MRXBOX95B-450 WC and 450

Mechanical Ventilation Unit with Heat Recovery and Summer Bypass for Wall Mounting

Installation and Maintenance

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

1.0 Introduction

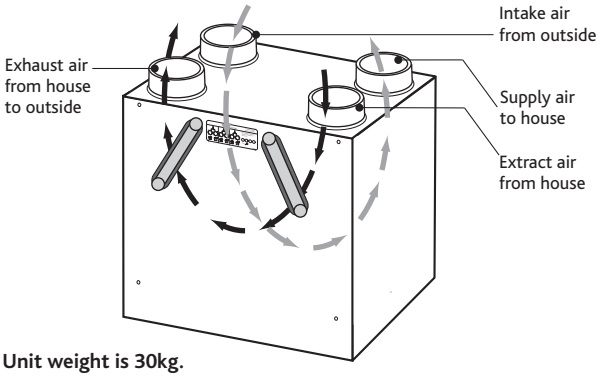
IMPORTANT

The unit must remain switched on at all times to maintain ventilation within the dwelling. Turning the unit off will cause long term damage to the unit and building fabric.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person for their safety. Children should be supervised so that they do not play with the appliance.

The MRXBOX95B-450 WC and MRXBOX95B-450 wall mounted units are designed to provide mechanical supply and extract ventilation with heat recovery and summer bypass.
It also incorporates an integral humidistat and frost protection (-5 degrees C as standard).
The unit is supplied with independent control for both supply and extract for 3 speeds.
To recover heat from the extract air the heat exchanger block is utilised. The heat exchanger can recover up to 95% of the normally wasted heat.

Figure 1. Airflow through unit in standard configuration.



Unit weight is 30kg.

2.0 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 a clear working space is required around the installed unit to allow the cover to be removed and provide sufficient access for maintenance such as filter change.
Please allow a minimum of 600mm in front of the unit and 200mm on the humidistat adjustment side. The (450 WC unit only) will also require a minimum of 400mm above the unit for access to the receiver in its standard position. Alternatively, the receiver may be fitted away from the unit as it is wired with a flying lead.

The fan must be installed indoors, on a suitable wall away from direct sources of frost, heat, water spray or moisture generation.
For a vibration-free result the unit must be mounted to a solid wall.

The unit is designed for wall mounting only on a solid wall, a gypsum block or a stud wall will not suffice. Additional measures such as extra studs or double panelling using 20mm MDF is required.

1. One part of the mounting bracket should be offered up to the wall, ensuring it's located horizontally. Mark the fixing points through the pre drilled holes in the bracket and install with screws (by others), ensuring the interlock side is at the top, (fig. 2).
2. Install the unit on the wall by ensuring the bracket on the unit interlocks over the wall mounted bracket (fig. 3).

Note: Care must be taken to ensure the unit is installed true in all 3 dimensions. Failure to do so may result in overflow from the internal condensation drip tray.

Figure 2. Fixing the mounting bracket to the wall.

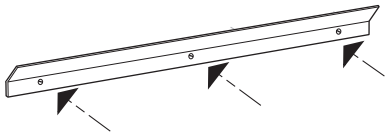


Figure 3. Mounting the unit on the wall mounted bracket.

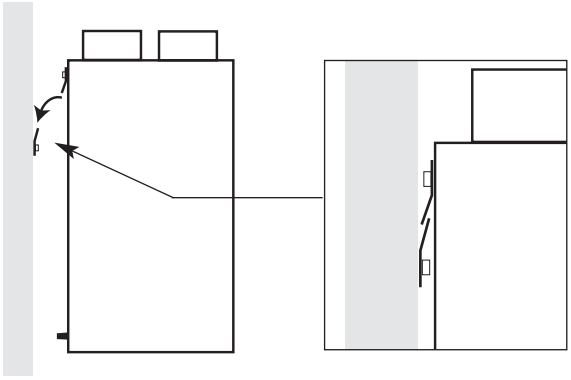
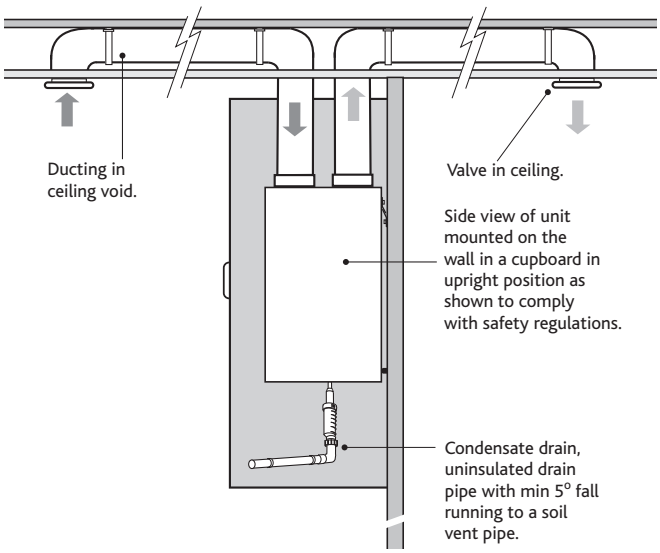


Figure 4. Typical example of a cupboard mounted unit on a wall using the bracket.



Nuaire: A Trading Division of Polypipe Limited Western Industrial Estate Caerphilly United Kingdom CF83 1NA
T: 029 2088 5911 F: 029 2088 7033 E: info@nuaire.co.uk W: www.nuaire.co.uk

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2.1 Condensate Drain

1. If using a U-trap please ensure the U-trap has been filled to a suitable level of water to avoid any air locks.
2. If the condensation pipe is fitted in an unheated space the pipe should be in insulated to prevent freezing.

Figure 5a. Wet option. Condensate pipe connection to unit and a typical example of a "U" trap drainpipe.

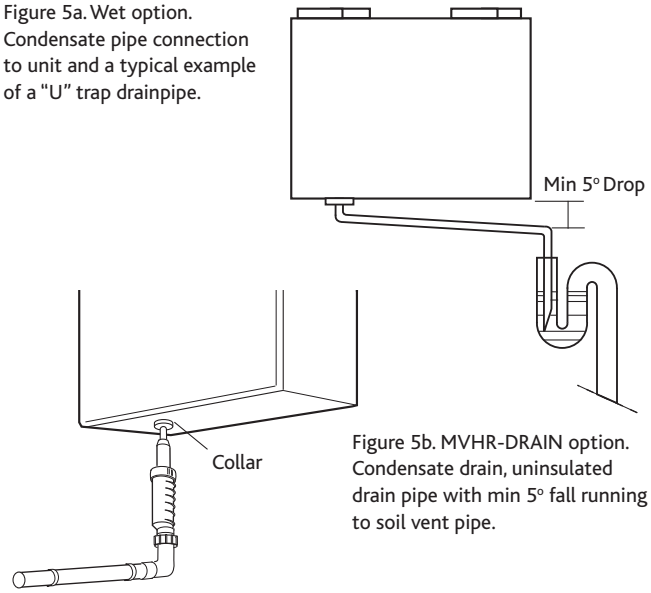


Figure 5b. MVHR-DRAIN option. Condensate drain, uninsulated drain pipe with min 5° fall running to soil vent pipe.

2.2 Extract/input areas

The unit is designed to extract air from all wet rooms e.g. bathroom, kitchen, en-suite, utility room (with sink) and WC's.

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

2.3 Ducting

It is recommended that rigid ducting be used it 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 exterior of the outside air inlet duct and the air outlet duct from the unit, these ducts should be insulated with material having a thermal resistance of >0.625m²K/w.

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 200mm between the appliance and any bends in ductwork is recommended. Ideally 200mm diameter or 204 x 60mm rectangular ducting should be used.

Ducting joints must be sealed with silicone type sealant and shall be adequately and reliably fixed to the appliance.

2.4 Ventilation flow rates

Flow rates applicable to local market. Meets EPBD requirements / EN308 tested.

IMPORTANT

Any air intake terminal MUST be installed in accordance with the appropriate regulation. Installers are advised to be aware of the requirements of this standard when installing 'through the wall' supply air ducting.

2.5 Handing

The unit may be handed to switch the supply and extract spigot positions, this can be done by following the steps below and are shown in fig. 6.

Note: This process should only be carried out by a competent and qualified person.

Step 1. Remove the front cover and inner panel followed by the rear panel to gain access to the inside of the unit

Step 2. Partially pull out the metal tray to access the circuit board and cable connections. All connections are required to be disconnected and although assistance has been given to allow correct reconnection please familiarise yourself with the layout before doing so. Once all connections are disconnected the PCB tray can then be fully removed, at this point the cables should be pulled through to the other side of the unit. Then slide the PCB tray partially into the unit ensuring the stand offs are on the side the front cover is going to be fixed and that no cables are trapped. All cables can then be re-connected to the PCB as per the original arrangement, note the following cables have been tagged with a cable tie approximately 25mm from its termination point for identification as there are two identical components. These are supply control cables, supply power cables, TH1 and SWL1.

Once complete the PCB tray can be slid in the remainder of the way.

Step 3. The filter should be reversed so the pull tab is at the side the front cover is to be attached

Step 4. The panels and cover removed in step 1 can then be re-assembled to the opposing sides that they were removed, care should be taken to ensure a good seal is achieved.

Figure 6. Unit handing view.

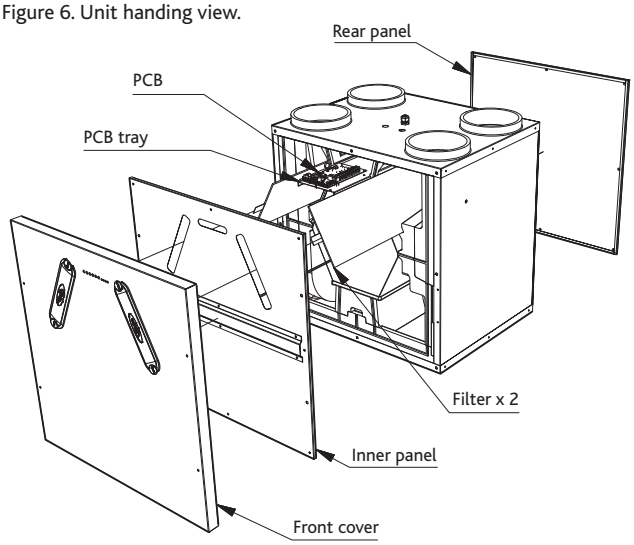
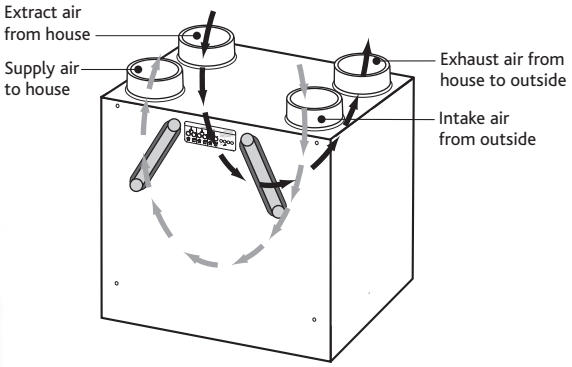


Figure 7. Airflow through unit in handed configuration.



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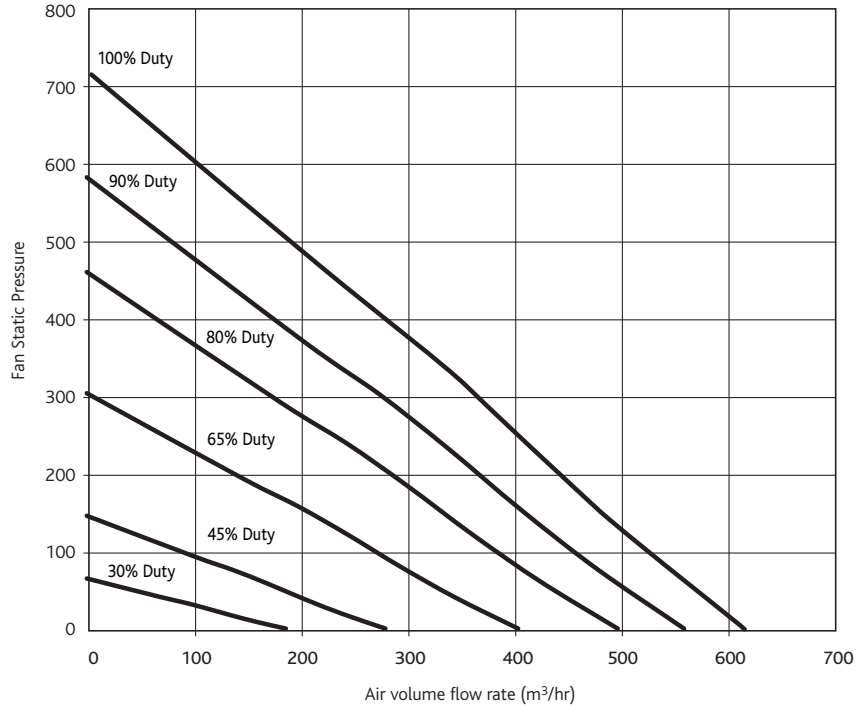
3.0 Performance



3.1 Sound and Breakout Levels

		Sound Power Levels dB re 1pW									
		63	125	250	500	1K	2K	4K	8K		LwA
Extract	Full speed Open inlet	58	56	57	63	57	51	46	45		63
	90% Open Inlet	58	55	56	62	55	49	44	43		61
	80% Open Inlet	57	55	55	60	53	47	42	41		59
	65% Open Inlet	56	53	52	57	47	41	36	35		55
	45% Open Inlet	54	50	49	52	40	34	29	28		50
	30% Open Inlet	51	47	43	44	29	23	18	17		43
Intake	Full Speed Open Inlet	56	54	59	67	55	48	37	34		64
	90% Open Inlet	56	53	58	66	53	46	35	32		63
	80% Open Inlet	55	53	57	64	51	44	33	30		61
	65% Open Inlet	54	51	54	61	45	38	27	24		58
	45% Open Inlet	52	48	51	56	38	31	20	17		53
	30% Open Inlet	49	45	45	48	27	20	16	16		45
Discharge	Full Speed Open Outlet	67	63	65	75	68	63	56	53		74
	90% Open Outlet	67	62	64	74	66	61	54	51		73
	80% Open Outlet	66	62	63	72	64	59	52	49		71
	65% Open Outlet	65	60	60	69	58	53	46	43		67
	45% Open Outlet	63	57	57	64	51	46	39	36		62
	30% Open Outlet	60	54	51	56	40	35	28	25		54
Supply	Full Speed Open Outlet	59	62	65	71	65	63	57	53		71
	90% Open Outlet	59	61	64	70	63	61	55	51		70
	80% Open Outlet	58	61	63	68	61	59	53	49		68
	65% Open Outlet	57	59	60	65	55	53	47	43		64
	45% Open Outlet	55	56	57	60	48	46	40	36		59
	30% Open Outlet	52	53	51	52	37	35	29	25		51
										Breakout Sound Pressure Level dBA@ 3m	**LwA**
Breakout	Full Speed Breakout	61	61	60	63	53	48	40	35	40	61
	90% Breakout	61	60	59	62	51	46	38	33	39	60
	80% Breakout	60	60	58	60	49	44	36	31	37	58
	65% Breakout	59	58	55	57	43	38	30	25	34	55
	45% Breakout	57	55	52	52	36	31	23	18	29	50
	30% Breakout	54	52	46	44	25	20	16	16	22	43

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4.0 Dimensions (mm) MRXBOX95B-450WC with wireless control Figure 8.

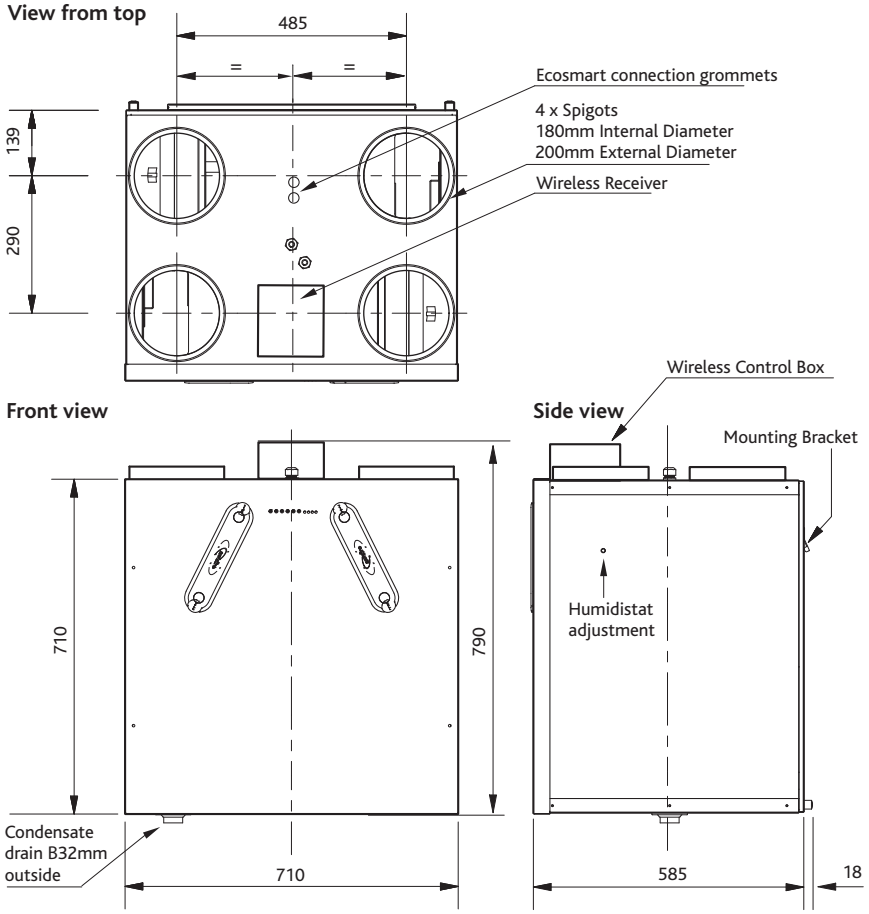
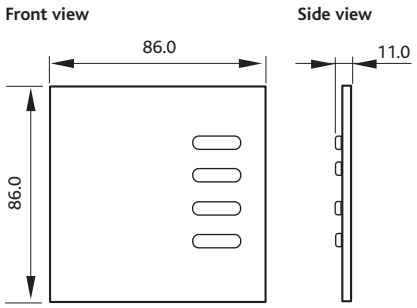
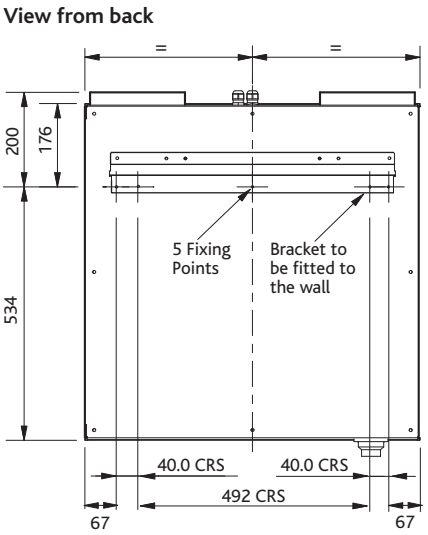


Figure 8a. Dimensions: 450WC unit switch.



4.2 Dimensions for unit wall mounting bracket position on 450WC & 450 units



4.1 Dimensions (mm) MRXBOX95B-450 Figure 9.

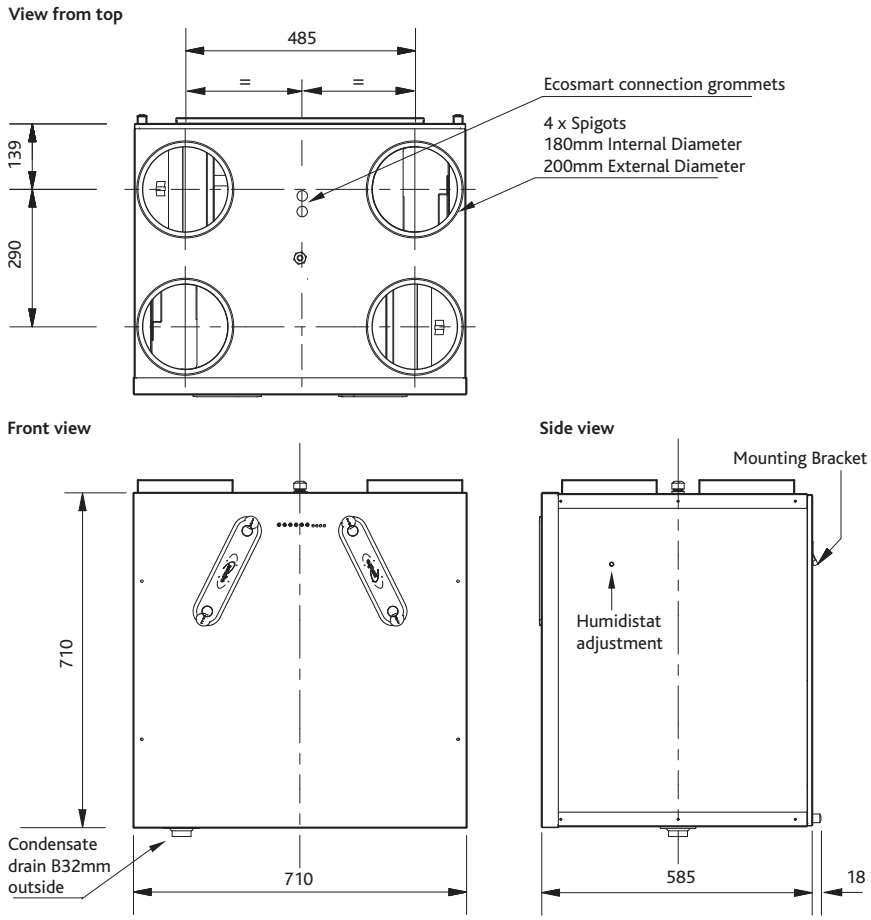
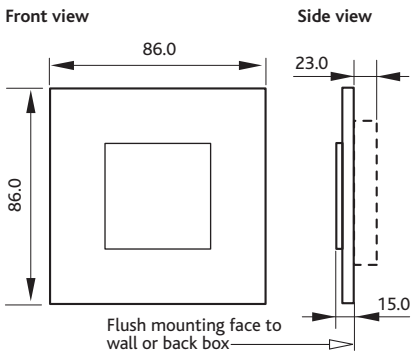


Figure 9a. Dimensions: MRXBOX95-3SWITCH



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5.0 Electrical Connection

Please note: the electrical connection of the unit must be be carried out by a qualified electrician.

The unit is supplied with a flexible cord for connection to the mains supply.

NOTE: In the event of 1kV transients the fans may stop running, normal operation will be resumed when the interference has ceased.

Electrical details:-

Voltage: 230V 1ph 50Hz
Consumption: 2.5Amp
Fuse rating: 5Amp
NOTE:This unit must be earthed.
The 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.

Power at reduced speed:-

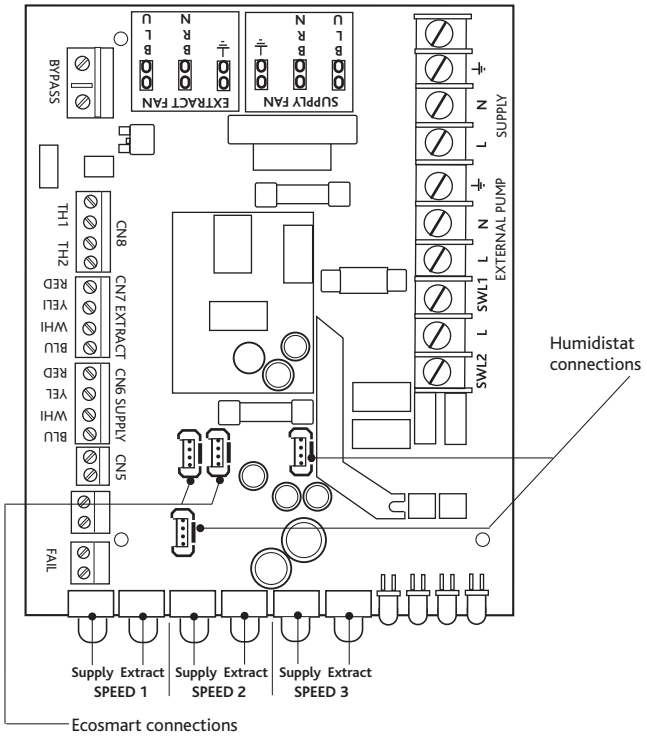
% Speed	W
100	337
90	246
80	173
65	93
45	31
30	<20

NOTE: Wiring is for reference purposes only as the connections shown are factory fitted. The unit is pre-wired with a 2 metre fly lead.

IMPORTANT

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.

Figure 10. PCB board.



5.1 Examples of typical wiring layouts

MRXBOX95B-450WC

Figure 11a.

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.

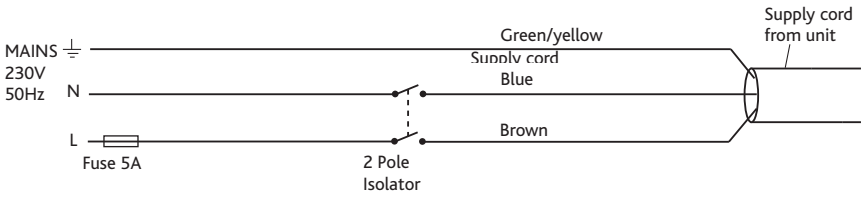


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Figure 11b.

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.

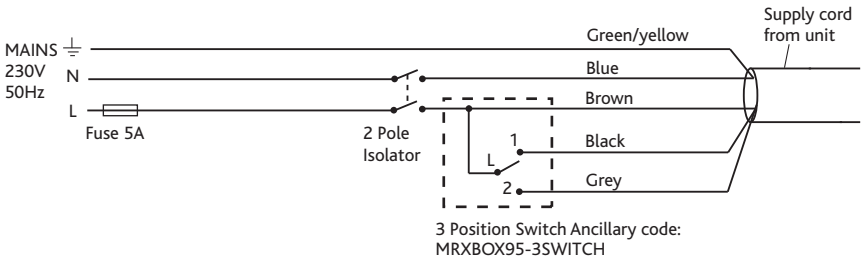

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Figure 11c. Unit serving one bathroom.

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.

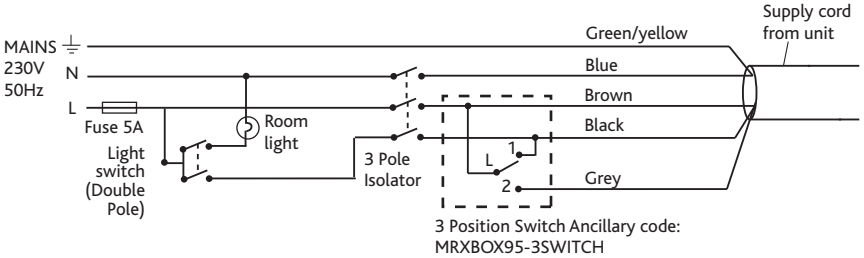

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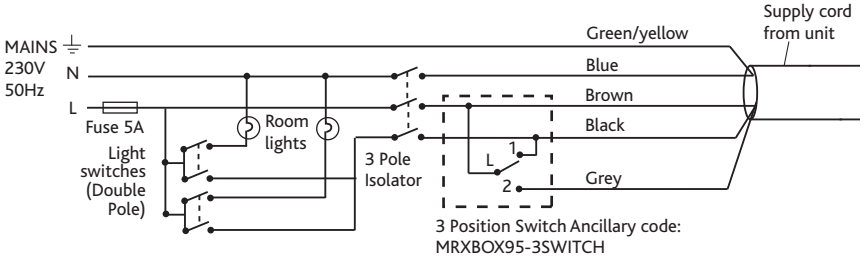
Figure 11d. Unit serving two bathrooms.

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.



5.0 Wireless control

Note: This process should only be carried out by a competent and qualified person.

The wireless control comes pre-set, if for any reason this needs to be repeated e.g. a replacement switch required the following steps should be followed. The unit needs to be powered to carry this out, care should be taken of live electrics while carrying out the task.

Step 1. Remove the cover from the wireless receiver on top of the unit using a terminal screwdriver.

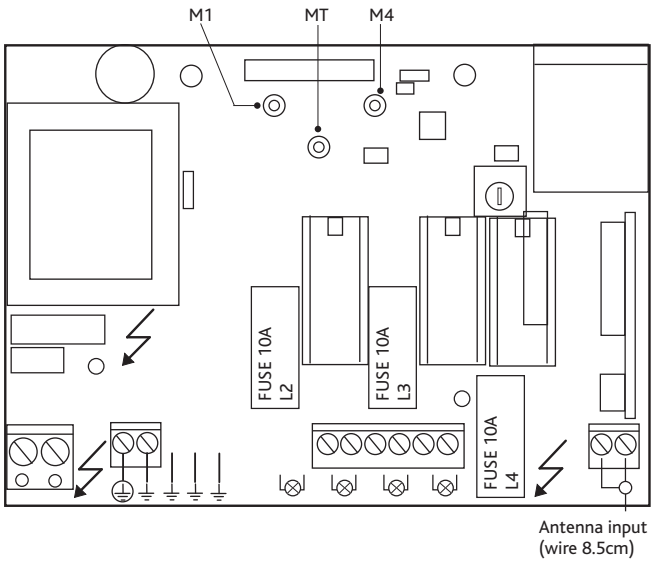
Step 2. Press and hold push button M4 so that the buzzer sounds continually, while it sounds press one of the buttons on the switch that is to be paired. Repeat this process for any additional switches that are to be paired.

Step 3. The system should now be fully functional and the cover can be re-fitted.

The duration of the timed boost may be adjusted between 5 - 30 mins using the trimmer as shown in fig 13. below.

A diagram of the wireless receiver is shown below, this is for reference only as the unit comes pre-wired.

Figure 13. Wireless receiver.



5.1 Switches

The wireless switch is supplied with a battery but this is not fitted, to fit the battery pull out the carrier at the base of the switch and insert the battery with the text facing you.

To fix either switch to a wall or back box remove the front fascia by inserting a terminal screwdriver into the two openings along the bottom edge and prize open gently. The fixing points on the back plate can then be accessed, once the switch has been secured the front fascia can then be re-fitted.

Note: The wireless switch will typically operate up to a distance of 30m inside a building, however, this is dependent on the layout and construction of the building. This distance will be reduced depending on obstructions e.g. walls. If the switch will not operate an additional wire aerial is supplied attached to the outside of the receiver cover, if required this can be fitted under the dome nut of the receiver and should point vertically skywards.

5.2 Ecosmart controls

A maximum of two Ecosmart sensors can be connected directly to the main circuit board, this can be done by cutting a small slit in the 20mm grommets situated on the top of the unit, the cable can then be threaded through to gain access to the connections on the PCB. If more than 2 connections are required an Ecosmart junction box will be required.

When a sensor is activated the unit will switch to speed 3 and run-on for 15 minutes after the signal is lost. Some sensors may also have additional optional run-on features.

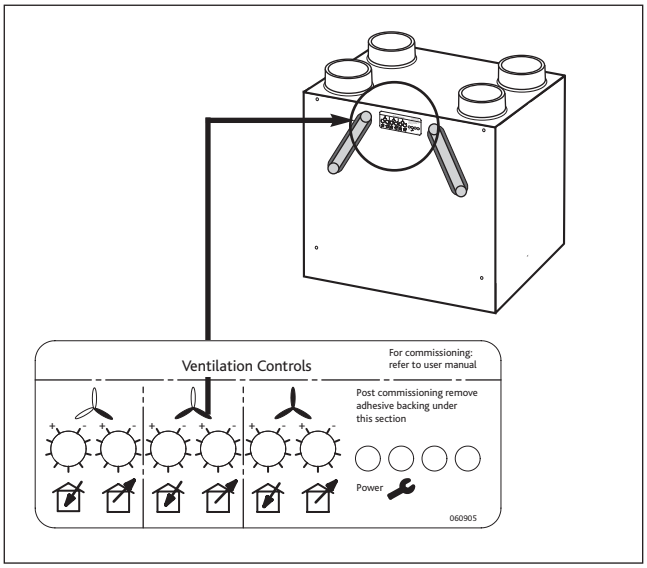
6.0 Commissioning

IMPORTANT

The filters fitted inside the unit are protected with a plastic film. Prior to commissioning remove the covers (fig 13), take off the film and replace.

1. The unit should be run for a minimum of 10 minutes to reach steady state before commencing commissioning.
2. The humidity sensor is initially set to its least sensitive position, this should be adjusted during commissioning. Depending on storage and site conditions the unit may boost due to high relative humidity levels, this will continue until the level drops below the specified set point.
3. The unit is supplied with independent control for both normal and boost airflows. (see fig. 14).
4. Correct commissioning is essential to ensure the ventilation air flow rates are met. It also ensures the unit is not over ventilating and causing excessive power consumption.
5. Adjustment valves should be locked in place to prevent further adjustment.
6. Once commissioned the home owner / tenant should be informed that 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.

Figure 14. Detail of unit control on front panel.



6.1 Humidity adjustment

This product contains an internal humidity sensor fitted into the airflow extracting from the wet rooms. When the unit senses that the humidity exceeds the set point the unit will boost to that set by the commissioned boost speed. The set point can be found on the side of the unit (see fig 8) and is at its most sensitive when turned fully clockwise. Note that the sensor is measuring humidity from all the wet rooms at the same time and should not be relied on to solely boost the unit.

Additional switch should be used local to the wet rooms (see wiring diagrams).

7.0 Maintenance/Cleaning

IMPORTANT

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

We recommend that the two G4 filters are inspected and cleaned after 6 months and replaced every 12 months. This will be indicated by the first LED from the right hand side flashing, the LED will flash for a two week period and then reset itself.

The filters can be removed from the unit by removing the two filter covers on the front panel of the unit. Take hold of the two circular tabs either end of the filter covers and pull out.

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

Inspect the heat exchanger every 5 years. Generally check for damage and security of components. The heat exchanger should be fitted in the same orientation as originally assembled e.g. front label facing removable cover and top label nearest PCB.

Figure 15. Removing the two filter covers on the front panel of the unit.

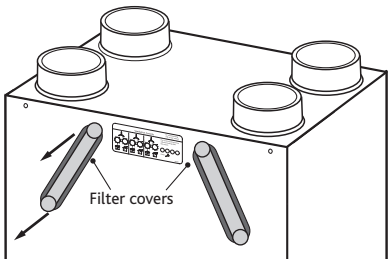
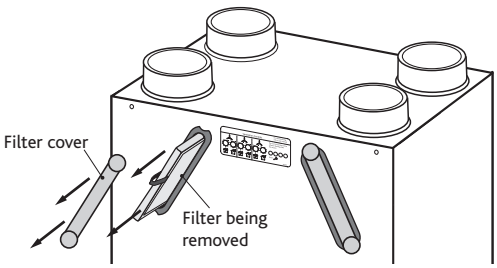


Figure 16. The filters can be removed by pulling on the black tab on the visible end of the filters.



8.0 Replacement of Parts

Should any component need replacing Nuaire keep extensive stocks for quick delivery. Ensure that the unit is electrically isolated, before carrying out any work.

Note: The supply cable must be replaced by an electrically competent person.

When ordering spare parts, please quote the serial number of the unit and the ARC number of the purchase if possible. **(This information will be available on the fan label).**

9.0 Warranty

MRXBOX95B-450 WC and MRXBOX95B-450 have a 1 year warranty.

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.

10.0 After Sales Enquiries

For technical assistance or further product information, please contact the After Sales Department.

Telephone 02920 858 400