



ISENSE-PLUS

230V Flush-Mounted Domestic Continuous Extract Fans Installation Manual



1.0 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.
- 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.
- 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.
- Ensure adequate air return into the room in compliance with existing regulations in order to ensure proper device operation. Ensure the fans capability by checking the performance fan curve. Flexible ducting is not recommended.
- In case of window installation it is necessary to use the appropriate window kit, which is not included. Glass thickness from 11mm to 35mm.

1.1 Hazard Symbols



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 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 INTRODUCTION

These high quality extractor fans are mechanical ventilation units designed to ensure air extraction in small / medium sized rooms. The units are suitable for air discharge directly to the outside or in the presence of short ducted system.

Please read these instructions carefully **before** installing the fan unit. Failure to comply with these instructions could reduce both the life and performance of the product and may invalidate the warranty. Nuair assume no responsibility for damage to persons or property resulting from failure to observe the regulations contained in this booklet.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Cleaning and user maintenance should not be made by children without supervision. The unit is not intended for use by persons (including children) with reduced physical, sensory or mental capacities or those with a lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit from a person responsible for their safety. Children should be supervised to ensure that they do not play with the unit.

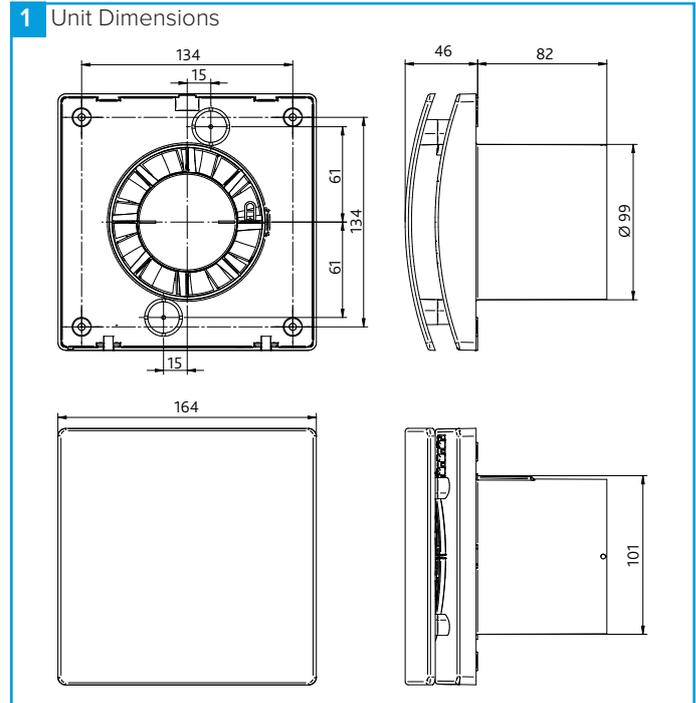
2.1 Unit Features

- **Construction Material:** High quality, impact and UV-resistant ABS.
- **Unit fascia is removable for cleaning without the use of tools.**
- **Single phase DC brushless motor with locked rotor protection.**
- **Motor mounted on high quality ball bearings.**
- **The fan is double insulated: no earth connection is required.**
- **Trickle speed selectable: 5 to 20 l/s.**
- **Option to boost through a Switch Live (SL) connection . Boost speed selectable: 6 to 29 l/s.**
- **Three button, three digit 7 segment LED display, for configuration**
- **Installation type selection available (through wall or ducted).**
- **Timer and integral humidistat.**
- **Constant volume facility.**
- **IPX4 rating with wall installation.**
- **Power supply 220V to 240V~ 50/60Hz.**
- **Operating temperature: 0°C to +40°C**

2.2 Code Description:

Code	Description
ISENSE-PLUS	230V Decentralised Mechanical Extract Ventilation fan (dMEV) – see Section 5.11

2.3 Dimensions (mm)



3.0 MECHANICAL INSTALLATION

Before commencing any work read the following instructions carefully and ensure you have the necessary competency to complete the work safely.

The 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, HVCA, etc.

If the environment in which the product is installed also houses a fuel-operating device (water heater, methane stove etc., that is not a “sealed chamber” type), it is essential to ensure adequate air intake, to ensure good combustion and proper equipment operation.

Ensure adequate air return into the room in compliance with existing regulations in order to ensure proper device operation. Ensure the fans capability by checking the performance fan curve. Flexible ducting is not recommended.

Ensure that the fan or exhaust grille are not obstructed, to guarantee optimum air passage.

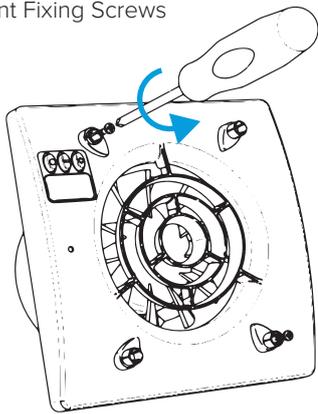
In case of window installation it is necessary to use the appropriate window kit, which is not included. Glass thickness from 11mm to 35mm.

3.1 Wall Installation

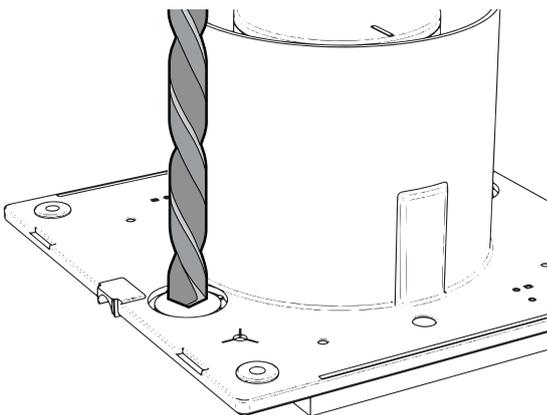
- Select a suitable position for the fan that keeps the duct as short and as straight as possible (ideally on a wall within 400mm of the ceiling).
- Cut a hole in the wall to suit the outside diameter of the ducting or wall-liner. Install the duct or wall-liner taking care to seal at both ends between it and the wall using proprietary waterproof mastic.
- Remove the magnetic fascia of the fan by pulling the fascia straight off.
- Loosen the front fan plate by unscrewing the front fixing screws (Figure 2).

- Use a small flat-head screwdriver to release the retaining clips between the front fan plate and fan backplate. Remove front fan plate (Figure 4).
- Position the fan in the duct and mark the four retaining screw positions through the fan backplate. Fit screw anchors suitable for the wall construction.
- If installing via recessed cable, drill a sufficient diameter in the backplate to allow the supply cable to pass through (Figure 3).
- Screw the backplate to the wall in positions marked earlier.
- For surface cable entry remove the white rubber cable gland (Figure 5) and cable clamp from the backplate, cut the cable gland to the required diameter and thread the supply cable through the gland. Slot the gland into place in the fan backplate.
- Complete the wiring by following the relevant wiring diagram in section 4.0. Ensure that the cable gland is slotted into place in the backplate, for surface cable entry the cable is to be secured via the cable clamp (Figures 6 & 7).
- Replace the front fan plate, an audible "click" should be heard when the front cover clips into place. Fix with the screws provided, and replace the fascia.

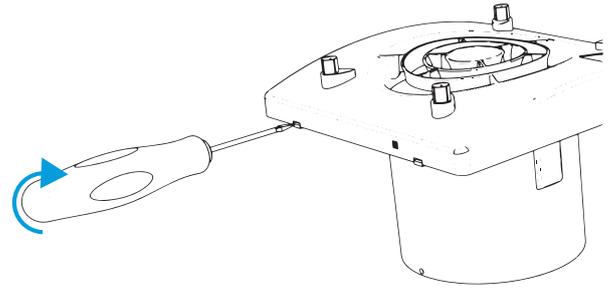
2 Removing Front Fixing Screws



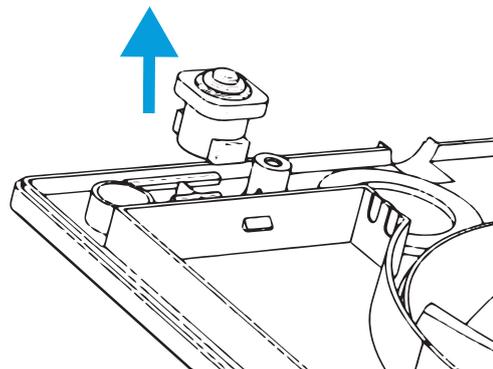
3 Drill Backplate For Recessed Cable Entry



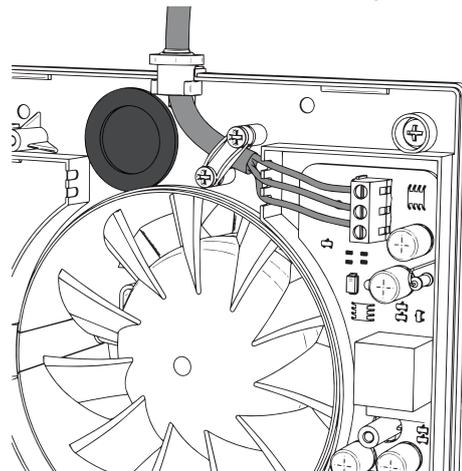
4 Releasing Retaining Clips



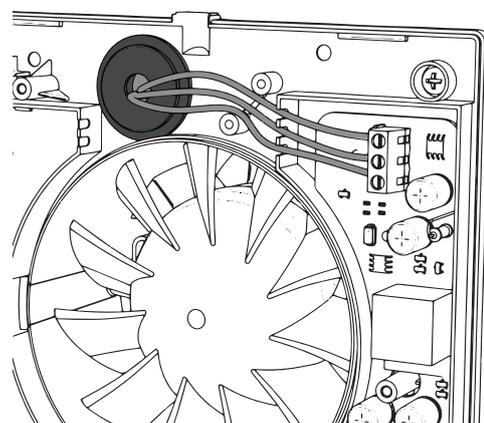
5 Remove Cable Gland For Surface Cable Entry



6 Cable Installation For Surface Cable Entry



7 Cable Installation For Recessed Cable Entry



4.0 ELECTRICAL INSTALLATION

Disconnection from the supply mains must be incorporated within the fixed wiring in accordance with the wiring regulations and shall have a minimum contact separation of 3mm in accordance with the latest edition of the IEE Wiring Regulations.

Before connecting the product to the power supply or the power outlet, ensure that:

- The data plate (voltage and frequency) correspond to those of the electrical mains.
- The electrical power supply/socket is adequate for maximum unit power. If not, contact a qualified technician.

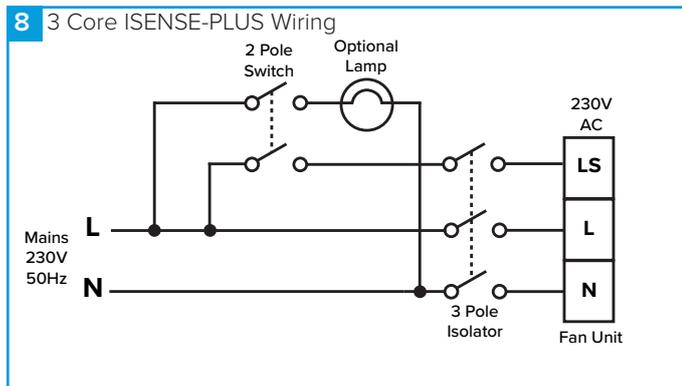
The electrical system to which the unit is connected must comply with regulations.

Isolation: Before commencing work, ensure the unit, switched live and any controls are electrically isolated from the electric supply.

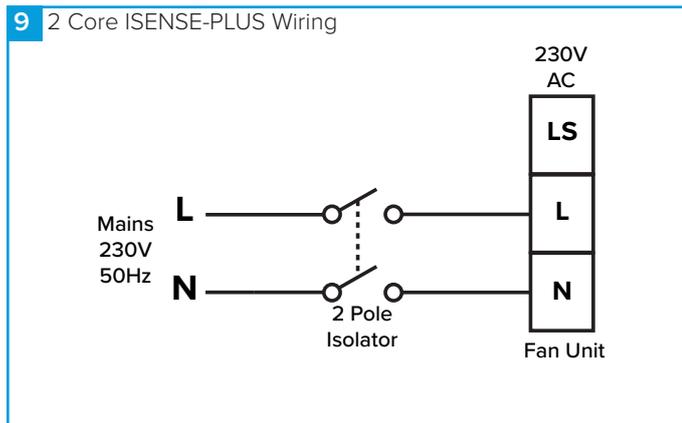
4.1 Wiring Diagrams

When wiring to PCB terminals, do not over tighten terminal block screws, maximum torque 0.15Nm.

4.1.1 ISENSE-PLUS - 3 Core



4.1.2 ISENSE-PLUS - 2 Core

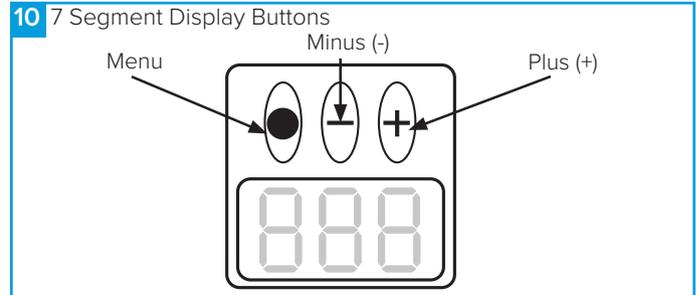


5.0 CONTROLS

Additional Safety Feature: When the front cover support is removed, the impeller stops turning. To aid with installation, this feature is disabled for the first 60 minutes of operation.

Read this manual carefully before operating the product and keep it in a safe place for reference.

The unit is provided with a 7 segment LED display which is visible by removing the fascia. The LED display illuminates upon pressing any button, and stays on for 10 seconds after the last button press.



5.1 Control Description

Upon power-up, the unit works at 'trickle' speed ('A').

If humidistat is activated, the unit works at 'comfort boost' speed ('b').

If the SL is activated, the unit runs at 'boost' speed ('B').

The run-on facility is available from SL / remote switch. The fan reverts to trickle after the run-on period has expired (unless humidity is present when the fan will revert to "comfort boost"). The front cover LED illuminates to indicate when a SL is present.

The run-on timer function is activated only if the SL has been on for at least 3 minutes.

5.2 Run Hours Monitor

An integral run time monitor is included with the unit. Upon power-up the display shows the running hours counter in a user friendly format.

E.g. P00 -> 900 (1 year) -> 004 (4 months) -> 006 (6 days) -> 003 (13 hours) -> P00 ...

Note that due to the format of a 7 segment display 'm' cannot be used for months with 0 being displayed in its place.

5.3 Airflow Rate Unit Of Measure

All air volumes shown on the unit for trickle, comfort boost and boost and in litres per second (l/s), this is displayed on the unit as a lower case 'u' (u).

Unit of Measure (u)	
Setting	Value Displayed
l/s (Default)	u5

5.4 Trickle Speed

Upon power up and in the absence of an active SL, the unit will run continuously at a settable trickle speed of between 5-20 l/s.

5.4.1 Setting Trickle Speed

Select the trickle speed setting on the unit by pressing the menu button until the first digit on the 7 segment display shows an upper case 'A' (A).

Press '+' or '-' to raise and lower the trickle speed between the values given in the table below.

Trickle Speed (A)	
Setting (l/s) (increments of 1)	Values Displayed
0-20 (5 default)	00 - 20

5.5 Comfort Boost Speed

The unit will run at a settable comfort boost speed of between 6-29 l/s when either of the below conditions have been met.

- The humidistat has been activated.
- The run-on timer has been activated.

Comfort boost minimum value is equal to trickle setting +1 l/s

5.5.1 Setting Comfort Boost Speed

Select the comfort boost speed setting on the unit by pressing the menu button until the first digit on the 7 segment display shows a lower case 'b' (b).

Press '+' or '-' to raise and lower the comfort boost speed between the values given in the table below.

Comfort Boost (b)	
Setting (l/s) (increments of 1)	Values Displayed
6-29* (13 default)	06 - 29

5.6 Boost Speed

The unit will run at a settable boost speed of between 6-29 l/s when the SL (Switched Live) has been activated.

5.6.1 Setting Boost Speed

Select the boost speed setting on the unit by pressing the menu button until the first digit on the 7 segment display shows an upper case 'B' (B).

Press '+' or '-' to raise and lower the boost speed between the values given in the table below.

Boost (B)	
Setting (l/s)	Value Displayed
8-29* (25 default)	08 - 29

* only in through-wall installation – in room up to 20l/s

5.7 Constant Airflow Rate Mode

Selecting constant flow operation allows the unit to alter its speed to account for variations in external resistance caused by changing wind conditions, ensuring the chosen airflow rate is supplied. This option will not disable trickle or boost functions.

5.7.1 Enabling Constant Airflow Rate Mode

Select constant flow on the unit by pressing the menu button until the first digit on the 7 segment display shows a lower case 'c' (c).

Press + or - to raise and select the appropriate installation type as given in the table below.

Constant Flow (c)	
Setting	Value Displayed
Off (Default)	0c
On	0C

5.8 Installation Type

The unit will scale its speed to obtain the air flow rates given for the trickle, comfort boost and boost speeds based on installation type.

'Through Wall' installation is typically for fans that are mounted on an external wall / window and extract direct to the outside.

An 'In Room' installation is typically for fans that are mounted on the ceiling or internal wall and which are ducted to the outside. Note, the unit will run at a higher RPM when 'In Room' installation is selected.

5.8.1 Selecting Installation Type

Select the installation type on the unit by pressing the menu button until the first digit on the 7 segment display shows an upper case 'I' (I).

Press + or - to raise and select the appropriate installation type as given in the table below.

Installation Type (I)	
Setting	Value Displayed
Through Wall (Default)	0I
In Room - Ducted	0R

5.9 Automatic Humidity Comfort Boost

An integral humidistat is included with the unit and has an adjustable threshold of 65-95%. If the humidistat is activated, the unit runs at comfort boost speed and continues running for a fixed 5 minute run-on cycle after humidity levels drop below the selected threshold.

In AUTO mode, the humidistat triggers if there's a steep humidity variation and humidity is over 65%.

5.9.1 Setting Humidistat Comfort Boost Threshold

Select the humidistat setting on the unit by pressing the menu button until the first digit on the 7 segment display shows a lower case 'h' (h).

Press the '+' or '-' to raise and lower the humidistat threshold between the values given in the table below.

Humidistat Threshold (h)	
Setting	Value Displayed
AUTO (Default)	0h
65%	65
75%	75
85%	85
95%	95
OFF	0F

5.10 Run-On Timer

An integral run-on timer is included with the unit which is easily adjustable between 1-25 minutes. When the SL is deactivated, the unit runs at comfort boost speed and continues running for a fixed run-on cycle according to the setting of the run-on timer.

After the run-on time has expired, the unit returns to trickle speed.

In AUTO mode the run-on timer works automatically according to the user's habits with the run-on time increasing depending on how long the SL is active. The principles behind this mode of operation are described below.

- If SL is active for under 3 minutes, the unit does not run-on.
- If SL is active for between 3-10 minutes, the unit runs-on for 5 minutes.
- If SL is active for between 10-20 minutes, the unit runs-on for 10 minutes.
- If SL is active for over 20 minutes, the unit runs-on for 15 minutes.

5.10.1 Night Time Delay

Night time delay prevents the SL from activating the run-on when it is active for less than 3 minutes. This is present in both AUTO and when a fixed run-on has been selected.

5.10.2 Setting Run-On Time

Select the run-on time setting on the unit by pressing the menu button until the first digit on the 7 segment display shows a lower case 't' (t).

Press '+' or '-' to raise and lower the run-on time between the values given in the table below.

Run-On Timer (t)	
Setting (minutes)	Value Displayed
AUTO (Default)	tt
1	01
5	05
10	10
15	15
20	20
25	25
OFF	off

5.11 Decentralised Mechanical Extract Ventilation (dMEV)

ISENSE-PLUS units are suitable for decentralised mechanical extract ventilation and are recognised by the Government's Standard Assessment Procedure (SAP) under the Product Characteristic Database (PCDB).

Table 1 - From ADF 2010 (England & Wales) Extract Ventilation Rates		
Room	Minimum High rate	Minimum Low Rate
Kitchen	13 l/s	Total extract rate should be at least the whole dwelling ventilation rate given in table 2.
Utility Room	8 l/s	
Bathroom	8 l/s	
Sanitary Accommodation	6 l/s	

Table 2 - Whole Dwelling Ventilation Rates					
	Number Of Bedrooms In Dwelling				
	1	2	3	4	5
Whole dwelling ventilation rate (l/s)	19	25	31	37	43

1. In addition, the minimum ventilation rate should be no less than 0.3l/s per m² of internal floor area. (This includes all floors, e.g. for a two-story building add the ground and first floor areas).
2. If the dwelling only has one habitable room, a minimum ventilation rate of 13l/s should be used.

In order to meet requirements, the unit must be set to the below specifications:

- Run continuously (see Section 5.4).
- Boost speed (see Section 5.6).
- Comfort Boost (see Section 5.5) should be set between trickle speed and boost speed settings .
- Constant Flow – ON (see Section 5.7).
- Through Wall or In-Room (ducted) installation (see Section 5.8).

All other settings are as per customers' requirements.

6.0 MAINTENANCE

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.

Before any maintenance or cleaning operation, switch off the fan and disconnect from the power supply.

6.1 Routine Maintenance

The magnetic front cover can be removed and cleaned with water and a mild detergent using a soft cloth and the motor fan assembly can be cleaned with a dry brush or dry cloth. Any other maintenance or cleaning should be carried out by properly qualified personnel.

Ensure the unit does not come into contact with any kind of liquid or solvent. If this should occur, contact a qualified technician before reassembling the fan.

The motor does not require lubrication as it is of the maintenance free "sealed for life" type.

7.0 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 Nuair International Sales office for further details.

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

8.0 END-OF-LIFE AND RECYCLING

Where possible Nuair 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 Nuair 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.

9.0 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@nuair.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.



