# XS FR/PR

## XS Flat/Pitched Roof Fan Supply & Extract Unit

## Installation and Maintenance Manual

CE The EMC Directive 2014/30/EU
The Low Voltage Directive 2014/35/EU

## 1.0 IMPORTANT SAFETY INFORMATION

- Installation or replacement of units or spare parts must be carried out by a qualified or Nuaire approved service engineer/ electrician and in accordance with IEE or local national wiring regulations.
- 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. Duct runs terminating close to the fan must be adequately protected by suitable guards.
- 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.
- Maximum ambient temperature should not exceed 25°C for continuous operation or 35°C occasionally.

### 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 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

The Nuaire XS Roof Fan Kit is available in 6, 9 and 12 inch impeller sizes suitable for supply or extract and can form the heart of an automatic ventilation system. Ensure adequate air replacement for the fan and any fuel burning appliance in the room.

Two types of roof fan kits are available, one for a flat roof and the other to cover a pitched roof installation. The applications are ideally suitable for direct ventilation of a top storey area.

The fan is IP24 splash proof approved with the motor rated at IP44. Roof Terminal components are made in soft grey colours from ultra violet stable Styrosun so they will blend with most decors and will not fade in sunlight.

**Roof Fan Kits are supplied as a complete package with all installation parts included.**

**Fig 1:** Typical Installation on Flat Roof Upstand, Direct Ventilation

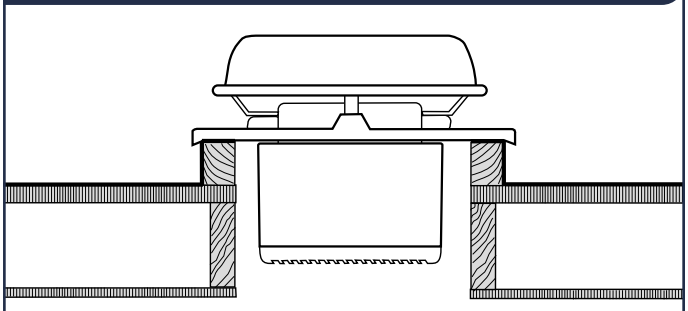
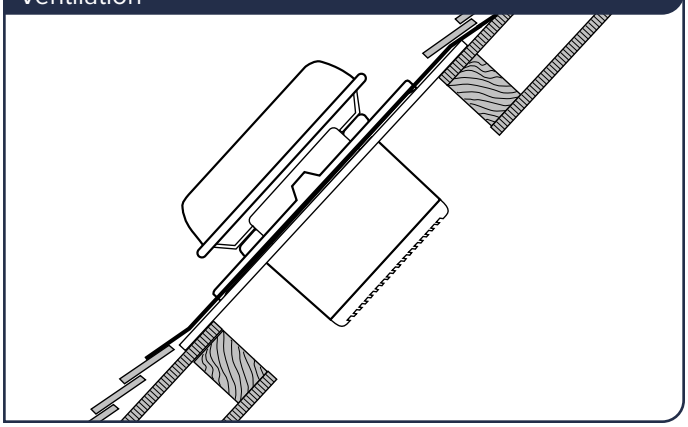


**Fig 2:** Typical Installation on Pitched Roof, Direct Ventilation



### 2.1 SWITCHING

Operated via a separately wired 3 amp fused spur (by others) or operated via the optional XS-MFC remote controller allowing supply or extract, variable speed and automatic or manual switching of several fans if desired.

### 2.2 SENSORS

Sensors are available as remote units or integral ‘plug in’ units. They are able to control multiple fans, depending on sensor and fan types. Integral sensors are quick and easy to install and are aesthetically pleasing, whilst remote sensors give the benefit of location close to the pollutant source. Remote sensors can be fitted with an optional security strap to prevent unwanted tampering.

### 2.3 GENERAL

The removable interior grille provides easy access while the external rotor motor makes for simple removal of the push-on impeller for cleaning. Upward angled interior grille vanes shield workings from view and downward sloping external vanes throw off rain. The fan is IP24 splash proof approved with the motor rated at IP44. All external components are made in soft grey colours from ultra violet stable ABS material so they will blend with most decors and will not fade in sunlight.

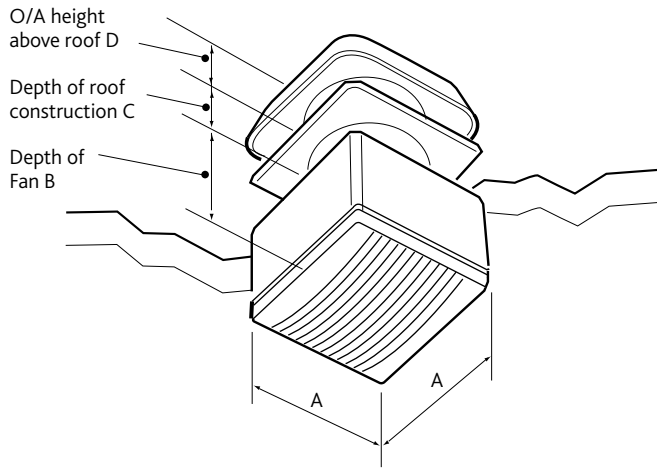
### 2.4 UNIT CODES

| 1 | 2 | 3 | 4 |
|---|---|---|---|
| XS | 12 | FR | H |

1. Range: **XS**
2. Size: **6**, **9 & 12**
3. Roof Type: **FR** = Flat Roof
   **PR** = Pitched Roof
4. Frequency: **No Suffix** = 50Hz
   **H** = 60Hz (220v)

### 2.5 GENERAL DIMENSIONS

**Fig 3:** Dimensions



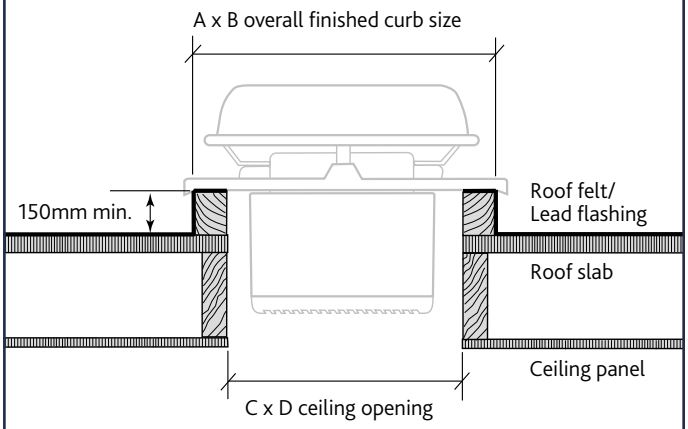

| Code | A | B | C | D |
|---|---|---|---|---|
| XS6WA | 269 | 161 | 150 | 170 |
| XS9WA | 337 | 158 | 150 | 180 |
| XS12WA | 413 | 172 | 150 | 185 |

### 2.6 UNIT WEIGHTS

| Code | Weight (kg) |
|---|---|
| XS6FR | 6.3 |
| XS9FR | 6.3 |
| XS12FR | 8.7 |
| XS6PR | 9.1 |
| XS9PR | 11.0 |
| XS12PR | 11.8 |

## 3.0 MECHANICAL INSTALLATION

**Fig 4:** Flat Roof Upstand Construction Details




| Code | A | B | C | D |
|---|---|---|---|---|
| XS6FR | 610 | 610 | 300 | 300 |
| XS9FR | 610 | 610 | 450 | 450 |
| XS12FR | 695 | 695 | 450 | 450 |

**Fig 5:** Flat Roof Kit Exploded Assembly

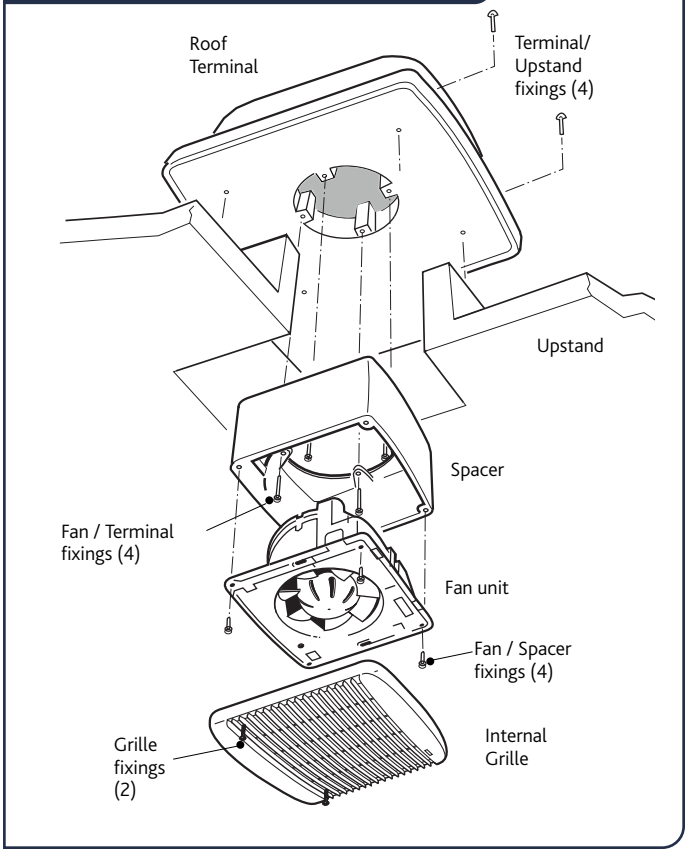



**Fig 6:** Drill through the dimples in the roof terminal

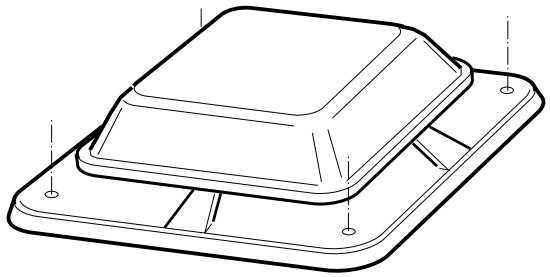


**Fig 7:** Position centrally & squarely over curb and fix using 6mm wood screws and sealing washers

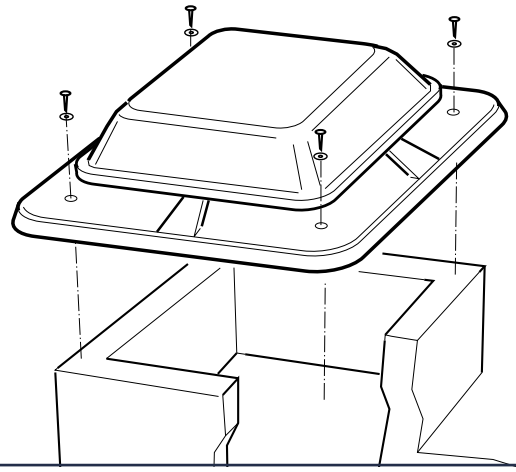


**Fig 8:** Feed the supply cable through the spacer

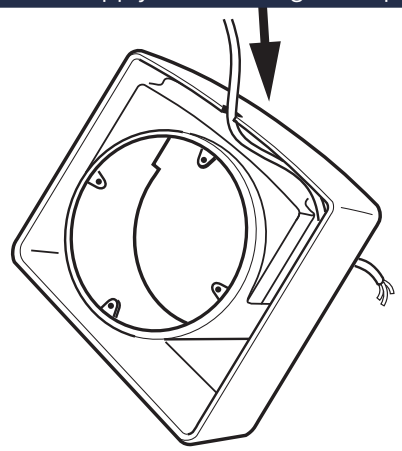


**Fig 9:** Feed the supply cable through the spacer

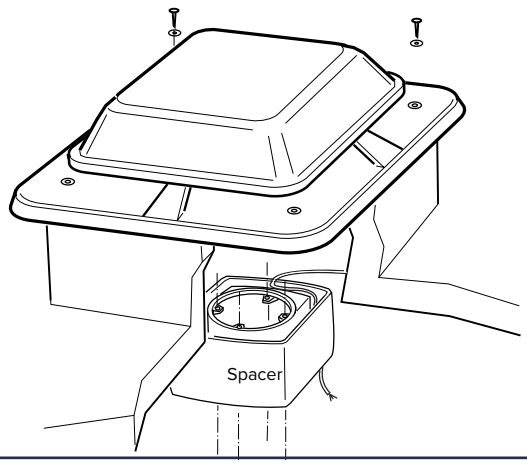


**Fig 10:** Release the electrical cover from the fan plate. For wiring options see Section 4.3 on page 6.

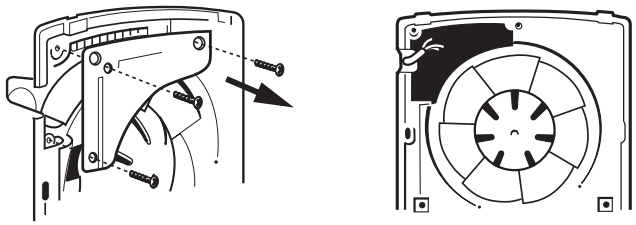


**Fig 11:** Attach the fan to the spacer section using 4 pan head screws

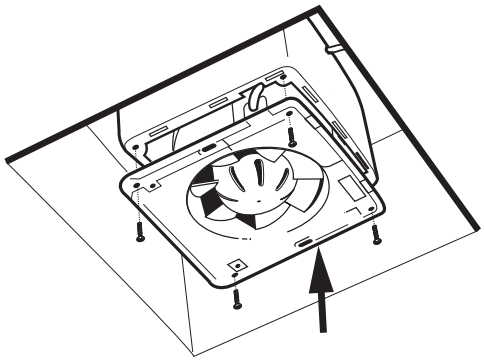
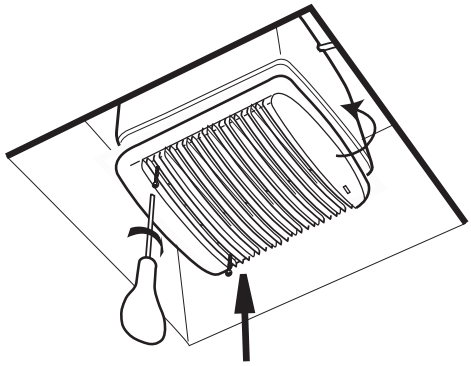
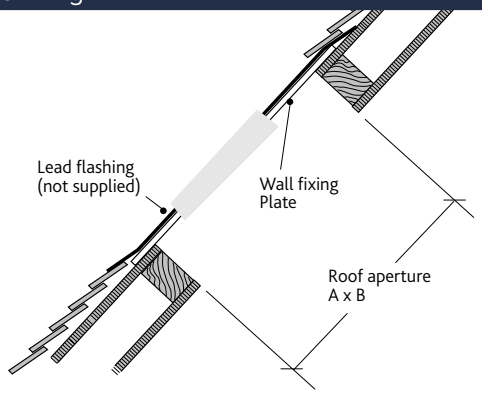


**Fig 12:** Fit the grille to the fan, locating the top lip before fixing



### 3.1 PITCHED ROOF KIT

**Fig 13:** Fit the grille to the fan, locating the top lip before fixing




| Code | A | B |
|---|---|---|
| XS6PR | 320 | 320 |
| XS9PR | 385 | 385 |
| XS12PR | 450 | 450 |

**Fig 14:** Pitched Roof Kit Exploded Diagram

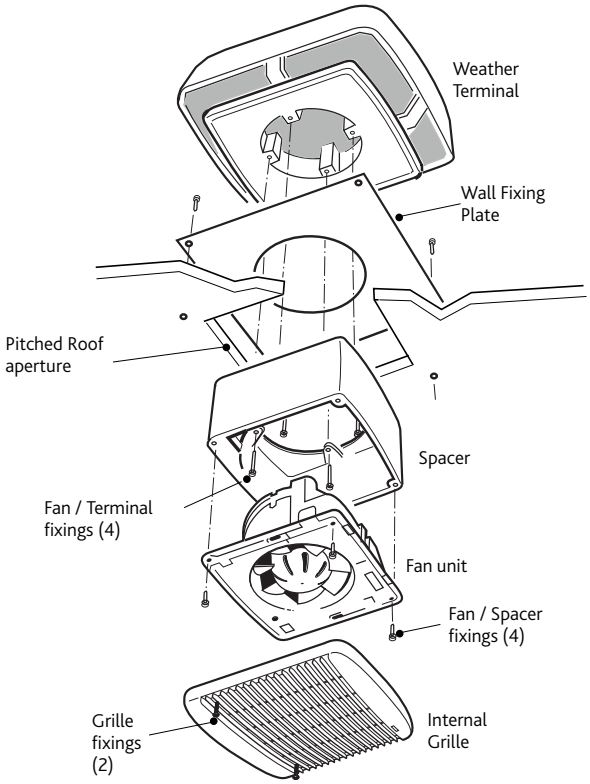



**Fig 15:** Fix the Wall Fixing Plate centrally over the roof aperture. Screws not provided.

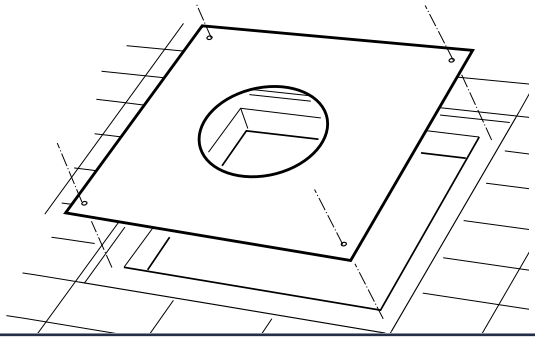


**Fig 16:** Locate the Weather Terminal centrally over the plate. Use the foam adhesive strips to secure temporarily.

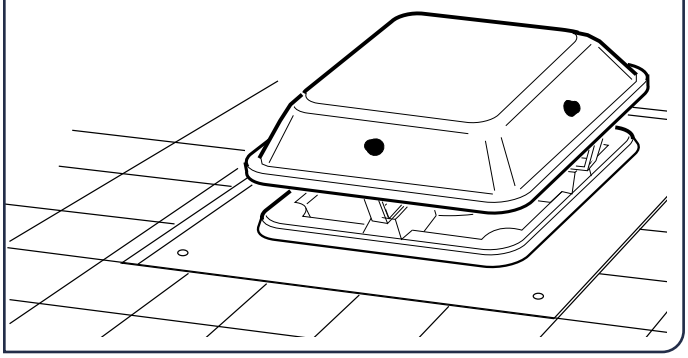


**Fig 17:** Feed the supply cable through the spacer

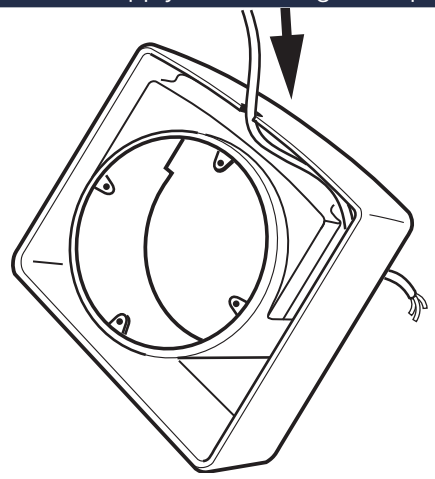


**Fig 18:** Offer the spacer section up and fix through to the Weather Terminal fixing inserts.

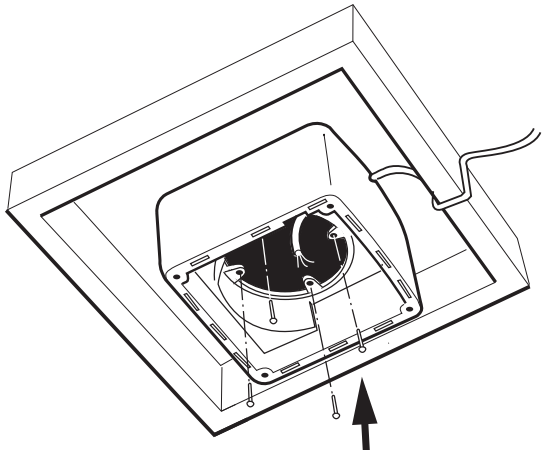


**Fig 19:** Seal the joint edge all round with sealing mastic to ensure adequate weathering. Alternatively use lead flashing.

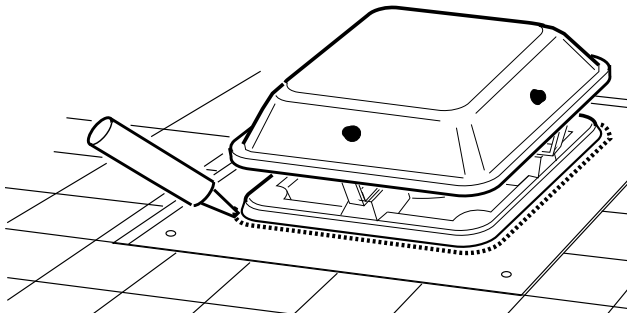


**Fig 20:** Release the electrical cover from the fan plate. For wiring options see Section 4.3 on page 6.

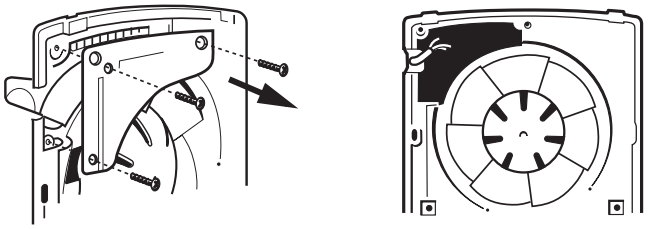


**Fig 21:** Attach the fan to the spacer section using 4 set screws

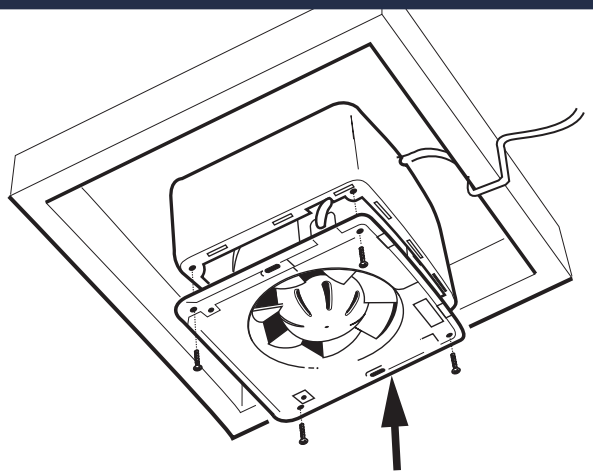
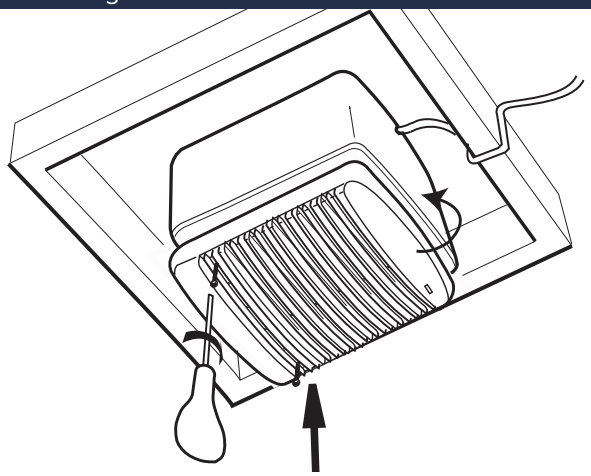


**Fig 22:** Fit the grille to the fan, locating the top lip before fixing



## 4.0 ELECTRICAL INSTALLATION

**Electrical work should be undertaken by a qualified electrician in accordance with the wiring regulations.**

**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.**

**ISOLATION**

Before commencing work, make sure that the unit is electrically isolated from the mains supply.

**IMPORTANT**

During shutter operation of XS fans there will be a short delay on start-up and shut down of approximately 40 seconds, this is normal.

**Fig 23:** Release the electrical panel from the fan plate

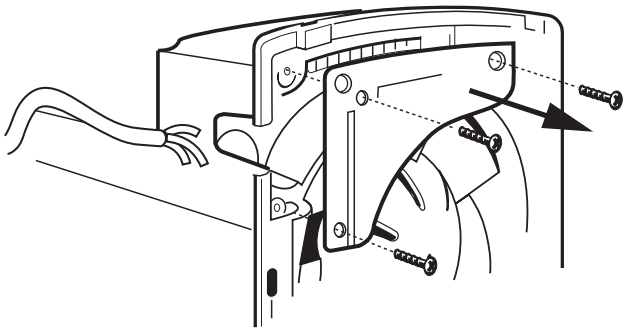


**Fig 24:** Remove the terminal cover

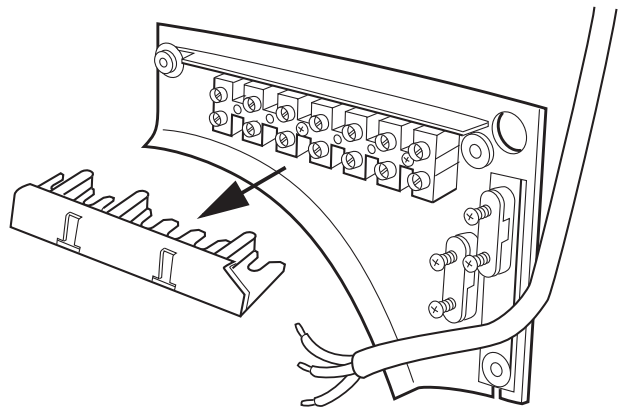


**Fig 25:** Clamp the cable and complete the connections

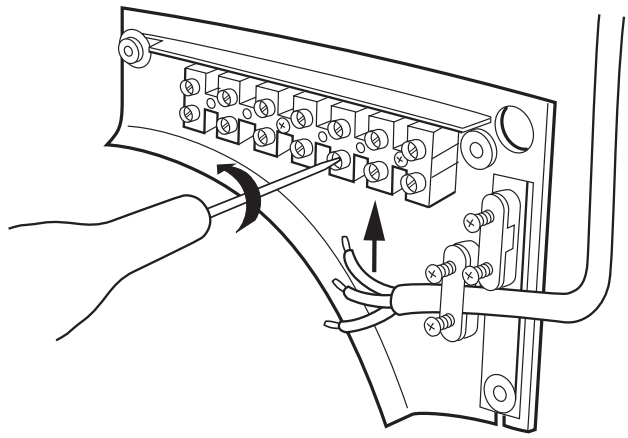
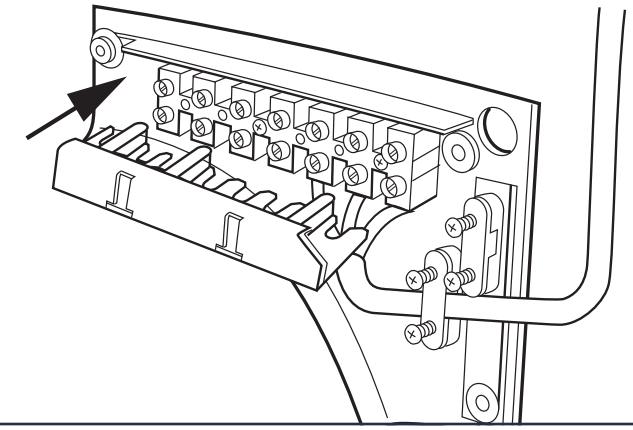


**Fig 26:** Refit the terminal cover before replacing the electrical panel



## 4.1 ELECTRICAL CONSUMPTION & WEIGHTS

| Code | Input Power* (W) | | Weight (kg) |
|---|---|---|---|
| | Max | Economy | |
| XS6FR | 38 | 20 | 6.3 |
| XS9FR | 50 | 37 | 8.7 |
| XS12FR | 100 | 70 | 11.0 |
| XS6PR | 38 | 20 | 6.3 |
| XS9PR | 50 | 37 | 9.1 |
| XS12PR | 100 | 70 | 11.8 |

*Values are for extract only at 50hz.

## 4.2 ELECTRICAL SPECIFICATION

230V ~ 50Hz / 220V ~ 60Hz Class I. Motor thermally protected by overload device. Cable: 1mm2 min/max. Fuse: 2A, BS1362 required for each single fan if used without XS-MFC control. 3A, BS1362 fuse for multiple fans via XS-MFC speed control. Use of an RCD is recommended.

Note: If 2 x 12 inch fans or 3 x 6 or 9 inch fans are used in the same operating mode in the same room they should all be controlled from the same MFC speed control. This avoids the possibility of one fan (if speed controlled at a lower flow rate) being stalled by the other fan(s).

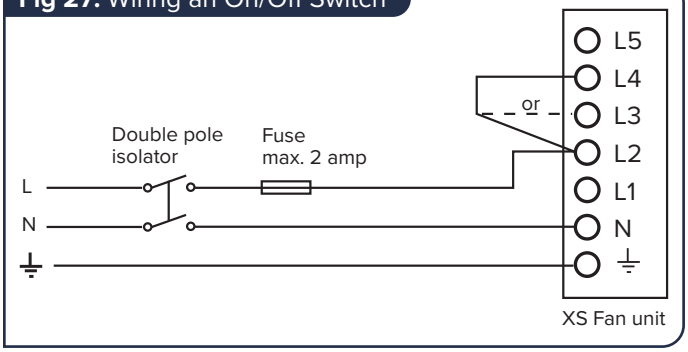
Adequate make-up air provision sufficient to provide ventilation in accordance with building regulations is required in all rooms. This should be checked during commissioning with all fans in the same room running together in all possible configurations.

The automatic shutters, motor bearings should be frequently inspected and maintained to ensure they open fully/operate satisfactorily.

Always confirm airflow direction before commissioning.

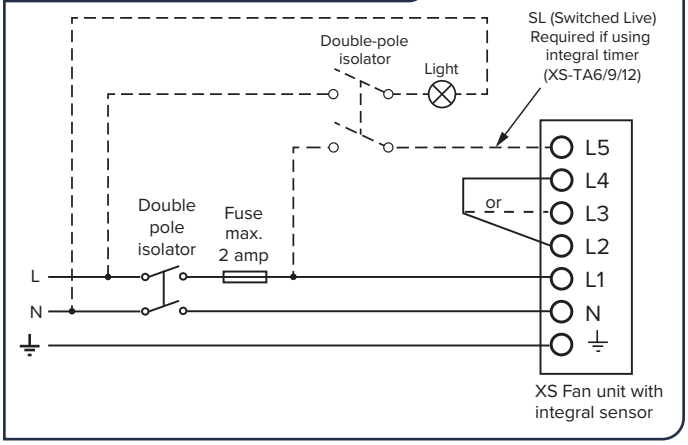
## 4.3 WIRING DIAGRAMS

**Fig 27:** Wiring an On/Off Switch



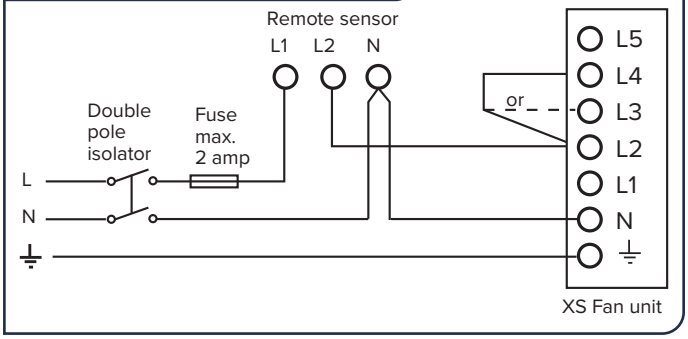

Connect link wire between L2 & L4 for extract or
Connect link wire between L2 & L3 for supply.

**Fig 28:** Wiring an Integral Sensor



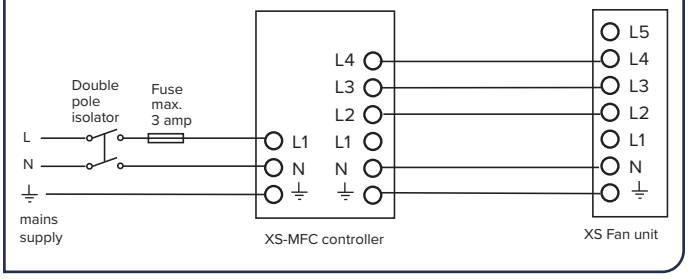

Connect link wire between L2 & L4 for extract or
Connect link wire between L2 & L3 for Supply.
Connect switched live signal to L5 for integral sensor.

**Fig 29:** Wiring a Remote Sensor



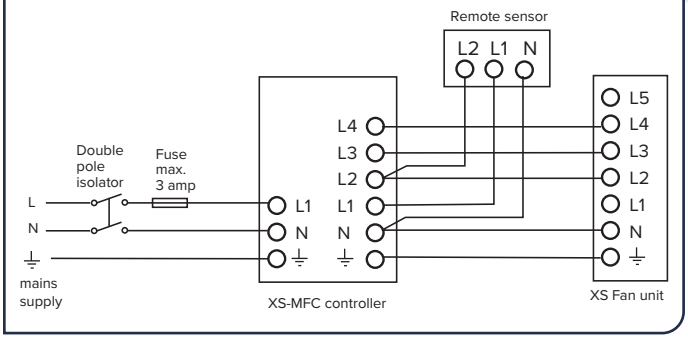

Connect link wire between L2 & L4 for extract or
Connect link wire between L2 & L3 for supply.

**Fig 30:** Wiring a Remote XS-MFC Control




Remote switch may be set: On/Off, Forward/ Reverse, Economy/Std. (variable speed), Auto/manual.

**Fig 31:** Wiring a Remote XS-MFC Control with a Remote Sensor

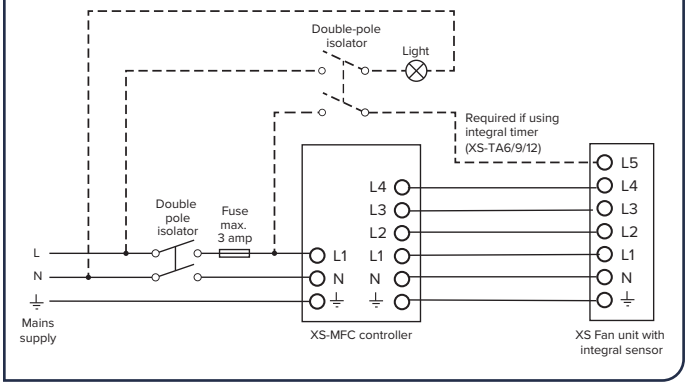



Remote switch may be set: On/Off, Forward/Reverse, Economy/ Std. (variable speed), Auto/manual.

One or more remote sensors may be wired in parallel to one XS-MFC Control.

- Humidity Sensor: XS-HR
- Air Quality Sensor: XS-AQR
- Passive Infra-Red Sensor: XS-PIRR

**Fig 32:** Wiring a Remote XS-MFC Control with a integral Sensor




Remote switch may be set: On/Off, Forward/Reverse, Economy/ Std. (variable speed), Auto/manual.

Maximum one integral sensor per fan 6/9/12 denotes unit size.

- Humidity Sensor: XS-H6/9/12
- Air Quality Sensor: XS-AQ6/9/12
- Passive Infra-red Sensor: XS-PIR6/9/12
- Temperature Sensor: XS-TH6/9/12
- Run-on Timer: XS-TA6/9/12

A single sensor will switch all fans if more than one fan is being operated by a single XS-MFC Control.

**Note: Multi-Fan Options:**

Up to 5 fans (size 6 or 9) can be controlled by one XS-MFC.
Up to 2 fans (size 12) can be controlled by one XS-MFC.

**Do not mix different fan sizes on the same XS-MFC control.**

### 4.4 FITTING INTEGRAL SENSORS (OPTIONAL)

**Before following the pictorial sequence shown**, first remove the fans front cover grille (2 screws). Release the four main corner screws and lift out the motor/fan plate assembly. Remove the electrical cover plate opposite the sensor plate. Follow the pictorial sequence on this page.

**Fig 33:** Unscrew the module plate from the motor plate assembly

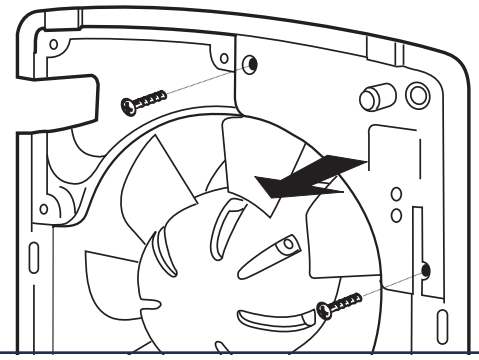


**Fig 34:** Remove the module plate

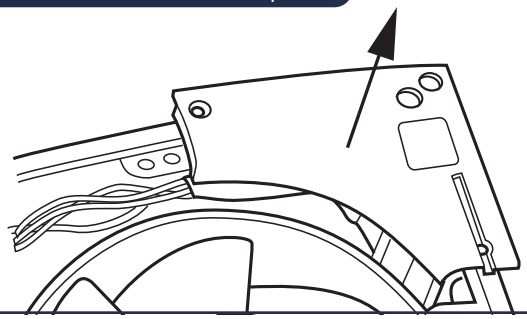


**Fig 35:** Lift out the sensor module wiring connector

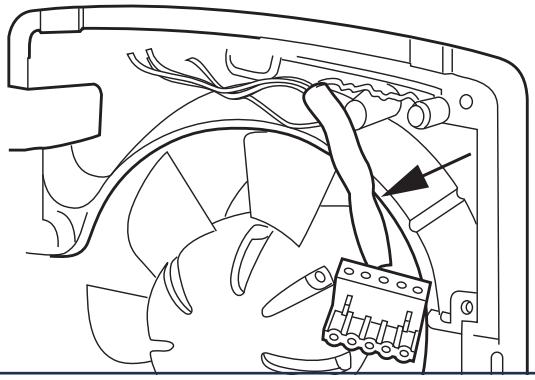


**Fig 36:** Plug the connector into the required sensor module

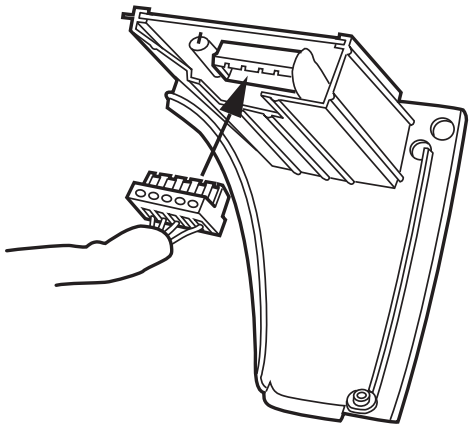


**Fig 37:** Screw the sensor module into position

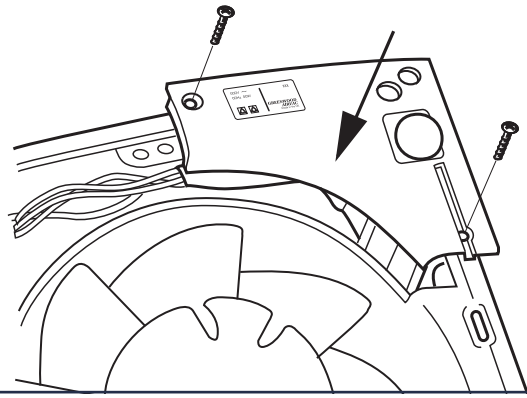


**Fig 38:** Push out the sensor area cover from the grille

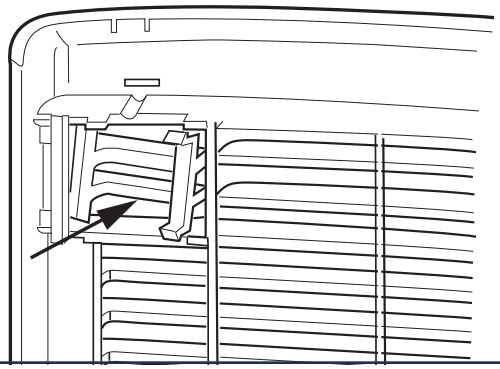
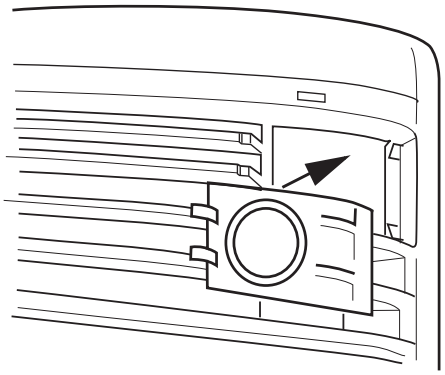


**Fig 39:** Fit the replacement sensor cover



## 4.5 FITTING XS-MFC CONTROLLER OR REMOTE SENSORS (OPTIONAL)

The XS-MFC Multi Fan Control provides supply or extract, variable speed and automatic or manual switching of several fans if desired, (see note below). The control is best mounted approx 1.5m above the floor. Remote Sensors are available for Humidity, Air Quality and Passive Infra Red control. Remote Sensors should be positioned at least 1.5m above the floor and away from direct heat sources e.g. radiators.

**Note: Multi-Fan Options:**

Up to 5 fans (size 6 or 9) can be controlled by one XS-MFC.
Up to 2 fans (size 12) can be controlled by one XS-MFC.

**Do not mix different fan sizes on the same XS-MFC control.**

**Fig 40:** Lift up the panel and remove two screws to dismantle the unit

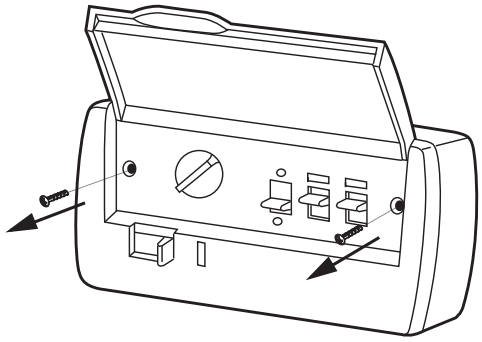


**Fig 41:** Push out the backplate box cable entry using a screwdriver

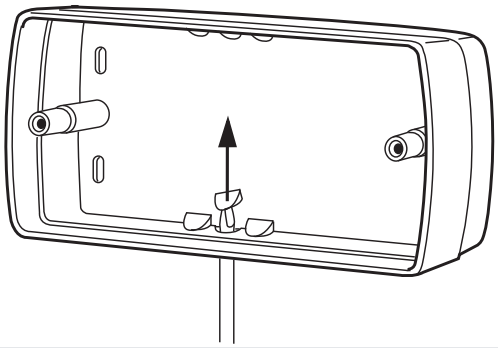


**Fig 42:** Spot through the backplate and drill and plug the wall

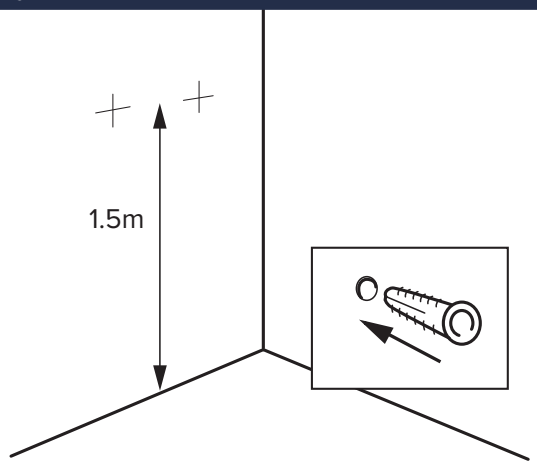



**Fig 43:** Fix backplate box to the prepared wall

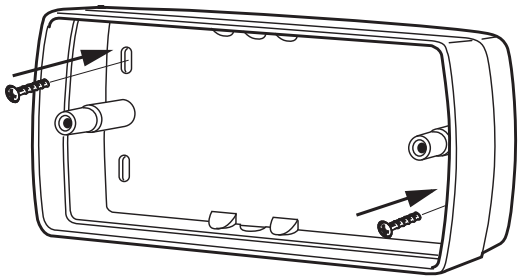


**Fig 44:** Feed approx. 200mm of supply cable into the box

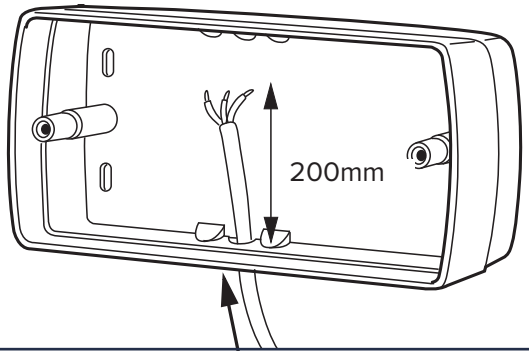



**Fig 45:** Connect the end of the cable into the control block

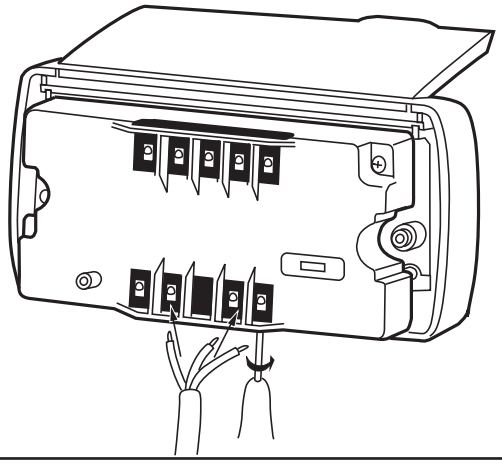
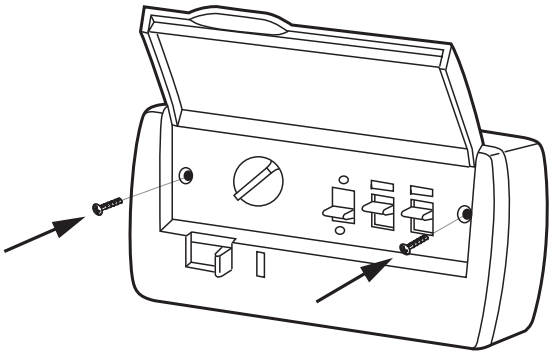


**Fig 46:** Fit the control into the backplate box and secure. Test the installation.



## 5.0 ANCILLARIES

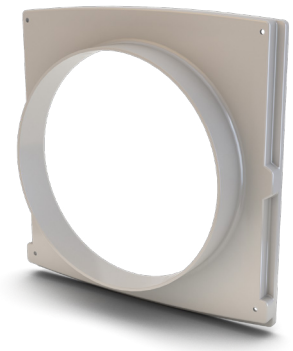
### 5.1 SINGLE SPIGOT ADAPTOR

Used in conjunction with flexible ducting systems.

Mounted onto the front of the Spacer section using the 4 off 5mm x 40mm brass screws supplied with the Single Spigot Adaptor. Replaces the internal grille.

Can also be used connected directly to a Roof Terminal using the 4 off 5mm x 40mm brass screws supplied with the Single Spigot Adaptor. Manufactured from HIPS material.

**Fig 47:** Single Spigot Adaptor



## 6.0 FLEXIBLE DUCTING & INSTALLATION ACCESSORIES

A full range of ducting and installation accessories is available from Nuaire. Call Nuaire to request literature.

**Fig 48:** Flexible Connector

## 7.0 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.

### 7.1 ANNUALLY

- Thoroughly inspect the unit and its components for corrosion, acting immediately to treat/restore any damaged areas.
- All electrical terminals within the unit should be tightened.
- Check all earth connections.

## 8.0 WARRANTY

The 3 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

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.

**IMPORTANT**

**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.**

## 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.

## 10.0 NOTES