Guide to Heat Recovery Ventilation

CI / SfB

(57.7)

1st edition





Heat Recovery Systems

Vent-Axia®

Lo-Carbon™

Guide to Heat Recovery Ventilation

Mechanical Ventilation with Heat Recovery (MVHR)

What Is It?

MVHR is a whole dwelling ventilation system that supplies & extracts air continuously at a low rate with the facility to be boosted as required meeting Building Regulations Part F System 4.

The unit is normally installed in the loft space or cupboard and rigid ducting supplies fresh filtered air to the habitable rooms and extracts stale polluted air from the 'wet' rooms Supply and extract diffusers are fitted to the ceilings and can be adjusted to balance the system.

The unit incorporates a polymer heat exchanger that tempers the incoming air before it is delivered to the habitable rooms The efficiency of the exchanger can vary from 70% to 95% heat recovery depending on whether it is of cross-flow or counter flow type, counter flow being the most efficient. Building Regulations are now calling for increased thermal efficiencies therefore the 95% heat exchanger is the best option.

The system can be controlled to boost speed when moisture is being generated by bathing or cooking either;

- Manually via single or multiple switches
- Automatically, typically via humidity or other sensors

These should be located in or near the wet rooms Background ventilators in windows are not required with this system.






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Sizing Your MVHR System

How do you select the correct MVHR unit for your system?

Sizing the unit is based on a minimum high rate for the wet areas and a minimum low rate calculated on the number of bedrooms or with a minimum trickle ventilation rate which should not be less than 0.3l/s per m^2 of internal floor area. This includes all floors so for a two story dwelling you must add the ground and first floor areas.
As an estimate, boost speed can be calculated at 8 l/s for each bathroom or utility room and 13 l/s for each kitchen.
We recommend you refer to tables 5.1a and 5.1b in Approved Document F of the Building Regulations for further details.

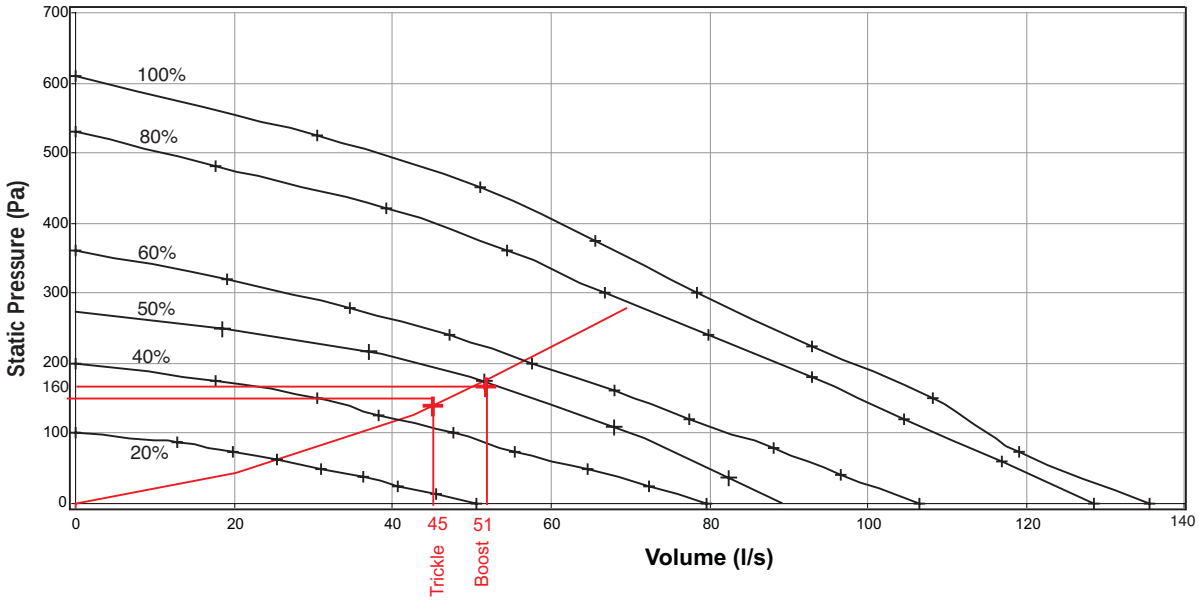
Calculating Ducting Resistance

As MVHR is a ducted system, its performance will be affected by system pressure that builds up in the duct runs, bends and terminations and also how many wet rooms you are extracting from.
As a guide, resistances boost in a well designed, well installed system may be in the region of:

1 or 2 Bed Apartments – 120 Pascals
3 Bed House 140 Pascals
4 Bed House 160 Pascals

Once airflow and system pressure are established, the fan curves for the proposed Unit should be read to ensure that the required performance levels will be met. With the example below, a 150m^2 modern air-tight 4 bed bedroom house with kitchen, utility, WC, bathroom and 2 en-suites requires 45 l/s of trickle speed and 51 l/s of boost speed. If the estimated system pressure is 160Pa, the Kinetic fan curve in the example below shows that required trickle performance level will be met at 42% setting. Boost speed can be delivered at 49% setting. It is worth noting that system pressure is affected by the size and configuration of the ducting. We would recommend that you read Installation Guide to MEV and MVHR available at www.vent-axia.com to help achieve good practice and help minimise the system pressure.

Sentinel Kinetic Plus Performance Curve



How do you install your MVHR system?

It is vital that ventilation systems are installed correctly to ensure ventilation rates are met. You can help achieve this by;

- Using rigid ducts wherever possible to reduce system pressure.
- Using flexible duct only for connections to MVHR unit and diffusers.
- Minimising bends and taking the most economical route
- Providing airtight seals with low modulous silicon an good quality sealing tape
- Providing mechanical fixes with cable ties or worm-drive clips.
- This will ensure systems can be commissioned and balanced to deliver the designed airflow rates inline with Building Regulations, Part F.

Installing your MVHR System

First fix

Install the ducting; the size of your duct will be determined by air flow rates, system pressure, and by which unit you are using and the length of runs and amount of bends. Please contact Vent-Axia if you require any assistance with duct sizes, however for most residential applications 204 x 60mm or 125mm round ducting will be adequate.

Duct installation should be completed before other services as you want the minimum amount of bends, thus taking the most direct route in and out of the building. All duct connections should be mechanically fixed, silicon sealed and joints taped to ensure an airtight seal.

Insulated ducting must be used where it passes through an unheated area including both intake and exhaust runs to atmosphere.

Second fix

Install the MVHR unit in a suitable position to minimise sound and vibration.

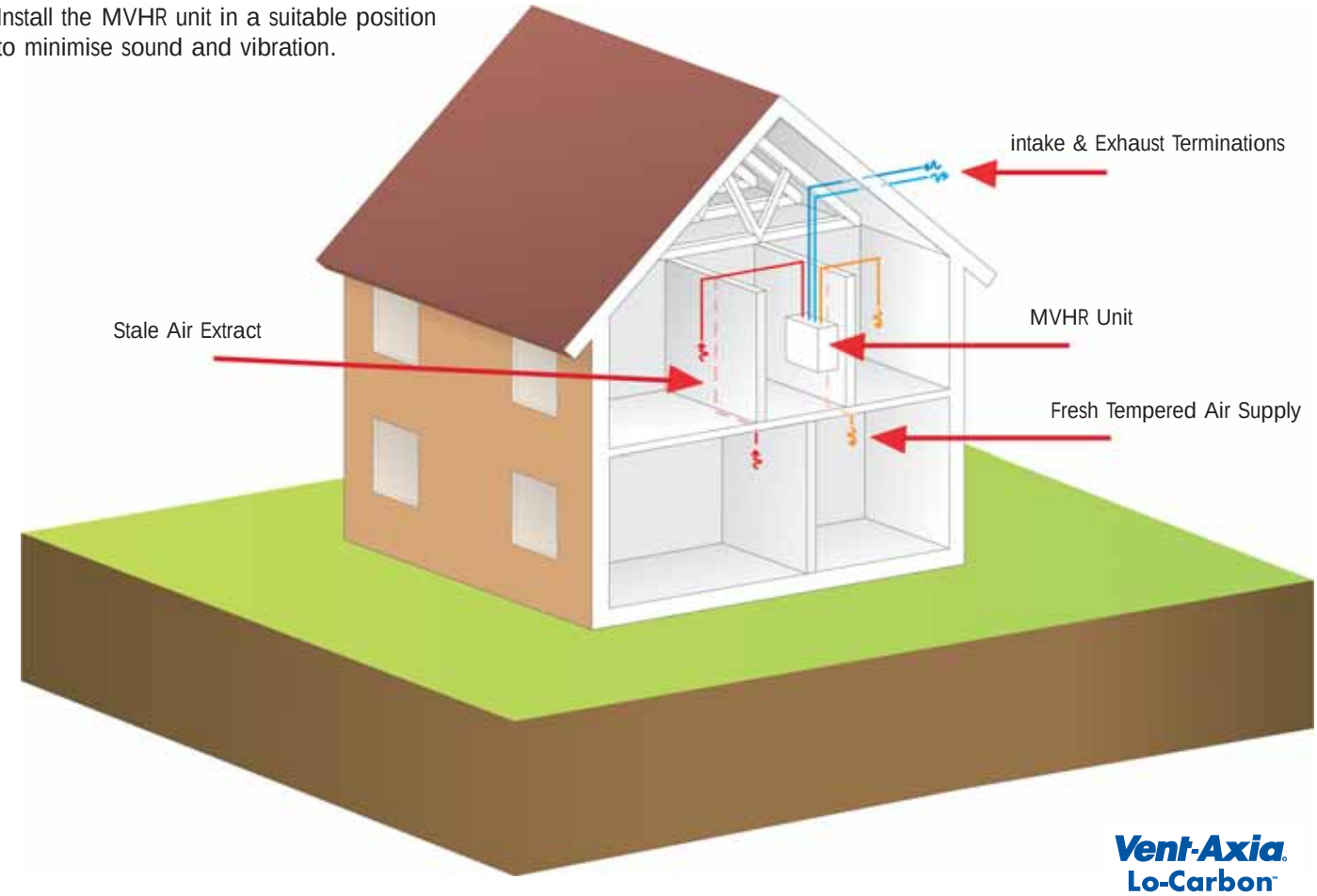
Wire the controls and fit sensors in suitable positions if being used.

Fit the condense drain and run to house waste system. Fix supply and extract diffusers and external terminations, these should be at least 1 metre apart so as to minimise the chance of cross contamination.

Commissioning

Supply and extract airflows should be balanced in accordance with the design requirements and individual room flow rates.

To help you with your design and installation, why not email our dedicated solutions department: solutions@vent-axia.com



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Guide to Central Ventilation

MVHR Systems

Astra



Up to 3 Bed house or Flat

- Part F compliant, System 4 continuous Mechanical Ventilation with Heat Recovery
- Normal, Boost & Purge speeds
- LoWatt motor offering 90% energy savings and long life

Kinetic



Up to 4 Bed house or Flat

- SAP Q Eligible - specific fan powers down to 0.72
- Compact and quiet
- Light weight for easy installation
- Easy access filters
- Multiple control options

Kinetic Hood



Up to 4 Bed house or Flat

- Building Regulations Part F compliant
- Ideal for small apartments
- Built in cooker hood
- Up to 92% heat recovery whilst controlling condensation
- Multiple control options

Kinetic Plus



Up to 7 Bed house, Flat or Commercial

- SAP Q Eligible - specific fan powers down to 0.49 and 92% efficient
- Light weight for easy installation
- Easy access filters
- Ideal for Student Accommodation
- Multiple control options

Rigid Ducting



- Full range of round and flat ducting with bends, connector and ancillaries
- 204 x 60 and 110 x 50 ideal for installation in ceiling voids
- Made from recycled plastic

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By Appointment to H.M. The Queen
Suppliers of Unit Ventilation Equipment
Vent-Axia, Crawley, West Sussex

Vent-Axia®

VENT-AXIA CONTACT NUMBERS

Free technical, installation and sales advice is available

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Tech Support Tel:	0844 856 0594
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Industrial

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Supply & Service

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