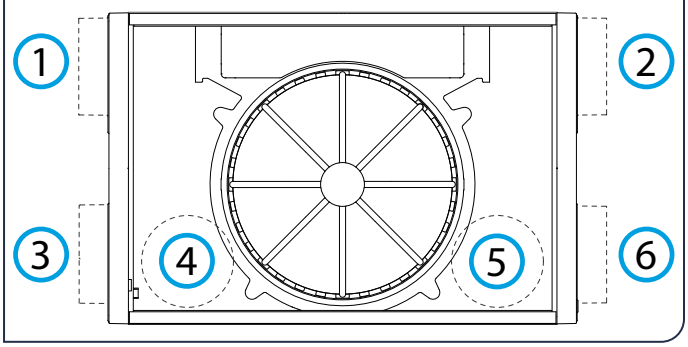
- Clean
- Light contamination
- Missing
- Heavy Contamination
- Damaged/ Perforated

CONDITION OF HEATER

- Operational
- All components present
- Discoloured
- Distorted
- Non-operational or incomplete

INSTALLATION

Schematic of Spigot Configurations



Indicate Inlet Position (1, 2, 3, 4, 5 or 6)

indicate Outlet Position (1 or 2)

Approx length of ductwork on inlet (600mm min.) mm

Approx length of ductwork on supply mm

Height of unit above floor level (1.8m min) m

Fused spur fitted? (Y/N)

Fused rating fitted Amps

FLATMASTER-PLUS or FLATMASTER-PLUS-HEAT?

	FLATMASTER-PLUS	FLATMASTER-PLUS-HEAT

Left or Right Handed Installation?

	Left-Handed	Right-Handed

POST-INSTALLATION CHECKS

1. Are all cables routed following the guidance in Fig 4 to Fig 7?
2. Has the thermistor cable been correctly routed through both retaining holes?
3. Have the cables been secured appropriately with the supplied zip ties?
4. Has the mains lead been secured using the cable grip provided?
5. Has the correct flow direction been selected on the Circuit Board? (See Fig 17 & Fig 18 on page 9)