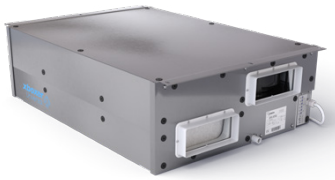


Xboxer Universal

Supply & Extract with Heat Recovery

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.
- 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.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- 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.

1.1 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.

1.1.1 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 INTRODUCTION

The Xboxer Universal ceiling void unit range is designed to provide mechanical supply and extract ventilation with heat recovery, which incorporates an automatic HX bypass feature.

The units are fitted with two high efficiency centrifugal fans with EC Motors, which have speed control over three different ventilation rates; trickle, boost and max. A counterflow plate heat exchanger is also used to recover up to 85% of the extracted air heat, whilst G3 Filters provide protection to the unit and ensure filtered air is supplied, guaranteeing the unit is ErP 2018 compliant.

The HX bypass damper shall open automatically via a wax actuator allowing the air to bypass the heat exchanger to deliver fresh filtered air during the warmer months.

General information regarding performance and specifications for the equipment may be obtained from our Technical Literature, and/or project specific documentation.

2.1 Code Description:

UNI	-	X	220	-	C
1	-	2	3	-	4

1. Range:	Student Accommodation
2. HX Type	**X** = Plate Heat Exchanger
3. Unit Size:	**220, 360, 580**
Spigot Type:	**No Suffix** = Rectangular (220 x 90mm) **C** = Circular (Ø150mm)

3.0 MECHANICAL INSTALLATION

The Xboxer Universal ceiling void unit range is designed to provide mechanical supply and extract ventilation with heat recovery, which incorporates an automatic HX bypass feature.

The units are fitted with two high efficiency centrifugal fans with EC Motors, which have speed control over three different ventilation rates; trickle, boost and max. A counterflow plate heat exchanger is also used to recover up to 85% of the extracted air heat, whilst G3 Filters provide protection to the unit and ensure filtered air is supplied, guaranteeing the unit is ErP 2018 compliant.

The HX bypass damper shall open automatically via a wax actuator allowing the air to bypass the heat exchanger to deliver fresh filtered air during the warmer months.

General information regarding performance and specifications for the equipment may be obtained from our Technical Literature, and/or project specific documentation.

3.1 Delivery of Equipment

3.1.1 Receipt of Equipment

All equipment is inspected prior to despatch and leaves the factory in good condition. Upon receipt of the equipment an inspection should be made and any damage indicated on the delivery note.

Particulars of damage and/or incomplete delivery should be endorsed by the driver delivering the goods before offloading by the purchaser. No responsibility will be accepted for damage sustained during the offloading from the vehicle or on the site thereafter. All claims for damage and/or incomplete delivery must be reported to Nuaire within two days of receipt of the equipment following guidance in our terms & conditions of sale.

3.1.2 Offloading and Handling

The weight of the unit modules and palletised items is displayed on the unit rating plate or on the packaging. Some of the modules have an uneven weight distribution, and this will be indicated by labelling where appropriate. Ensure that lifting and handling equipment is adequately rated. Offloading and positioning of the equipment is the responsibility of the purchaser.

Spreaders should be used when lifting with slings to avoid damage to the casings. Care must be taken to ensure that slings are correctly positioned to avoid crushing and twisting of the unit castings.

Where channels and/or support frames are bolted to the underside of the unit casing, slings or fork-lift arms should be positioned to locate in the apertures in the channels. If lifting eyes have been supplied / fitted it is recommended that they are used.

Xboxer Universal units will be delivered to site in one section and will be labelled with the direction of air flow. The direction convention must be observed during assembly.

3.1.3 Storage

The equipment must be stored in a dry, internal location. Ductwork connection apertures shall be sealed against the ingress of dust, water and vermin. Do not stack units, modules or components.

Where fans are to be stored or bonded for extensive periods follow the Warranty Guidance Notes found in our conditions of sale.

3.2 Unit Installation

Installation of the Xboxer Universal units, including all external services and controls should be installed in accordance with the

appropriate site procedures, and MUST conform to all governing regulations e.g. CDM, CIBSE, IEE, and in strict accordance with the applicable Building Regulations.

To aid in installation, dimensional templates including hole centres for mounting points are provided with the units.

The unit must be installed indoors, in a suitable ceiling void away from direct sources of frost, heat and water spray or moisture generation. For a vibration-free result the unit must be mounted to a solid surface in the void.

The unit is designed for ceiling mounting on a horizontal surface and incorporates steel mounting points (fixings are not supplied) in the casing design as well as bottom access for filter replacement.

The unit may only be operated in its intended horizontal installation plane and must be fully levelled during installation (this is essential to ensure that condensate drains correctly).

Offset spigots have been included in the unit for greater flexibility in the layout of the ductwork.

The correct installation position for the units shall be decided with due regard to access and maintenance requirements, and the objective of minimising the system ductwork resistance.

The recommended installation method is to use standard Unistrut channel secured to the slab or steelwork above the unit. Six suitable drop rods or bolts should be secured to the Unistrut channel and extended to be fixed to the unit's two mounting brackets (one on each side of the unit, each with 3 fixing points).

In the unlikely event of motor failure, the unit must be lowered from its installation position in order to facilitate a motor replacement. An access hatch of sufficient size for the unit to pass through is required. You must ensure that all associated electrical, condensate and ductwork connections can be disconnected.

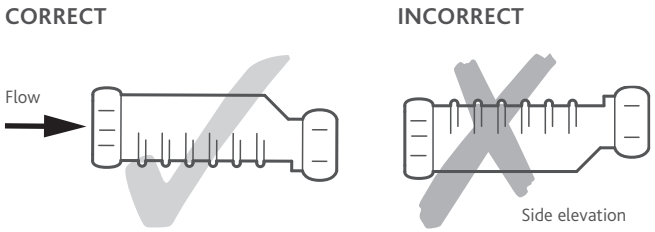
The unit must be installed with a minimum of 300mm clearance around the control box to allow for maintenance. **An access hatch of sufficient size for the unit to pass through is required.**

3.3 Condensate Drain

Units come complete with external drain pipe (21.5mm waste pipe) at the front of the unit. Use conventional plumbing connections to link up with U-trap or alternative drain method (Solvent cement connections or compression fit connections are recommended). The condensate must be discharged under a water level in a U-trap drainpipe or an alternative drain method which acts as an airlock. If using a U-trap, ensure the U-trap has been filled to a suitable level of water to provide an adequate airlock.

This condensate discharge connection is suitable for 21.5mm diameter overflow pipe. Solvent cement should be used to make the joint. If the condensation pipe is fitted in an unheated space the pipe should be in insulated to prevent freezing. Ensure that the condensate drain pipe has a minimum 5° fall running to SVP.

1 MVHR-DRAIN Installation



When installed horizontally the ribs must be at the bottom to ensure correct operation.

Nuaire recommend MVHR-DRAIN be used as the primary condensate take-off.

3.3.1 MVHR-DRAIN Installation

Offer up the MVHR-DRAIN inlet to the threaded tail of the appliance waste outlet or MVHR-DRAIN knuckle or running adaptor, and tighten the threaded cap sufficiently hand-tight to provide a water-tight seal (check that the cap screws on square and does not 'cross-thread'). When the screwed cap is tight, the MVHR-DRAIN body is secure.

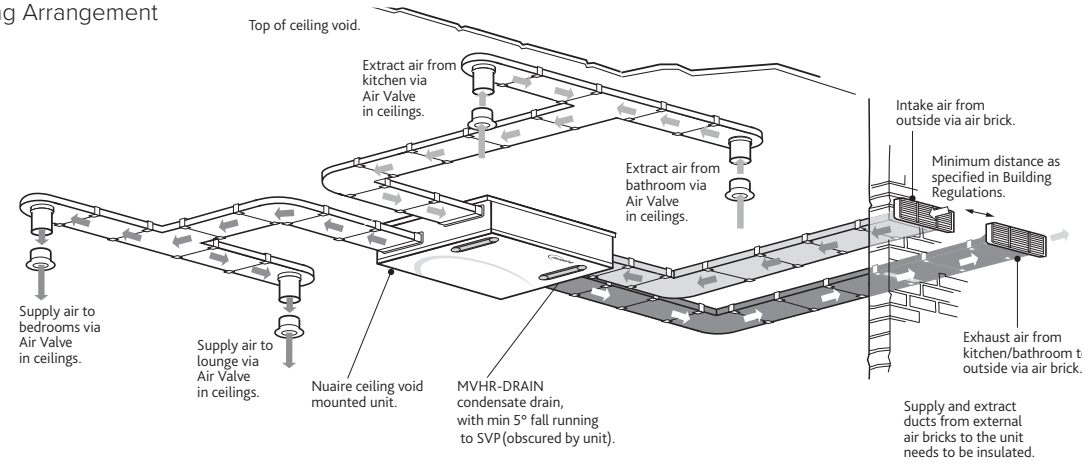
1. Cut the pipe to length, allowing for the full compression socket depth (using an appropriate pipe cutter, such as a Hepworth ratchet pipe cutter).
2. Remove any 'swarf' from the end of the plastic pipe. Ream the copper pipe end to remove any 'burr', and file if necessary to remove any external sharp edges. Mark the socket depth on the pipe, and check that the pipe section to be jointed is free of any surface damage which may affect the joint seal.
3. Unscrew the cap from the MVHR-DRAIN outlet, and slide the cap and rubber seal onto the pipe.
4. Insert the pipe end fully into the socket.
5. Slide the rubber seal and screwed cap up against the face of the socket, and tighten the cap sufficiently hand-tight (check that the cap is square to the body and does not 'cross thread'). Hand tight should be adequate to form a proper seal.

3.4 Extract / Supply Areas

The unit is designed to extract air from all wet rooms e.g. bathroom, kitchen, en-suite, utility room (with sink). WCs do not need to be ventilated if openable windows are fitted.

Supply air should be to all habitable rooms e.g. bedrooms and lounge. Extract / input grilles should be adjustable valve types (not supplied).

2 Typical Ducting Arrangement



3.5 Ducting

It is recommended that rigid ducting should be used at all times. Flexible ducting has a very high resistance and it is impossible to calculate how much resistance will be on a system if used. If used the flexible ducting must be kept to a minimum and should always be pulled taut. A maximum of 300mm should be used on each leg.

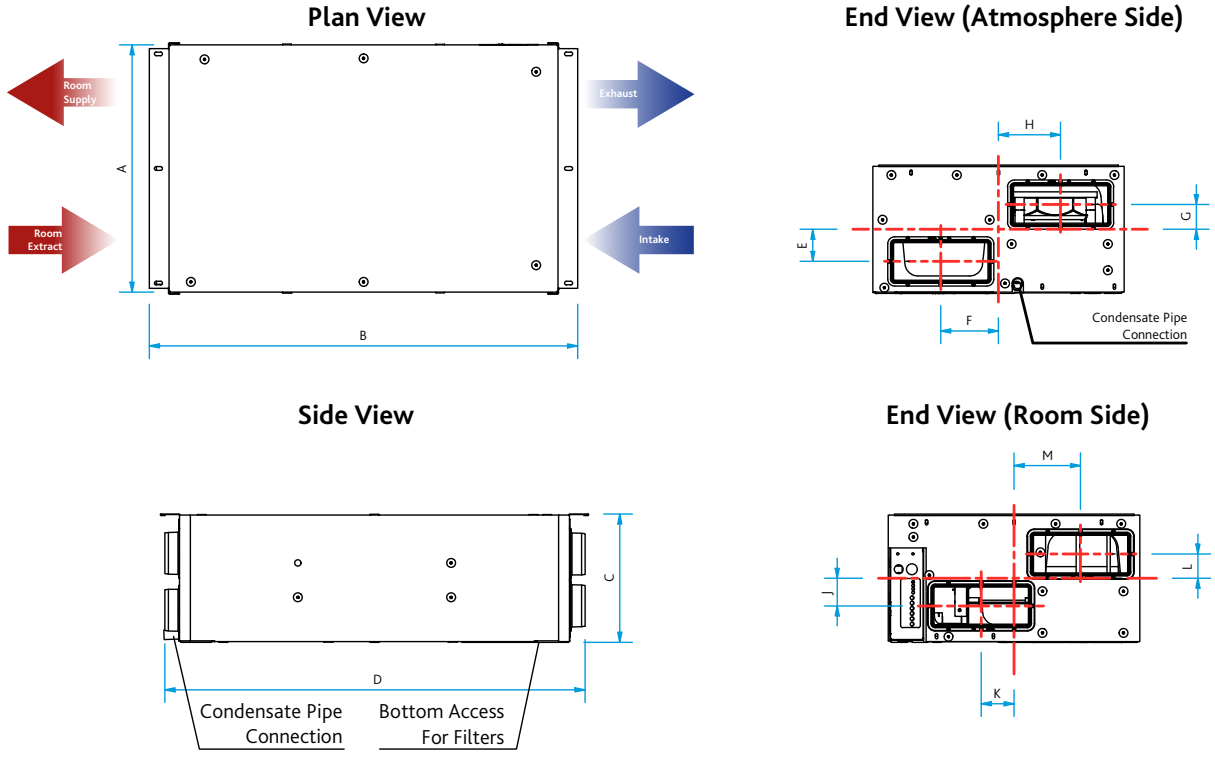
To prevent condensation on the outside of the outside air inlet duct and the air outlet duct from the Xboxer Universal, these ducts should be insulated.

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 (Figure 2). Ducting joints must be sealed with non-hardening silicone type sealant and needs to be taped with metallised tape. Ducting shall be adequately and reliably fixed to the appliance.

3.6 Dimensions (mm) & Weights (kg)

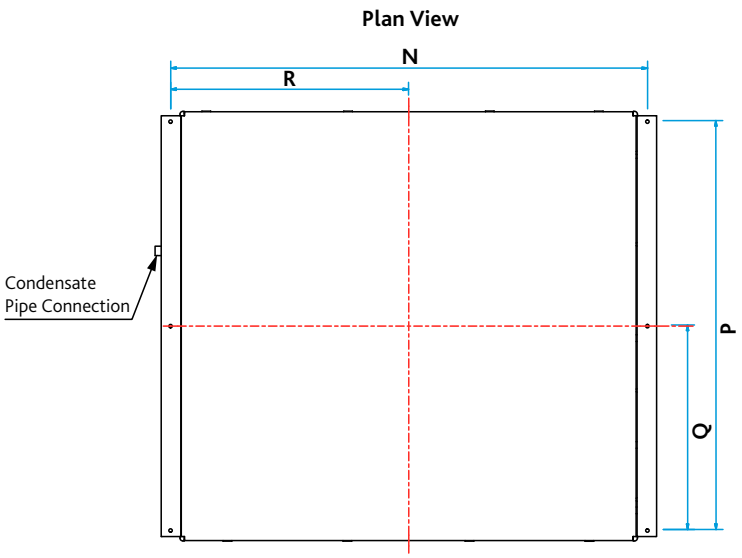
3.6.1 UNI-X220 Rectangular Spigot

3 UNI-X220 Rectangular Spigot Unit Dimensions & Weights



Unit Code	Unit Dimensions (mm)												Unit Weights (kg)
	A	B	C	D	E	F	G	H	J	K	L	M	
UNI-X220	570	980	300	982	71	132	57	142	64	75	57	152	40

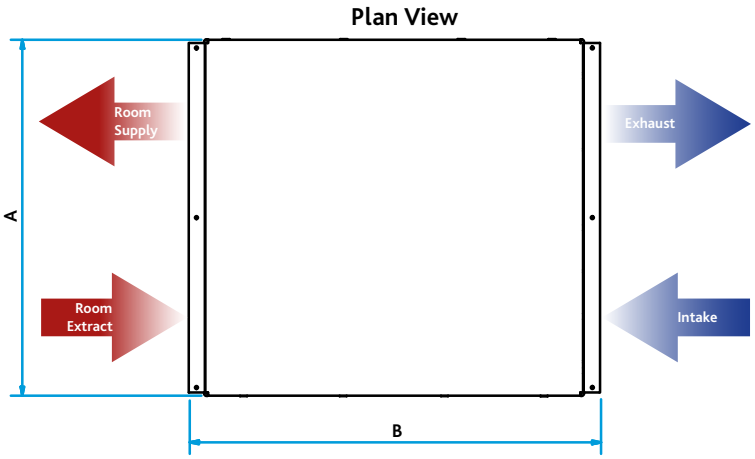
4 UNI-X220 Rectangular Spigot Unit Mounting Hole Centres Dimensions

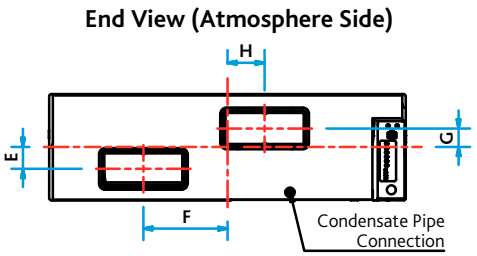


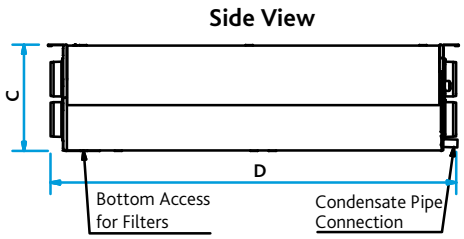
Unit Code	Hole Centre Dimensions (mm)			
	N	P	Q	R
UNI-X220	934	524	262	467

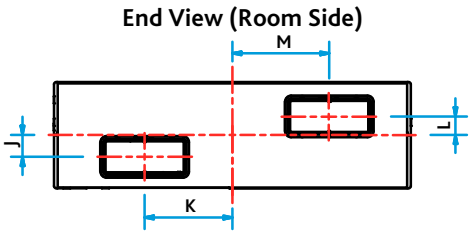
3.6.2 UNI-X360 & UNI-X580 Rectangular Spigot

5 UNI-X360 & UNI-X580 Rectangular Spigot Unit Dimensions & Weights



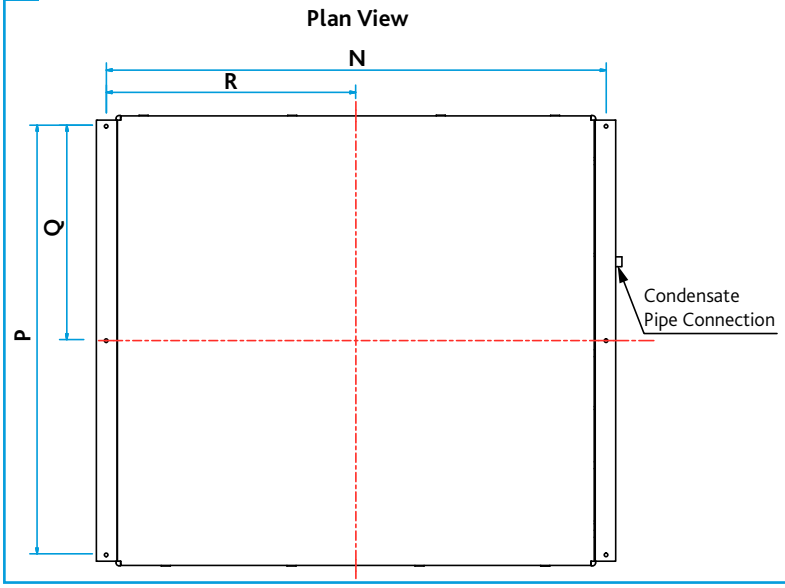






Unit Code	Unit Dimensions (mm)												Unit Weights (kg)
	A	B	C	D	E	F	G	H	J	K	L	M	
UNI-X360	720	1072	300	1100	53	163	53	130	57	160	53	194	55
UNI-X580	985	1136	300	1216	60	233	52	103	60	243	52	268	65

6 UNI-X360 & UNI-X580 Rectangular Spigot Unit Mounting Hole Centres Dimensions

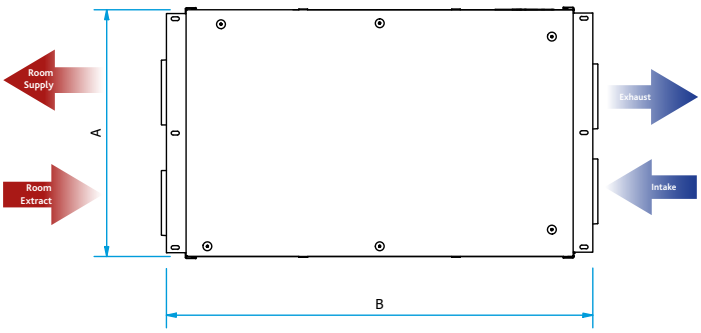


Unit Code	Hole Centre Dimensions (mm)			
	N	P	Q	R
UNI-X360	1031	670	335	515
UNI-X580	1091	938	469	546

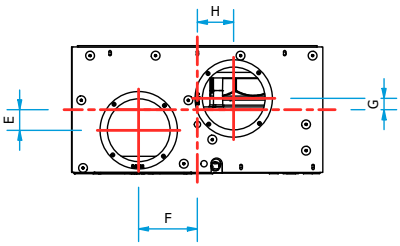
3.6.3 UNI-X220 Circular Spigot

7 UNI-X220 Circular Spigot Unit Dimensions & Weights

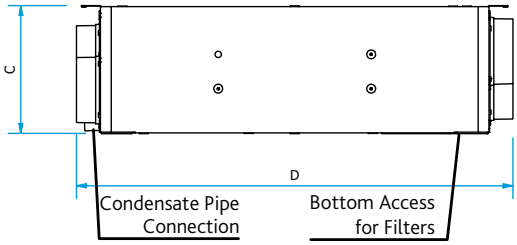
Plan View



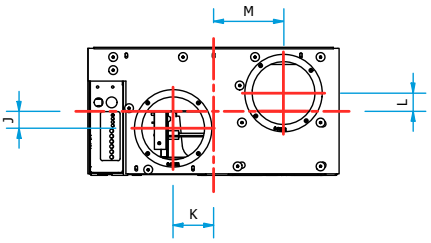
End View (Atmosphere Side)



Side View



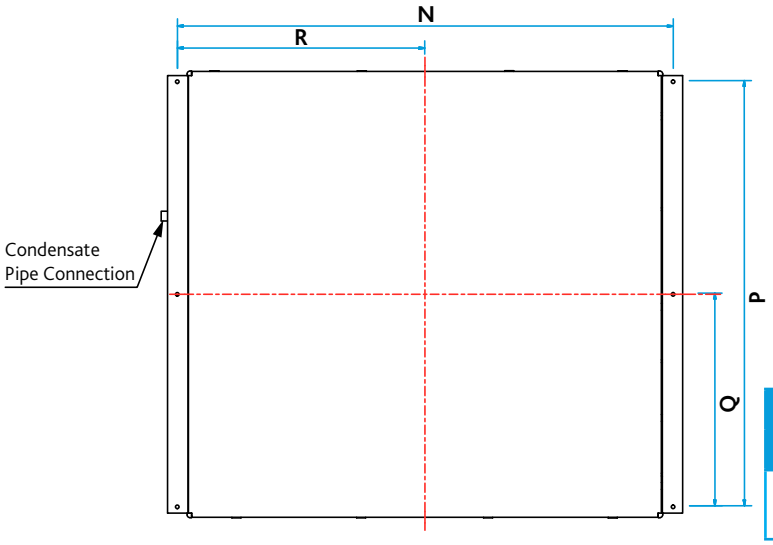
End View (Room Side)



Unit Code	Unit Dimensions (mm)												Unit Weights
	A	B	C	D	E	F	G	H	J	K	L	M	(kg)
UNI-X220-C	570	980	300	982	71	132	57	142	64	75	57	152	40

8 UNI-X220 Circular Spigot Unit Mounting Hole Centres Dimensions

Plan View

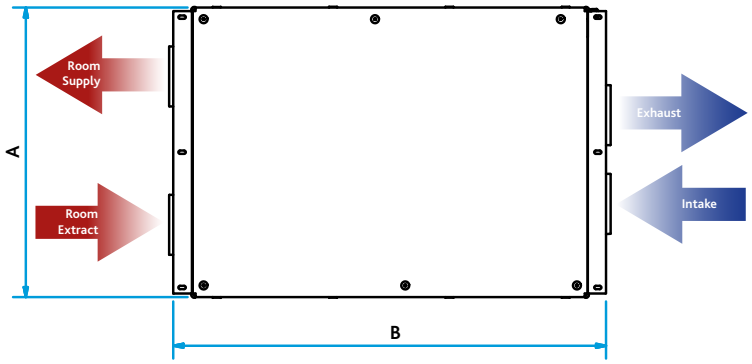


Unit Code	Hole Centre Dimensions (mm)			
	N	P	Q	R
UNI-X220-C	934	524	262	467

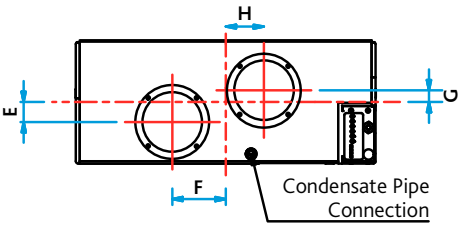
3.6.4 UNI-X360 & UNI-X580 Circular Spigot

9 UNI-X360 & UNI-X580 Circular Spigot Unit Dimensions & Weights

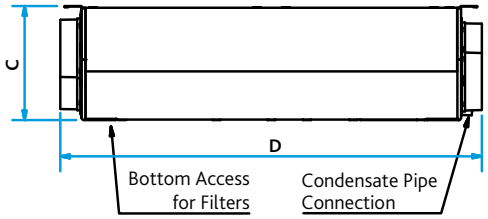
Plan View



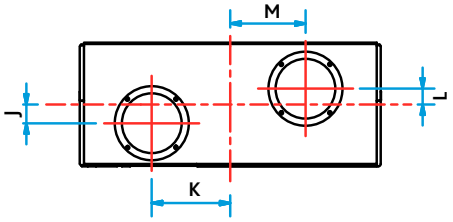
End View (Atmosphere Side)



Side View



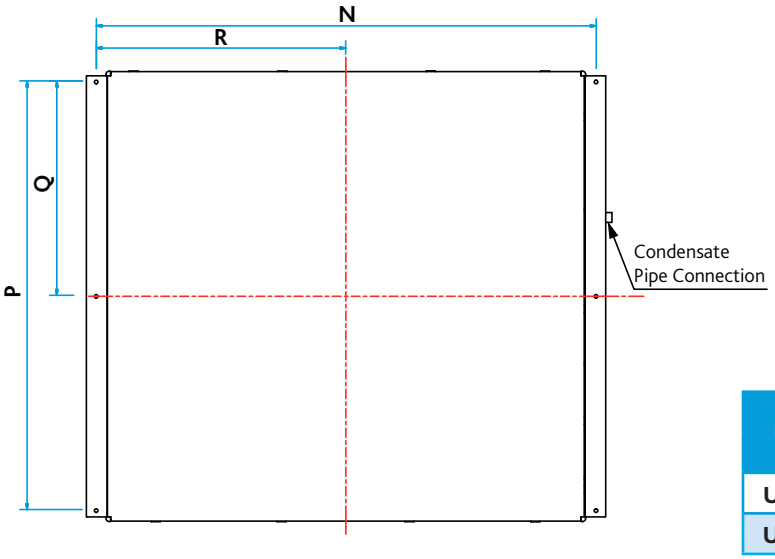
End View (Room Side)



Unit Code	Unit Dimensions (mm)												Unit Weights (kg)
	A	B	C	D	E	F	G	H	J	K	L	M	
UNI-X360	720	1072	300	1100	53	163	53	130	57	160	53	194	55
UNI-X580	985	1136	300	1216	60	233	52	103	60	243	52	268	65

10 UNI-X360 & UNI-X580 Circular Spigot Unit Mounting Hole Centres Dimensions

Plan View



Unit Code	Hole Centre Dimensions (mm)			
	N	P	Q	R
UNI-X360-C	1031	670	335	515
UNI-X580-C	1091	935.6	467.8	546

4.0 ELECTRICAL INSTALLATION

The electrical wiring should be carried out by competent persons, in accordance with industry practises and in conformance to all governing and statutory bodies.

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.

Unit details including Full Load Current, Voltage, fan speed etc. can be found on the unit label.

The Xboxer Universal range of units MUST be earthed.

The five core cable from the mains power supply should be connected to a fixed wiring installation, via a fused isolator, in accordance with current IEE wiring regulations.

In the event of an ESD discharge while operating the optional touch switch, the fan control may reset itself causing the fans to switch off temporarily. Functions will resume as normal after the control resets.

4.1 Electrical Information

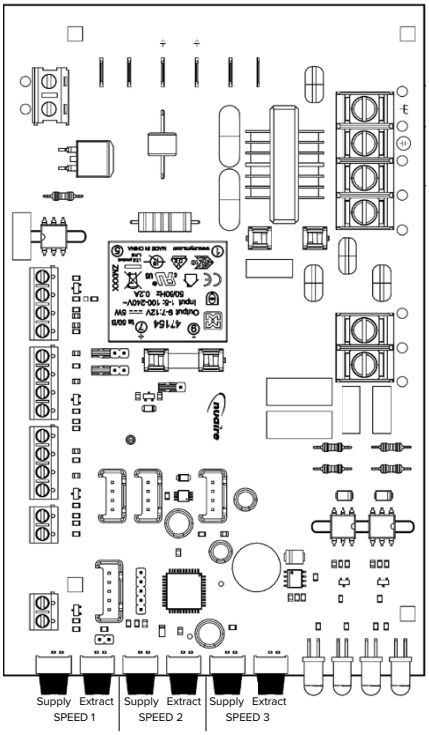
Electrical details:-
Voltage: 240V 1ph 50Hz

Unit Code	Power Consumption (W)	Full Load Current (A)
UNI-X220(-C)	168	1.5
UNI-X360(-C)	168	1.5
UNI-X580(-C)	340	2.8

4.2 Wiring Diagrams

4.2.1 PCB

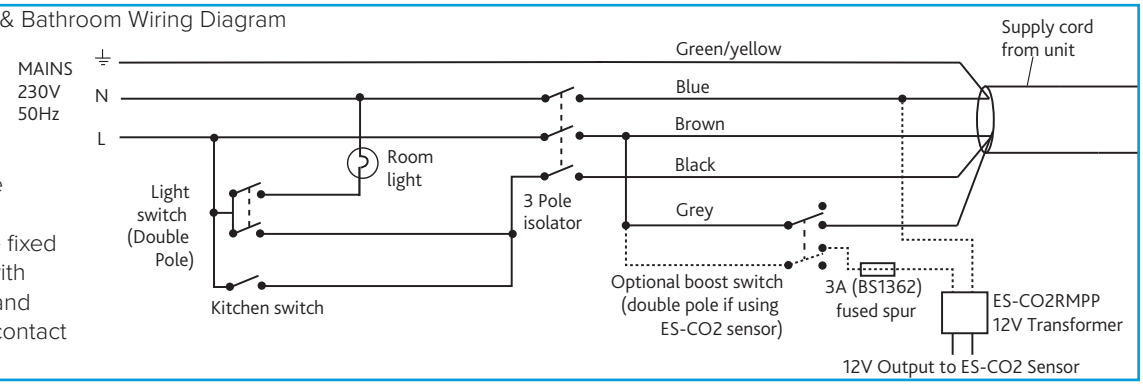
11 PCB Diagram



4.2.2 Unit Serving Kitchen & Bathroom

12 Unit Serving Kitchen & Bathroom Wiring Diagram

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.

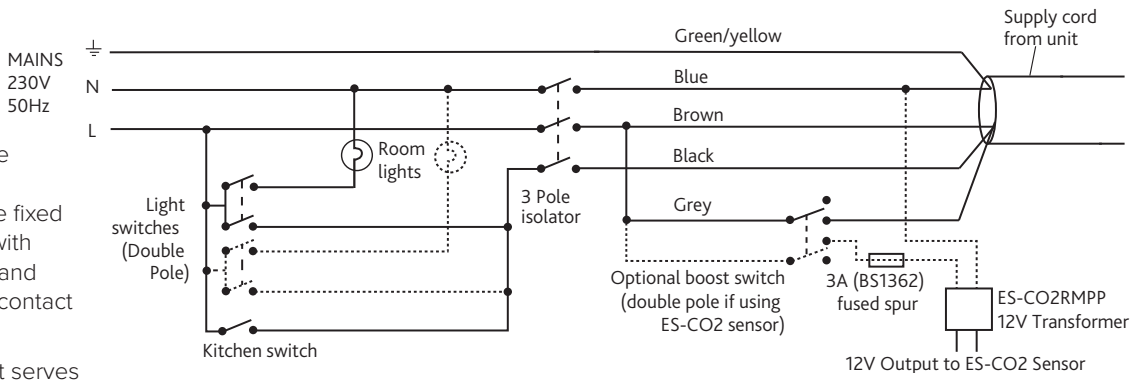


4.2.3 Unit Serving Kitchen and Multiple Bathrooms

13 Unit Serving Kitchen and Multiple Bathrooms Wiring Diagram

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.

When wiring a unit that serves multiple bathrooms, the wiring shown as a dashed line can be repeated for the appropriate number of bathrooms.



5.0 CONTROLS

5.1 Optional Control Ancillaries

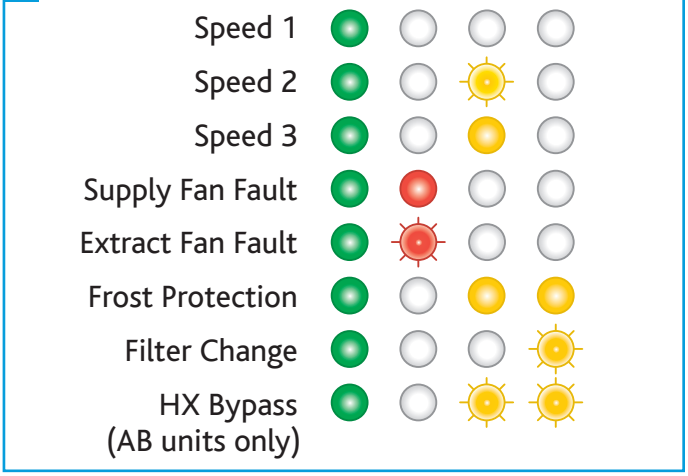
The following list of control ancillary items have been tested and are available for use with Xboxer Universal units:

Ancillary Code	Description
ES-JB	Ecosmart Junction Box
ES-HUMIDSTAT2	Ecosmart Surface Mounted Humidistat
ES-THERMOSTAT2	Ecosmart Surface Mounted Thermostat
ES-PIR2	Ecosmart Surface Mounted Passive InfraRed Sensor
ES-AVI2	Ecosmart Surface Mounted Audio Visual Indicator
ES-VF	Ecosmart Surface Mounted Vault Free Relay Box
230-PIR	230V Passive InfraRed Sensor
779891	Normal or Boost Speed Switch
MRXBOX95-3SWITCH	3 Speed Switch
UNI-X-BT	Illuminated Push Button Run-On Timer
UNI-X-TT	Illuminated Touch Button Run-On Timer
ES-CO2RM	Ecosmart Surface Mounted CO2 Sensor (SELV by others)
ES-CO2RMPP	Ecosmart Surface Mounted CO2 Sensor (3 pin plug must be removed)

5.2 Status Indication

The status of the unit is indicated by a series of LEDs on the front cover, with variations listed below.

14 Status Indication LEDs



5.3 Frost Protection

In the event of the intake air temperature at the unit dropping below the predetermined set point (-5°C as standard) the supply fan will reduce to minimum speed, once the temperature rises above the set point the fan will return to its commissioned speed.

This mode will only activate after ten days of continuous run time. If commissioning of the unit is outside of this time frame please notify the after sales department prior to site visit.

5.4 Heat Exchanger Bypass

The HX bypass damper shall open automatically under certain scenarios allowing the supply air to bypass the heat exchanger. These scenarios are described below.

1. Outdoor temp >10°C
   AND
   Indoor temp > Outdoor temp
   AND
   Inside temp > 25°C

2. Outdoor temp > 10°C
   AND
   Outdoor temp > Indoor temp
   AND
   Outdoor temp < 25°C

An amount of hysteresis is included in the strategy such that the "current" condition is maintained until 1°C past the control point.

5.5 Commissioning

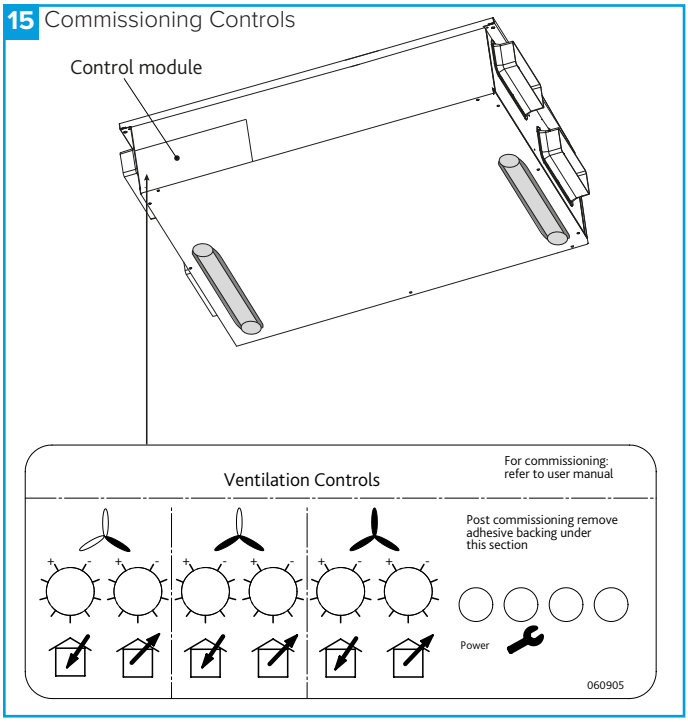
The unit is supplied with independent fan speed control via the potentiometers (Figure 11) for both normal and boost and maximum airflows.

Commissioning should be carried out in accordance with building regulations document “domestic ventilation compliance guide”.

A calibrated moving vane anemometer and hood will be required for the commissioning, and adjustment valves should be locked in place to prevent further adjustment.

Once commissioned the unit should not be adjusted as it will have a detrimental effect on the indoor air quality and could result in condensation and mould growth. The label covering the control has an adhesive panel which should be removed post commissioning to prevent tampering.

15 Commissioning Controls



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.

6.1 Maintenance Schedule

6.1.1 Routine Maintenance

- Clean all areas of unit and treat any areas of corrosion.
- Check all access doors for leakage and if necessary locks should be adjusted and any replacement gasket materials should be replaced as required.
- Any drain trays should be cleaned and repaired if necessary.

6.1.2 Every 3 Months

- Check filters and change/clean if required, failure to do so may impair the performance and energy efficiency of this unit.
- Ensure condensate drains are cleaned clear and that water can flow freely from unit.
- Check fin coil banks and heat exchangers. If necessary clean with a soft brush or vacuum. Check for signs of contamination.

6.1.3 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.

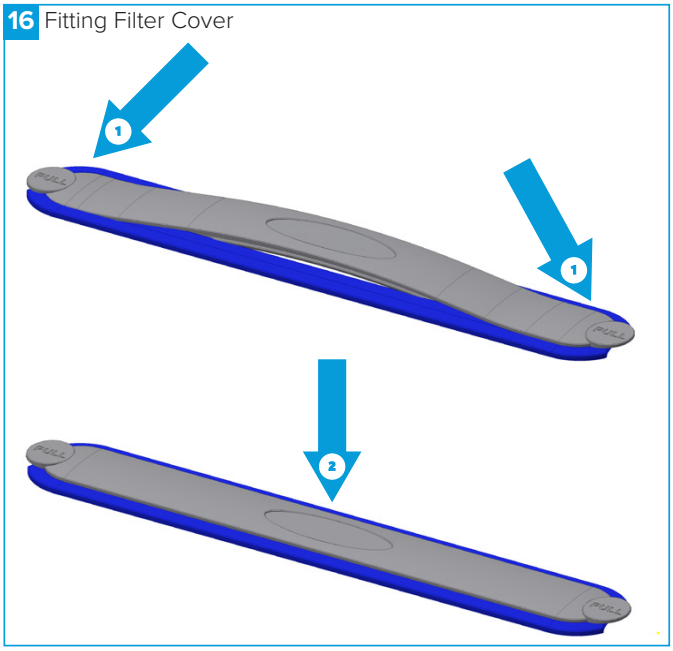
6.2 Filter Replacement

Filters can be accessed within the unit by removing the two filter covers on the bottom panel of the unit. Take hold of the two circular tabs either end of the filter covers and pull to remove (Figure 16).

The filter can now be extracted by pulling the removal loop on the edge of the filter. Once the filters have been inspected and return or replace them as necessary and refit the filter cover.

To fit the filter cover, insert both ends of the cover into the filter slot and press down on the centre (Figure 16). Ensure that a full seal is made between the unit and the cover. Any incorrectly fitted covers will cause a performance drop of the unit.

16 Fitting Filter Cover



6.3 Motor Replacement

With the unit taken down from its installed position, the motors can be replaced by following the below procedure:

1. Unscrew all the black plastic Expanded Polystyrene (EPS) fixings in the top, sides and ends of the unit using a Torx Driver Bit, T25 x 70 mm (RS component no. 769-119).
2. Unscrew the three screws at the top of both end panels; this will release the top plate of the unit.
3. Remove the earth fixing that connects the top plate to the unit control panel.
4. Remove the top plate of the unit, lifting directly upwards using the safety edges along the side of the top plate.
5. Unscrew all bolts and screws from the newly exposed EPS foam lid and remove foam lid. This allows access to replace the unit motors.
6. Once motor replacement has been completed reassemble the unit in reverse operation to the process described above. Ensure all fixings are replaced and secure prior to testing the unit.

7.0 VOLTAGE SPIKE

In the event of a voltage spike occuring, the unit may initiate fan fail mode. To restart/reset the fan isolate the unit from the power supply for 20 seconds. Following this period reconnect power to the unit to restart the fan.

8.0 WARRANTY

The 2 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.

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.

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

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