The Renewable Solutions Provider

Making a World of Difference

Lossnay Fresh Air Ventilation

Lossnay

MITSUBISHI ELECTRIC

LIVING ENVIRONMENTAL SYSTEMS

Air Conditioning | Heating
Ventilation | Controls

Why do we need fresh air ventilation?

Poor indoor air quality can be attributed to many problems inside a building. Excess humidity causes dampness, rot and mould, whilst pollutants are known to be a major cause of damaging health issues such as asthma and eczema. Stale air is also believed to lead to a loss in productivity and low morale.

As the demand for improved energy efficiency results in increasingly airtight buildings, natural ventilation proves less effective and drives the need for mechanical ventilation. With increasing legislation, the challenge for designers, installers and occupiers of any building is to find ventilation that's both effective and energy efficient.

Mitsubishi Electric meets this need with a range of Lossnay mechanical ventilation heat recovery (MVHR) systems, designed to supply fresh air into any building whilst simultaneously extracting stale air and, most importantly, recovering valuable heat energy for maximum efficiency.

The name Mitsubishi is synonymous with excellence

Founded in 1921, Mitsubishi Electric is now a global, market leading environmental technologies manufacturer. In the UK, the Living Environmental Systems Division provides pioneering solutions that heat, cool, ventilate and control our buildings in some of the most energy efficient ways possible.

We believe that global climate challenges need local solutions. Our aim is to help individuals and businesses reduce the energy consumption of their buildings and their running costs.

Lossnay is Mitsubishi Electric's latest generation of MVHR, designed to provide a constant supply of controlled, pre-heated / pre-cooled fresh air to buildings, improving climate control and reducing energy bills.

At Mitsubishi Electric we have evolved and today we offer advanced environmental systems that really can make a world of difference.

*1 Source: The World Health Organisation

With 90%[*1] of our time spent indoors, good air quality within buildings is vital

Legislation - driving the need for effective ventilation

In line with Government targets, changes to building regulations have been introduced to improve energy efficiency and reduce carbon emissions.

Part L

Part L of the Building Regulations calls for buildings to be more airtight and energy efficient.

As a result, maintaining good indoor air quality through effective ventilation is vital and MVHR systems are perfect to achieve this in an energy efficient manner. Part L covers the maximum amount of electricity a mechanical ventilation system should use and more specifically what the fan motors in a unit should use (Specific Fan Power (SFP)).

Furthermore, figures for minimum energy efficiency for heat exchangers in heat recovery systems are outlined for non-domestic buildings. Currently Part L calls for heat recovery systems with plate heat exchangers, installed in non-domestic buildings, to be at least 50% efficient.

Part F

Part F of the Building Regulations focuses primarily on mechanical ventilation systems and indoor air quality.

It covers all aspects of specifying and designing a mechanical ventilation system and gives guidance on installation, commissioning, operation and maintenance.

Part F covers four types of ventilation systems:

- Background ventilators and intermittent extract fans
- Passive stack ventilation
- Continuous mechanical extract ventilation
- Continuous mechanical supply and extract with heat recovery

Minimum ventilation rates are also advised within the document for non-domestic buildings with an air supply rate of 10l/s/person being advised as a minimum for offices.

The London Plan

The London Plan, published by the mayor of London, is an overall strategic plan for the UK's Capital City.

The London Plan covers a broad range of important issues including transport, economics and the environment. One of the most important parts covers 'London's response to climate change'.

Reducing overheating in buildings and over-reliance on air conditioning systems is a topic that is covered in this section and the use of mechanical ventilation systems is highlighted as a key step towards addressing these issues.

Mechanical ventilation with heat recovery can help reduce overheating in buildings and decrease both heating and cooling loads

Lossnay - the perfect solution from Mitsubishi Electric

Lossnay provides excellent ventilation alongside a heating and/or cooling system whatever the building, to ensure healthy, comfortable environments.

Developed and refined over the past 35 years, the Lossnay system has perfected mechanical ventilation with the recovery of heat energy that would have otherwise been wasted. The units help to reduce overall energy costs by extracting stale air and then recovering the heating or cooling energy to either warm or cool incoming fresh air.

Utilising recoverable energy, Lossnay is able to save up to 30% on the capital outlay by reducing the heating and cooling loads within an occupied space.

The benefits of Lossnay include:

- Clean, fresh air
- Improved air quality and comfort
- Increased climate control
- Energy efficient heat recovery
- Reduced energy bills

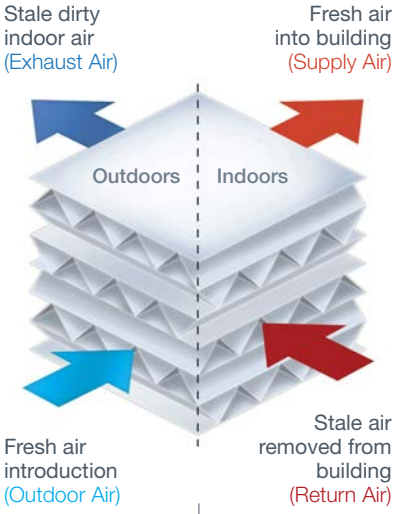
How **Lossnay** works

The technology behind the energy efficiency of Lossnay lies in the construction of the core which enables exchange of both latent heat (humidity/moisture) and sensible heat (temperature) to maintain a comfortable internal environment for minimal energy consumption.

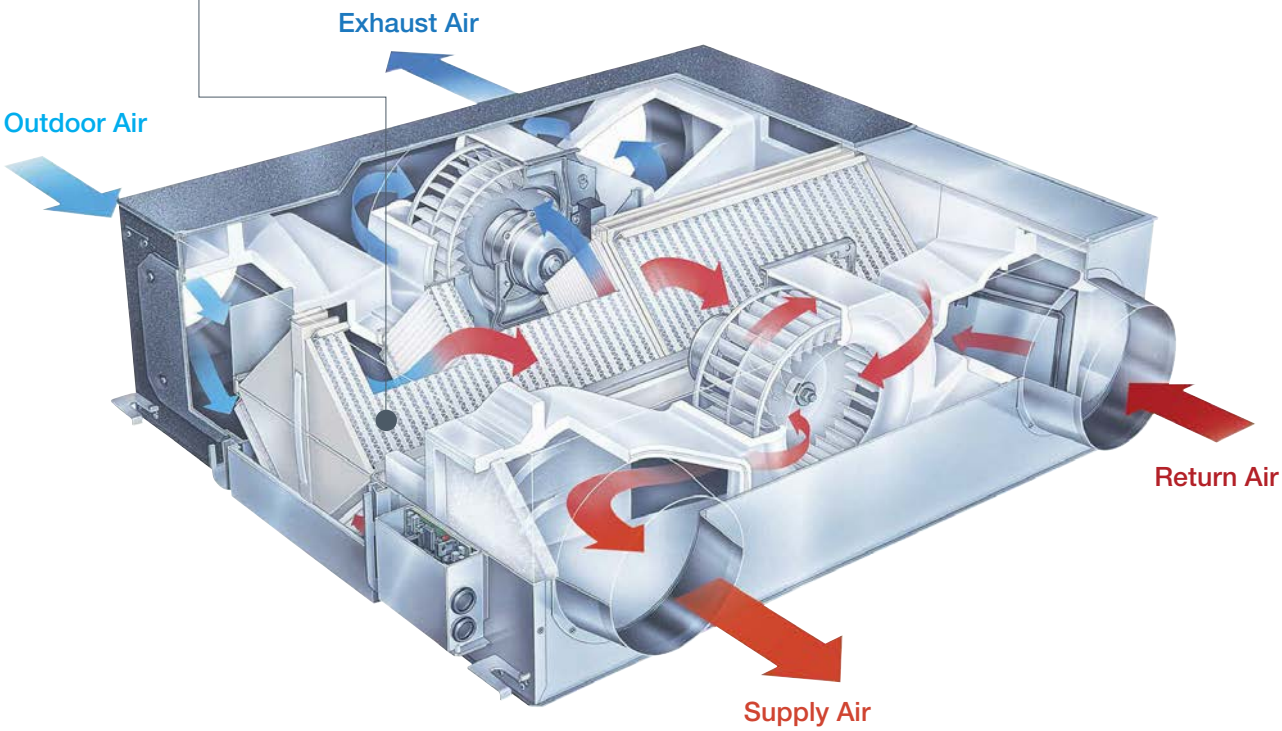
The core is made from ultra-thin paper and sits at the heart of the system. Constructed in a corrugated form and layered in alternate directions, the core allows a cross airflow to maximise heat recovery without the supply and exhaust air mixing, ensuring only fresh air is introduced into a building.

The use of ultra-thin paper enables the unit to achieve high enthalpy exchange efficiency and dramatically increases moisture permeability whilst acting as a barrier against air leakage.

Lossnay's Dynamic Paper Heat Exchanger Core



As Lossnay extracts stale air from a building, heat energy is recovered through the paper core and transferred into the fresh incoming air.

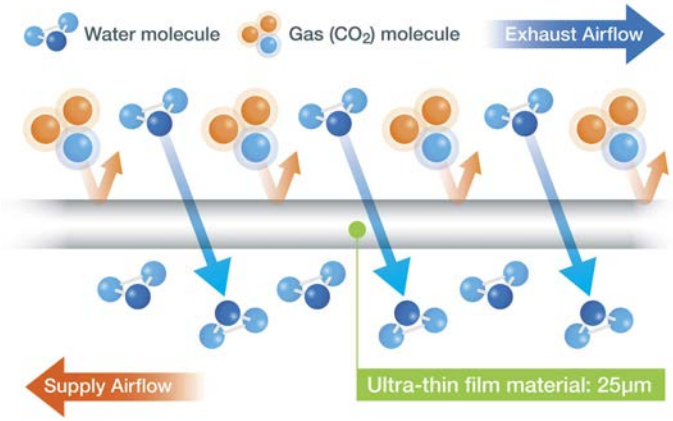


Features and benefits of **Lossnay**

With a thickness of 25µm, the paper used in the Lossnay core is one of the thinnest in the world

Energy efficient “Hyper-Eco” paper core

The Lossnay core is essentially a diaphragm made of specially processed paper which fully separates the inlet and exhaust air supplies, ensuring that only fresh air is introduced to the indoor environment.



With a thickness of just 25µm, the paper used in the Lossnay core is as thin as some household aluminium foils.

The microscopically small pores of the diaphragm decrease the rate at which water soluble gases, such as ammonia and hydrogen, pass through. The specially processed paper used to make the core has been developed with high moisture permeability characteristics which aids the transfer of moisture and improves the effectiveness of shielding unwanted gases, resulting in highly efficient energy transfer.

Why Lossnay uses a total heat exchanger

Traditional forms of MVHR which use plastic or metal cores only allow sensible heat recovery; Lossnay's paper core allows total heat recovery including both sensible and latent heat.

Sensible heat is transferrable heat that causes a rise or fall in air temperature. Latent heat is transferrable heat that causes a change in the humidity level or moisture content in the air and it's this latent heat transfer that enables Lossnay to recover more heat energy than a 'sensible only' heat exchanger. This is because water has a higher specific heat capacity than air, meaning it can transfer, or recover, more heat than air.

Total heat exchangers provide a comfortable air temperature within a room. The energy saved by using Lossnay contributes towards lowering the heating or cooling requirement within the building, therefore reducing the energy consumption and running costs.

When comparing Lossnay's total heat exchanger (sensible and latent), to a 'sensible only' heat exchanger, the results show Lossnay as the more efficient MVHR. For instance during the summer, when the outdoor temperature is 27ºC the Lossnay[*2] unit is able to reduce a buildings cooling load by 3.6kW compared to 1.8kW of the sensible heat exchanger, making Lossnay twice as efficient as a 'sensible only' heat exchanger.

Similarly in the winter when the outdoor temperature is 0ºC the Lossnay unit can recover up to 8.2kW of heat energy compared to 6.4kW of the sensible heat exchanger, making Lossnay 28% more efficient than a 'sensible only' heat exchanger.

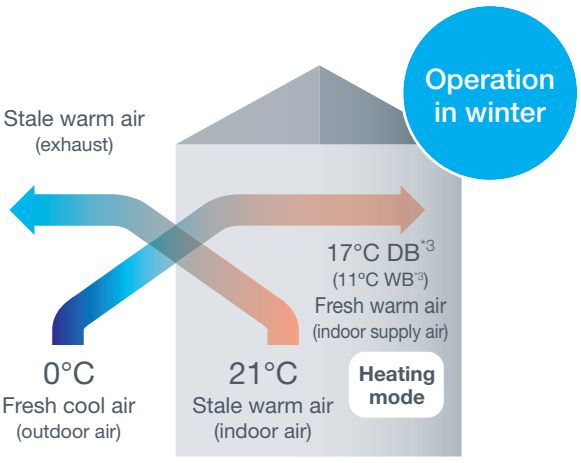
Benefits of total heat exchangers

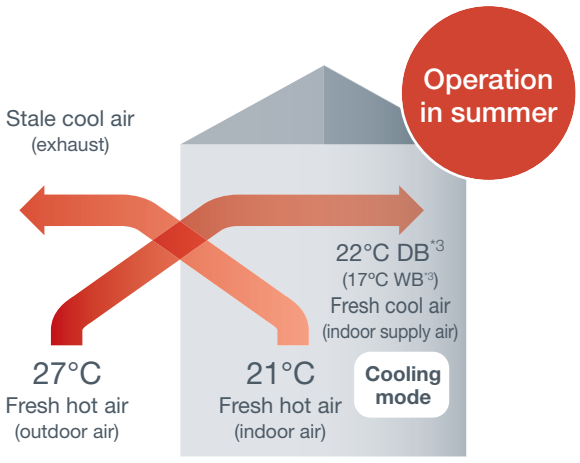
Using a highly efficient total heat exchanger, Lossnay provides a constant supply of controlled, pre-cooled / pre-heated, fresh air for improved climate control and reduced energy bills.

Further benefits of total heat exchangers include:

- Controlled humidity levels
- Dry eye and dry throat prevention
- Static reduction
- Higher heat transfer efficiency

Effective ventilation





Lossnay's simultaneous air exhaust and supply provides balanced and effective ventilation allowing for a clean, fresh internal environment to be maintained in an energy efficient and cost effective manner.

*2 Results based on Lossnay LGH-100RX5-E total heat exchanger and a competitor's equivalent 'sensible only' heat exchanger unit.
*3 DB = Dry Bulb, WB = Wet Bulb.

Features and benefits of **Lossnay**

Bypass mode and free cooling

New buildings are highly insulated and therefore retain heat energy relatively well. Consequently the internal temperature may increase to levels that become uncomfortable for the occupants even at moderate ambient conditions.

The RX5 and DC Lossnay units have a bypass function that allows free cooling to take place. For example when the outdoor temperature is above 8ºC and lower than the indoor air conditioning set temperature in summer, Lossnay provides fresh outdoor cool air to reduce the indoor air temperature. The benefit of this would be a lower load requirement from a cooling system.

If the outdoor temperature is above 8ºC, Lossnay's bypass mode allows fresh air to cool the internal environment therefore reducing the air conditioning load

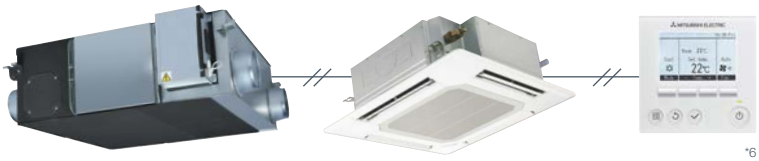
Integration with other Mitsubishi Electric systems

Lossnay units can work either on their own to provide fresh air into a room, or in combination with Mr Slim or City Multi air conditioning ceiling cassette and ducted units.

When working together with air conditioning, Lossnay units can provide significant energy savings by automatically utilising free cooling as well as heat recovery. As the Lossnay and the air conditioning unit are connected by a two core communication cable, they can work together to optimise both comfort and energy efficiency.

This is achieved by the Lossnay reading the mode and set temperature the air conditioning requires, then utilising the outside temperature to help achieve the required temperature either by free cooling or heat recovery.

For example, in the summertime when the indoor temperature is on average 21ºC and the outdoor temperature is 27ºC, Lossnay can reduce the cooling load by up to 3kW per hour.*4 In contrast, Lossnay can also save up to 8kW of heat capacity per hour in the winter when the average indoor temperature is 21ºC and the outside temperature 2.5ºC.*5

Example:	Lossnay unit	Cassette	Control
One LGH-25RX5 serving one PLA-RP71BA. Room size 7m x 7m, 140w/m² heat load. 7 people per room, 10l/s/person of fresh air to meet Part F requirements. Maximum amount of fresh air to be introduced is 30% of the fan coil volume. Ceiling cassettes may require fresh air casements. Free cooling is not available below 8ºC when interlocked with Mr Slim or City Multi units.			

*6

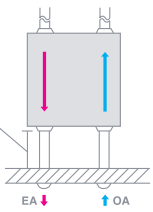
Flexible installation

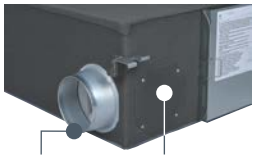
The ducts on the RX5 Lossnay units can be connected in two different directions to the outdoor vents thanks to the collars and aperture plates that can be interchangeably placed in two different positions.

This flexibility allows for installations close to the surface of a wall and helps avoid cases where the stale air exhaust vent would be blocked by an obstruction of some kind. This makes both the planning and installation of Lossnay units much simpler.

Standard installation

A space is necessary to prevent the influx of rainwater.

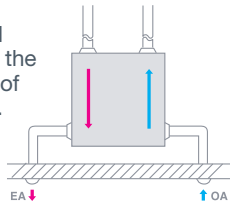




Collar Aperture Plate

Installation with duct direction changed

Can be installed close to the surface of the wall.



Changing the duct direction

Exchangeable

*4 Based on the LGH-100RX5, temperature efficiency 79%, enthalpy efficiency (cooling) 67% and air volume at 1000m³/h@100PA
*5 Based on the LGH-100RX5, temperature efficiency 79%, enthalpy efficiency (cooling) 71% and air volume at 1000m³/h@100PA
*6 Lossnay fan speed button is incorporated within the standard PAR-31MAA and PAR-F27MEA controllers

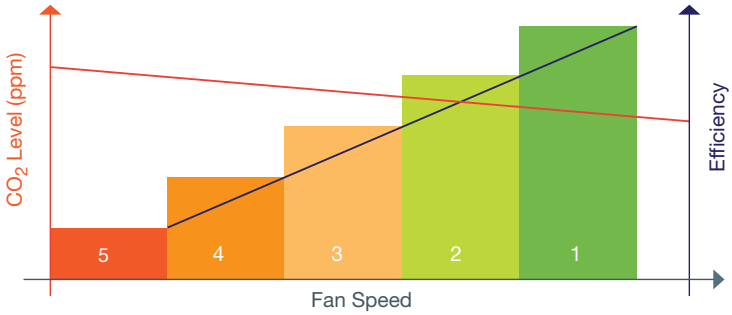
Features and benefits of **Lossnay**

CO_2 sensor integration

Integration of a third party CO_2 sensor is possible with the RX5 & DC Lossnay units which allows the fan speed to automatically change depending on the CO_2 density in a room.[*7]

The benefit is that when CO_2 levels are low, the Lossnay units are able to work at a lower fan speed, reducing electrical power consumption and increasing heat exchange efficiency.

When CO_2 density increases, the unit can increase its fan speed to provide more fresh air and therefore reduce CO_2 levels



Low noise levels & good sound attenuation

The Lossnay units benefit from low sound levels and are suitable for installation in low noise environments such as schools, offices, homes etc.

The Lossnay core also has good sound attenuation and can reduce the amount of sound that enters a building through the unit restricting any unwanted noise pollution.

*7 Procon Lossnay-5-FSC interface, which is able to control up to 16 Lossnay units and enables automatic fan speed control based on CO_2 levels. For more information visit page 25

Multi-ventilation mode

All RX5 Lossnay models feature the **“Multi-ventilation Mode”** which allows the air supply/exhaust balance to be varied dynamically to suit the usage environment and location. Modes can be selected easily by setting the connectors on the circuit board.

Normal Office

Providing efficient ventilation while maintaining air supply/exhaust balance...

Power air supply & air exhaust

Most widely used pattern forming the basis for traditional ventilation design.

This ensures the most efficient ventilation while maintaining the air supply/exhaust balance. The optimum ventilation rate can be maintained by selecting the Power air supply/exhaust mode with both the air supply & air exhaust switched to "High"*8 (or "Extra high") on the main unit.

For example in an office, the control switches can be set to "High" to run in Power air supply/exhaust mode when a large number of people are in the office, then switched to "Low" to run in energy saving ventilation mode late at night or on holidays when there are few people present.

Small Office or Building

Using Lossnay compensates for using extractor fans...

Power air supply

In smaller offices or buildings, there may be insufficient air supply to the main rooms or offices due to the excessive exhaust via extractor fans located in toilets or kitchen areas.

Setting to Power air supply mode with the air supply switch on "High" (or "Extra high") and the air exhaust switch on "Low" on the main unit, allows efficient ventilation while making up for the insufficient air supply.

Industrial Areas

Priority on air exhaust...

Power air exhaust

In locations such as industrial working areas, dirty air must be exhausted swiftly.

Setting the Power air exhaust mode with the air supply switch on "Low" and the air exhaust switch on "High" (or "Extra high") on the main unit allows efficient extraction of odours.

Maintaining the area at a negative air pressure also prevents dirty air from spreading to surrounding areas.

Ventilation Mode	Supply Airflow	Exhaust Airflow
Power air supply/exhaust mode	High	High
Power air supply mode	High	Low
Power air exhaust mode	Low	High
Energy-saving ventilation mode	Low	Low

*8 "High" can be further set to "Extra high" using the dip switch

Ideal Lossnay Applications and Case Studies

Ideal **Lossnay** applications

Restaurants

A restaurant can never be too clean and its air never too fresh.

The atmosphere of a restaurant is crucial to securing and retaining customers. Cleanliness is the key to an attractive atmosphere and restaurants devote significant effort to ensuring their premises are as such. Sanitation and cleanliness, however, are not enough.

No matter how clean a restaurant may look, if there are unwanted odours lingering in the air, all those efforts go to waste and the restaurant's clean image is tarnished.

For these reasons, Lossnay's superior ventilation capabilities ensure that every breath is a fresh one and a pleasant environment is maintained for guests at all times. Lossnay also keeps owners happy with its remarkable heat recovery technology that supplies fresh outdoor air with minimal change to indoor temperature and humidity, saving on energy costs.

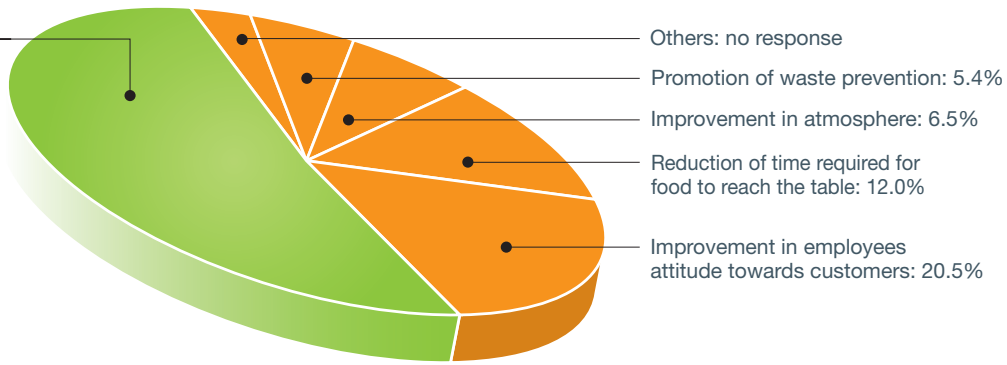
If it's Lossnay

- **Lossnay works to remove stale air and supply fresh, clean air free of the odours associated with cooking, cigarettes, staff and diners.**
- **Change in room temperature and humidity is kept to a minimum thanks to the heat-recovery function.**
- **Lossnay operates very quietly, so those in the midst of enjoying their meals will not be bothered by any excess noise.**
- **A large array of Lossnay sizes are available to match the layout of just about any restaurant.**

What would you most like to see improved in restaurants?

52.3%

Improvement in overall cleanliness



1996 Foodstuffs Consumption Monitor, Second Periodic Survey
(Ministry of Agriculture, Forestry and Fisheries, Japan)

Ideal **Lossnay** applications

Schools

Creating the best possible environment for our children to succeed.

No matter how good a school's curriculum, no matter how positive and enthusiastic the teacher, a child who does not feel well will have a hard time learning.

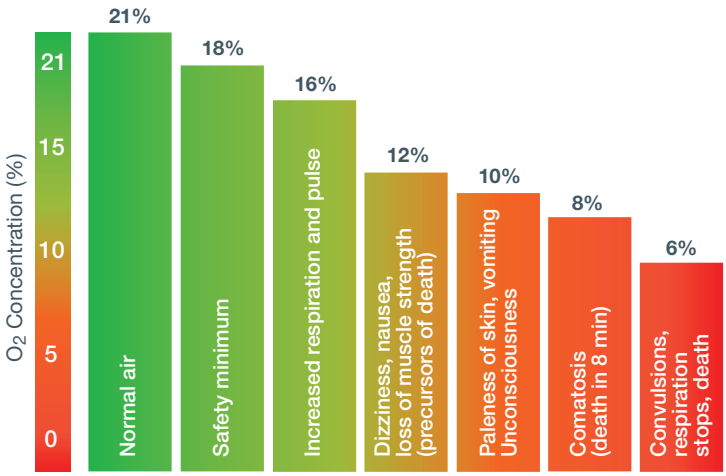
A constant flow of fresh air is nowhere as important as it is in our schools. In classrooms where large numbers of students are gathered for long periods of time, carbonic gases have the tendency to accumulate, decreasing the levels of oxygen that are vital for alertness and concentration.

This is especially true during the winter months when windows tend to remain closed. Lossnay ventilates fresh outdoor air into classrooms to replenish the supply of oxygen and expels not only carbon dioxide, but also other pollutants and odours that inevitably sully the air.

If it's Lossnay

- **The continuous influx of fresh, outdoor air and the exhaust of stale, indoor air ensure that the indoor oxygen level is maintained at just the right balance for comfort and health.**
- **Occupants have the luxury of breathing fresh air at all times, even in highly air-tight buildings.**
- **Lossnay's sound attenuation qualities prevent outside noise from penetrating into the room, helping to maintain a quiet environment for productive study.**
- **Heat-exchange technology prevents fluctuations in temperature creating significant energy savings when either heating or cooling a room.**
- **Change in room temperature and humidity is kept to a minimum thanks to the heat-recovery function.**

O_2 Concentration and Deficiency



Offices

Fresh air - improving the overall quality of working life.

Many office buildings today are heavily insulated, air-tight structures with little or no natural ventilation. The unnatural environment created by air conditioners without added ventilation is a breeding ground for bacteria. Factor this in with the accumulation of pollutants and odours in the form of formaldehyde, pollen, dust, carbon dioxide and the necessity of ventilation becomes ever more apparent. In fact, poorly ventilated buildings can give rise to Sick Building Syndrome, a malady that is known to cause headaches, sore eyes, itching and loss of concentration.

This results not only in discomfort at best and sickness at worst for the building's occupants, but also the reduced productivity of the workforce. Fresh air, effectively ventilated throughout the building is therefore essential to the overall quality of working life.

If it's Lossnay

- **Simultaneous forced-air supply and exhaust introduces fresh, outdoor air into the building, effectively ventilating even fully airtight structures.**
- **Multiple split-type units operate independently of one another, simplifying system set up and ensuring a layout that optimally matches nearly any office design.**
- **Lossnay operation can be interlocked with the air conditioning system operation.**
- **Heat that is commonly lost due to ventilation is collected and reused thanks to the Lossnay Core, reducing an air conditioner's energy load and cutting operating costs.**
- **Change in room temperature and humidity is kept to a minimum thanks to the heat-recovery function.**

Lossnay

Case Study
PACAIR

A breath of fresh air for PACAIR employees

When PACAIR moved into their premises, Mitsubishi Electric was their MVHR manufacturer of choice.

Nigel Palmer, the Director of this busy value added reseller wanted to ensure his staff enjoyed maximum comfort at minimum running costs so the use of the VL-100 single room total heat exchanger was the perfect solution for PACAIR's office.

The unit works alongside an LGH-50RX5-E and Heat pump VRF on the first floor to introduce clean, fresh air whilst removing stale air with minimal heat loss.

Lossnay total heat recovery system captures not only sensible heat energy from the outgoing air, but also latent energy which helps maintain moisture levels.

"We want our clients & staff to enjoy a fresh and comfortable working environment all year round but we also want to know that our system is as cost effective as possible" said Nigel Palmer, PACAIR Director.

Installation Summary

PACAIR chose the wall mounted unit to minimises installation

Low noise levels

Lossnay provides total heat recovery

The VL-100 was chosen because of its simple installation and low maintenance. The unit's excellent sound attenuation and low power consumption make the Lossnay unit the ideal choice for PACAIR.

Lossnay

Case Study

De Montfort University

University offers students optimum environment for working

De Montfort University is proud of its state-of-the-art facilities and the supportive environment it offers to students. In order to provide the best possible conditions for study the University has installed premium ventilation and air conditioning to some of the rooms within one of its properties, Edith Murphy House.

Installation Summary

De Montfort University has state-of-the-art facilities to improve student learning

Lossnay provides university with fresh air ventilation

Mechanical Ventilation with Heat Recovery reduces overall running costs

The provision of good ventilation and air conditioning offers a healthier and more comfortable environment in which to live and work. It also improves people's ability to concentrate.

Engineering and development consultancy, Mott MacDonald, was tasked by the University to design a system that would provide it with the optimum solution for Edith Murphy House.

"With the introduction of stricter building regulations, modern buildings are becoming more air tight which makes the need for fresh air ventilation key to maintaining a healthy and comfortable internal environment," said Stuart Bellamy, Principal Electrical Engineer at Mott MacDonald. "Basic ventilation systems allow all the energy spent in heating or cooling an interior to be lost as soon as fresh air is introduced to a room, however, mechanical heat recovery ventilation units such as Lossnay provide an ideal way to extract stale pollutant air and introduce fresh, clean air without compromising on internal temperature and humidity."

The decision to install a Lossnay system has provided the University with the perfect answer to deliver excellent ventilation, with the added advantage of low running costs.

Lossnay

Case Study

HBS Group Southern

Fresh air ventilation that's so good installers use it themselves

Heating and ventilation specialist HBS Group Southern, based in Whiteley, Hampshire, is an expert in providing heating and cooling systems to the industrial and commercial sector.

Installation Summary

Lossnay recovers around 80% of wasted heat from the outgoing exhaust air

Lossnay can work independently or alongside existing heating and cooling systems

The units also offer a summer free cooling function

Its team of experienced, skilled professionals have taken the company from humble beginnings in 1950, with just 5 employees, to one of the fastest-growing, family owned companies in the South-East.

So when it came to selecting a fresh air ventilation system for its new Head Office the company was well placed to select the best.

"Our installers are tasked with ensuring clients receive the most energy efficient, cost-effective solutions possible and because we appreciate the quality of the product and the technical back-up service they offer, we sell and install a range of Mitsubishi Electric equipment," said Kevin Bull, Managing Director of HBS Group Southern. "We wanted the same high standard of kit for ourselves so we chose to install a selection of their products, including the Lossnay RX5 fresh air ventilation system."

Lossnay is an effective ventilation system that works alongside the Mitsubishi Electric air conditioning that has also been installed, to provide employees with the optimum environment in which to work comfortably and safely.

The Lossnay technology reduces overall energy costs by extracting stale air from a room and recovering the heating or cooling energy from it; this energy is then used to warm or cool incoming fresh air.

Using recovered energy means that the system can save up to 30% on the initial capital costs of a heating and cooling plant.

Lossnay brings fresh air technology to J D Wetherspoon

When J D Wetherspoon, one of the UK's largest pub, hotel and restaurant chains invested £2M in a new pub restaurant called The Cribbar in Newquay, Cornwall, it wanted to create optimum comfort for its customers.

The company is committed to driving down its carbon footprint and energy costs, whilst giving customers the perfect environment in which to enjoy a meal and a drink. Crucial to achieving this goal is a design with the best heating, cooling and ventilation system possible.

"Energy consumption is a necessary part of business but we take every opportunity we can to reduce ours, together with our carbon footprint," said Jon Randall, Head of Developments and Acquisitions for J D Wetherspoon. "The installation of energy efficient Mr Slim heat pumps combined with Lossnay heat recovery ventilation has helped us to meet both of these goals and offers us the added benefit of reduced running costs."

Installation Summary

J D Wetherspoon invested £2M into The Cribbar in Newquay

The company is working towards a more environmentally-sustainable future

Lossnay can even provide The Cribbar with cool fresh air without the need for any air conditioning

During summer months Lossnay can even provide The Cribbar with cool fresh air without the need for any air conditioning. When the outdoor temperature is lower than the indoor room temperature (typically in the spring time and during summer evenings), Lossnay will introduce fresh, cool air into the building and the air conditioning system can be turned off.

Lossnay

Case Study

Chapelford Village Primary School

School aims to score 'Very Good' in BREEAM rating with heat recovery technology

A new state-of-the-art Primary School has opened its doors in Cheshire to offer pupils and staff a fresh, comfortable and highly energy efficient place of learning.

Chapelford Village Primary School, near Warrington is a £4.3 million building project which has relocated the existing and aging facility at nearby Sycamore Lane Primary.

Installation Summary

New state-of-the-art Primary School in Cheshire

£4.3 million building project

18 LGH-100RX5-E Lossnay mechanical heat recovery ventilation units installed

The entire building has been built to the latest standards of thermal insulation to ensure it is energy efficient, with the local authority targeting a 'Very Good' BREEAM rating.

Modern buildings are almost airtight and this can lead to problems with the build-up of stale air. For Chapelford, this has been solved with the installation of 18 LGH-100RX5-E Lossnay mechanical heat recovery ventilation units. These keep the classrooms full of fresh air, without throwing away all the energy used to heat the spaces.

The LGH-100RX5-E works by extracting up to 80% of the heat energy from the outgoing air and transferring it to heat up the incoming air flow. This significantly reduces the amount of energy needed to bring the fresh outdoor air up to room temperature and keeps the classrooms fresh and airy all year round.

A bypass mode also allows cool fresh air to be introduced during the hot summer months effectively giving the classrooms free cooling during the summer term.

The school is also benefiting from four Ecodan CAHV heat pump boilers which heat the building's underfloor heating system. Six Mr Slim air conditioning units are also installed in various hot spots throughout the school such as the Server Room and the teachers' common room.

The Lossnay Product Range

Product Information

VL-100(E)U$_5$-E

Wall Mounted VL-100(E)U$_5$-E

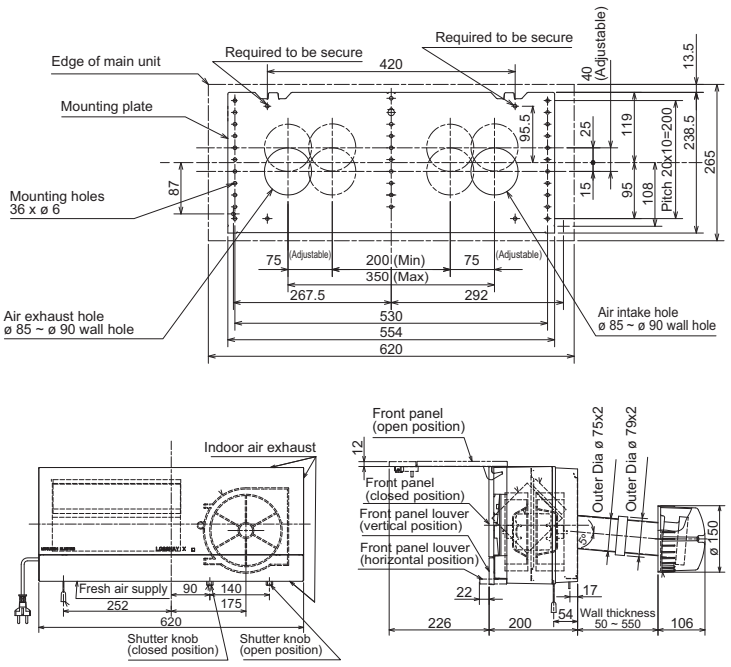
The VL-100(E)U$_5$-E single room total heat exchangers are particularly suited to small offices which require the introduction of fresh, clean air along with removal of stale air with minimal heat loss.

Key Features

- Effective fresh air ventilation
- Efficient recovery of heating/ cooling energy
- Improved air quality & comfort
- Good sound attenuation
- Reduces heating/ cooling costs
- Low power consumption
- Simple installation
- Low maintenance
- New model arriving Autumn 2013

MODEL		RESIDENTIAL WALL MOUNTED VL-100(E)U$_5$-E
ELECTRICAL POWER SUPPLY		240V, 50Hz
PHASE		Single
POWER CONSUMPTION (W)	Low	17
	High	34
AIRFLOW (m^3/h)	Low	61
	High	106
SOUND PRESSURE LEVEL	Low	27
	High	38
TEMPERATURE	Low	79
EXCHANGE EFFICIENCY (%)	High	72
WEIGHT (kg)		7.5
DIMENSIONS (mm)	Width	620
	Depth	200
	Height	265
DUCT SIZE (mm)		2xø75
FUSE RATING (BS88) - HRC (A)		6
MAINS CABLE No. Cores		3

DIMENSIONS



If the wall is thicker than 550mm, use the extension pipes and the pipe extension joints (separately sold parts).*8

*7 The VL-100U$_5$-E includes a pull cord switch to control the unit.
NOTE: The VL-100EU$_5$-E is available without a pull cord switch and with the option to fit a field supplied external wall switch.
*8 Extension pipe kit available as an optional extra.

DC Lossnay

The DC Lossnay is ideal for schools and offices.

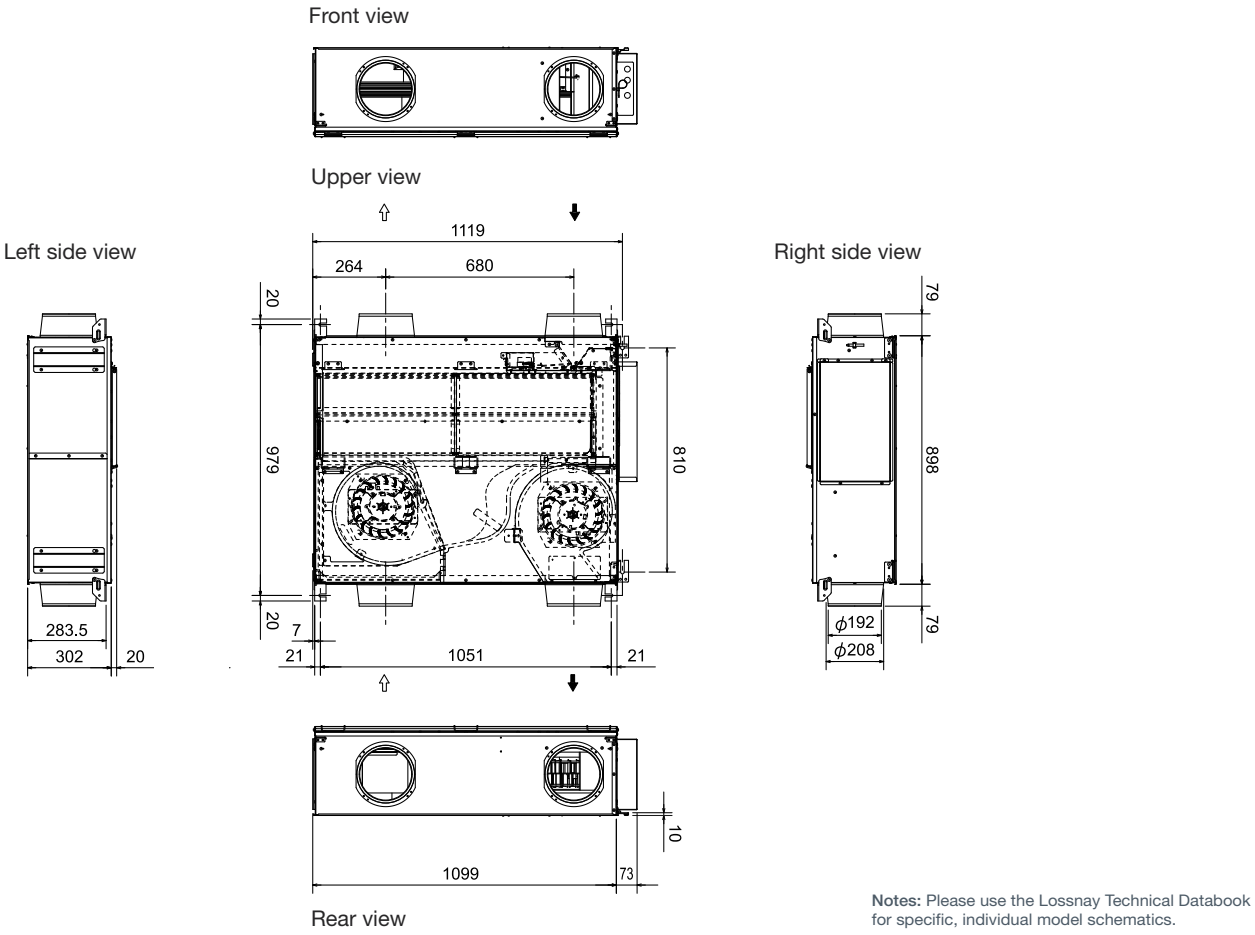
The efficient DC fan motors are highly robust and designed to consume minimal energy to ensure the highest levels of efficiency and control with quiet operation whatever the fan speed.

Key Features

- Effective fresh air ventilation
- Efficient recovery of heating/ cooling energy
- Hyper Eco Paper Core facilitates total heat exchange (both sensible and latent heat)
- Reduces heating/ cooling costs
- Improved air quality & comfort
- DC fan motors – low power consumption & low noise
- 5 variable fan speeds
- Bypass mode for 'free cooling', including new power bypass mode to supply a greater volume of fresh, cool air - for instance during summer nights
- Low maintenance
- Fan speed optimisation based on CO_2 levels using the Procon Lossnay-5-FSC interface accessory
- SAP Appendix Q eligible
- ECA eligible (Lossnay core only)

MODEL		LGH-50RSDC-E1										
ELECTRICAL POWER SUPPLY		220-240V, 50Hz										
STARTING CURRENT (A)		2.5										
VENTILATION MODE		LOSSNAY						BYPASS				
FAN SPEED		1	2	3	4	5	POWER	1	2	3	4	5
INPUT POWER (W)		165	90	41	22	14	265	164	90	40	21	14
AIRFLOW (m^3/h)		395	305	215	144	90	468	395	305	215	144	90
AIRFLOW (l/s)		110	85	60	40	25	130	110	85	60	40	25
EXTERNAL STATIC PRESSURE (Pa)		100	60	30	15	7	135	100	60	30	15	7
SOUND PRESSURE LEVEL (dBA)		31	26.5	21	18	18	35	31	26.5	21	18	18
TEMPERATURE EXCHANGE EFFICIENCY (%)		77.5	81.5	85.5	88	90	-	-	-	-	-	-
ENTHALPY EXCHANGE EFFICIENCY	Heating	71	75	79	82	84	-	-	-	-	-	-
	Cooling	68	72.5	77	80.5	83	-	-	-	-	-	-
WEIGHT (kg)		48										
DIMENSIONS (mm)	Width	1099 + 73										
	Depth	898										
	Height	302										
DUCT SIZE (mm)		200										
FUSE RATING (BS88) - HRC (A)		6										
MAINS CABLE No. Cores		3										

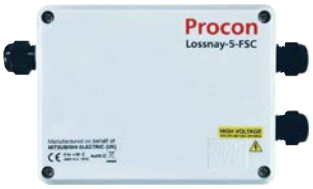
DIMENSIONS



Notes: Please use the Lossnay Technical Databook for specific, individual model schematics.

LOSSNAY-5-FSC

The Procon Lossnay-5-FSC interface is able to control up to 16 Lossnay units and enables automatic fan speed control based on CO_2 levels (5 fan speeds on DC Lossnay and 3 fan speeds on RX5) when used in conjunction with a third party CO_2 sensor. A PIR sensor/ BEMS can also be connected to the Lossnay units to allow the unit to only run when a building/ room is occupied.



OPTION CONTROLLER

Part No. DC-5 Speed

Lossnay RX5

The Lossnay RX5 series has been developed for commercial applications in particular. With a large range of airflow rates ranging from 19l/s up to 556l/s across 9 different units, the RX5 series is highly suitable for any commercial application.

Key Features

- Effective fresh air ventilation
- Total heat exchanger
- Highly efficient recovery of heating / cooling energy
- "Hyper Eco Core". At only 25µm the Lossnay core uses one of the thinnest papers in the world to achieve high enthalpy exchange efficiency
- Reduces heating / cooling costs
- Free cooling function
- Good sound attenuation
- Low maintenance
- Flexible and easy installation
- Fan speed optimisation based on CO_2 levels using the Lossnay-5-FSC interface (automatic fan speed control is with 3 speeds)
- High level of control using PZ-60DR-E Lossnay controller
- ECA eligible (Lossnay core only)

MODEL			COMMERCIAL LGH-15RX5-E	COMMERCIAL LGH-25RX5-E	COMMERCIAL LGH-35RX5-E	COMMERCIAL LGH-50RX5-E	COMMERCIAL LGH-65RX5-E	COMMERCIAL LGH-80RX5-E	COMMERCIAL LGH-100RX5-E	COMMERCIAL LGH-150RX5-E	COMMERCIAL LGH-200RX5-E
ELECTRICAL POWER SUPPLY			220-240V, 50Hz								
STARTING CURRENT (A)			0.8	0.9	2.4	3.0	4.4	3.8	4.6	7.3	11.9
RUNNING CURRENT (A)		Extra Low	0.15	0.18	0.30	0.40	0.60	0.65	0.90	-	-
		Low	0.25	0.27	0.51	0.85	1.20	1.45	1.70	2.90	3.40
		High	0.38	0.48	0.74	1.00	1.50	1.60	2.10	3.20	4.20
		Extra High	0.46	0.55	0.92	1.25	1.80	1.75	2.40	3.50	4.80
INPUT POWER (W)		Extra Low	35	42	69	95	140	145	200	-	-
		Low	59	62	116	190	265	340	380	680	785
		High	90	114	169	228	322	370	475	740	980
		Extra High	110	129	212	286	380	415	535	830	1100
AIRFLOW (m^3/h)*9		Extra Low	70	105	115	180	265	355	415	-	-
		Low	110	155	210	390	520	700	755	1300	1580
		High / Extra High	150	250	350	500	650	800	1000	1500	2000
AIRFLOW (l/s)*9		Extra Low	19	29	32	50	74	99	115	-	-
		Low	31	43	58	108	144	194	210	361	439
		High / Extra High	42	69	97	139	181	222	278	417	556
EXTERNAL STATIC PRESSURE (Pa)		Extra Low	14	9	9	10	8	20	18	-	-
		Low	40	25	30	60	50	95	60	100	65
		High	70	60	80	90	80	120	110	135	105
		Extra High	105	85	160	155	120	150	170	175	165
SOUND PRESSURE LEVEL (dBA)	Lossnay	Extra Low	18	19	18	19	22	22	22	-	-
		Low	23.5	21.5	23	28	31.5	31	32.5	35	34
		High	27	26	29.5	32	33	33	35	37.5	38
		Extra High	28	27	32	34	34.5	34.5	37	39	40
	Bypass	Extra Low	19	19	18	19	22.5	22	22	-	-
		Low	24	22	24	29	30.5	32	33	37	35
		High	28	26.5	30.5	32.5	33.5	34	36	39	39
		Extra High	29	27.5	32.5	35	35	35.5	38	40.5	41
TEMPERATURE EXCHANGE EFFICIENCY (%)		Extra Low	85.5	83.5	88	86	86	87.5	87	-	-
		Low	84	81.5	85	81	80	80.5	83	81	83
		High	82	79	80	78	77	79	80	80	80
		Extra High	82	79	80	78	77	79	80	80	80
ENTHALPY EXCHANGE EFFICIENCY (%)	Heating	Extra Low	81	77.5	81.5	78	78	79.5	80	-	-
		Low	77.5	74	76.5	71	70.5	72.5	74	72.5	73.5
		High / Extra High	75	69.5	71.5	69	68.5	71	72.5	72	72.5
	Cooling	Extra Low	81	76	81	77	77	79.5	79	-	-
		Low	76.5	72.5	75.5	68	68.5	71.5	73	71.5	72
		High / Extra High	73	68	71	66.5	66	70	71	70.5	71
WEIGHT (kg)			20	20	29	32	40	53	59	105	118
DIMENSIONS (mm)		Width	735	735	874	1016	954	1004	1231	1004	1231
		Depth	780	780	888	888	908	1144	1144	1144	1144
		Height	273	273	315	315	386	399	399	798	798
DUCT SIZE (mm)			100	150	150	200	200	250	250	(SA,RA)250 (OA,EA)270x700	(SA,RA)250 (OA,EA)270x700
STANDARD FILTER*10			EU-G3	EU-G3	EU-G3	EU-G3	EU-G3	EU-G3	EU-G3	EU-G3	EU-G3
FUSE RATING (BS88) – HRC (A)			6	6	6	6	6	6	6	10	16
MAINS CABLE NO. CORES			3	3	3	3	3	3	3	3	3

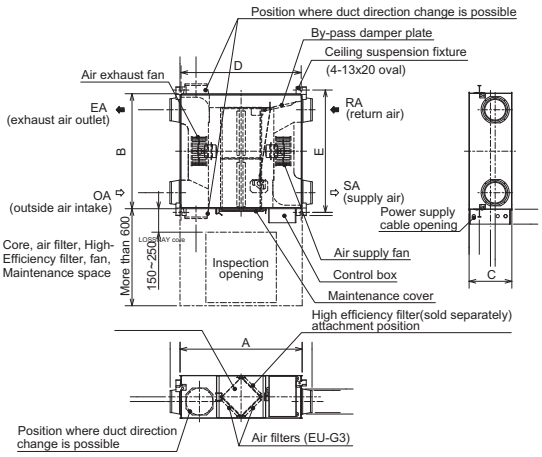
Notes: Running Current, Input Power and Recovery Efficiency are based on the above airflow rate, power supply 240v, 50Hz. Extra High and High mode available via dip switch setting. Extra Low mode not available on sizes 150 and 200. Noise measured at 1.5m under the centre of panel.

*9 Airflow tested to Japan industrial standards JIS B 8628.

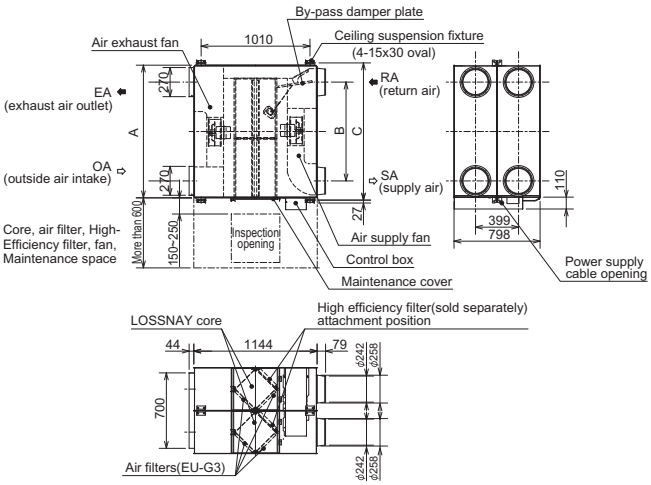
*10 EU-F7 filter available as optional parts.

DIMENSIONS

LGH-15-100RX5-E



LGH-150-200RX5-E



Notes: Please use the Lossnay Technical Databook for specific, individual model schematics.

MODEL	DIMENSIONS A	B	C	CEILING SUSPENSION FIXTURE PITCH D	E	NOMINAL DIAMETER
LGH-15RX5-E	780	735	273	768	782	ø100
LGH-25RX5-E	780	735	273	768	782	ø150
LGH-35RX5-E	888	874	315	875	921	ø150
LGH-50RX5-E	888	1016	315	875	1063	ø200
LGH-65RX5-E	908	954	386	895	1001	ø200
LGH-80RX5-E	1144	1004	399	1010	1036	ø250
LGH-100RX5-E	1144	1231	399	1010	1263	ø250

LGH-150RX5-E	1004	690	1045
LGH-200RX5-E	1231	917	1272

ACCESSORIES / OPTIONAL EXTRAS

High Efficiency Filter

PZ-25RFM - for LGH-15RX5-E / LGH-25RX5-E
PZ-35RFM - for LGH-35RX5-E
PZ-50RFM - for LGH-50RX5-E
PZ-65RFM - for LGH-65RX5-E
PZ-80RFM - for LGH-80RX5-E / LGH-150RX5-E (2 sets)
PZ-100RFM - for LGH-100RX5-E / LGH-200RX5-E (2 sets)

The High Efficiency Filter
(colourimetric method 65% EU-F7) can be incorporated inside the Lossnay LGH-RX5-E unit easily

PZ-60DR-E Lossnay Controller

PZ-60DR-E Lossnay Controller

One Lossnay PZ-60DR-E controller can control up to 15 Lossnay RX5 units.

Key Features

- Weekly timer function

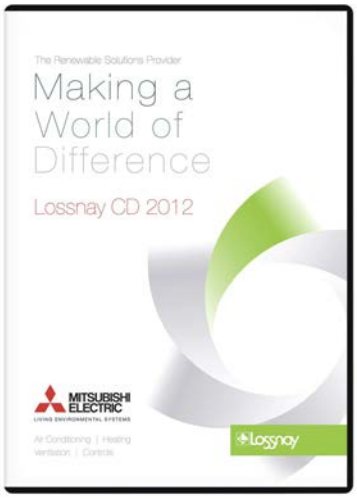
This function gives the ability to pre-set air volume requirements at different intervals. For instance users can set different fan speeds for different times of the day according to requirement which in turn aids in reducing power consumption. It is also possible to set different daily fan speed patterns for different days of the week.

- Night purge

This is a key feature of the controller and can be used during the summer months to automatically ventilate and cool a room at night where heat energy may accumulate while the air conditioning is switched off, reducing the air conditioning load the next morning.

- Fan speed selection
- Ventilation mode selection
- Error indication
- Maintenance indication

Lossnay CD



Lossnay CD

Mitsubishi Electric's Lossnay CD provides details on the complete range of Lossnay RX5 models in an easy to access format that will help users deliver both fresher indoor environments and the best levels of energy efficiency possible.

The CD includes manuals, sound data and presentations, as well as a special calculation software tool which shows users how to use Lossnay to reduce the heating or cooling load within a room. It also calculates how quick the technology's payback period will be when compared to the running costs of a conventional ventilator.

Domestic Lossnay CD

Mitsubishi Electric's Domestic CD provides information on the VL and DC Lossnay ranges, which are designed for small installation environments. The CD includes manuals, PI sheets, presentations and case studies.

Please contact Mitsubishi Electric for your free Lossnay CD.

Responsible, sustainable manufacturing

As a leading provider of environmental technologies, Mitsubishi Electric prides itself on using responsible, sustainable manufacturing processes that take energy use, efficiency and the impact on the environment very seriously.

Our production facilities are committed to sustainable business practices such as energy and resource efficiency, minimising ecological impacts and reducing greenhouse gas emissions.

In line with our aim to improve all round performance and energy efficiency throughout all our operations, we set and adhere to the highest environmental standards to protect the world in which we live.

Global Environmental Vision 2021

Mitsubishi Electric's Global Environmental Vision 2021 sets a goal for a lower emission future that influences all our policy decisions.

www.mitsubishielectric.com/eco

Green Gateway

Green Gateway is Mitsubishi Electric Living Environmental System's commitment to the environment. It strives to instill positive changes in Mitsubishi Electric's own operations as well as seeking to influence those of its customers.

www.greengateway.mitsubishielectric.co.uk

ECA

The RX5 and DC Lossnay cores are listed on the Carbon Trust Energy Technology List and are eligible for the Enhanced Capital Allowance (ECA) tax benefit.

www.decc.gov.uk

Sap Appendix Q Eligible

The DC Lossnay is SAP Appendix Q listed and therefore allows for additional CO_2 savings benefits above the standard SAP MHRV default values by allowing you to enter performance data specific to that particular product rather than the default values.

http://www.sap-appendixq.org.uk/

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