

Airepod AP-MVHR-LL & AP-MVHR-RL



The Airepod system is a 90% efficient whole house/ apartment heat recovery unit which uniquely also provides a minimum of 70% of the property'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.

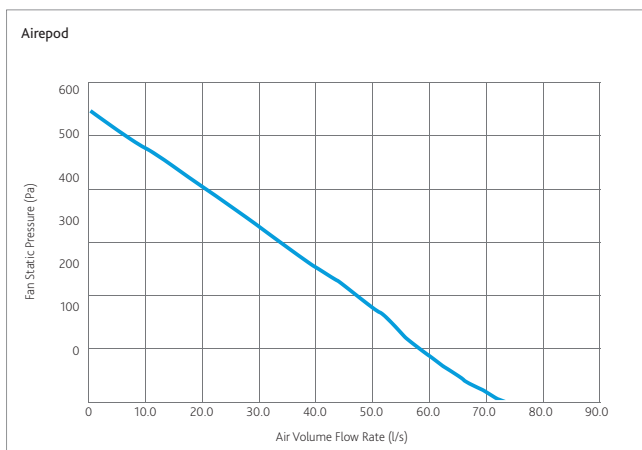
The 70% base heating load is delivered by an LTHW heating coil within the Airepod fed from either central CHP or energy centre. The remaining 30% of heat is provided by electric heaters within the duct system, or fan-coils in higher specification apartments.

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 SAP Product Characteristics Database.

AIREPOD How does it work?



Performance



SAP 2012 Test Results

	AP-MVHR-LL / AP-MVHR-RL	
Application	Specific Fan Power (W/l/s)	Heat Exchange Efficiency
Kitchen + 1 Wet Room	0.67	86%
Kitchen + 2 Wet Rooms	0.66	86%
Kitchen + 3 Wet Rooms	0.7	86%
Kitchen + 4 Wet Rooms	0.8	86%
Kitchen + 5 Wet Rooms	0.89	85%
Kitchen + 6 Wet Rooms	1.07	85%

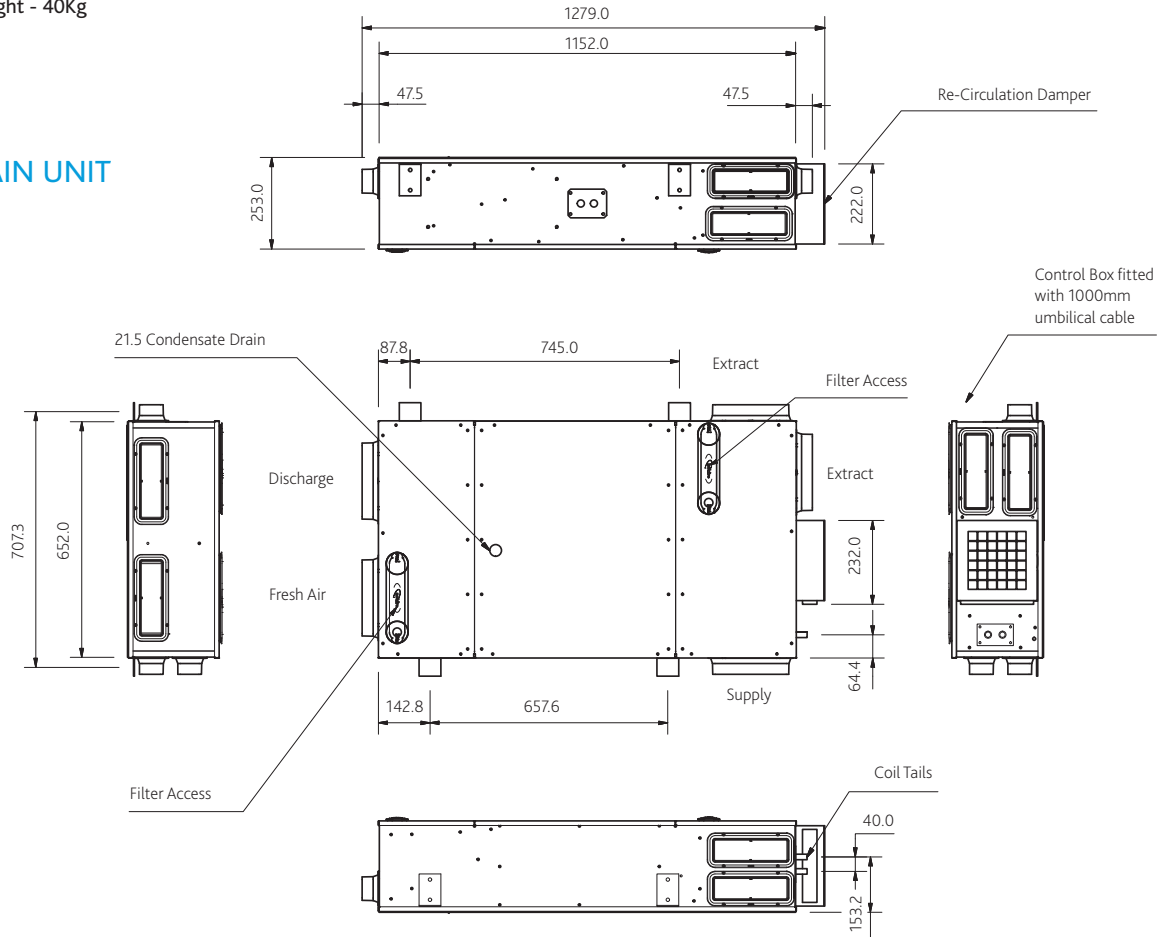
Call for further information
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General Arrangement

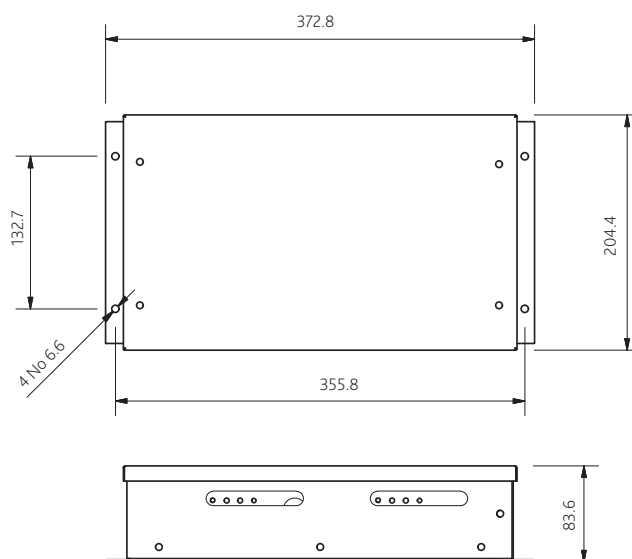
DIMENSIONS (mm)

Weight - 40Kg

MAIN UNIT



CONTROL BOX



Consultants Specification

OPERATION

The Nuair 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 (moisture-laden 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 Nuair 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 Nuair 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 230V 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 230V 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 230V 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 Nuair 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.

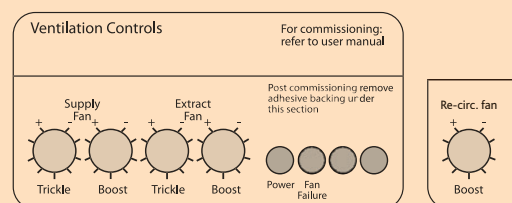
Ductwork connection spigots (sheet metal or PVC mouldings) shall be provided.

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. 230V 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.



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

Heating Enable terminals (230V 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.

UNIT SERVING KITCHEN AND BATHROOM

