MECHANICAL VENTILATION WITH HEAT RECOVERY (MVHR)

IMPROVING INDOOR AIR QUALITY IN NEW HOMES
Proud to Build British

Nuaire is a world leader in the design and manufacture of fans and ventilation systems. We put our energy into efficient ventilation so you don’t waste yours.

Nuaire is a privately owned, British company that designs and manufactures innovative ventilation products for the residential and commercial sectors. We are proud to be recognised for our expertise, commitment to innovation and the outstanding quality of our products and customer service.

People are the heart of Nuaire, and we have over 400 staff at our headquarters with a further 65 technical sales engineers throughout the UK and Ireland.

Based in South Wales, our factory covers 18,000 m², allowing us to manufacture almost all of our products on site, from small bathroom fans to large air handling units.

In recent years Nuaire has invested millions of pounds into new manufacturing plant to support its plans for growth.

“Our manufacturing facility is approximately 4 x the size of the Wembley pitch”

Nuaire’s technical application team can offer expert advice and support to help you make the right choice in your ventilation strategy. Providing a simple, quick selection or offering advice on compliance with the very latest building regulations and environmental issues, we are here for you every step of the way.

GETTING IT RIGHT FROM THE START
Advice On Compliance and SAP Q
Stay ahead of the latest building regulations and make the best product and fabric choices.

Over 65 Sales Staff
Field and office based staff to support you at every stage.

Gold Star Aftercare
Our comprehensive product warranty and dedicated after sales support gives you peace of mind.

Nuaire Academy
To ensure your installers get the best from your system and meet Building Regs, Nuaire offers BPEC training. This is free of charge to our customers delivered from our BPEC Accredited Training Centre.

The Full Service
Help with product selection, detailed parts lists and fast delivery ensure you meet your deadline and budget.
MECHANICAL VENTILATION WITH HEAT RECOVERY (MVHR - System 4)

Heat recovery (MVHR) is fast becoming the most popular strategy for effective whole home ventilation for new build properties.

A proven low-energy, highly efficient ventilation method, Nuaire’s heat recovery MRXBOX range offers all year round ventilation by extracting moisture and supplying fresh air, whilst recovering the heat that would otherwise be lost. The MRXBOXAB’s is the first MVHR range on the market with integral automatic summer bypass as standard.

Nuaire offers the widest range of heat recovery systems in the UK, specifically designed to meet building regulations with the best SFP/SAP Q scores. With a range of compact wall and loft units designed to suit every size and type of property, Nuaire will have a unit to fit the requirements of your project.

With Government legislation and building regulations for low leakage rates, air-tight buildings may lead to poor indoor air quality.

Nuaire’s award winning, wide range of MVHR solutions are 95% efficient and will quietly and effectively provide fresh, filtered air all year round. MVHR systems will retain heat that would otherwise have been lost to outside and warm incoming fresh air, if required.

MVHR How does it work?

**NO NEED TO OPEN WINDOWS TO VENTILATE**
Clean fresh air is continuously drawn into the property from outside through the supply air ducting.

**BOOST FACILITY**
Both the supply and extract air can be boosted at any time by the home owner to increase the ventilation levels. Light switches, PIRs and Humidistats can be used.

**HIGH EFFICIENCY FILTERS HELP CREATE A HEALTHY LIVING ENVIRONMENT**
Clean, fresh air passes through the filter inside the unit and into the counter-flow heat exchanger, where it is warmed using the heat recovered from extract before it is delivered to the habitable rooms of the home.

**PREVENTS CONDENSATION BY KEEPING MOISTURE LEVELS LOW**
Stale air is continuously extracted from the moisture producing areas, such as kitchens and bathrooms. The MVHR unit takes advantage of the heat by absorbing up to 95% of it and storing it in the heat exchanger.
All the options you need

Ventilation is often overlooked, or considered late in the construction when joists and other services are installed.

Nuaire offer a wide range of solutions, including MVHR's for wall, loft or ceiling mount. Nuaire also offer acoustic solutions to ensure you not only meet building regulations, but ensure efficient, whisper-quiet performance.

Design Services

Nuaire’s Technical Application Team can offer expert advice and support on design.

Services include supporting 3D CAD illustrations to illustrate choice of product, ducting and ancillaries. This bespoke package enables correct selection and aids project management and site control.

As well as a simple, clean system layout in 3D showing ventilation, Nuaire provides a complete parts list with installation visuals.
Design of continuous mechanical extract systems

System 3 (Continuous Mechanical Extract) has been sized for the winter period. Additional ventilation may be required during warmer months and it has been assumed that the provisions for purge ventilation (e.g. openable windows) could be used.

Step 1: Determine the whole dwelling ventilation rate from Table 5.1b.
(Note: no allowance is made for infiltration as the extract system lowers the pressure in the dwelling and all air flow through infiltration paths does not increase the overall ventilation rate.)

Step 2: Calculate the whole dwelling extract ventilation rate by summing the individual room rates for ‘minimum high rate’ from Table 5.1a.
(For sanitary accommodation only, as an alternative, the purge ventilation provisions can be used where security is not an issue. In this case the ‘minimum high extract rate’ for the sanitary accommodation should be omitted from the Step 2 calculation.)

Step 3: The required extract rates are as follows:
The maximum whole dwelling extract ventilation rate (i.e. the boost rate) should be at least the greater of Step 1 and Step 2. Note that the maximum individual room extract rates should be at least those given in Table 5.1a for minimum high rate.

The minimum whole dwelling extract ventilation rate should be at least the whole dwelling rate found in Step 1.

Location of Ventilation Devices

- Extract should be from each wet room.
- Mechanical extract terminals and fans should be installed as high as is practicable and preferably less than 400mm below the ceiling.
- Where ducts etc are provided in a dwelling with a protected stairway, precautions may be necessary to avoid the possibility of the system allowing smoke or fire to spread into the stairway.

Air Transfer

- To ensure good transfer of air throughout the dwelling, there should be an undercut of minimum area 7600mm² in all internal doors above the floor finish. This is equivalent to an undercut of 10mm for a standard 760mm width door. This should be achieved by making an undercut of 10mm above the floor finish if the floor finish is fitted, or by a 20mm undercut above the floorboards, or other surface, if the floor has not been fitted.

Controls

- Should be set up to operate without occupant intervention, but may have manual or automatic controls to select the boost rate. Any manual boost controls should be provided locally to spaces being served, e.g. bathrooms and kitchen, as provision of a single centrally located switch may result in fans being left in an inappropriate mode of operation.
- Automatic controls could include sensors for humidity, occupancy/usage and pollutant release. Humidity controls should not be used for sanitary accommodation as odour is the main pollutant.
- In kitchens, any automatic control must provide sufficient flow during cooking with fossil fuel (e.g. gas) to avoid build up of combustion products.
- Ensure that the system always provides the minimum whole dwelling ventilation rate specified in table 5.1b.

Where manual controls are provided, they should be within reasonable reach of the occupants. It is recommended that they are located in accordance with the guidance of Requirement N3 Safe Opening And Closing of Windows etc., which is given in Approved Document N. Where reasonable, pull cords, operating rods or similar devices should be provided.

Noise

Any continuously running fans should be quiet so as not to discourage their use by occupants.

![Table 5.1a Extract Ventilation Rates](image)

<table>
<thead>
<tr>
<th>Room</th>
<th>Intermittent Extract</th>
<th>Continuous Extract</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Minimum Rate</td>
<td>Minimum High Rate</td>
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<tr>
<td>Kitchen</td>
<td>30 l/s adjacent to hob, or 60 l/s elsewhere</td>
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<td>Utility Room</td>
<td>30 l/s</td>
<td>8 l/s</td>
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<td>Bathroom</td>
<td>15 l/s</td>
<td>8 l/s</td>
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<tr>
<td>Sanitary Accommodation</td>
<td>6 l/s</td>
<td>6 l/s</td>
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![Table 5.1b Whole Dwelling Ventilation Rates](image)

<table>
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<tr>
<th>Number of bedrooms in dwelling</th>
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<td>Whole dwelling ventilation rate (l/s)</td>
<td>13</td>
<td>17</td>
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<td>25</td>
<td>29</td>
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</tbody>
</table>

Notes:
- a. In addition, the minimum ventilation rates should be no less than 0.3 l/s per m² of internal floor area (this includes all floors, e.g. for a two-storey building, add the ground and first floor areas).
- b. This is based on two occupants in the main bedroom and a single occupant in all other bedrooms. This should be used as the default value. If a greater level of occupancy is expected, add 4 l/s per occupant.
## MVHR Product Selector

### WALL MOUNTED

<table>
<thead>
<tr>
<th>Feature</th>
<th>For properties up to 60m² /660ft²</th>
<th>For properties up to 100m² /1100ft²</th>
<th>For properties up to 150m² /1600ft²</th>
<th>For properties up to 270m² /2900ft²</th>
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</thead>
<tbody>
<tr>
<td>Kitchen + up to 2 wet rooms</td>
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<td>Kitchen + up to 8 wet rooms</td>
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<tr>
<td>Discreet Run Monitor</td>
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<tr>
<td>Integral automatic summer bypass</td>
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<td>Integral frost protection</td>
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<td>Optional sensors and detectors</td>
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### LOFT

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### LOW PROFILE

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*Page No.* | 10 | 10 | 16 | 16 | 22 | 22 | 28 | 45 | 38 | 38 | 33

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TOTAL CONTROL WITH THE LIGHTEST TOUCH

...what a breath of fresh air

Simple, intuitive and discreet, the Nuaire LCD control - MRXBOX-VSC puts you in total control of your MVHR system. With a wide range of functions and settings, no other product gives you the freedom to tailor performance, while saving energy.

For more details call 029 2085 8500
email enquiries@nuaire.co.uk
or visit www.nuaire.co.uk/residential
The stylish touch screen wired controller has been designed to make controlling your MVHR ventilation system simple, for both the installer and the end user.

With a 3.2” touch screen display, the unit can be surface or semi-recess mounted and is compatible with standard 2 gang recess back box.

When installing the MVHR, you can commission the unit through the controller and program settings such as air flow, frost protection and summer bypass.

For the end user, they will be able to tailor the unit to suit their lifestyle, through setting a timed or rising boost, or even putting the unit into holiday or night mode to save on energy.
The MRXBOXB95AB-WM1 has been designed with automatic summer bypass and the facility to commission the supply and extract fans independently on both minimum and maximum speeds, in addition to the features you will find on the standard MRXBOX95-WM1.

Both the MRXBOXB95AB-WM1 and MRXBOX95-WM1 are designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery. Tempered air is delivered into ‘living areas’ whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well-ventilated homes. The unit uses the latest generation of low voltage DC fans and motors, counter flow heat exchanger and easy accessible controls. The heat exchanger block can recover up to 95% of the normally wasted heat. The two independent fans have full speed control for background and boost ventilation rates as well as a run-on timer facility and adjacent smoke detectors. Both units are listed on the Product Characteristics Database.

Sensors for the MRXBOX95(AB)-WM1 include:
- MRXBOX95-PIR (Passive Infra Red) - A low voltage sensor, detects movement and activates system. Incorporates overrun timer and timer adjustments.
- MRXBOX95-HUM - A low voltage sensor, activates the system when the RH level is above set point. Incorporates overrun timer and RH set point level adjustment.
- MRXBOX95-RFI - IF fan failure occurs, the audio visual indicator will flash a warning.
Performance - MRXBOX95(AB)-WM1

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</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing.

Electrical & Sound

MRXBOX95-WM1
1. Multi-room supply and extract heat recovery
2. Product range
3. Efficiency
4. Wall/cupboard application
5. Medium duty

MRXBOX95 AB -WM1
1. Multi-room supply and extract heat recovery
2. Product range
3. Efficiency
4. Automatic Summer Bypass
5. Wall/cupboard application
6. Medium duty
Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Application</th>
<th>MRXBOX95AB-WM1</th>
<th>MRXBOX95-WM1</th>
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<tbody>
<tr>
<td></td>
<td>Specific Fan Power (W/l/s)</td>
<td>Heat Exchange Efficiency</td>
</tr>
<tr>
<td>Kitchen + 1 Wet Room</td>
<td>0.72</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>0.59</td>
<td>93%</td>
</tr>
<tr>
<td>Kitchen + 2 Wet Room</td>
<td>0.87</td>
<td>86%</td>
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<tr>
<td></td>
<td>0.69</td>
<td>92%</td>
</tr>
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General Arrangement

SPIGOT LOCATION & DUCTING REFERENCES

Spigot 1. 125mm dia. = extract air from dwelling.
Spigot 2. 125mm dia. = exhaust air to outside.
Spigot 3. 125mm dia. = intake air from outside.
Spigot 4. 125mm dia. = supply air to house.

Mounting Bracket on wall and rear of unit

Two removable G2 Filters

Condensate Tray
Technical - MRXBOX95(AB)-WM1

DIMENSIONS (MM)

Weight - 16kg

Electrical Details

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

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

NOTE: This unit must be earthed.

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

<table>
<thead>
<tr>
<th>ELECTRICAL DETAILS: MRXBOX95-WM1</th>
</tr>
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<tbody>
<tr>
<td>Voltage: 230V 1ph 50Hz</td>
</tr>
<tr>
<td>Consumption: 75W - 0.6 Amp</td>
</tr>
<tr>
<td>Fuse rating: 3 Amp</td>
</tr>
</tbody>
</table>
Wiring - MRXBOX95(AB)-WM1

UNIT SERVING KITCHEN & BATHROOM

UNIT SERVING KITCHEN & TWO BATHROOMS

OPTIONAL SENSORS AND DETECTORS
Customise MRXBOX95AB-WM1 for enhanced performance. All supplied with pre-plugged 10m data cable and incorporates status LED.

MRXBOX95-PIR (passive infra red)
A low voltage sensor, detects movement and activates system. Incorporates overrun timer and timer adjustments.

MRXBOX95-HUM
A low voltage sensor, activates the system when the RH level is above set point. Incorporates overrun timer and RH setpoint level adjustment.

MRXBOX95-RFI
If fan failure occurs the audio visual indicator will flash a warning.
Consultants Specification

**OPERATION**

The supply and extract system shall be wall/cupboard mounted in accordance with the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from all wet areas, e.g. bathroom, en suite, w.c, kitchen, utility rooms etc. The supply air shall be pre-heated by the warm extract air via the integrated counter-flow heat exchanger element.

The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:

- Switched live signal from light/remote switches
- Optional externally interconnected sensors

When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

An adjustable run-on facility is integrated into the unit which allows the fans to run-on for between 1 and 60 minutes after the signals have been switched off.

The unit shall have the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), and boost speed, via inbuilt minimum and maximum speed adjustment. The fans shall have infinitely variable speed control.

**UNIT SPECIFICATION**

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by G2 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency d.c. fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable of an ambient temperature of 40ºC.

The unit shall be supplied complete with an insulated condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 125mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

**CONTROL OPTIONS**

All versions shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:

- Independent control of background supply and extract flow rates.
- Independent control of boost speed supply and extract flow rates.
- Integral heat exchanger frost protection.
- Integral adjustable run on timer.
- Fan failure indication.
- Integral S/L terminal for boost from remote switch, e.g. light switch.
- Indication and controls – The unit shall have clear LED visual indication for maintenance, servicing and operation mode, i.e. summer bypass, frost protection.

**INTEGRAL AUTOMATIC SUMMER BYPASS – MRXBOX95AB-WM1**

The 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.

**MRXBOX-VSC (VISUAL SYSTEM CONTROLLER)**

The MRXBOX-VSC is compatible with the Nuaire MRXBOX95(AB)-WM1 heat recovery units, the controller comes complete with commissioning and end user functions.

The display will be a 3.2” LCD display and will remain on standby until such time the screen is touched.

The initial display will show the MVHR system status as listed below:

- Current Fan Speed
- Current indoor/outside temperature (MRXBOX95AB units only)
- Indicate when the summer bypass is activated
- Indicate when frost protection is activated
- Indicate when the filters require cleaning/changing.
The MRXBOX95AB-WM2 has been designed with automatic summer bypass and the facility to commission the supply and extract fans independently on both minimum and maximum speeds.

Both the MRXBOX95AB-WM2 and MRXBOX95-WM2 are designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery. Tempered air is delivered into 'living areas' whilst extracting moisture laden air from 'wet' areas, creating comfortable well ventilated homes. The unit has the facility to commission the supply and extract fans independently on both minimum and maximum speeds. The heat exchanger block can recover up to 90% of the normally wasted heat. Both units are listed on the Product Characteristics Database.

Typical Installation

![Typical Installation Diagram]
Performance - MRXBOX95(AB)-WM2

**CODE DESCRIPTION**

<table>
<thead>
<tr>
<th>MRXBOX95-WM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Multi-room supply and extract heat recovery</td>
</tr>
<tr>
<td>2. Product range</td>
</tr>
<tr>
<td>3. Efficiency</td>
</tr>
<tr>
<td>4. Wall/cupboard application</td>
</tr>
<tr>
<td>5. Medium duty</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MRXBOX95AB-WM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Multi-room supply and extract heat recovery</td>
</tr>
<tr>
<td>2. Product range</td>
</tr>
<tr>
<td>3. Efficiency</td>
</tr>
<tr>
<td>4. Automatic Summer Bypass</td>
</tr>
<tr>
<td>5. Wall/cupboard application</td>
</tr>
<tr>
<td>6. Medium duty</td>
</tr>
</tbody>
</table>

**Electrical & Sound**

<table>
<thead>
<tr>
<th>Curve</th>
<th>Maximum power consumption</th>
<th>Sound Power Levels dB re 1pW @3m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Watts</td>
<td>63</td>
</tr>
<tr>
<td>1</td>
<td>150</td>
<td>57</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
<td>53</td>
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<td>3</td>
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<td>4</td>
<td>14</td>
<td>51</td>
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<td>5</td>
<td>8</td>
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</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing.
**Sap Appendix Q Test Results**

<table>
<thead>
<tr>
<th>Application</th>
<th>MRXBOX95AB-WM2</th>
<th>MRXBOX95-WM2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specific Fan Power (W/l/s)</td>
<td>Heat Exchange Efficiency</td>
</tr>
<tr>
<td>Kitchen + 1 Wet Room</td>
<td>0.53</td>
<td>87%</td>
</tr>
<tr>
<td>Kitchen + 2 Wet Room</td>
<td>0.53</td>
<td>86%</td>
</tr>
<tr>
<td>Kitchen + 3 Wet Room</td>
<td>0.60</td>
<td>85%</td>
</tr>
<tr>
<td>Kitchen + 4 Wet Room</td>
<td>0.73</td>
<td>84%</td>
</tr>
<tr>
<td>Kitchen + 5 Wet Room</td>
<td>0.84</td>
<td>84%</td>
</tr>
</tbody>
</table>

**General Arrangement**

**SPIGOT LOCATION & DUCTING REFERENCES**

- Spigot 1. 125mm dia. = extract air from dwelling.
- Spigot 2. 125mm dia. = exhaust air to outside.
- Spigot 3. 125mm dia. = intake air from outside.
- Spigot 4. 125mm dia. = supply air to house.

Mounting Bracket on wall and rear of unit

Two removable G2 Filters

Condensate Tray
DIMENSIONS (MM)

Weight - 21kg

Electrical Details

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

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

NOTE: This unit must be earthed.

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

<table>
<thead>
<tr>
<th>ELECTRICAL DETAILS: MRXBOX95-WM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage: 230V 1ph 50Hz</td>
</tr>
<tr>
<td>Consumption: WM2 - 1.3 Amp</td>
</tr>
<tr>
<td>Fuse rating: 3 Amp</td>
</tr>
</tbody>
</table>

MRXBOX-VSC CONTROL SCREEN COMPATIBLE WITH THIS UNIT
Wiring - MRXBOX95(AB)-WM2

UNIT SERVING KITCHEN & BATHROOM

UNIT SERVING KITCHEN & TWO BATHROOMS
Consultants Specification

OPERATION
The supply and extract system shall be positioned as indicated on the drawings and shall be in accordance with the particular fan schedule in the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from all wet areas, e.g. bathroom, en suite, w.c, kitchen, utility rooms etc. The supply air shall be pre-heated by the warm extract air via the integrated counter-flow heat exchanger element. The extracted air shall also be filtered before it reaches the heat exchanger block.

The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:
• Switched live signal from light/remote switches
When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

An adjustable run-on facility is integrated into the unit which allows the fans to run-on for between 1 and 60 minutes after the signals have been switched off.

The unit shall have the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), and boost speed, via inbuilt minimum and maximum speed adjustment. The fans shall have infinitely variable speed control.

UNIT SPECIFICATION
The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 90%. The heat exchanger shall be protected by G3 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable of an ambient temperature of 40ºC.

The unit shall be supplied complete with an insulated condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 125mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Units shall be MRXBOX95-WM2 or MRXBOX95AB-WM2 as manufactured by Nuaire and shall be listed on the SAP Appendix Q database.

CONTROL OPTIONS
All versions shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:

• Independent control of background supply and extract flow rates.
• Independent control of boost speed supply and extract flow rates.
• Integral heat exchanger frost protection.
• Fan failure indication.
• Integral S/L terminal for boost from remote switch, e.g. light switch.
• Additional S/L terminal for 100% boost speed from remote switch, e.g. plate switch
• Discreet daily run monitor.
• Remote fail indicator (part number MRXBOX95LH-RFI)
• Indication and controls – The unit shall have clear LED visual indication for maintenance, servicing and operation mode, i.e. summer bypass, frost protection.

INTEGRAL AUTOMATIC SUMMER BYPASS – MRXBOX95AB-WM2
The 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.

Integral Humidity Sensor
The integral humidity sensor incorporated within the extract fan chamber will automatically boost both the extract and supply fan, to the commissioned boost speed, when the humidity level exceeds that set by the front panel mounted adjustment potentiometer.

MRXBOX-VSC (VISUAL SYSTEM CONTROLLER)
The MRXBOX-VSC is compatible with the Nuaire MRXBOX95(AB)-WM2 heat recovery units and can be purchased separately. The controller comes complete with commissioning and end user functions.

The display will be a 3.2˝ LCD display and will remain on standby until such time the screen is touched.

The initial display will show the MVHR system status as listed below:
• Current Fan Speed
• Current indoor/outside temperature (MRXBOX95AB units only)
• Indicate when the summer bypass is activated
• Indicate when frost protection is activated
• Indicate when the filters require cleaning/changing.
The MRXBOXB95AB-WH1 has been designed with automatic summer bypass and the facility to commission the supply and extract fans independently on both minimum and maximum speeds.

Both the MRXBOX95AB-WH1 and MRXBOX95-WH1 are designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery. Tempered air is delivered into ‘living areas’ whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well ventilated homes. The unit has the facility to commission the supply and extract fans independently on both minimum and maximum speeds. The heat exchanger block can recover up to 95% of the normally wasted heat. Both units are listed on the Product Characteristics Database.

**Typical Installation**

**INSTALLATION FEATURES**

Filter cover
Filter being removed
Filter Code
MVHR-WH1-FILTERKIT

---

**MRXBOX95AB-WH1** (with automatic summer bypass) & **MRXBOX95-WH1**

The MRXBOX95AB-WH1 has been designed with automatic summer bypass and the facility to commission the supply and extract fans independently on both minimum and maximum speeds.

Both the MRXBOX95AB-WH1 and MRXBOX95-WH1 are designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery. Tempered air is delivered into ‘living areas’ whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well ventilated homes. The unit has the facility to commission the supply and extract fans independently on both minimum and maximum speeds. The heat exchanger block can recover up to 95% of the normally wasted heat. Both units are listed on the Product Characteristics Database.
Performance - MRBOX95(AB)-WH1

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing.

<table>
<thead>
<tr>
<th>Curve</th>
<th>Maximum power consumption</th>
<th>Sound Power Levels dB re 1pW</th>
<th>dBA @3m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150</td>
<td>63  125  250  500  1K  2K  4K  8K</td>
<td>Curve</td>
</tr>
<tr>
<td>1</td>
<td>Open inlet</td>
<td>48  51  58  49  47  39  25 &lt;16</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>56  63  67  67  62  60  50  41</td>
<td>47</td>
</tr>
<tr>
<td>2</td>
<td>Open inlet</td>
<td>48  50  57  48  45  37  23 &lt;16</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>56  62  66  66  60  58  48  39</td>
<td>45</td>
</tr>
<tr>
<td>3</td>
<td>Open inlet</td>
<td>47  50  56  46  43  35  21 &lt;16</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>55  62  65  64  58  56  46  37</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Open inlet</td>
<td>46  48  53  43  37  29 &lt;16 &lt;16</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>54  60  62  61  52  50  40  31</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>Open inlet</td>
<td>44  45  50  38  30  22 &lt;16 &lt;16</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>52  57  59  56  45  43  33  24</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Open inlet</td>
<td>41  42  44  30  19 &lt;16 &lt;16 &lt;16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>49  54  53  48  34  32  22 &lt;16</td>
<td>27</td>
</tr>
</tbody>
</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing.

CODE DESCRIPTION

MRXBOX95-WH1
1. Multi-room supply and extract heat recovery
2. Product range
3. Efficiency
4. Wall/cupboard application
5. High 1 Model

MRXBOX95AB-WH1
1. Multi-room supply and extract heat recovery
2. Product range
3. Efficiency
4. Automatic Summer Bypass
5. Wall/cupboard application
6. High 1 Model
# Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Application</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
<th>Energy Saving Trust Best Practice Compliant</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
<th>Energy Saving Trust Best Practice Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen + 1 Wet Room</td>
<td>0.49</td>
<td>89%</td>
<td>Yes</td>
<td>0.41</td>
<td>91%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 2 Wet Room</td>
<td>0.47</td>
<td>88%</td>
<td>Yes</td>
<td>0.40</td>
<td>91%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 3 Wet Room</td>
<td>0.50</td>
<td>88%</td>
<td>Yes</td>
<td>0.46</td>
<td>90%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 4 Wet Room</td>
<td>0.57</td>
<td>88%</td>
<td>Yes</td>
<td>0.53</td>
<td>90%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 5 Wet Room</td>
<td>0.66</td>
<td>87%</td>
<td>Yes</td>
<td>0.62</td>
<td>89%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 6 Wet Room</td>
<td>0.76</td>
<td>86%</td>
<td>Yes</td>
<td>0.72</td>
<td>88%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 7 Wet Room</td>
<td>0.90</td>
<td>86%</td>
<td>Yes</td>
<td>0.83</td>
<td>87%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## General Arrangement

**SPIGOT LOCATION & DUCTING REFERENCES**

- Spigot 1. 150mm dia. = extract air from dwelling.
- Spigot 2. 150mm dia. = exhaust air to outside.
- Spigot 3. 150mm dia. = intake air from outside.
- Spigot 4. 150mm dia. = supply air to house.
Technical - MRBOX95(AB)-WH1

DIMENSIONS (MM)

Weight - 27kg

View from front with cover removed

Side View

View from top

Mounting bracket

458
226
16
226
120
Spigots
4x 150mm dia.

619
654
431

Detail of unit control on front panel.

Tamper proof label following commissioning, includes system status indication.

Electrical Details

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

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

NOTE: This unit must be earthed.

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

<table>
<thead>
<tr>
<th>ELECTRICAL DETAILS: MRXBOX95-WH1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage: 230V 1ph 50Hz</td>
</tr>
<tr>
<td>Consumption: WH1 - 1.3 Amp</td>
</tr>
<tr>
<td>Fuse rating: 3 Amp</td>
</tr>
</tbody>
</table>

MRXBOX-VSC CONTROL SCREEN COMPATIBLE WITH THIS UNIT
Wiring - MRBOX95(AB)-WH1

UNIT SERVING KITCHEN & BATHROOM

UNIT SERVING KITCHEN & TWO BATHROOMS

Supply cord from unit
Consultants Specification

OPERATION
The supply and extract system shall be positioned as indicated on the drawings and shall be in accordance with the particular fan schedule in the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from all wet areas, e.g. bathroom, en suite, w.c, kitchen, utility rooms etc. The supply air shall be pre-heated by the warm extract air via the integrated counter-flow heat exchanger element. The extracted air shall also be filtered before it reaches the heat exchanger block.

The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:

• Switched live signal from light/remote switches

When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

An adjustable run-on facility is integrated into the unit which allows the fans to run-on for between 1 and 60 minutes after the signals have been switched off.

The unit shall have the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), and boost speed, via inbuilt minimum and maximum speed adjustment. The fans shall have infinitely variable speed control.

UNIT SPECIFICATION
The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by G3 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable of an ambient temperature of 40ºC.

The unit shall be supplied complete with an insulated condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Units shall be MRXBOX95-WH1 or MRXBOX95AB-WH1 as manufactured by Nuaire and shall be listed on the SAP Appendix Q database.

CONTROL OPTIONS
All versions shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:

• Independent control of background supply and extract flow rates.
• Independent control of boost speed supply and extract flow rates.
• Integral heat exchanger frost protection.
• Fan failure indication.
• Integral S/L terminal for boost from remote switch, e.g. light switch.
• Additional S/L terminal for 100% boost speed from remote switch, e.g. plate switch
• Discreet daily run monitor.
• Remote fail indicator (part number MRXBOBX95LH-RFI)
• Indication and controls – The unit shall have clear LED visual indication for maintenance, servicing and operation mode, i.e. summer bypass, frost protection.

INTEGRAL AUTOMATIC SUMMER BYPASS MRXBOX95AB-WH1
The 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.

Integral Humidity Sensor
The integral humidity sensor incorporated within the extract fan chamber will automatically boost both the extract and supply fan, to the commissioned boost speed, when the humidity level exceeds that set by the front panel mounted adjustment potentiometer.

MRXBOX-VSC (VISUAL SYSTEM CONTROLLER)
The MRXBOX-VSC is compatible with the Nuaire MRXBOX95(AB)-WH1 heat recovery units and can be purchased separately. The controller comes complete with commissioning and end user functions.

The display will be a 3.2˝ LCD display and will remain on standby until such time the screen is touched.

The initial display will show the MVHR system status as listed below:

• Current Fan Speed
• Current indoor/outside temperature (MRXBOX95AB units only)
• Indicate when the summer bypass is activated
• Indicate when frost protection is activated
• Indicate when the filters require cleaning/changing.
MRXBOX95AB-WH2 (with automatic summer bypass)

MRXBOX95AB-WH2 is designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery.

Tempered air is delivered into ‘living’ areas whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well-ventilated homes. The unit has been designed with automatic summer bypass and the facility to commission the supply & extract fans independently on both minimum and maximum speeds. This unit is listed on the Product Characteristics Database.

Typical Installation

INSTALLATION FEATURES

Typical cupboard installation of MRXBOX95AB-WH2
Performance - MRXBOX95AB-WH2

Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Application</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
<th>Energy Saving Trust Best Practice Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen + 1 Wet Room</td>
<td>0.60</td>
<td>89%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 2 Wet Room</td>
<td>0.56</td>
<td>89%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 3 Wet Room</td>
<td>0.56</td>
<td>89%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 4 Wet Room</td>
<td>0.61</td>
<td>88%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 5 Wet Room</td>
<td>0.67</td>
<td>87%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 6 Wet Room</td>
<td>0.76</td>
<td>87%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 7 Wet Room</td>
<td>0.90</td>
<td>86%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Electrical & Sound

<table>
<thead>
<tr>
<th>Curve</th>
<th>Maximum power consumption</th>
<th>Sound Power Levels dB re 1pW</th>
<th>dBA @ 3m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Watts)</td>
<td>63</td>
<td>125</td>
</tr>
<tr>
<td>1</td>
<td>337</td>
<td>58</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Open inlet</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Open Outlet Breakout</td>
<td>61</td>
<td>61</td>
</tr>
</tbody>
</table>

Above noise measured at stated percent of maximum working pressure.
Technical - MRXBOX95AB-WH2

DIMENSIONS (MM)

Weight - 44Kg

View from top

Front view

Side view

Mounting

Humidistat adjustment

Condensate drain 832mm outside

Ecosmart connection grommets

4 x Spigots
180mm Internal Diameter
200mm External Diameter

Dimensions: Unit wall mounting bracket position
(Viewed from back)

Detail of unit control on front panel.

Tamper proof label following commissioning, includes system status indication.
**Electrical Details - MRXBOX95AB-WH2**

Please note: the electrical connection of the unit must 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.

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

---

<table>
<thead>
<tr>
<th><strong>ELECTRICAL DETAILS: MRXBOX95 - WH2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage:</strong></td>
</tr>
<tr>
<td>230V 1ph 50Hz</td>
</tr>
<tr>
<td><strong>Consumption:</strong></td>
</tr>
<tr>
<td>2.5 Amp</td>
</tr>
<tr>
<td><strong>Fuse rating:</strong></td>
</tr>
<tr>
<td>5 Amp</td>
</tr>
</tbody>
</table>

---

**Wiring**

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

**UNIT SERVING KITCHEN & BATHROOM**

**UNIT SERVING ONE BATHROOM**

**UNIT SERVING TWO BATHROOMS**
Consultants Specification

OPERATION

The supply and extract ventilation unit shall be positioned as indicated on the drawings and shall be in accordance with the particular fan schedule in the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from the wet areas e.g. bathroom, en-suite, w.c, kitchen, utility rooms, etc. The supply air shall be pre-heated by the warm extract air via the integrated counter-flow heat exchanger element.

The extracted air shall also be filtered before it reaches the heat exchanger block. The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:

- Switched live signal from light / remote switches.

When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

The unit shall have the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), boost speed, via inbuilt minimum and maximum speed adjustment. The fans shall have infinitely variable speed control.

MRXBOX95AB-WH2 - SPECIFICATION

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by G3 grade filters on fresh air inlet and system extract.

The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type.

The motors shall be suitable of an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 32mm drain connection.

The unit shall be suitable for 180 and 200mm diameter circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Units shall be MRXBOX95AB-WH2 as manufactured by Nuaire.

INTEGRAL AUTOMATIC SUMMER BYPASS

The 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.

INTEGRAL HUMIDITY SENSOR

The integral humidity sensor incorporated within the extract fan chamber will automatically boost both the extract and supply fan, to the commissioned boost speed, when the humidity level exceeds that set by the side panel mounted adjustment potentiometer.

OPTIONAL REMOTE SWITCH (MRXBOX95-3 SWITCH)

The unit shall have the facility to wire a three position remote switch to a suitable location within the property. The switch shall have 3 settings, trickle, boost and summertime boost facility. The remote switch will act as the master switch and will override all other switches.

CONTROL OPTIONS

All versions shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:

- Independent control of background supply and extract flow rates.
- Independent control of boost speed supply and extract flow rates.
- Integral fan failure indication.
- Integral S/L terminal for boost to commissioned level, from remote switch, e.g. light switch.
- Integral S/L terminal for summertime boost speed, from remote switch e.g. plate switch.
- Integral heat exchanger frost protection.
- Discreet daily run monitor.
- Remote fail indicator (Part number-MRXBOX95LH-RFI).

Indication and controls - The unit shall have clear LED visual indication for maintenance, servicing and operation mode i.e. summer bypass, frost protection.

The unit shall be offered with a 5 year warranty.

The manufacturer’s recommendations should be observed at all times. The unit shall be the MRXBOX95AB-WH2 and shall be manufactured by Nuaire.

MRXBOX-VSC (VISUAL SYSTEM CONTROLLER)

The MRXBOX-VSC is compatible with the Nuaire MRXBOX95AB-WH2 heat recovery unit and can be purchased separately. The controller comes complete with commissioning and end user functions.

The display will be a 3.2˝ LCD display and will remain on standby until such time the screen is touched.

The initial display will show the MVHR system status as listed below:

- Current Fan Speed
- Current indoor/outside temperature
- Indicate when the summer bypass is activated
- Indicate when frost protection is activated
- Indicate when the filters require cleaning/changing.
MRXBOX95B-LP1 is specifically designed for apartment applications where space is a premium.

The MVHR unit provides optimised balanced (supply & extract) mechanical ventilation with heat recovery. Tempered air is delivered into ‘living’ areas whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well-ventilated homes. The unit has a facility to commission the supply & extract fans independently on both minimum and maximum speeds. This unit is listed on the Product Characteristics Database.

Typical Installation

INSTALLATION FEATURES

General Arrangement
Performance - MRXBOX95B-LP1

Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Exhaust terminal Configuration</th>
<th>Fan speed setting</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen + 1 Wet Room</td>
<td>100% variable</td>
<td>0.54</td>
<td>75%</td>
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<td>Kitchen + 2 Wet Room</td>
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<td>Kitchen + 5 Wet Room</td>
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Electrical & Sound

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<th>Maximum power consumption (Watts)</th>
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<th>250</th>
<th>500</th>
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<td>10</td>
<td>14</td>
<td>10</td>
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</tbody>
</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving based on SAP Appendix Q testing. Please note step curves shown are for information purposes only and are not individual units. The units actual duty range is infinitely variable.
Technical - MRXBOX95B-LP1

DIMENSIONS (MM)

Weight - 37kg

Electrical Details

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

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

NOTE: This unit must be earthed.

The three 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.

<table>
<thead>
<tr>
<th>ELECTRICAL DETAILS: MRXBOX95B - LP1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage:</td>
</tr>
<tr>
<td>Consumption:</td>
</tr>
<tr>
<td>Fuse rating:</td>
</tr>
</tbody>
</table>

Detail of unit control on control panel.

Tamper proof label following commissioning, includes system status indication.
Wiring MRXBOX95B-LP1

UNIT SERVING KITCHEN & BATHROOM

UNIT SERVING KITCHEN & TWO BATHROOMS
Consultants Specification

OPERATION

The supply and extract ventilation unit shall be positioned as indicated on the drawings and shall be in accordance with the particular fan schedule in the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from the wet areas e.g. bathroom, en-suite, w.c, kitchen, utility rooms, etc. The supply air shall be pre-heated and by the warm extract air via the integrated counter-flow heat exchanger element.

The extracted air shall also be filtered before it reaches the heat exchanger block. The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:

- Switched live signal from light / remote switches.

When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

The unit shall have the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), and boost speed, via inbuilt minimum and maximum speed adjustment. The fans shall have infinitely variable speed control.

SPECIFICATION

The unit shall be manufactured from galvanised sheet steel with a white, pre-painted removable access panel. The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate, aluminium, counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 80%. The heat exchanger shall be protected by G3 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the underside access panels, enabling quick and easy maintenance.

The unit shall have a maximum depth of 200mm to fit within ceiling void restrictions. The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type.

The motors shall be suitable of an ambient temperature of 40°C.

Motor assemblies shall be removable from the underside of the unit and will not require the unit to be removed from situ.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 204x60mm rectangular ducting. The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

INTEGRAL AUTOMATIC SUMMER BYPASS

Unit shall be MRXBOX95B-LP1 as manufactured by Nuaire.

The unit shall be fitted with 100% summer bypass as standard. The bypass opens automatically when outside temperature exceeds 20°C. This shall open the damper via an actuator. Outside air supplied through the bypass shall be filtered, so the air quality is optimal, irrespective of the bypass setting (open or closed).

The unit shall be offered with a 5 year warranty.

STD CONTROLS

The unit shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:

- Independent control of background supply and extract flow rates.
- Independent control of boost supply and extract flow rates.
- Integral fan failure indication.
- Integral S/L terminal for boost to commissioned level, from remote switch, e.g. light switch.
- Additional S/L terminal for 100% boost speed, from remote switch e.g. plate switch.
- Integral heat exchanger frost protection.
- Discreet daily run monitor.

OPTIONAL CONTROLS/SENSORS

773532 - Normal/boost switch.
HUMISEN - 230V Humidistat.
230-PIR - PIR Sensor with run-on timer.

OPTIONAL ECOSMART SENSORS/ANCILLARIES

MRXBOX95-PIR - boost by Passive Infra Red.
MRXBOX95-HUM - boost by Humidistat.
MRXBOX95-RFI - Remote fail indicator.
MRXBOX95-LH1 and MRXBOX95-LH2 are designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery.

Tempered air is delivered into ‘living’ areas whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well-ventilated homes. The unit has the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), boost control will control both fans to the same volume. The heat exchanger block can recover up to 95% of the normally wasted heat. Both units are listed on the Product Characteristics Database.

Typical Installation

FLEXIBLE LOFT MOUNTING OPTIONS

Option 1
Mounted on roof joists using four "L" shaped metal brackets and AV mounts on long sides of unit.

Option 2
Mounted on roof joists using four "L" shape metal brackets and AV mounts on short sides of unit.

ACCESSORIES
OPTIONAL REMOTE FAIL INDICATOR
MRXBOX95-LH-RFI is connected to the fan unit via low voltage wiring.

MRXBOX-VSC CONTROL SCREEN COMPATIBLE WITH MRXBOX95-LH2

NUAIRE’S MVHR
Filter Code 777674

MRXBOX-VSC
CONTROL SCREEN
COMPATIBLE WITH
MRXBOX95-LH2

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UNIT COMPONENTS

SPIGOT LOCATION & DUCTING REFERENCES

- Spigot 1. 125mm dia. = extract air from dwelling.
- Spigot 2. 125mm dia. = exhaust air to outside.
- Spigot 3. 125mm dia. = intake air from outside.
- Spigot 4. 125mm dia. = supply air to house.

DIMENSIONS (MM)

Weight - 21Kg

View from front 4x 125mm spigots

Side view (no controls)

View from top

Side view (no controls)

Condensate drain outlet

M20 & M16 Cable glands
Mains entry & blanking gland

Adjustable potentiometers and indication lights

Heat exchanger

G4 Removable filter
Filter Code MVHR-LOFT-FILTERKIT

G4 Removable filter
Filter Code 777674

21.5mm dia. condensate drain alternative position

21.5mm dia. condensate drain

840

450

430

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General Arrangement - MRXBOX95-LH1/2

OPTIONAL SUMMER BYPASS

SPIGOT LOCATION & DUCTING REFERENCES

Spigot 1. 125mm dia. = extract air from dwelling.
Spigot 2. 125mm dia. = exhaust air to outside.
Spigot 3. 125mm dia. = intake air from outside.
Spigot 4. 125mm dia. = supply air to house.

DIMENSIONS (MM)

View from front 3x 125mm spigots

View from top

Side view (controls) 1x 125mm spigots

Side view (no controls)

Heat exchanger

Lid

G4 Removable filter
Filter Code 777674

Adjustable potentiometers and indication lights

M20 & M16 Cable glands
Mains entry & blanking gland

Condensate drain outlet
Electrical Details - MRXBOX95-LH1/2

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

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

NOTE: This unit must be earthed.

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

<table>
<thead>
<tr>
<th>ELECTRICAL DETAILS: MRXBOX95 - LH1</th>
<th>ELECTRICAL DETAILS: MRXBOX95 - LH2</th>
</tr>
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<tbody>
<tr>
<td><strong>Voltage:</strong> 230V 1ph 50Hz</td>
<td><strong>Voltage:</strong> 230V 1ph 50Hz</td>
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<tr>
<td><strong>Consumption:</strong> LH1 - 1.3 Amp</td>
<td><strong>Consumption:</strong> LH2 - 2.2 Amp</td>
</tr>
<tr>
<td><strong>Fuse rating:</strong> LH1 - 3 Amp</td>
<td><strong>Fuse rating:</strong> LH2 - 53 Amp</td>
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</table>

Wiring

UNIT SERVING KITCHEN & BATHROOM

UNIT SERVING KITCHEN & TWO BATHROOMS
Performance - MRXBOX95-LH1

Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Application</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
<th>Energy Saving Trust Best Practice Compliant</th>
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<td>Kitchen + 1 Wet Room</td>
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<td>91%</td>
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</tr>
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<td>Kitchen + 2 Wet Room</td>
<td>0.59</td>
<td>91%</td>
<td>Yes</td>
</tr>
<tr>
<td>Kitchen + 3 Wet Room</td>
<td>0.62</td>
<td>91%</td>
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<td>Kitchen + 4 Wet Room</td>
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<td>91%</td>
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<td>Kitchen + 5 Wet Room</td>
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<td>91%</td>
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Electrical & Sound

<table>
<thead>
<tr>
<th>Curve</th>
<th>Maximum power consumption (Watts)</th>
<th>Sound Power Levels dB re 1pW</th>
<th>dBA @3m</th>
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</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing. Hemispherical free field dBA.
Performance - MRXBOX95-LH2

Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Application</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
<th>Energy Saving Trust Best Practice Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen + 1 Wet Room</td>
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<td>Kitchen + 2 Wet Room</td>
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<td>Kitchen + 3 Wet Room</td>
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<td>Kitchen + 4 Wet Room</td>
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<td>Kitchen + 5 Wet Room</td>
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Electrical & Sound

<table>
<thead>
<tr>
<th>Curve</th>
<th>Maximum power consumption (Watts)</th>
<th>Sound Power Levels dB re 1pW</th>
<th>dBA @3m</th>
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</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing. Hemispherical free field dBA.
Consultants Specification

OPERATION
The supply and extract ventilation unit shall be positioned as indicated on the drawings and shall be in accordance with the particular fan schedule in the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from the wet areas e.g. bathroom, en-suite, w.c, kitchen, utility rooms, etc. The supply air shall be pre-heated by the warm extract air via the integrated counter-flow heat exchanger element.

The extracted air shall also be filtered before it reaches the heat exchanger block.

The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:
• Switched live signal from light / remote switches.
When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

The unit shall have the facility to commission the supply and extract fans independently on minimum speed (continuous background ventilation), boost control will control both fans to the same volume, via inbuilt minimum and maximum speed adjustment; The fans shall have infinitely variable speed control.

UNIT SPECIFICATION
The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by G4 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the top access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type.

The motors shall be suitable of an ambient temperature of 40ºC. The unit shall be supplied complete with an insulated condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 125mm circular ducting.

Anti-vibration mounts are supplied with each unit to prevent vibration being transmitted to the ceiling timbers.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

OPTIONAL SUMMER BYPASS
The bypass damper opens when a 230V signal is applied to the unit (via a manual switch, supplied). This opens the damper via an actuator. When the switch signal is deactivated the unit returns to its original state (air through the heat exchanger).

Outside air supplied through the bypass is still filtered, so the air quality is optimal, irrespective of the bypass setting (Open or closed).

CONTROL OPTIONS
All versions shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:
• Independent control of background supply and extract flow rates.
• Single control of boost ventilation rates
• Run time monitor included
• Integral Fan failure indication.
• Integral S/L terminal for boost from remote switch, e.g. light switch.

OPTIONS CONTROL
MRXBOX95LH-RFI Remote fail indicator.

Units shall be the MRXBOX95-LH1 as manufactured by Nuaire.

OPTIONAL LOFT STAND
Mvhr-loft-stand.

MRXBOX-VSC (VISUAL SYSTEM CONTROLLER)
The MRXBOX-VSC is compatible with the Nuaire MRXBOX95-LH2 heat recovery unit and can be purchased separately. The controller comes complete with commissioning and end user functions.

The display will be a 3.2” LCD display and will remain on standby until such time the screen is touched.

The initial display will show the MVHR system status as listed below:
• Current Fan Speed
• Current indoor/outside temperature (MRXBOX95AB units only)
• Indicate when the summer bypass is activated
• Indicate when frost protection is activated
• Indicate when the filters require cleaning/changing
MRXBOX95-LOFT

MRXBOX95-LOFT is designed to provide optimised balanced (supply and extract) mechanical ventilation with heat recovery. Tempered air is delivered into ‘living’ areas whilst extracting moisture laden air from ‘wet’ areas, creating comfortable well-ventilated homes.

MRXBOX95-LOFT uses the latest generation of low voltage DC fans and motors, counter flow heat exchanger and easy accessible controls. The heat exchanger block can recover up to 95% of the normally wasted heat. The two independent fans has full speed control for background and boost ventilation rates as well as a run-on timer facility. This unit is listed on the Product Characteristics Database.

FLEXIBLE SOLUTION
MRXBOX95-LOFT ensures a flexible solution with four 125mm dia.

OPTIONAL SUMMER BYPASS AVAILABLE
Provides cooling during warmer months. MRXBOX95B-LOFT.

OPTIONAL SENSORS AND DETECTORS

MRXBOX95-PIR (passive infra red)
A low voltage sensor detects movement and activates system. Incorporates overrun timer and timer adjustments.

MRXBOX95-HUM
A low voltage sensor activates the system when the RH level is above set point. Incorporates overrun timer and RH setpoint level adjustment.

MRXBOX95-RFI
If fan failure occurs the audio visual indicator will flash a warning.

FOR SMALLER HOUSES.
Typical Installation - MRXBOX95-LOFT

**FLEXIBLE LOFT MOUNTING OPTIONS**

**Option 1**
Mounted on roof joists using four "L" shape metal brackets and AV mounts on long sides of unit.

**Option 2**
Mounted on roof joists using four "L" shape metal brackets and AV mounts on short sides of unit.

**REMOVABLE G4 FILTERS**
Filter Code 777674

**Performance**

**CODE DESCRIPTION**

MRXBOX95-LOFT
1 2 3 4
1. Multi-room supply and extract heat recovery
2. Product range
3. Efficiency
4. Loft application
### Sap Appendix Q Test Results

<table>
<thead>
<tr>
<th>Application</th>
<th>Specific Fan Power (W/l/s)</th>
<th>Heat Exchange Efficiency</th>
<th>Energy Saving Trust Best Practice Compliant</th>
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<tbody>
<tr>
<td>Kitchen + 1 Wet Room</td>
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<td>92%</td>
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<td>Kitchen + 2 Wet Room</td>
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<td>Kitchen + 3 Wet Room</td>
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### Electrical & Sound

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<tr>
<th>Curve</th>
<th>Maximum power consumption</th>
<th>Sound Power Levels dB re 1µW</th>
<th>dBA @3m</th>
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</table>

The maximum power consumption shown above (Watts) is consumed on units running continuously, not taking into account any heat recovery saving and based on SAP Appendix Q testing. Hemispherical free field dBA.
General Arrangement - MRXBOX95-LOFT

UNIT COMPONENTS

SPIGOT LOCATION & DUCTING REFERENCES

Spigot 1. 125mm dia. = extract air from dwelling.
Spigot 2. 125mm dia. = exhaust air to outside.
Spigot 3. 125mm dia. = intake air from outside.
Spigot 4. 125mm dia. = supply air to house.

DIMENSIONS (MM)

Weight - 27.5Kg
OPTIONAL SUMMER BYPASS

SPIGOT LOCATION & DUCTING REFERENCES

Spigot 1. 125mm dia. = extract air from dwelling.
Spigot 2. 125mm dia. = exhaust air to outside.
Spigot 3. 125mm dia. = intake air from outside.
Spigot 4. 125mm dia. = supply air to house.

DIMENSIONS (MM)

Weight - 28Kg

View from front: 3x 125mm spigots
Side view (controls): 1x 125mm spigots

View from top

Side view (no controls)

21.5mm dia. condensate drain alternative position
Electrical Details - MRXBOX95-LOFT

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

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

NOTE: This unit must be earthed.

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

<table>
<thead>
<tr>
<th>ELECTRICAL DETAILS: MRXBOX95 -LOFT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage:</strong></td>
</tr>
<tr>
<td>230V 1ph 50Hz</td>
</tr>
<tr>
<td><strong>Consumption:</strong></td>
</tr>
<tr>
<td>75W (max) - 0.6 Amp</td>
</tr>
<tr>
<td><strong>Fuse rating:</strong></td>
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<tr>
<td>3 Amp</td>
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</table>

Wiring

UNIT SERVING KITCHEN & BATHROOM

UNIT SERVING KITCHEN & TWO BATHROOM
Consultants Specification

OPERATION

The supply and extract system shall be positioned in the loft space in accordance with the specification.

The combined supply and extract with heat recovery unit, shall supply filtered fresh air to each of the habitable rooms and vitiated air shall be extracted from all wet areas e.g. bathroom, en-suite, w.c., kitchen, utility rooms, etc. The supply air shall be pre-heated by the warm extract air via the integrated counter-flow heat exchanger element.

The ventilation unit shall vary its speed and therefore the ventilation rate, as it receives signals from one of the following:

• Switched live signal from light / remote switches
• Optional externally interconnected sensors

When signals are received, the fan shall alter its speed to adjustable, normal and boost rates.

An adjustable run-on facility is integrated into the unit which allows the fans to run-on for between 1 and 60 minutes after the signals have been switched off.

The unit shall have the facility to commission the supply and extract fans via inbuilt minimum and maximum speed adjustment; the fans shall have infinitely variable speed control.

MRXBOX95-LOFT - UNIT SPECIFICATION

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by G4 grade filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the top access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency DC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable of an ambient temperature of 40ºC.

The unit shall be supplied complete with an insulated condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 125mm circular ducting.

Anti-vibration mounts are supplied with each unit to prevent vibration being transmitted to the ceiling timbers.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

OPTIONAL SUMMER BYPASS - MRXBOX95B-LOFT

The summer bypass facility during the warmer months can reduce the temperature in a room by a few degrees, whilst still ventilating that room effectively. The bypass damper opens when a 230V switch signal is applied to the unit. (via a manual switch) This opens the damper via a wax actuator. When the switch signal is de-activated the unit returns to its original state (air through the heat exchanger).

MRXBOX95-LOFT - CONTROL OPTIONS

All versions shall have the following functions integrally mounted within the fan unit on a purpose made PCB, all such components pre-wired and factory fitted by the manufacturer:

• Integral speed control on supply and extract.
• Integral background ventilation control/set point.
• Integral boost ventilation control/set point.
• Integral run on timer.
• Fan failure indication.
• Integral S/L terminal for boost from remote switch, e.g. light switch.

OPTIONAL SENSORS

MRXBOX95-PIR Passive infra-red detector
MRXBOX95-HUM Humidistat
MRXBOX95-RFI Remote fail indicator

Units shall be the MRXBOX95-LOFT as manufactured by Nuaire.
The Airepod system is a 90% efficient whole house/apartment heat recovery unit which uniquely also provides a minimum of 70% of the apartment’s heating, removing the need for a wet heating system. It replaces the typical inflexible wet heating system and removes the need for radiators. Airepod is a low-profile ceiling mounted system, just 235.0mm in depth, saving valuable storage space.

The 70% base heating load is delivered by an LTHW heating coil within the Airepod fed from either central CHP or energy centre. The remaining 30% of heat is provided by electric heaters within the duct system, or fan-coils in higher specification apartments.

Airepod uses a traditional heat exchanger but differs from conventional heat recovery systems in that it includes a third blower which allows additional, pre-tempered room air to be recirculated and mixed with incoming fresh air through the heater battery. Control of the recirculating fan is independent of the supply/extract fans. The approved document F ventilation rates are maintained at all times with the recirculating blower only topping up air-flow when heating is needed. Both units are listed on the Product Characteristics Database.

AIREPOD How does it work?

Call for further information
Tel: 029 2085 8500
Email: enquiries@nuaire.co.uk

Sap Appendix Q Test Results

<table>
<thead>
<tr>
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<td>86%</td>
</tr>
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<td>Kitchen + 2 Wet Rooms</td>
<td>0.66</td>
<td>86%</td>
</tr>
<tr>
<td>Kitchen + 3 Wet Rooms</td>
<td>0.7</td>
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<td>Kitchen + 4 Wet Rooms</td>
<td>0.8</td>
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<tr>
<td>Kitchen + 5 Wet Rooms</td>
<td>0.89</td>
<td>85%</td>
</tr>
<tr>
<td>Kitchen + 6 Wet Rooms</td>
<td>1.07</td>
<td>85%</td>
</tr>
</tbody>
</table>
Consultants Specification

OPERATION

The Nuaire AP-MVHR-LL/RL unit fulfils two separate, but related functions and is available as either Left-hand Low-pressure (LL), or Right-hand Low-pressure (RL).

The unit provides continuous ventilation for the apartment – supply ventilation (fresh, outside air ducted to the “habitable” rooms), and extract ventilation (vitiated air extracted from the “wet” rooms, and discharged from the building). The unit incorporates a high efficiency heat recovery section that transfers heat from the extract air, and uses it to warm the supply air. This arrangement reduces the ventilation heating load.

The heat recovery section includes a bypass arrangement that may be used to prevent heat transfer occurring in operational periods when heating is not required.

The additional function is to provide a percentage of the overall heating requirement for the apartment.

This heating is provided by a LTHW coil that is mounted within the MVHR unit.

The outside air supply and vitiated air extract rates are to be determined (for each apartment) by the methods described in Approved Document F (Ventilation).

Typically, for ventilation only, there are a number of operating conditions -
Whole Dwelling Supply Rate (WDSR)– based on the number of bedrooms or 0.3 l/s per m² of floor area.
High extract rate (HER), based on pre-set values for type and quantity of wet rooms.
Low extract rate (LER), equal to the Whole Dwelling Supply Rate.

The ventilation air flow rates for each apartment therefore must be individually determined.

Unit operation at the HER is typically initiated by manual switch and / or light switch interface.

For the heating function, there is a different airflow criterion to meet, as the heating input must be delivered at maximum temperature of 50 deg C.

Again, the heat loss conditions are specific to, and must be determined for, each apartment.

If the heat loads and supply temperature limit require supply flow rates that are greater than the standard ventilation rates, this can be economically accomplished by means of the re-circulation feature within the Nuaire AP-MVHR-LL/RL unit.

The maximum supply air flow rate that can be achieved in this manner will be limited principally by the ductwork resistance, and acceptable noise levels within the apartment.

HEAT RECOVERY BYPASS OPERATION

The Nuaire AP-MVHR-LL/RL unit incorporates a high efficiency counter-flow heat recovery device, with a 100% bypass facility. It should be understood that the heat recovery bypass operation serves only to prevent unwanted heat gain in the supply air stream from the extract air stream. It is a passive control measure – the resultant supply air temperature in bypass mode being simply that of the outside air temperature. In heat recovery mode, the supply air temperature will fall between that of the outside air and that of the room return air, and largely biased towards the higher of the two – regardless of which this is.

The bypass damper is not capable of modulation. Control of the bypass damper shall be by others (switched mains signal).

FREE COOLING

Because of the relatively low airflow rates delivered by a residential ventilation system, the potential for free cooling by means of the bypass is extremely limited.

HEATING

Control of the LTHW heating coil output shall be by others. Operation of the unit heating coil, shall necessitate the supply system operation at the boost rate, and where appropriate, the operation of the re-circulation fan / damper.

CONDENSATE

In the course of normal operation, it is to be expected that condensate will be produced as a result of the cooling of the extract air-stream. Condensate is discharged from the unit via a plain un-trapped connection.

UNIT FAIL SIGNAL

A common fault output is available at the unit, and should be verified as clear prior to operation of any heating mode.

(Note – the consultant engineer has recently requested independent fan failure indication. This is under evaluation, but does not currently form part of the product specification).

SOCIAL HOUSING APPLICATIONS

In these properties, the additional 30% of the base heating input is to be provided by burst fire controlled duct mounted electric heaters. One heater is to be provided for each habitable room.

The control of these heaters shall be by individual room set-point controller. The output of these controllers is directly applied to the relevant burst fired controlled heater.

These controllers shall be enabled by the central controller whenever heating is required in the apartment, and this enable signal shall necessitate the supply system operation at boost rate, and where appropriate, the operation of the re-circulation fan / damper.
NUAIRE SUMMARY:-

- Supply - at a minimum rate of WDSR, and at a maximum rate determined by the heating requirement, and initiated by a switched 230 V HEATING ENABLE signal from the central controller. Maximum rate operation may include operation of the unit's re-circulation function.

- Extract – at a minimum rate of LER, and at a maximum rate of HER when initiated by manual switch / light switch (230V signal)

- Bypass – limits heat pick up in the supply air. Bypass operation shall be controlled by switched 230 V signal from the central controller or other source

- Common fault signal – Available at unit. Unit operation shall be verified prior to operation of heating system. (NB this is essential for the electrical heating system for social housing)

- LTHW heating coil – control by others.

SOCIAL HOUSING APARTMENTS

The system shall include duct mounted electric heaters, with burst fired electric controllers.

Each habitable room shall be provided with an individual heating set-point control.

This control shall be enabled by a switched 230 V HEATING ENABLE signal from the central controller that simultaneously boosts the supply airflow rate.

OUTLINE SPECIFICATION

It is anticipated that apartment layouts and utility cupboard restrictions will result in the requirement for a number of product configurations. Generally these do not affect product costs.

The MVHR unit shall provide supply and extract ventilation and part of the heating requirement for the dwellings.

The unit shall incorporate high efficiency supply and extract fans of backward curved centrifugal design with integral EC type motors.

The unit shall incorporate a high efficiency counter-flow heat recovery module c/w 100% bypass facility.

The unit shall incorporate a LTHW heating coil (capacity specific to property requirements). The coil connections (15mm copper x 2) shall terminate outside the unit casing for connection to third party valve gear.

The unit shall incorporate a re-circulation facility, with damper, damper actuator, and high efficiency fan of backward curved centrifugal design with integral EC type motor.

The unit shall incorporate an insulated drip tray for collection of condensate generated by the heat recovery device. A condensate drain connection shall be provided, terminating outside the unit casing (trapping, by others, is normally required when connecting to household drainage. Use of the Nuaire product - MVHR-DRAIN is recommended).

The unit casing shall be manufactured in galvanised mild steel (natural finish), acoustically and thermally insulated to a level appropriate for the application.

Screw fastened access panels shall be provided, enabling all required maintenance functions to be carried out.

The unit shall be provided with 4 brackets and threaded mounting points to enable fixing to the ceiling slab.

Ductwork connection spigots (sheet metal or PVC mouldings) shall be provided.

An electrical connection box, with terminal strips, shall be provided, fixed to the outside of the unit casing, for connection to mains power and the third party controller. (The unit does not incorporate a means of electrical isolation.) N.B. Control cables should not be routed within 50mm of mains supply cables.

Unit current rating: - 1.5 A Fusing requirement: - 3A Power supply 1 ph. 230 V 50 Hz AC. This unit must be earthed.

Controls – the unit shall be fitted with a local control having the following functionality:-

- 2 stage speed / duty adjustment of the supply and extract fans, and single duty adjustment of the recirculation fan.

UNIT SERVING KITCHEN AND BATHROOM

Bypass control terminals (230 V AC) (Bypass actuator fitted and connected internally)

Heating Enable terminals (230 V AC) (Boosts unit flow rate and initiates Re-circulation fan / damper operation if required)

Typical wiring example - manual control of High/Low flow rate by light switch.
Acoustic solution for MRXBOX95-WH1/WM2

Nuaire’s First Fix and Acoustic Solution are designed to not only reduce noise but to improve the installation when wall or cupboard mounting the MRXBOX95-WH1/WM2 MVHR Units.

Offering the only complete MVHR acoustic and first fix solution to overcome both noise and ease the installation of heat recovery units; Nuaire’s solution addresses both duct and breakout noise; provides an aesthetically pleasing cupboard installation for the home occupant and reduces installation errors and time.

Typical Installation

FIRST FIX SOLUTION MRXBOX-FF-WH1/WM2
Nuaire’s First Fix box is fixed to the underside of the floor slab at first fix stage of the build. The box has four airflow chambers pre-fitted with 204x60mm spigots. Ceilings can then be boarded within the cupboard space easily and quickly without the risk of the spigots not aligning to the fan unit.

ACOUSTIC BOX MRXBOX-AB-WH1/WM2
Nuaire has created a unique solution that is not only designed to reduce noise significantly, addressing duct and breakout noise but is visibly appealing for the home occupant. It can be used with or without the First Fix Solution.

MRXBOX95B-WH1/WM2
Nuaire’s Acoustic Box and First Fix solution are compatible with the MRXBOX95(AB)-WH1 and MRXBOX95(AB)-WM2 heat recovery units, which are designed for medium to large properties.
### Electrical & Sound

**Sound data without Acoustic Box**

<table>
<thead>
<tr>
<th>Acoustic performance to BS848 Part 2.2 and AMCA 300</th>
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<tr>
<td>Breakout Noise (dBA)</td>
<td>28</td>
</tr>
<tr>
<td>Inlet Noise (dBA)</td>
<td>25</td>
</tr>
<tr>
<td>Outlet Noise (dBA)</td>
<td>40</td>
</tr>
</tbody>
</table>

*Breakout level is hemispherical. For spherical deduct 3 dBA*

<table>
<thead>
<tr>
<th>Sound Power Levels re 1 pWatts (Hz)</th>
<th>63</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1k</th>
<th>2k</th>
<th>4k</th>
<th>8k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Inlet</td>
<td>45</td>
<td>48</td>
<td>53</td>
<td>43</td>
<td>38</td>
<td>30</td>
<td>16</td>
<td>&lt;16</td>
</tr>
<tr>
<td>Open Outlet</td>
<td>53</td>
<td>60</td>
<td>62</td>
<td>61</td>
<td>53</td>
<td>51</td>
<td>41</td>
<td>32</td>
</tr>
<tr>
<td>Breakout</td>
<td>53</td>
<td>58</td>
<td>54</td>
<td>47</td>
<td>34</td>
<td>31</td>
<td>16</td>
<td>&lt;16</td>
</tr>
</tbody>
</table>

Above noise calculated speed controlled to require duty (66.4%)

<table>
<thead>
<tr>
<th>For 100% Speed</th>
<th>+ 3</th>
<th>+ 3</th>
<th>+ 5</th>
<th>+ 6</th>
<th>+ 9</th>
<th>+ 9</th>
<th>+ 9</th>
<th>+ 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Noise (dBA)</td>
<td>+ 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inlet Noise (dBA)</td>
<td>+ 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outlet Noise</td>
<td>+ 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**With Acoustic Box**

<table>
<thead>
<tr>
<th>Supply/Discharge</th>
<th>-8</th>
<th>-10</th>
<th>-8</th>
<th>-14</th>
<th>-23</th>
<th>-26</th>
<th>-20</th>
<th>-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet Noise (dBA)</td>
<td>-8</td>
<td>-4</td>
<td>-6</td>
<td>-8</td>
<td>-22</td>
<td>-24</td>
<td>-16</td>
<td>-115</td>
</tr>
</tbody>
</table>
DIMENSIONS (MM)

MRXBOX95-AB-WH1

MRXBOX95-FF-WH1

COMPLETED SYSTEM
Consultants Specification

**MRXBOX-FF-WH1/WM2**
The unit shall be supplied with 204mm x 60mm rectangular spigots to connect to the duct run, with the ability to be fitted in eight separate positions reducing the requirement for bends in the system.

The unit offers the facility to be fitted directly to the mating sections without the need for spigots reducing breakout noise, additional 150mm circular spigots to be supplied as an alternative option.

**MRXBOX-AB-WH1/WM2**
The unit offers the facility to be fitted directly to the MVHR unit and plenum chamber without the need for spigots reducing breakout noise, however, there is the capability to fit 150mm circular spigots as an alternative option.

The unit shall be fully lined with acoustic material offering excellent noise reduction.

Wall mounting brackets are to be supplied as part of the system to allow the MVHR unit to be raised after other system components are installed to form an airtight seal and enable the installation to be levelled.

The unit shall be clamped to the MRXBOX95-WH1/WM2 unit to provide an efficient seal and ensure correct alignment.

The unit shall be fixed in position during installation as a standalone section without relying on other system elements.
NUAIRE’S ACOUSTIC VENTILATION

Acoustic Ventilator

Nuaire Acoustically treated ventilator minimises noise pollution when background ventilation is required.

The provision of fresh air for rapid ventilation to all apartments is to be available without any inconvenience that may be caused by noise pollution from the road immediately adjacent to the development. To this end any apartments situated on the main road are to be provided with an acoustically treated ventilator. These are to be situated in the external wall of any room overlooking the road.

N.B. ALL rooms in corner/end apartments where one or more rooms overlook the road are to have the acoustic ventilators provided, regardless of that particular room’s proximity to the road.

Features

- Manual operation for total flexibility
- Airflow 38l/s @ 50Pa when fully open
- Prevents ingress of wind, rain etc with externally fitted baffle
- Aluzinc finish can be painted to allow blending into any environment
- Telescopic design allows for differing wall thicknesses
- Class 0 rated flame retardant acoustic material
- SRL test report available
- 3 year warranty

The acoustic ventilator shall be a manually operated device used at the discretion of the apartment’s occupier and when in use shall allow fresh air to pass into the room in question. The fresh air flow will be a combination of natural infiltration and fan assisted via the apartment’s ventilation system. The unit’s air flow characteristic shall be 38l/s @ 50Pa when the adjustable regulating plate is fully open. When the acoustic ventilator is in use any externally generated noise from the adjacent road shall be kept to acceptable levels and shall be equivalent to that of the particular unit specified elsewhere in this document.

The acoustic ventilator shall have a baffle plate mounted externally and an adjustable regulating plate on the internal face both suitable for paint finishing. The external baffle shall act as a weather shield stopping the ingress of wind, rain, etc. and shall be manufactured from aluminium alloy. The adjustable regulating plate shall be of a blank appearance so as to appear neutral to the wall in which it is situated. The adjustable regulating plate will be hinged for operation; the hinge mechanism will be graduated to facilitate the adjustment.

The unit casing shall be manufactured from Aluzinc corrosion protected steel and shall be of a minimum 1.5mm thickness.

The unit dimensions shall be 450mm wide x 200mm high x 200mm deep (min), the depth of the unit shall be telescopic to suit different wall thicknesses; this facility shall not affect the acoustic properties or the air flow characteristics of the acoustic ventilator.

The acoustic media used within the unit shall be flame retardant material, Class 0 rated. Unit shall be all as per model reference ACC-400 as manufactured by Nuaire Ltd.

The unit shall have a 3 year warranty.

Acoustic performance

(Summary – for full data see SRL test report C/04/SL/3108/1 method BS EN ISO 717-1:1997).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rw (C,Ctr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vent in closed position.-</td>
<td>54</td>
</tr>
<tr>
<td>Vent in open position.-</td>
<td>46</td>
</tr>
<tr>
<td>For comparison, 220mm cavity wall without penetration.-</td>
<td>58</td>
</tr>
</tbody>
</table>

Air brick set-up resistance
**NUAIRE’S NOISE SOLUTIONS**

**Inline Attenuation**

Available in 0.5m, 1m & 1.5m lengths

**Features**

- Regulation driven to reduce duct noise for designers’ “Domestic Compliance Guide 2010” & noise requirements Part F 2010
- Corrosion Proof - Lightweight PVC removes the risk of corrosion
- Reduce cross talk room to room noise
- Prevents noise ingress for inner city development
- Space Saving - Slim line low profile design for integration within your ducting system

**PRODUCT RANGE**

<table>
<thead>
<tr>
<th>Silencer Code</th>
<th>Description</th>
<th>Width</th>
<th>Length</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVCSIL-500</td>
<td>System 204 Duct Silencer x 500mm</td>
<td>204mm</td>
<td>580mm</td>
<td>65mm</td>
</tr>
<tr>
<td>PVCSIL-1000</td>
<td>System 204 Duct Silencer x 1.0mtr</td>
<td>204mm</td>
<td>1080mm</td>
<td>65mm</td>
</tr>
<tr>
<td>PVCSIL-1500</td>
<td>System 204 Duct Silencer x 1.5mtr</td>
<td>204mm</td>
<td>1580mm</td>
<td>65mm</td>
</tr>
</tbody>
</table>

**THE LEVEL OF SOUND ABSORPTION**

<table>
<thead>
<tr>
<th>Silencer Length</th>
<th>63Hz</th>
<th>125Hz</th>
<th>250Hz</th>
<th>500Hz</th>
<th>1k Hz</th>
<th>2k Hz</th>
<th>4k Hz</th>
<th>8k Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>500mm</td>
<td>-3</td>
<td>5</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>12</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>1.0mtr</td>
<td>0</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>37</td>
<td>23</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>1.5mtr</td>
<td>6</td>
<td>16</td>
<td>20</td>
<td>32</td>
<td>47</td>
<td>35</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

**STATIC PRESSURE DROP IN PASCALS (PA) VERSUS FLOW RATE (L/S)**

<table>
<thead>
<tr>
<th>Approximate l/s</th>
<th>15</th>
<th>30</th>
<th>60</th>
<th>90</th>
<th>120</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVCSIL-500</td>
<td>pa</td>
<td>10.5</td>
<td>18.5</td>
<td>100</td>
<td>213</td>
<td>371</td>
</tr>
<tr>
<td>PVCSIL-1000</td>
<td>pa</td>
<td>10.4</td>
<td>17.2</td>
<td>107</td>
<td>234</td>
<td>373</td>
</tr>
<tr>
<td>PVCSIL-1500</td>
<td>pa</td>
<td>8.2</td>
<td>23.5</td>
<td>107</td>
<td>230</td>
<td>412</td>
</tr>
</tbody>
</table>
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