

**NATIONAL
VENTILATION**

Manufacturers & suppliers
of  monsoon products

Mechanical Ventilation And Heat Recovery



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About National Ventilation

National Ventilation's story begins back in 1986, the company was established by John Davison and Robin Francis, originally based out of Stoke house, the pair saw a potential in offering smaller businesses ducting components, which large manufacturers were unable to accommodate for, thriving in this gap in the market, they outgrew the premises and in 1998, moved to Curload where they continued to supply ducting components as well as selling ventilation systems, again, quickly exceeding their expectations soon outgrew the premises before moving to their current location in Burrowbridge in 2003.

Since then, the business has continued to develop and grow - becoming part of the Volution Ventilation Group, the UK's biggest ventilation manufacturer. Allowing for greater access to a varying array of components and further investment into the National Ventilation brand.

National Ventilation continues to focus on how and why it has grown to be as strong as they are: Their expertise in ventilation, their unrivalled customer service and being the UK's most customer focussed ventilation business.

Our service commitment to you

Using National Ventilation, you can be safe in the knowledge that you would be using a well-designed, fit for purpose system and will have a point of contact that will assist you throughout the entire job. Our customer service is second-to-none with prompt response times to enquiries.

Additionally, we also offer the following:

- On-site visits with an expert.
 - Next day delivery
 - A free design service providing you with ventilation designs, training and visits.
-

Our product range

We specialise in innovative, energy-saving ventilation products that can accommodate domestic, commercial and industrial applications. We offer MVHR whole house systems to intermittent, dMev and MEV fans as well as ducting and accessories. Using National Ventilation, you can be safe in the knowledge that you would be using a well-designed, fit for purpose system and will have a point of contact that will assist you throughout the entire job.



Monsoon Energysaver™ IntelliSystem Heat Recovery

- Touch screen and app control
 - Easy installation with lightweight unit
 - Complete summer bypass
 - Wi-Fi connectivity
 - Wireless commissioning
 - USB Pre-commissioning
 - Left/right handing
 - Pre-heater & post heater options
 - ISO ePM2.5 & ISO ePM10 filter options
-



Free design service
for developers
and self builders

Knowledge you need, Service you deserve

CONTACT us for your
FREE ventilation system
DESIGN service today



Upload your drawings today!

www.nationalventilation.co.uk/design-service

Approved Document F and L of the building regulations

Approved Documents F (ADF) and L (ADL) of the Building Regulations were issued in October 2010. The document has been revised since its introduction, with the latest revision in 2021. They place much greater emphasis on health and energy efficiency and incorporated installation and commissioning requirements documenting effective design, installation, and operation of ventilation systems.

The objective is to maximise carbon reduction through correctly specified and designed systems, competent installation minimising losses of the systems, verified performance once installed and correct operation by the homeowner.

Approved Document F Overview

This section of the building regulations explains how to achieve compliance, looking at the three key areas in detail: Ventilation provision, Minimising the ingress of external pollutants and Commissioning and providing information.

ADF, Means of Ventilation, is the document which addresses the performance requirements of different ventilation systems. Factors such as airflow rates, noise and occupier's operation are all covered here.

The latest edition has a few top-level changes which may mean something to you (we will cover them in more detail in each section later) but as an overview they are as follows:

Ventilation Rates

The ventilation rate of a given property is calculated dependant on the designed infiltration rate. Basically, how much air leaks in or out of the dwelling (anyone who has lived in a draughty house will understand the importance that this has!). The airtightness of a building is defined as its air permeability; this is the volume of air that escapes through the envelope of the building per hour ($\text{m}^3/\text{h}.\text{m}^2$).

Installation and Commissioning

There is guidance on good installation practice and a commissioning guide set out within ADF Section C. This has been taken from the Domestic Ventilation Compliance Guide and is used to demonstrate compliance. The checklist should be completed to ensure that ventilation not only delivers the required airflow, but also does it efficiently and quietly.

Approved Document L Overview

ADL, the document concerning conservation of fuel and power, covers the efficiency and energy consumption of ventilation products, among others. The latest edition remains largely unchanged, except for increase in heat recovery efficiency of 73%, which is a 3% increase on the previously value published within the Building Services Compliance Guide for domestic and non-domestic (2013). ADF also includes the minimum Specific Fan Power (SFP) limits which remain unchanged.

There continues to be an opportunity to save energy through ventilation by using an installer who has attended a training course to become a competent person and using the SAP Performance Characteristics Database (PCDB), formerly known as Appendix Q. This is a method by which energy efficient ventilation systems can be selected, both of which gain energy benefit that can be added back into the SAP calculation.

What does this mean for ventilation?

Ventilation uses energy in two ways. Firstly, mechanical systems use electricity to power the motors and secondly heat is lost as heated air is extracted from a building. This is now dealt with by a minimum energy efficiency level for all ventilation systems being set. There are now for the first-time new build and refurbishment minimums in both the amount of electricity a motor can use minimum specific fan power (SFP) and a minimum energy efficiency of heat exchangers in systems that can recover heat.

We recommend that best practice is followed when designing and installing a system, as the product performance is affected by both areas.

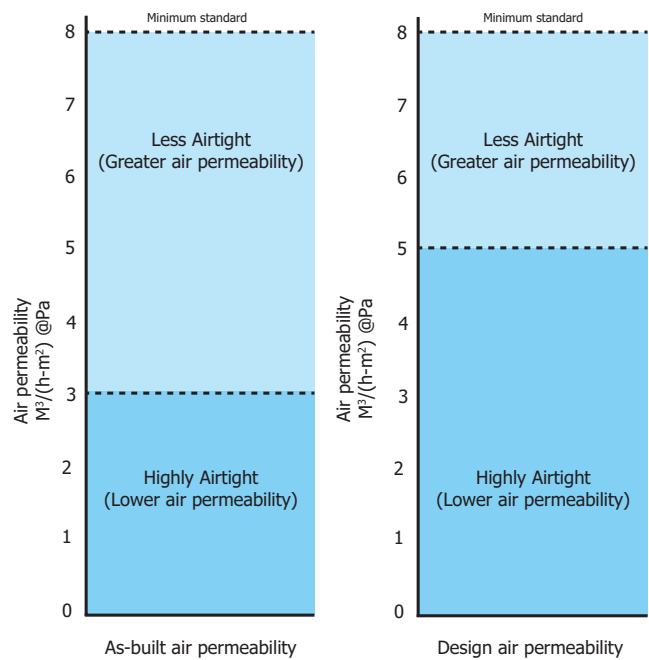
Ventilation

There are multiple systems covered in the building regulations, which are as follows:

- Natural ventilation with background ventilators and intermittent extract fans
- Continuous mechanical extract ventilation
- Mechanical ventilation with heat recovery

Within ADF, it states "The ventilation systems in this approved document are examples of systems that comply with Part F of the Building Regulations. Other ventilation systems may be acceptable if they can be shown to meet an equal level of performance."

This clause stipulates those alternative systems, such as Positive Input Ventilation (PIV) may be used provided it can show to have an equal level of performance.



Approved Document F – Airflows, background ventilations and noise

There are some design considerations which vary depending on which ventilation system is being used. These are outlined here but are shown in more detail in the separate sections for each system.

Natural ventilation with background ventilators and intermittent extract fans

These have different requirements of background ventilators dependant on the room type and whether it is single or multi-storey.

Continuous mechanical extract ventilation

There is a requirement to have a minimum number of background ventilators, which equates to the number of bedrooms plus two.

Mechanical ventilation with heat recovery

Background ventilators should not be installed with mechanical ventilation with heat recovery, as they can provide unwanted additional ventilation and reduce system efficiency.

Noise

Noise is now covered by the building regulations. As our buildings become more energy efficient and more airtight, the amount of noise entering them from outside is reduced. This has the effect of making them much quieter inside. That means that any noise made inside the house will be more noticeable, so ADF now recommends a maximum noise level of 30 dB(A) in noise sensitive rooms, such as bedrooms and living rooms for continuous systems and 45 dB(A) in less noise sensitive rooms such as kitchens and bathrooms for both continuous and intermittent systems.

Airflow rates

Table 1.1 – Minimum extract ventilation rates for intermittent systems

ROOM	INTERMITTENT EXTRACT RATES (L/S)
Kitchen (cooker hood extracting to outside)	30
Kitchen (no cooker hood or cooker hood does not extract to the outside)	60
Utility room	30
Bathroom	15
Sanitary accommodation	6

NOTE: As an alternative for sanitary accommodation, the purge ventilation guidance may be used.

Table 1.2 – Minimum extract ventilation rates for continuous extract systems

ROOM	HIGH RATE (L/S)	CONTINUOUS RATE
Kitchen	13	The sum of all extract ventilation in the dwelling on its continuous rate should be least the whole dwelling ventilation rate given in Table 1.3
Utility room	8	
Bathroom	8	
Sanitary accommodation	6	

NOTE: If the continuous rate of ventilation provided in a room is equal to or higher than the minimum high rate specified in the table, no extra ventilation is needed.

Table 1.3 – Minimum whole dwelling ventilation rates determined by the number of bedrooms

NUMBER OF BEDROOMS	MINIMUM VENTILATION RATE BY NUMBER OF BEDROOMS
1	19
2	25
3	31
4	37
5	43

NOTE: - If the dwelling only has one habitable room, a minimum ventilation rate of 13l/s should be used.
- For each additional bedroom, add 6l/s to the values in Table 1.3.

Approved Document L – Minimum efficiencies of motors and heat exchangers

Energy efficiency

As mentioned earlier, there are energy efficiency limits for all the systems covered in the building regulations as well as some minimum heat exchanger efficiencies for heat recovery products. These are as follows:

Specific Fan Power (SFP)

- Intermittent extract fans - specify a maximum of 0.5 W/l/s
- Continuous extract fans - specify a maximum of 0.7 W/l/s
- Continuous supply and extract fans (MVHR) - specify a maximum of 1.5W/l/s

Heat Exchanger Efficiency

There is a requirement for any heat exchanger in a residential property to be a minimum of 73% efficient.

New Build

Building Regulations favour continuous ventilation as these products perform better in SAP, are easier to specify and easier to standardise (no requirement for background ventilators). This encourages new build designers to move new planning applications away from intermittent fans, especially if they have an air permeability of 5 or lower.

Monsoon Energysaver™ IntelliSystem Heat Recovery

- Touch screen and app control
- Easy installation with lightweight unit
- Complete summer bypass
- Wi-Fi connectivity
- Wireless commissioning
- USB Pre-commissioning
- Left/right handing
- Pre-heater & post heater options
- ISO ePM2.5 & ISO ePM10 filter options



The Monsoon Energysaver IntelliSystem heat recovery unit from National Ventilation is our flagship mechanical ventilation with heat recovery solution. It has been designed using the latest CFD techniques to ensure maximum levels of performance without compromising on comfort. The system provides maximum level of control, with its integrated control which is housed within the unit or located remotely. Ensuring the highest levels of comfort by continuously supplying and extracting air throughout the home ensuring the best possible consumer experience, with optional ISO eO2.5 and ISO ePM10 filters protecting households from airborne impurities.

Installation

For ease of installation the MON-HRU/350-150i can be mounted vertically in a roof space, hallway cupboard or within a kitchen cupboard and comes with adjustable wall mounting fittings.

Left (L) or right (R) hand installation is achievable by simply selecting the spigots to atmosphere via the touch screen controller.

Controls

The Monsoon Energysaver IntelliSystem heat recovery unit has been designed with the customer in mind and comes with number of options for system control.

Control Panel: The IntelliSystem control panel on the unit comes with a manual boost switch which is designed to provide an increased level of ventilation when required to eradicate odours or during hot periods during the summer. The unit will operate continuously on a normal mode setting and will boost when one of the control devices, such as the humidistat is activated.

App controlled: Using the App the user can easily view the current air temperatures, check the status of the unit, and can even select different operating modes.

Technical Specification

MODELS	SEC CLASS
MON-HRU/350-150i	A+

Accessories

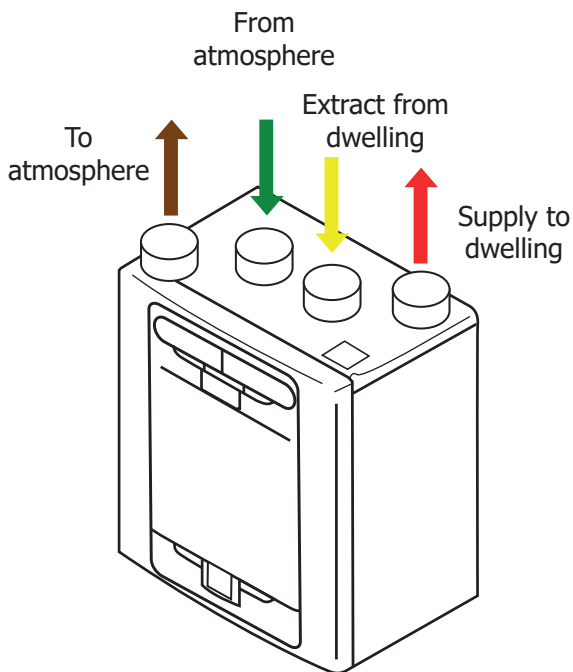
PRODUCT CODE	DESCRIPTION
HRU-DOCK	Docking kit for controller
HRU-VF	Volt Free Input for Manual and Automatic Switches
HRU-SL	Switched Live Expansion
HRU-AI	Analogue Input for 0-10V Inputs, ie CO2 sensor

PCDB

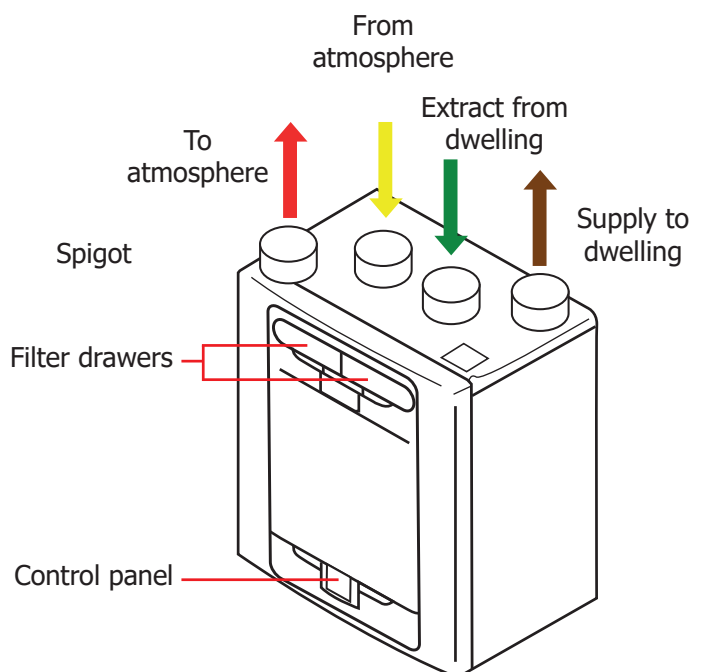
WET ROOMS	SFP (W/L/S)	EFFICIENCY (%)
K + 1	0.39	93%
K + 2	0.46	92%
K + 3	0.55	91%
K + 4	0.70	91%
K + 5	0.85	90%
K + 6	1.07	89%
K + 7	1.31	89%

Spigot configuration

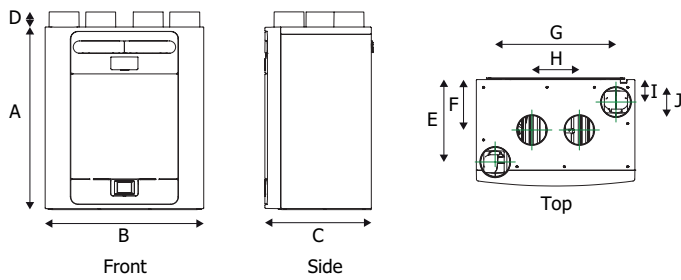
Left hand



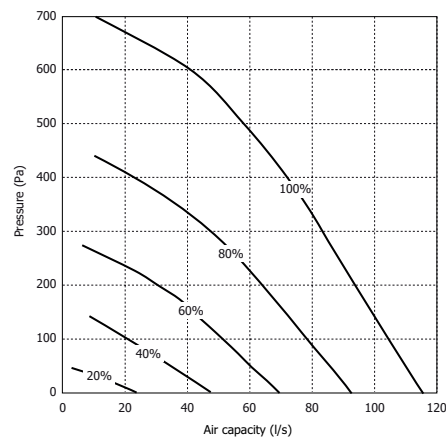
Right hand



Dimensions



A	B	C	D	E	F	G	H	I	J
760	660	443	64	343	210	503	197	93	125



Performance curve

Sound spectrum data

Octave Band (Hz) Sound Power Levels, dB SPL dB(A) @

SPEED	TEST MODE	63	125	250	500	1K	2K	4K	8K	3M
20%	Extract	50.3	49	36	31.5	23.6	16.1	18.9	25.3	18.9
	Supply	52.9	50.9	46.8	43	34.6	27.1	19.2	25.4	26.4
	Breakout	34.6	34.8	35.7	34.9	29.6	25.1	21	25.3	15.5
40%	Extract	51.9	51.3	50.4	41.2	35	25.3	19.8	25.4	27.3
	Supply	59.5	56.5	59.4	55	48.2	42.6	31.8	26.1	38.4
	Breakout	40.2	42.6	46.5	45.4	41	36.2	25.5	25.3	26
60%	Extract	60.6	60.3	54.2	49.5	44.4	36.2	27.9	26.3	34.2
	Supply	66.9	62.4	63.3	62	57.9	53.5	43.4	34.2	45.7
	Breakout	45.5	49.8	52.5	53.1	49.7	46.7	36.2	26.9	34
80%	Extract	75.5	68.6	59.3	56	48.3	44.2	36.9	31.3	41.1
	Supply	82.4	67.6	65.2	67.6	64.2	60.8	50.8	43.2	51.7
	Breakout	59.2	55	56.8	60	55.4	53.9	44.1	33.4	40.5
100%	Extract	72.4	70.5	60.5	56.4	49.8	46.3	39	33.4	42
	Supply	79.4	69.6	66.6	75.1	64.9	63.6	53.4	45.7	56.2
	Breakout	63	57.1	58.5	63.7	56.8	55.9	46.4	36.2	43

Tested According to BS EN 13141-7:2010. Breakout quoted spherical. Supply and Extract quoted hemispherical.

Consultant specification

The supply and extract ventilation unit shall be the Monsoon Energysaver™ IntelliSystem Heat Recovery as manufactured by National Ventilation and shall be sized as indicated on the drawings and shall be in accordance with the specification.

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multiplate, counter-flow, high-efficiency heat exchanger block with independently verified thermal efficiency up to 93%. The heat exchanger shall be protected by G3 grade filters on fresh air inlet and system extract. The unit shall have the facility to accommodate M5 or F7 filters. The filters shall be accessible via tool-free access doors. The heat exchanger, motors, summer bypass and all other serviceable parts shall be accessible through the front of the unit.

Supply air to the room shall be pre-heated by the extract air via the integrated composite plastic counter-flow heat recovery cell. The Monsoon Energysaver™ IntelliSystem shall automatically vary the ventilation rate via EC/DC motors, as it receives signals from optional or in-built sensor inputs. When a signal is received, the fans shall either vary their speed proportionally or on a trickle/boost principle.

The unit shall have the facility to commission the supply and extract fans individually via in-built minimum and maximum speed adjustment, or alternative wired remote-control unit. The fans themselves shall have independent, infinitely variable speed control.

Unit specification

The unit shall be manufactured with an ABS Outer case construction, with the ability to alter the spigot configuration via the on-board controller.

The unit shall have a high efficiency composite plastic counter-flow heat exchanger, supply, and extract filters (up to F7), automatic 100% summer bypass, integral minimum and maximum infinitely variable speed controls with fascia mounted failure indication.

The unit shall have low energy, high efficiency EC/DC fan/motor assemblies with sealed for life bearings. The impellers shall be high efficiency backward curved centrifugal type, achieving an SFP as low as 0.39W/l/s (EN 308). The unit shall have a heat exchanger cell with a thermal efficiency of up to 93% when tested to EN 308. This shall be protected by G3 grade synthetic filters on supply and extract, with the option of M5, F7 or external carbon activated filters. The unit shall come with both a 22mm and 32mm connection for draining condensation.

The unit shall be constructed with a removable tool-free front panel which gives access to the removable on-board controller and other accessories. The EPS panel can then be removed with 4 screws allowing full maintenance access. This shall provide access to the following:

- Supply or extract fan
- Heat exchanger
- Access to the electrical connections

Access shall be provided for wiring termination and setup/commissioning.

The backlit touch-screen user interface therein shall be removable for remote mounting if required. Filters shall be accessed via the two pull out drawers near the top of the unit.

Units shall be as manufactured by National Ventilation.

Standard controls

The Sentinel Kinetic Advance shall incorporate the following functions integrally mounted through a touchscreen; adjustable controller fitted by the manufacturer: -

- Integral infinitely variable fan speed control on supply and extract.
- 6 speeds; 4 adjustable
- Left- or Right-hand spigot configuration, programmable by the on-board controller
- Filter change wizard which stops the motors during filter replacement
- 0-10V proportional speed adjustment
- Volt free contacts
- 24V external sensor supply, e.g. PIR sensor
- Filter check facility adjustable in one-month increments

The unit shall incorporate:

- An integral humidity sensor with the following features: Ambient Response; Raises the humidity trigger point as dwelling temperature reduces.
 - Rapid Response: Monitors the rate of change in humidity and triggers increased airflow even if the humidity trigger threshold is not reached.
 - Proportional Response: incrementally increases the fan speed to reduce noise and reduce energy consumption.
 - Wi-Fi connectivity for remote commissioning
 - USB functionality for commissioning
 - The unit shall incorporate an automatic 100% summer bypass damper which monitors internal and external temperatures to maintain the user comfort temperature (default 21°C):
 - o 'Evening Fresh' turns the unit to maximum speed with the bypass operational for 2 hours or until the user comfort temperature is reached (default 21°C).
 - o 'Night-time Fresh' will run the unit on maximum speed with the bypass operational throughout the night or until the dwelling reaches minimum temperature (default 14°C). Independently acoustically tested to BS EN 13141-7:201
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Manufacturers & suppliers
of  monsoon products

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