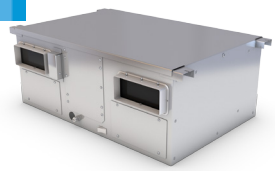


CM-XBOX-INLINE

Cooling module for use with MVHR Units

Installation Manual

1.0 SAFETY INFORMATION

- The provision of the electrical supply and the connection of the unit to the mains must be carried out by a qualified electrician. Ensure that the mains supply (Voltage, Frequency and Phase) complies with the rating label.
- Isolate from power supply before removing any covers. During installation / maintenance ensure all covers are fitted before switching on the mains supply.
- 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.
- Ducting must be securely fixed with screws to the spigot to prevent access to live parts.
- If the supply cord is damaged, it must be replaced by its service agent or similarly qualified persons in order to avoid a hazard.
- When installing the unit, take care not to damage electrical or other hidden components – do not drill the unit casing.
- 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.
- The unit must be installed indoors, and away from direct sources of frost, heat and water spray or moisture generation. Ambient temperature range -5 to 40 deg C.
- The cooling unit is an electro-mechanical device that contains and uses R407C refrigerant. The unit provides cooling in the range of 0.4 to 1.4 kW. The weight of the R407C refrigerant is 0.63Kg.
- 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. This unit contains live electrical components, moving parts and refrigerant under pressure. Always site out of reach of children and protect from vandalism and accidental damage.

- Keep the unit horizontal during installation and level the unit in its final position. Once in final position, leave unit for a minimum of 4 hours before activation.
- Ensure that the airflow through the unit does not fall below 100m3/h (28 l/s) during operation.

1.1 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.**

1.2 Personal Protective Equipment

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

- **Protective Steel Toed Shoes -** 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 INSTALLATION

Isolate before commencing work, make sure that the unit, switched live and Nuaire control are electrically isolated from the mains supply and switched live supply.

2.1 General Installation

Installation must be carried out by competent personnel in accordance with the appropriate authority and conforming to all statutory governing regulations. All mains wiring must be in accordance with the current I.E.E. Regulations, or the appropriate standards. Ensure that the mains supply (Voltage, Frequency and Phase) complies with the rating label.

Please note clear working space is required around the installed unit to provide sufficient access for maintenance (Figure 1). Please ensure duct runs do not obstruct maintenance access points.

The unit must be installed indoors, and away from direct sources of frost, heat and water spray or moisture generation. Ambient temperature range -5 to 40 °C.

This unit must be earthed.

When installing the unit, take care not to damage electrical or other hidden components – **do not drill the unit casing**.

The cooling unit is an electro-mechanical device that contains and uses R407C refrigerant. The unit provides cooling in the range of 0.4 to 1.4 kW.

This unit contains live electrical components, moving parts and refrigerant under pressure. Always site out of reach of children and protect from vandalism and accidental damage.

Keep the unit horizontal during installation and level the unit in its final position. Once in final position, leave unit for a minimum of 4 hours before activation.

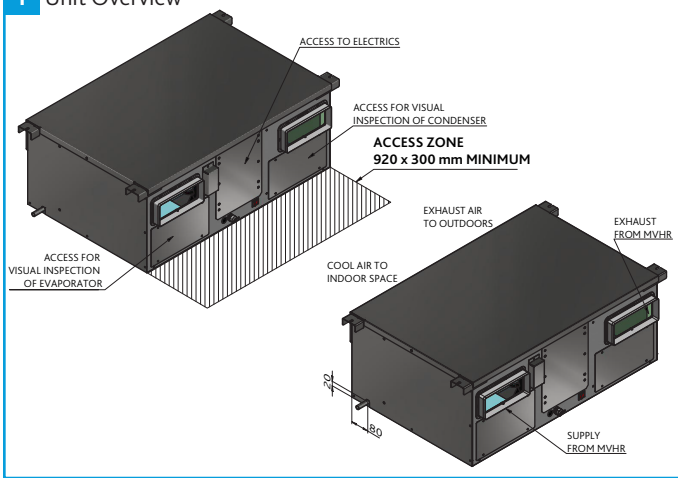
Ensure that the airflow through the unit does not fall below 100m3/h (28 l/s) during operation.

For a vibration-free result the unit must be mounted to a solid surface in the void. The unit is designed for ceiling mounting only (horizontal surface).

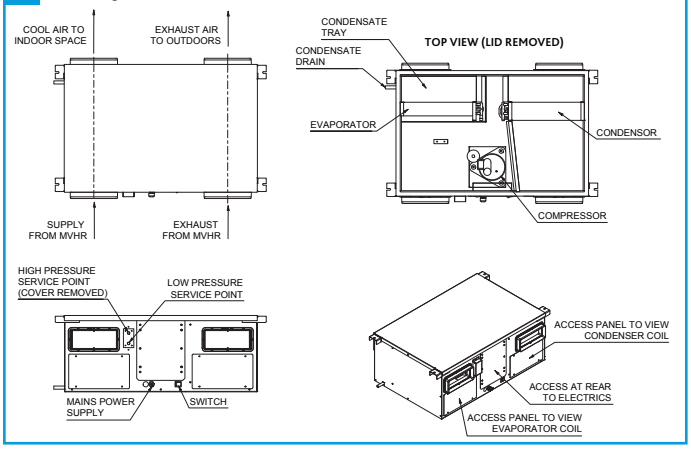
Position & secure the unit to the ceiling using appropriate fixings (supplied by others), ensuring that the four outer fixing holes on the unit are accessible.

The unit must be installed in an upright position as shown for the condensate drain and for compliance with safety regulations relating to IP protection for water drip ingress.

1 Unit Overview



2 Unit Layout



2.2 Condensate Drain Installation

Unit comes complete with external condensate drain pipe of 15 mm diameter positioned 20 mm up from the base and 80mm back from the supply/exhaust connection face.

Use conventional plumbing connections to link up with U-trap. If using a U-trap please ensure the U-trap has been filled to a suitable level of water to avoid any air locks.

If the condensation pipe is fitted in an unheated space the pipe should be in insulated to prevent freezing.

For domestic waste pipes, the typical 1:40 (around 1.5°) is recommended. If using a dry trap various suppliers quote a minimum of 10° for a pipe run in line with the unit. Ensure the cooler has its own trap separate to the MVHR.

3.0 DUCTING

Before commencing ducting installation reference should be made to building regulations document "Domestic ventilation compliance guide". This document supports ADF2010 and details installation, testing and commissioning of all ventilation systems.

It is recommended that rigid ducting must be used it all times. Fresh-air Intake and stale air Exhaust ducts will carry cold air in winter. Supply air duct will carry cold air when Cooling Module is operating. Therefore Intake, Exhaust and supply ducts will be at risk of condensation forming on external surfaces and should all be insulated. Supply air duct only needs insulating after the cooling module.

Any duct component including ancillaries such as carbon filters must be insulated if they are carrying colder air produced by the cooling module. Flexible connections should be avoided. Nuaire Ductmaster thermal ducting should be used on Intake, Exhaust and Supply duct runs.

Ducting must be installed in such a way that resistance to airflow is minimised. Bends should be kept to a minimum.

A minimum distance of 300mm between the appliance and any bends in ductwork is recommended. 220 x 90mm rectangular ducting should be used.

Ducting joints must be sealed with silicone type sealant and needs to be taped. Ducting shall be adequately and reliably fixed to the appliance with screws to prevent access to live parts.

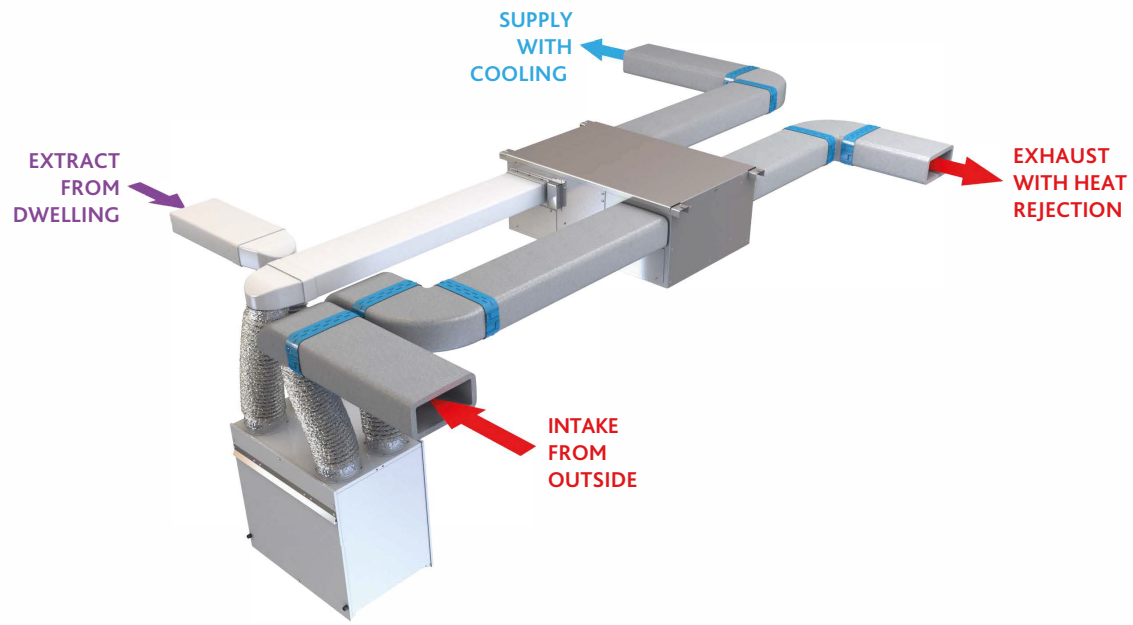
4.0 SUPPLY TEMPERATURES

Supply air temperature is critical to ensure good cooling distribution and to avoid condensation forming on supply terminals. MVHR duty in cooling mode must be sufficient to avoid "Over-cooling". If supplying to habitable rooms through Linear Slot Diffusers 12°C is the recommended minimum supply air temperature. If supply to habitable rooms is by air valve then 14°C is the recommended minimum supply air temperature.

5.0 CONTROLS / DESCRIPTION OF OPERATION

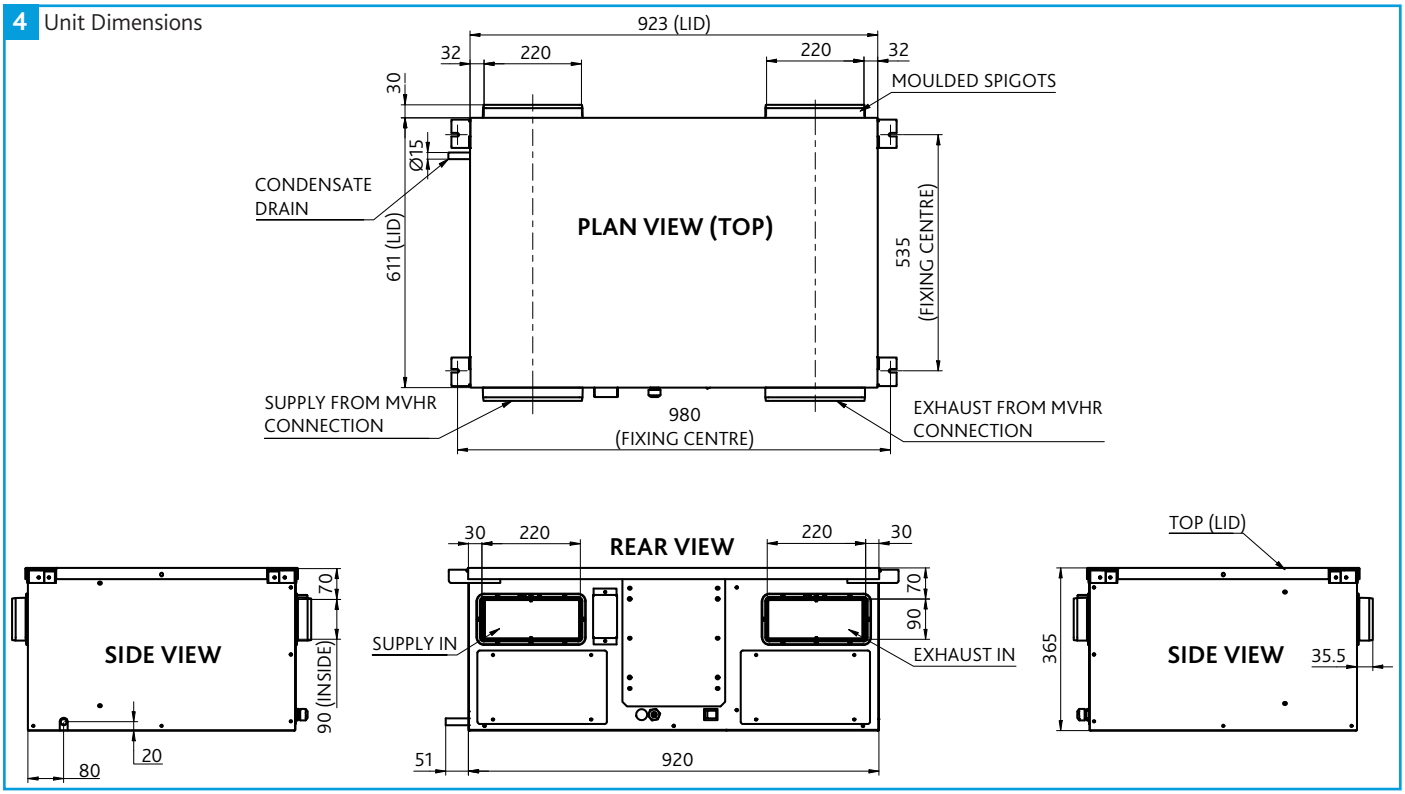
- MVHR will run continuously at Background/Whole dwelling duty (Speed 1) unless it receives a 230v signal to Switched-Live input connections SL1 or SL2.
- MVHR will be enabled to minimum-high-rate/Boost (Speed 2) when it receives a 230v switched live from Kitchen boost switch / Bathroom lighting circuit / PIR Detector / Remote humidistat, etc.
- Cooling module will be enabled to run and MVHR enabled to speed 3 by a 230v Switched live from wall mounted thermostat (Supplied by Nuaire). The Wall mounted thermostat will enable the cooling module to run and MVHR to speed 3 when the living room temperature reaches 23°C (when the CM-THERM-CONTROL is set to ECO).
- N.B. The wall mounted thermostat is factory pre-set to enable the Cooling module to run and the MVHR to speed 3 at 23°C. It may be necessary to interlock this with the heating system to prevent the cooling system from running when the heating is ON.
- If supplied with a Summer/Winter MVHR, it will be supplied with a Summer/Winter switch. When set to summer mode the MVHR will target a temperature under 21°C within the apartment.
- Summer mode can be selected year round to attempt to mitigate overheating caused by solar gains but must be selected when cooling is expected to run (summer months).
- Winter mode ensures the MVHR will recover heat at all times.

3 Typical Ducting Arrangement



6.0 DIMENSIONS

4 Unit Dimensions



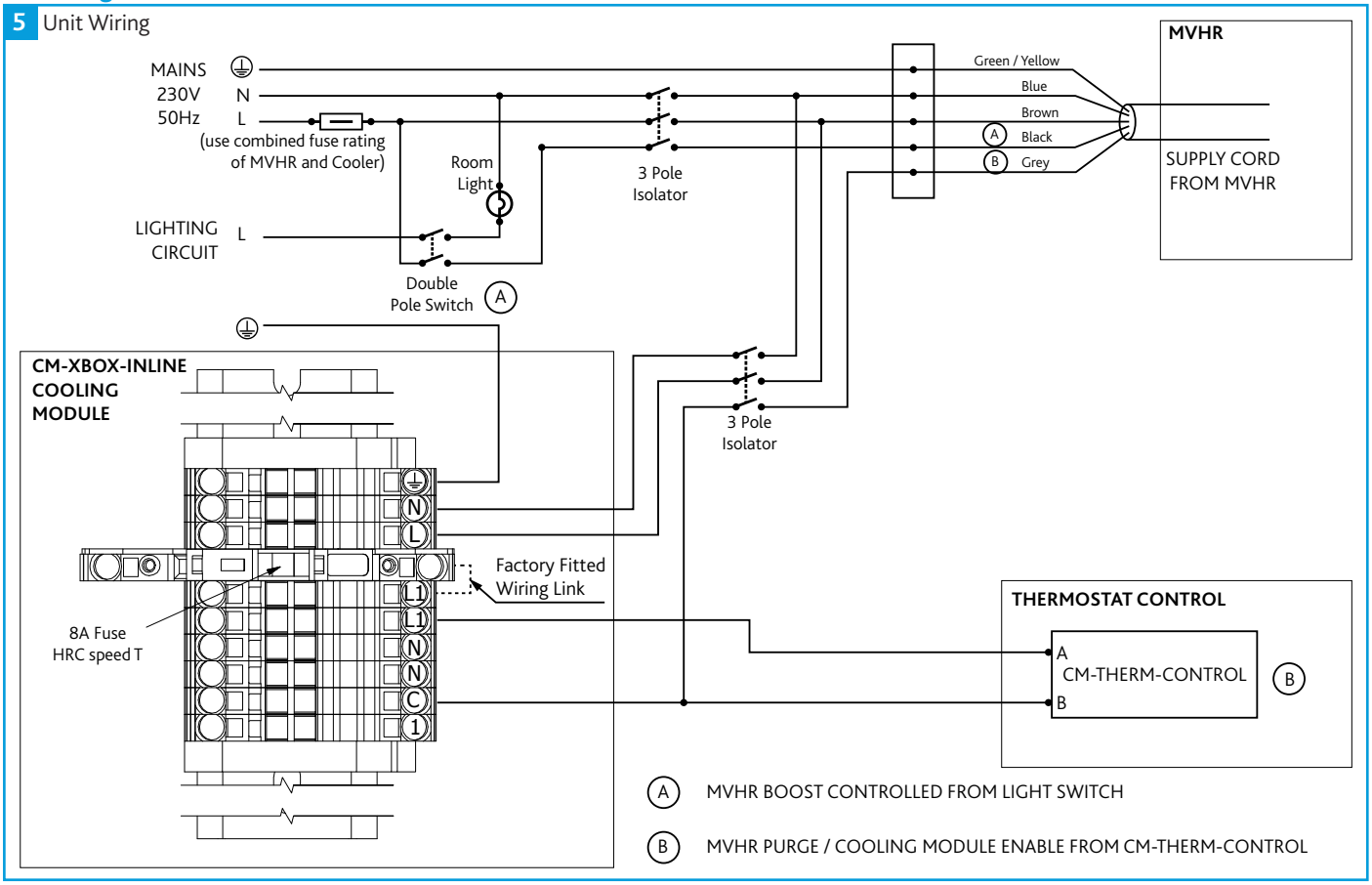
7.0 ELECTRICAL INSTALLATION

7.1 Electrical Details

7.2 Voltage: 230V 1ph 50Hz
Running Current: 2.8 Amp
Locked Rotor Current: 15 Amp
This unit must be earthed.

7.3 Wiring

5 Unit Wiring



8.0 MAINTENANCE

Isolate before commencing work, make sure that the unit, switched live and Nuaire control are electrically isolated from the mains supply and switched live supply.

It is important that maintenance checks are recorded and that the schedule is always adhered to, in all cases, the previous report should be referred to.

8.1 Access

The main central panel allows access to controls and electrical connections. Lower panels either side allows access to front face of cooling coil, heat rejection coil or refrigerant high and low temperature test points.

Access may not be possible if the minimum access zone of 920 x 300 mm has not been provided.

8.2 Annual Maintenance - Evaporator and Condenser

- Inspect all heat exchangers for signs of damage or dirt. Loose dirt may be removed by using a soft brush, taking care not to brush the dirt into the coil, blocking the fins. Damaged fins should be combed out using a comb.
- If the coil has become dirty, review the frequency of the filter checks.
- If the coil is excessively dirty, use a proprietary cleaning agent, e.g. HYDRO-COIL or MULTISOLVE.
- Inspect the condensate drain tray and clean as required.
- Check all electrical connections for tightness.
- Switch on the power to the unit. Check the operation of the mechanical cooling system.
- While the mechanical cooling system is operating check the system pressures, these should typically be:-
  Suction pressure (low): 4.48 bar(65 psi) to 5.51bar(80psi)
  Discharge pressure (high):16.54 bar(240psi) to 22.06 bar(320psi)
- Check that all the panels are in place and that the unit is in a clean condition.

8.3 Repair and Replacement

If, in the event of a failure, a component requires replacing, the power to the unit must be securely isolated.

8.3.1 Refrigeration Circuit Components

**** WARNING ****
All repair and replacement work on refrigeration components must be carried out by a fully qualified refrigeration engineer, trained in maintenance and refrigeration recovery, and with a sound knowledge of all relevant safety regulations pertaining to the job.

**** NOTE ****
A refrigerant reclaim rig must always be available on site when changing any refrigeration components, to remove all or part of the refrigerant charge. The liquid line filter drier must be renewed when a component is replaced.

All refrigerant in the unit must be reclaimed and disposed of safely.

8.3.2 Compressor

In the event of a compressor failure, a sample of oil should be removed from the compressor by draining through the discharge port. This sample should be tested, using a proprietary acid test kit, to determine if the failure has resulted in a burn out. If the oil is clean, a new compressor can be fitted immediately. In the event of a burn out the system will need cleaning. In the absence of any approved flushing agents, a burn out filter must be fitted in the suction line and an oversized filter in the liquid line.

Ensure that the suction line filter is fitted with an appropriate acid binding core.

Once the compressor has been replaced, the whole system must be fully evacuated and the correct refrigerant charge measured in.

The suction line filter should be checked and the core replaced as necessary until the system is clean, and then removed. The liquid line filter should be replaced with one of the correct size when the system is clear.

8.3.3 Pressure Switches

In the event of a pressure switch failure, it is not necessary to empty the refrigeration circuit. Each pressure switch is connected to a Schrader type self-sealing service valve, however, a small amount of liquid refrigerant may escape when disconnecting the flare nut, and gloves should be worn to protect the hands.

9.0 WARRANTY

The 1 year warranty starts from the day of delivery and includes parts and labour.

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. **Only genuine Nuaire parts and filters may be used to maintain the unit. Failure to maintain the unit as recommended will invalidate the warranty.**

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.

10.0 END-OF-LIFE AND RECYCLING

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.

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.

11.0 AFTER SALES ENQUIRIES

For technical assistance or further product information, including spare parts and replacement components, please contact the After Sales Department. Before calling please establish the serial number of the unit **(this information will be available on the unit label).**

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.

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