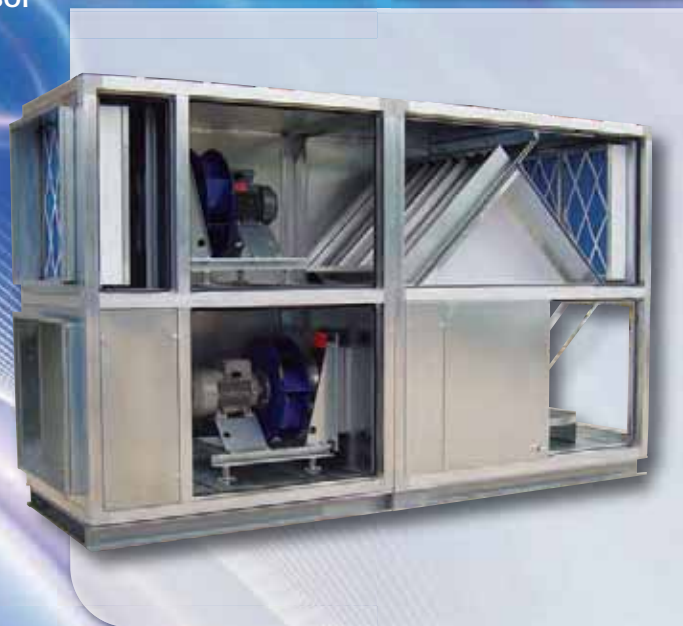


# Ecovent NRG

## HIGH EFFICIENCY HEAT RECOVERY

- low energy fans
- fitted controls with touch screen remote
- wide range of models for ceiling void, plantroom and outdoor location
- L2 compliant classroom unit
- All units suitable for demand ventilation using a VES air quality sensor



### **VES AIR HANDLING UNITS**

*part of a complete range of innovative flexible products from the HVAC experts*

# EcoventNRG

## Why choose VES

VES have been supplying products for the HVAC industry for over 40 years, and have the in-depth knowledge and resources to provide solutions to all ventilation related requirements. We are a substantial British manufacturing company with over 220 employees, several factories plus a regional base in the north of England, and sales and service engineers located throughout the UK.

## Complete range of products

The product range encompasses all types of ventilation products, including those required for commercial, industrial, public and domestic buildings. The emphasis is on low energy products and sophisticated controls to meet the requirements of the Building Regulations.

The range extends from a small bathroom extract fan up to a mighty central station air handling unit. There are specialist heat recovery units, high temperature fans for kitchen hood extract; duct, wall, ceiling and roof units; low noise products and silencers; fitted controls.

## High quality, flexible solutions

VES operate a quality assurance system to ISO 9001, monitored by the BSI. The air movement products are tested in house to BS 848 Part 1, and submitted for external testing and approval when necessary.

VES specialise in bespoke designs for ventilation units, and whatever the issue, be it space, noise, temperature etc, can provide a design solution to meet the requirements of the project.

## Superior customer service

From the moment we receive your enquiry to delivery and beyond, we have the people in place to give excellent customer service.

The VES after sales service covers the whole of the UK and is among the best in the industry.

## Experience and expertise

VES employ a range of experts in disciplines including air movement, noise control, air conditioning, controls, electrics and product refurbishment, and we have key staff who have worked at VES for many years.

## Manufactured in the UK

VES has over 12000m<sup>2</sup> of manufacturing and stores space, and has state of the art sheet metalworking equipment, plus a large powder coating plant. VES also has a substantial controls department, and makes components such as dampers and electric heaters in-house. This not only provides employment for local people, but also many suppliers around the UK.

Ecovent has been the acknowledged market leader in heat recovery air handling units for over 10 years. Ecovent NRG is a further development, offering more choice and considerable advances in energy saving.

The expanded range includes three low profile ECO NRG P models with improved specific fan power, higher outputs, bypass damper to the plate heat exchanger and double skinned case.

The size 2 unit offers a duty of 0.35m<sup>3</sup>/sec against 150Pa external resistance, with an SFP of less than 2.2 watts/litre/sec - ideal for classrooms.



## Contents:

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# HEAT RECOVERY AIR HANDLING UNITS

## One range ... many options

### ECO NRG P units Size 0, 1 and 2 key features:

- One size case with three fan options
- Air volumes up to  $0.40\text{m}^3/\text{sec}$
- Low energy fans, with low SFP
- Double skinned case
- Ideal for ceiling void or roof space
- Top or bottom access
- Weatherproof construction available
- Prewired fan speed controller and isolator
- Bypass damper to heat exchanger
- Optional fitted controls package
- Built-in LPHW coil or EHB
- Circular spigot connections with duct seal



### Size 3, 4, 5 & 6 key features:

- Air volume up to  $1.0\text{m}^3/\text{sec}$
- 25mm double skinned cases, plantroom or weatherproof, flat or stacked
- Low energy fans with low SFP
- Face and bypass damper to heat exchanger
- Built-in LPHW coil or EHB
- Optional fitted controls prewired to all components
- Unit access is at the top or bottom on flat units and on the side of stacked units
- Units supplied in two sections



### Size 7, 8 & 9 key features:

- Air volume up to  $2.5\text{m}^3/\text{sec}$
- 50mm cases constructed to EN1886 standard, including low air leakage to rating L3
- Cases available - plantroom or weatherproof, flat or stacked
- Units supplied in two sections
- Low energy plug fans with prewired inverter
- Face and bypass damper to heat exchanger
- Built-in LPHW coil or EHB
- Optional fitted controls, prewired to all components
- The direct drive plug fans ensure quick and accurate site commissioning, complete with fan speed control, low energy use and low SFP, plus low maintenance



### Better by design

- All Ecovent NRG units contain a cross flow plate heat exchanger which has no cross contamination of moisture, smells or fumes.
- All units have a filter to both inlets and a drain pan to the exhaust side of the heat exchanger.
- Quick change plug connectors fitted to all fans and motors
- All units have been tested to BS 848 Part 1.

### Design options

The Ecovent NRG range can be readily adapted to suit your particular requirements. This will not take a lot of time at quoting, design or production stage; VES are experts in special air handling units.



- > For example, the units size 3 - 6 can be upgraded to EN 1886 construction. This will add 50mm to the width and height, and 100mm to the length.
- > Sizes 7, 8 and 9 can be scaled down to standard 25mm double skinned case construction if preferred.
- > Twin extract fans with autochangeover system. The fans will be mounted in parallel to avoid loss of duty.
- > Heavy weight case panel infill to further reduce noise breakout.
- > Fitted cooling or heat pump coils. It may be necessary to make the unit wider or go to the next size due to the face velocity and air pressure drop through the coil.
- > Fitted silencers available for all models. These can be powder coated to match a weatherproof case and supplied with support feet and inlet or outlet cowls if required.
- > Increased corrosion protection for coastal, swimming pool or food processing applications. Internal powder coat paint finish or stainless steel panelling available.
- > Special colour - advise BS or RAL number.
- > Ecobox plate heat exchangers available in separate housings.

### Electric Heater Batteries

Calculate the heat output required using this formula:

$$\text{Heat Output} = \text{Air Volume} \times \text{Constant} \times \text{Temperature Rise}$$

$$\text{kW} = \text{m}^3/\text{sec} \times 1.21 \times \Delta^{\circ}\text{C}$$

Each EHB has a fitted manual reset high temperature cut-out set at 130°C. In addition, when fitted controls are supplied, VES fit a further high temperature cut-out rated at 70°C within the Ecovent NRG unit, together with an airflow pressure switch piped to each side of the supply fan. These are all wired into the controls system, for complete safety in the event of reduced airflow or airflow failure. The heater will be shut down before any damage occurs.

### Hot Water Heaters

Generously sized to provide for all conditions, the coils have two rows of copper tubes and aluminium fins with a minimum spacing of 7 fins per inch. An air vent and drain is provided on the headers, which terminate in a BSP connection. See page 22 for a table of coil outputs.

### Ecovent NRG Controls

**Control panels can be fitted and prewired or supplied for remote location.**

The control panels have been designed to maximise heat recovery, and be easy to use once installed.

Built-in controls mean the unit is fully prewired and tested before despatch.

There will be far less site wiring required. Units in two or more sections will have terminal boxes which require some final site connection by others, using quick change prewired plug connectors.

The touch screen remote controller allows adjustment and monitoring of temperature and time clock. This gives the building occupants adequate control over their environment. Many other functions are available, these can only be accessed by pin number at the remote. The controller has a low voltage screened cable connection to the panel.

## Ecovent NRG Controls Continued

### Control Functions

- Intelligent start up – the unit monitors the start up time over a period of time and automatically adjusts start time each day to meet the room temperature requirements.
- The air temperature is constantly monitored using sensors which check the fresh air intake, supply air duct and extract or room temperature. From this the face and bypass damper on the plate heat exchanger is automatically adjusted for heat recovery, free cooling and cooling recovery.
- Electric heating in up to 9 steps of control.
- Fully modulating hot water heating with frost protection.
- Fan speed controllers can be supplied loose, fitted to unit and prewired into the control system as required. The control system can switch the unit to low speed ie trickle vent using the speed controllers if required.
- DX or chilled water cooling control.
- Should a DX heat pump coil be fitted, an additional sensor will be located after the plate heat exchanger to ensure that an air on temperature of 16°C onto the heat pump coil is provided in heating mode. In this situation a hot water or electric heater must be fitted between the plate heat exchanger and the DX coil.



### Further Control features

- Service interval reminder.
- On screen alarm advising fault.
- BMS volt free contacts for any number of signals.
- If controls fitted and electric heating used, an airflow pressure switch and two high temperature safety cutouts will be fitted and prewired.
- Anti-condensation heater fitted in weatherproof control panels.

## Demand ventilation using an air quality sensor

The VES **AQ Sensor** sends a 0-10 volt signal direct to the fan speed controller to adjust the airflow to maintain desired air quality. Typically, as occupancy increases, air quality decreases, and the fan will speed up to compensate, and vice versa. This is particularly beneficial with the full fresh air **Ecovent NRG** system, especially when they have inverters fitted.



### AQ Sensor Features

- Adjustment of the weighting can be between 100% CO<sub>2</sub> and 100% VOC (volatile organic compounds), and proportions in between, ie 25/75, 50/50 etc. VOC weighting should be used for environments with odours such as smoking, cooking, toilets, garage exhaust fumes etc. CO<sub>2</sub> weighting should be used where people occupancy varies, ie shops, offices, sports clubs etc. Default setting 50/50%.
- Normal range of operation for CO<sub>2</sub> is 450 - 1250 ppm, the defined range from clean fresh air to unpleasant air. This band width can be reduced if required for a faster response.
- The AQ unit sends a 0–10 volt signal direct to the fan speed controller.
- The AQ Sensor is suitable for room location model AQ-R, and duct mounting using model AQ-D.
- The AQ Sensor has further advanced adjustments available for specialised environments.



### ECO NRG P Sizes 0, 1&2



- Compact construction, with 15mm double skinned case and Class O rated thermal/acoustic infill.
- Fitted dual fan speed controller as standard for commissioning, max/min speed, 0-10volt control, and compatible with the AQ air quality sensor.
- High spec fans with backward curved single inlet impellor and external rotor motor.
- High efficiency cross flow heat exchanger with fitted bypass damper and 230 volt actuator.
- Plantroom / ceiling void unit flat orientation with top or bottom access, and weatherproof construction with top access and powder coat paint finish in Signal Grey to RAL 7004.
  - Filter fitted to both supply and extract inlet, pleated, synthetic, grade G4.
  - Circular spigot connections with rubber duct seal.
  - Built in LPHW coil or EHB.
  - Drain pan suitable for use with optional peristaltic pump.
  - Fitted prewired isolator as standard.
  - Units can be hung with drop rods or supplied with optional self levelling feet.
  - Optional fitted and wired control system with touch screen remote.
  - Fans and bypass damper motor fitted with quick change plug connectors for easy maintenance.
  - Optional powder coat paint finish available to plantroom/ceiling void units.

### Electrical Details

| Unit size                      | 0                      | 1                      | 2                      |
|--------------------------------|------------------------|------------------------|------------------------|
| Fan power, watts, each fan     | 140                    | 200                    | 400                    |
| Fan FLC, amps                  | 0.6 amps               | 0.86                   | 1.70                   |
| Fan speed RPM                  | 2530                   | 2420                   | 2370                   |
| Supply                         | 230 volt 1 phase 50 Hz | 230 volt 1 phase 50 Hz | 230 volt 1 phase 50 Hz |
| EHB size, kW                   | 3.0                    | 6.0                    | 9.0                    |
| No 1 phase EHB steps           | 2                      | 4                      | 4                      |
| Fitted control panel with EHB  | CPCO-1/632/2-1/C/D     | CPCO-1/632/4-1/D       | CPCO-1/632/4-1/D       |
| Fitted control panel with LPHW | CPCO-1/632/W/C/D       | CPCO-1/632/W/C/D       | CPCO-1/632/W/C/D       |

LPHW coil, designed for LPHW 82/71°C, EAT -5°C, LAT 25°C, coil construction copper tubes, aluminium fins, coil connections 1/2" BSP.  
LPHW control valve and actuator can be supplied.

### Sound Data

| Ecovent NRG P          | Sound Spectrum dB re10 <sup>-12</sup> w PWL |     |     |     |    |    |    |    | Casing Noise Breakout |         |
|------------------------|---|-----|-----|-----|----|----|----|----|-----------------------|---------|
|                        | Centre Frequency Hz                         |     |     |     |    |    |    |    | NR @ 1m               | NR @ 3m |
|                        | 63  | 125 | 250 | 500 | 1k | 2k | 4k | 8k |                       |         |
| <b>Size 0</b>          | 64  | 72  | 66  | 66  | 63 | 59 | 60 | 55 | 35                    | 30      |
| <b>Size 1</b>          | 62  | 68  | 66  | 68  | 65 | 60 | 61 | 57 | 35                    | 30      |
| <b>Size 2</b>          | 64  | 70  | 68  | 70  | 67 | 62 | 63 | 59 | 40                    | 35      |
| <b>Silencer IL, dB</b> | 6   | 8   | 12  | 19  | 28 | 30 | 24 | 21 | n/a                   | n/a     |

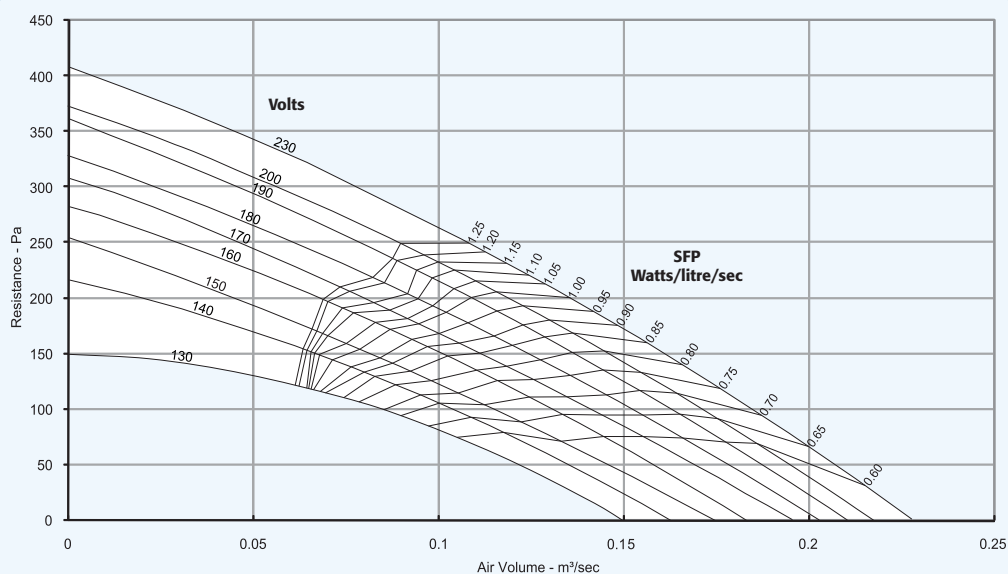
Sound Power Level PWL, dB, linear, in accordance with ISO13347-1:2004

Silencer model ALS 5/1200/STD/CS designed to meet NR 35/40 within conditioned space.

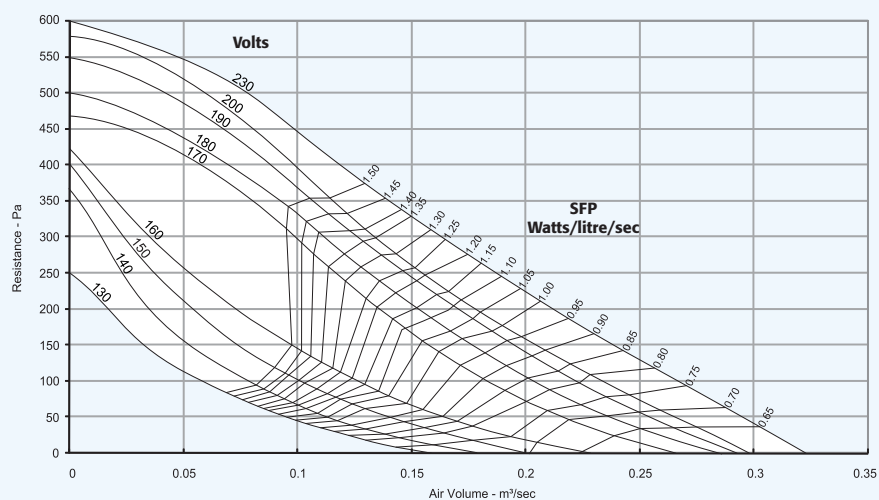
|                     |         |
|---------------------|---------|
| Control details     | p4 / 5  |
| Specific Fan power  | p12     |
| Unit dimensions     | p14 /15 |
| Silencer dimensions | p20     |
| LPHW heater details | p22     |

# Selection Curves Sizes 0, 1&2

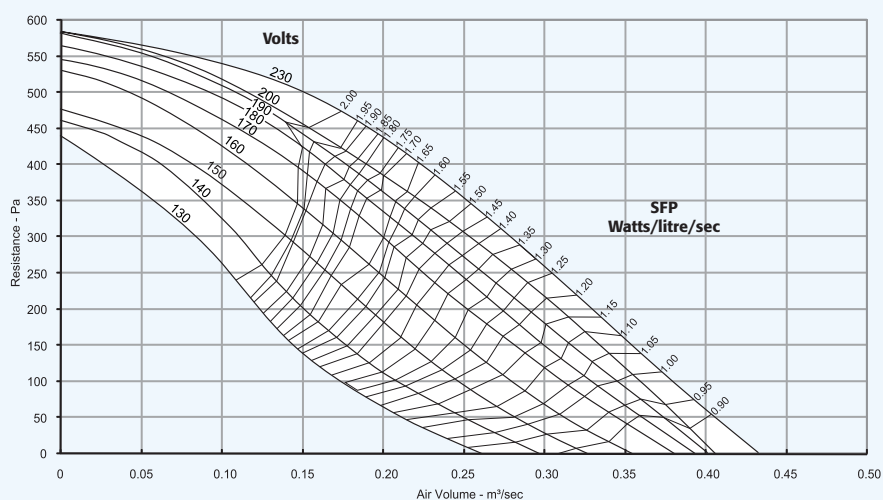
## ECO NRG P 0



## ECO NRG P 1



## ECO NRG P 2



### Sizes 3,4, 5&6



- 25mm double skinned cases, available plantroom or weatherproof, flat or stacked configuration. All units built with an aluminium tubular frame, and galvanised steel sheet panels, with resin bonded mineral wool slab infill.
- External units supplied with sloping roof, channel base, inlet and exhaust cowls and powder coat finished in Signal Grey to RAL 7004.
- Low energy backward curved single inlet fans, with low SFP, available with 230volt single and 400volt three phase motors.
- Cross flow plate heat exchanger with fitted face and bypass damper and 230volt actuator.
- Optional fitted controls, prewired to all internal components.
- Built in LPHW coil or EHB.
- Fans and bypass damper motor fitted with quick change plug connectors for easy maintenance.
- Flat units have top or bottom access.
- Stacked units have side access.
- Units supplied in two sections.

### Electrical Details

| Unit size                       | 3                  | 4                  | 5                | 6                |
|---------------------------------|--------------------|--------------------|------------------|------------------|
| <b>230 volt 1 phase motors</b>  |                    |                    |                  |                  |
| Fan power, watts, each fan      | 490                | 490                | 730              | 1300             |
| Fan FLC, amps                   | 2.2                | 2.2                | 3.3              | 5.7              |
| Fan speed RPM                   | 1050               | 1350               | 1230             | 1320             |
| Fan speed regulator (manual)    | T4                 | T4                 | T4               | T8               |
| Fan speed regulator (0-10 volt) | MS10               | MS10               | MS10             | MS10             |
| <b>400 volt 3 phase motors</b>  |                    |                    |                  |                  |
| Fan power, watts, each fan      | 320                | 450                | 690              | 1150             |
| Fan FLC, amps                   | 0.51               | 0.86               | 1.3              | 2.0              |
| Fan speed RPM                   | 1050               | 1330               | 1210             | 1330             |
| Max. EHB size, kW*              | 15.0               | 18.0               | 27.0             | 27.0             |
| No of single phase steps        | 6                  | 6                  | 9                | 9                |
| <b>Control Panels</b>           |                    |                    |                  |                  |
| For EHB (1 phase fan)           | CPC3-1/642/6-1/C/D | CPC3-1/642/6-1/C/D | CPC4-1/842/9-1/D | CPC5-1/842/9-1/D |
| For EHB (3 phase fan)           | CPC1-3/642/6-1/C/D | CPC1-3/642/6-1/C/D | CPC2-3/842/9-1/D | CPC3-3/842/9-1/D |
| For LPHW (1 phase fan)          | CPC3-1/642/W/C/D   | CPC3-1/642/W/C/D   | CPC4-1/642/W/C/D | CPC5-1/642/W/C/D |
| For LPHW (3 phase fan)          | CPC1-3/642/W/C/D   | CPC1-3/642/W/C/D   | CPC2-3/642/W/C/D | CPC3-3/642/W/C/D |

Notes: \*Other sizes of EHB can be supplied with control panel to suit.

### Sound Data

| Ecovent NRG | Sound Spectrum dB re10 <sup>-12</sup> w PWL |    |    |    |    |    |    |    | Casing Noise Breakout |         |
|-------------|---|----|----|----|----|----|----|----|-----------------------|---------|
|             | Centre Frequency Hz                         |    |    |    |    |    |    |    | NR @ 1m               | NR @ 3m |
| Size 3      | 59  | 69 | 64 | 59 | 54 | 49 | 45 | 39 | 40                    | 35      |
| Size 4      | 64  | 74 | 69 | 64 | 59 | 54 | 50 | 44 | 45                    | 40      |
| Size 5      | 75  | 78 | 77 | 71 | 65 | 62 | 60 | 59 | 50                    | 45      |
| Size 6      | 69  | 79 | 80 | 69 | 67 | 62 | 59 | 57 | 55                    | 50      |

Sound Power Level PWL, dB, linear, in accordance with ISO13347-1:2004

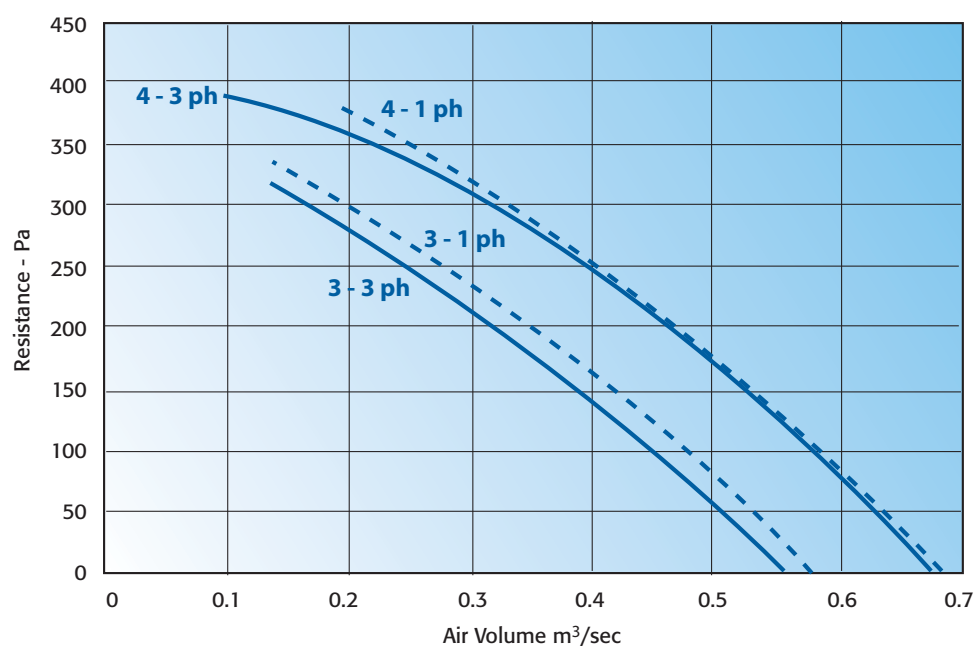
Control details p4 / 5  
 Specific Fan power p12  
 Unit dimensions p16 / 17

Silencer dimensions p21  
 LPHW heater details p22

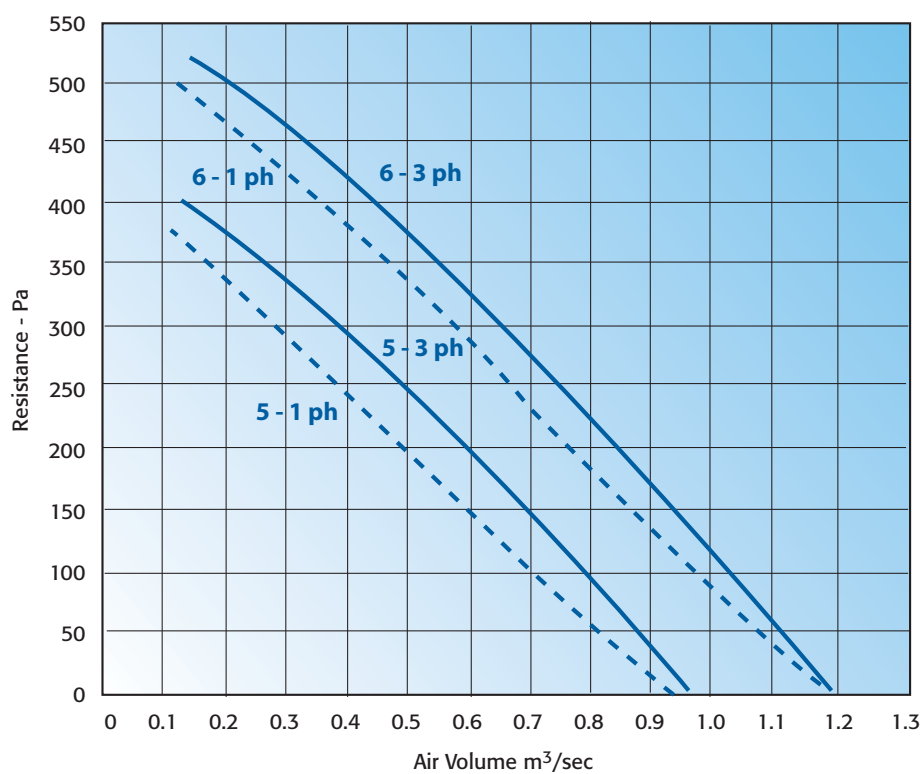


# Selection Curves

## ECO NRG 3 & 4



## ECO NRG 5 & 6



## Sizes 7,8&9



### Design Details

- ▶ 50mm double skinned case certified to EN 1886 standard.
- ▶ Direct drive centrifugal plug fans complete with prewired inverter for energy saving, and rapid site commissioning. The fan is fully vibration isolated from the case internally with A.V. mounts and flexible connection. All fan motors are for 400 volt 3 phase 50 Hz.
- ▶ High efficiency cross flow plate heat exchanger, with condensate drain pan, and fitted face and bypass damper with 230 volt actuator.
- ▶ Optional fitted controls, prewired to all internal components.
- ▶ Filter fitted to both supply and extract inlet, pleated, synthetic, grade G4.
- ▶ Built in LPHW coil or EHB in up to 9 steps of control.
- ▶ Units available plantroom or weatherproof, flat or stacked configuration. Internal units built using an aluminium tubular frame, and galvanised steel sheet panels with resin bonded mineral wool slab infill. External units supplied with sloping roof, channel base, inlet and exhaust cowls and powder coat finished in Signal Grey to RAL 7004.
- ▶ High efficiency filters, cooling and heat pump coils available.
- ▶ Quick change plug connectors fitted to all electrical components for easy maintenance.

### Electrical Details

| Unit size              | 7   | 8   | 9   |
|------------------------|-----|-----|-----|
| Fan power, kW, per fan | 2.2 | 3.0 | 3.0 |
| Fan FLC, amps, max     | 4.7 | 6.4 | 6.4 |

To select an electric heater use the formula on page 4.

A control panel will be designed in the VES Sales Department to match the components selected for the AHU.

### Sound Data

| Ecovent<br>NRG | Fan Speed<br>RPM | Sound Spectrum dB re10 <sup>-12</sup> w PWL |     |     |     |    |    |    |    | Casing Noise Breakout |         |
|----------------|------------------|---|-----|-----|-----|----|----|----|----|-----------------------|---------|
|                |                  | Centre Frequency Hz                         |     |     |     |    |    |    |    | NR @ 1m               | NR @ 3m |
|                |                  | 63  | 125 | 250 | 500 | 1k | 2k | 4k | 8k |                       |         |
| 7-35Hz         | 1000             | 62  | 65  | 69  | 68  | 64 | 60 | 55 | 51 | 35                    | 30      |
| 7-45Hz         | 1280             | 66  | 70  | 73  | 73  | 69 | 64 | 60 | 56 | 40                    | 35      |
| 7-55Hz         | 1580             | 70  | 74  | 78  | 78  | 74 | 70 | 65 | 61 | 45                    | 40      |
| 7-65Hz         | 1825             | 73  | 77  | 81  | 82  | 78 | 74 | 69 | 65 | 50                    | 45      |
| 7-75Hz         | 2115             | 76  | 80  | 85  | 85  | 82 | 77 | 73 | 69 | 50                    | 45      |
| 7-85Hz         | 2480             | 79  | 84  | 88  | 88  | 85 | 81 | 77 | 73 | 55                    | 50      |
| 8-30Hz         | 860              | 63  | 67  | 70  | 69  | 65 | 61 | 56 | 52 | 35                    | 30      |
| 8-40Hz         | 1150             | 67  | 71  | 74  | 74  | 69 | 65 | 61 | 56 | 40                    | 35      |
| 8-50Hz         | 1450             | 72  | 76  | 79  | 79  | 75 | 71 | 66 | 62 | 45                    | 40      |
| 8-60Hz         | 1700             | 75  | 79  | 83  | 83  | 80 | 75 | 71 | 66 | 50                    | 45      |
| 8-70Hz         | 2000             | 78  | 82  | 87  | 87  | 83 | 79 | 75 | 70 | 55                    | 50      |
| 8-80Hz         | 2250             | 81  | 85  | 90  | 90  | 86 | 82 | 78 | 73 | 60                    | 55      |
| 9-30Hz         | 852              | 67  | 70  | 73  | 72  | 68 | 63 | 59 | 54 | 40                    | 35      |
| 9-35Hz         | 1003             | 70  | 74  | 77  | 76  | 72 | 68 | 63 | 59 | 45                    | 40      |
| 9-40Hz         | 1140             | 73  | 77  | 80  | 79  | 75 | 71 | 67 | 62 | 50                    | 45      |
| 9-45Hz         | 1286             | 75  | 79  | 83  | 83  | 78 | 74 | 70 | 65 | 50                    | 45      |
| 9-50Hz         | 1419             | 78  | 81  | 85  | 85  | 81 | 77 | 72 | 68 | 55                    | 50      |
| 9-55Hz         | 1550             | 79  | 83  | 87  | 87  | 83 | 79 | 74 | 70 | 55                    | 50      |

Sound Power Level PWL, dB, linear, in accordance with ISO13347-1:2004

Noise levels stated are at the pressure side of the fan. At suction side the levels are 2dB lower at all points. They are at mid-duty point on the fan curves.

### Noise Breakout from Ecovent NRG Cases

The sound reduction for the unit cases size 7 - 9 is as follows:

|                         |    |     |     |     |    |    |    |    |
|-------------------------|----|-----|-----|-----|----|----|----|----|
| Centre Frequency Hz:    | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Sound Reduction, IL, dB | 4  | 8   | 16  | 29  | 32 | 30 | 36 | 34 |

This case sound reduction I.L. should be deducted from the fan sound power spectrum, and further deduction made for measurement distance from case - 1 metre 8 dB, 2 metres 12 dB, 3 metres 14 dB, 6 metres 24 dB.

This distance figure should be deducted from each octave band and will result in a sound pressure level spectrum at that distance.

To further reduce noise breakout, heavy weight panel infills are available.

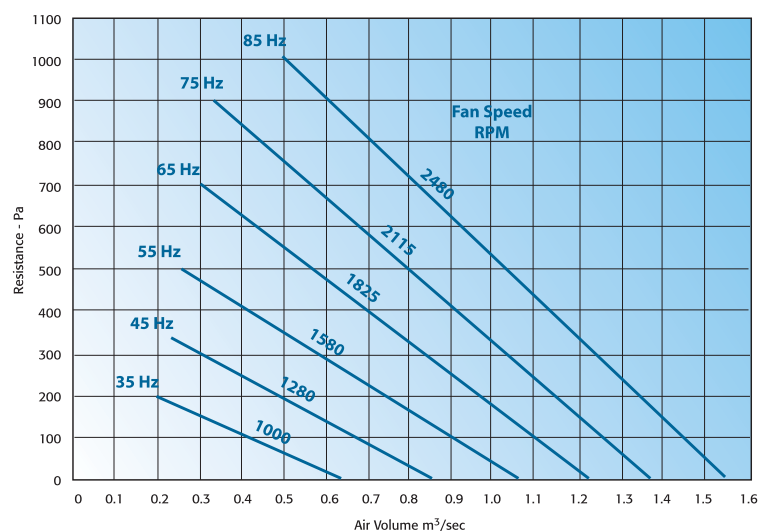
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Unit dimensions p18 / 19  
Silencer dimensions p21

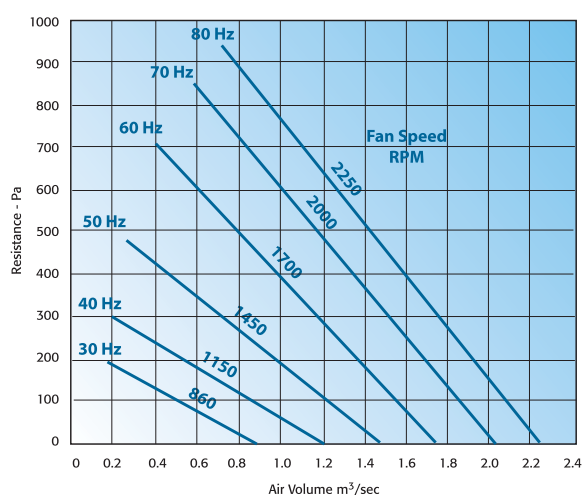
LPHW heater details p22  
Fan commissioning p24

# Selection Curves

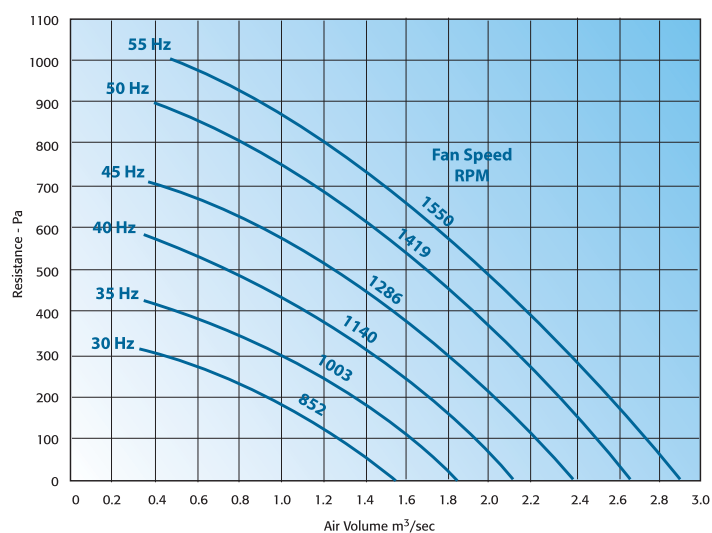
## ECO NRG 7



## ECO NRG 8



## ECO NRG 9





### Specific Fan Power (SFP)

#### Watts/litre/second per fan

- As required in Building Regulations, Part L2A, Section 10, Equation 11, the SFP for the supply and extract fans is to be combined.
- The Ecovent NRG figures are shown for each fan, as the duties may differ on supply and extract.
- The figures for each fan are therefore to be added together to determine the combined SFP.
- To comply with these requirements it may be necessary to reduce the external resistance, go to a larger unit, or one with a three phase motor.

### ECO NRG P Size 0, 1 & 2 at full speed

| Air Volume<br>m <sup>3</sup> /sec | Size 0 | 230 volt 1 phase<br>Size 1 | Size 2 |
|-----------------------------------|--------|----------------------------|--------|
| 0.100                             | 1.35   |                            |        |
| 0.125                             | 1.10   | 1.55                       |        |
| 0.150                             | 0.89   | 1.35                       |        |
| 0.175                             | 0.75   | 1.20                       |        |
| 0.200                             | 0.65   | 1.05                       | 1.80   |
| 0.225                             | 0.55   | 0.92                       | 1.62   |
| 0.250                             |        | 0.83                       | 1.52   |
| 0.275                             |        | 0.74                       | 1.39   |
| 0.300                             |        | 0.66                       | 1.28   |
| 0.325                             |        |                            | 1.18   |
| 0.350                             |        |                            | 1.09   |
| 0.375                             |        |                            | 0.99   |
| 0.400                             |        |                            | 0.93   |

### ECO NRG Size 3, 4, 5 & 6 at full speed

| Air Volume<br>m <sup>3</sup> /sec | Size 3 | 230 volt 1 phase<br>Size 4 | Size 5 | Size 6 | 400 volt 3 phase<br>Size 3 | Size 4 | Size 5 | Size 6 |
|-----------------------------------|--------|----------------------------|--------|--------|----------------------------|--------|--------|--------|
| 0.20                              | 1.67   | 1.97                       | 3.90   | 4.61   | 0.99                       | 1.81   | 3.00   | 4.40   |
| 0.30                              | 1.23   | 1.44                       | 2.24   | 3.73   | 0.73                       | 1.27   | 1.89   | 2.82   |
| 0.40                              | 0.98   | 1.17                       | 1.70   | 2.92   | 0.60                       | 1.00   | 1.44   | 2.09   |
| 0.50                              | 0.80   | 0.96                       | 1.38   | 2.39   | 0.49                       | 0.81   | 1.19   | 1.72   |
| 0.60                              | 0.67   | 0.81                       | 1.16   | 2.04   | 0.42                       | 0.69   | 0.99   | 1.39   |
| 0.70                              |        | 0.70                       | 0.99   | 1.75   |                            |        | 0.85   | 1.24   |
| 0.80                              |        |                            | 0.87   | 1.53   |                            |        | 0.73   | 1.04   |
| 0.90                              |        |                            | 0.75   | 1.36   |                            |        | 0.65   | 0.88   |
| 1.00                              |        |                            |        | 1.23   |                            |        |        | 0.80   |
| 1.10                              |        |                            |        | 1.11   |                            |        |        | 0.73   |

### ECO NRG Size 7 at various speeds

| Air Volume<br>m <sup>3</sup> /sec | 30Hz | 35Hz | 40Hz | 45Hz | 50Hz | 55Hz | 60Hz | 65Hz | 70Hz | 75Hz | 80Hz | 85Hz |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| 0.30                              | 0.79 | 0.92 | 0.98 | 1.12 | 1.46 | 1.77 | 1.85 | 2.24 | 2.54 |      |      |      |
| 0.40                              | 0.58 | 0.71 | 0.81 | 0.94 | 1.08 | 1.30 | 1.42 | 1.69 | 1.95 | 2.27 | 2.73 | 3.24 |
| 0.50                              | 0.49 | 0.55 | 0.66 | 0.76 | 0.89 | 1.06 | 1.15 | 1.36 | 1.58 | 1.85 | 2.19 | 2.59 |
| 0.60                              |      | 0.46 | 0.54 | 0.64 | 0.76 | 0.88 | 0.96 | 1.14 | 1.35 | 1.57 | 1.85 | 2.19 |
| 0.70                              |      |      | 0.46 | 0.55 | 0.64 | 0.76 | 0.85 | 0.99 | 1.15 | 1.37 | 1.58 | 1.88 |
| 0.80                              |      |      |      | 0.47 | 0.56 | 0.66 | 0.75 | 0.84 | 1.03 | 1.19 | 1.41 | 1.66 |
| 0.90                              |      |      |      |      | 0.48 | 0.56 | 0.66 | 0.74 | 0.92 | 1.07 | 1.27 | 1.49 |
| 1.00                              |      |      |      |      |      | 0.49 | 0.59 | 0.68 | 0.83 | 0.96 | 1.04 | 1.35 |
| 1.10                              |      |      |      |      |      |      | 0.52 | 0.60 | 0.74 | 0.86 | 0.94 | 1.22 |
| 1.20                              |      |      |      |      |      |      |      | 0.55 | 0.67 | 0.76 | 0.86 | 1.10 |
| 1.30                              |      |      |      |      |      |      |      |      | 0.60 | 0.70 | 0.77 | 0.99 |
| 1.40                              |      |      |      |      |      |      |      |      |      |      |      | 0.90 |
| 1.50                              |      |      |      |      |      |      |      |      |      |      |      | 0.83 |

## ECO NRG Size 8 at various speeds

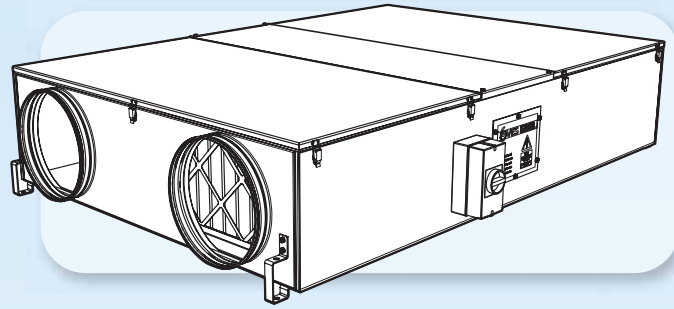
| Air Volume<br>m <sup>3</sup> /sec | 400 volt 3 phase |      |      |      |      |      |      |      |      |      |      |
|-----------------------------------|------------------|------|------|------|------|------|------|------|------|------|------|
|                                   | 30Hz             | 35Hz | 40Hz | 45Hz | 50Hz | 55Hz | 60Hz | 65Hz | 70Hz | 75Hz | 80Hz |
| 0.30                              | 0.62             | 0.83 | 1.04 | 1.37 | 1.71 | 2.05 |      |      |      |      |      |
| 0.40                              | 0.48             | 0.63 | 0.79 | 1.05 | 1.32 | 1.64 | 1.87 | 2.34 |      |      |      |
| 0.50                              | 0.39             | 0.52 | 0.65 | 0.86 | 1.08 | 1.37 | 1.56 | 1.97 |      |      |      |
| 0.60                              | 0.33             | 0.43 | 0.56 | 0.72 | 0.90 | 1.12 | 1.33 | 1.65 | 1.99 |      |      |
| 0.70                              | 0.28             | 0.36 | 0.48 | 0.62 | 0.79 | 0.98 | 1.19 | 1.44 | 1.78 | 2.09 | 2.09 |
| 0.80                              | 0.24             | 0.28 | 0.42 | 0.54 | 0.68 | 0.86 | 1.07 | 1.27 | 1.54 | 1.84 | 1.84 |
| 0.90                              |                  | 0.27 | 0.36 | 0.47 | 0.60 | 0.76 | 0.95 | 1.16 | 1.40 | 1.68 | 1.68 |
| 1.00                              |                  | 0.24 | 0.32 | 0.42 | 0.54 | 0.68 | 0.85 | 1.05 | 1.25 | 1.52 | 1.52 |
| 1.10                              |                  |      | 0.28 | 0.37 | 0.48 | 0.60 | 0.77 | 0.94 | 1.14 | 1.39 | 1.38 |
| 1.20                              |                  |      |      | 0.33 | 0.43 | 0.55 | 0.69 | 0.86 | 1.04 | 1.27 | 1.27 |
| 1.30                              |                  |      |      | 0.30 | 0.39 | 0.50 | 0.63 | 0.78 | 0.96 | 1.16 | 1.16 |
| 1.40                              |                  |      |      |      | 0.36 | 0.46 | 0.57 | 0.72 | 0.88 | 1.08 | 1.07 |
| 1.50                              |                  |      |      |      |      | 0.42 | 0.52 | 0.66 | 0.81 | 1.00 | 1.00 |
| 1.60                              |                  |      |      |      |      | 0.38 | 0.48 | 0.60 | 0.75 | 0.93 | 0.93 |
| 1.70                              |                  |      |      |      |      |      | 0.44 | 0.56 | 0.69 | 0.87 | 0.87 |
| 1.80                              |                  |      |      |      |      |      |      | 0.53 | 0.64 | 0.81 | 0.74 |
| 1.90                              |                  |      |      |      |      |      |      | 0.49 | 0.59 | 0.75 | 0.70 |
| 2.00                              |                  |      |      |      |      |      |      |      | 0.56 | 0.70 | 0.65 |
| 2.10                              |                  |      |      |      |      |      |      |      |      | 0.65 | 0.61 |
| 2.20                              |                  |      |      |      |      |      |      |      |      | 0.62 | 0.59 |

## ECO NRG Size 9 at various speeds

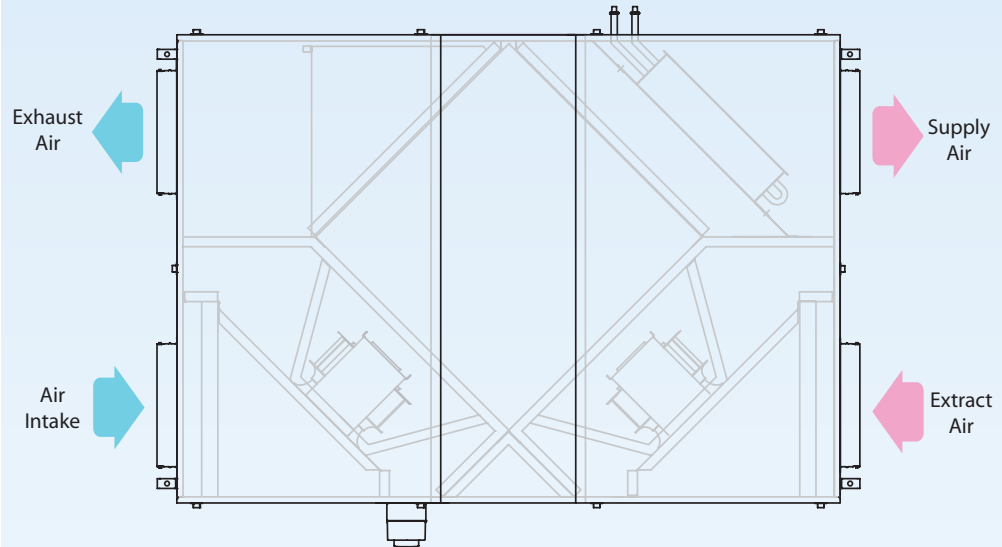
| Air Volume<br>m <sup>3</sup> /sec | 400 volt 3 phase |      |      |      |      |      |
|-----------------------------------|------------------|------|------|------|------|------|
|                                   | 30Hz             | 35Hz | 40Hz | 45Hz | 50Hz | 55Hz |
| 0.60                              | 0.75             | 0.96 | 1.16 | 1.51 | 1.90 | 2.18 |
| 0.70                              | 0.64             | 0.84 | 1.05 | 1.34 | 1.69 | 1.97 |
| 0.80                              | 0.57             | 0.76 | 0.95 | 1.21 | 1.57 | 1.75 |
| 0.90                              | 0.52             | 0.69 | 0.87 | 1.11 | 1.43 | 1.62 |
| 1.00                              | 0.47             | 0.63 | 0.80 | 1.03 | 1.32 | 1.51 |
| 1.10                              | 0.42             | 0.58 | 0.75 | 0.97 | 1.24 | 1.42 |
| 1.20                              | 0.40             | 0.54 | 0.70 | 0.94 | 1.15 | 1.35 |
| 1.30                              | 0.37             | 0.50 | 0.65 | 0.90 | 1.07 | 1.26 |
| 1.40                              | 0.35             | 0.46 | 0.60 | 0.79 | 1.02 | 1.17 |
| 1.50                              | 0.32             | 0.43 | 0.57 | 0.75 | 0.97 | 1.12 |
| 1.60                              | 0.31             | 0.40 | 0.55 | 0.72 | 0.93 | 1.07 |
| 1.70                              |                  | 0.38 | 0.52 | 0.67 | 0.86 | 1.02 |
| 1.80                              |                  | 0.35 | 0.49 | 0.64 | 0.82 | 0.97 |
| 1.90                              |                  |      | 0.46 | 0.60 | 0.78 | 0.93 |
| 2.00                              |                  |      | 0.43 | 0.58 | 0.75 | 0.89 |
| 2.10                              |                  |      | 0.40 | 0.55 | 0.72 | 0.85 |
| 2.20                              |                  |      |      | 0.52 | 0.67 | 0.82 |
| 2.30                              |                  |      |      | 0.49 | 0.64 | 0.78 |
| 2.40                              |                  |      |      | 0.48 | 0.61 | 0.75 |
| 2.50                              |                  |      |      |      | 0.58 | 0.72 |
| 2.60                              |                  |      |      |      | 0.55 | 0.69 |
| 2.70                              |                  |      |      |      |      | 0.66 |
| 2.80                              |                  |      |      |      |      | 0.63 |
| 2.90                              |                  |      |      |      |      | 0.60 |

## Sizes 0,1&2 Plantroom/ Ceiling Void

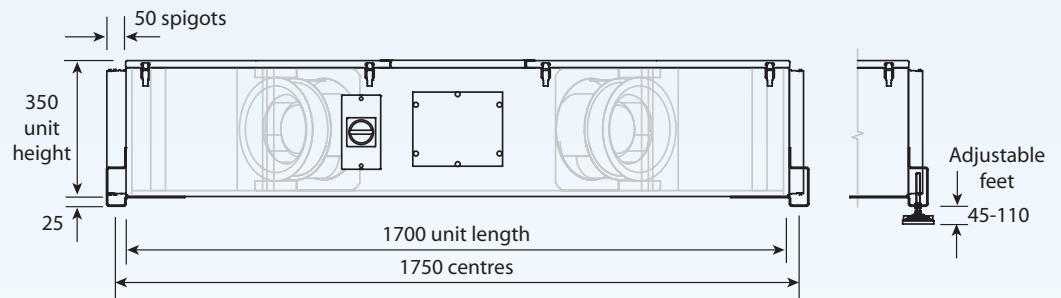
- Top or bottom access.
- Unit can be handed in one of two configurations.
- Horizontal mounting.
- Fitted hot water or electric heater.
- Isolators fitted on fan side of unit.
- Mounting foot suitable for M8 drop rod or self-levelling feet.



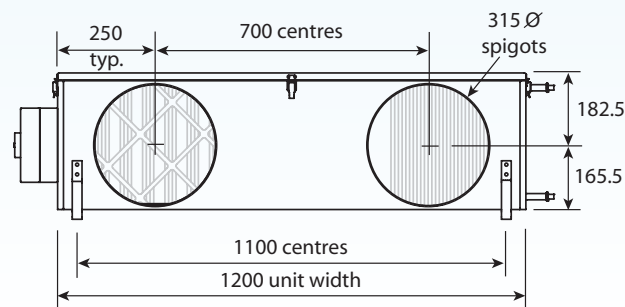
Plan View



Side View



End View



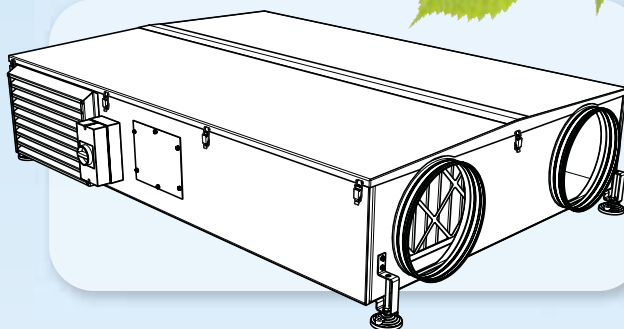
**Unit weight  
120kgs**

- Fan, filter, heater access via removable lids.
- Isolators, controls, air flow and filter pressure switches will be mounted on fan side of unit.
- Minimum 324mm required for filter removal above or below unit.
- The optional peristaltic pump and isolator will be supplied loose for fitting by customer.

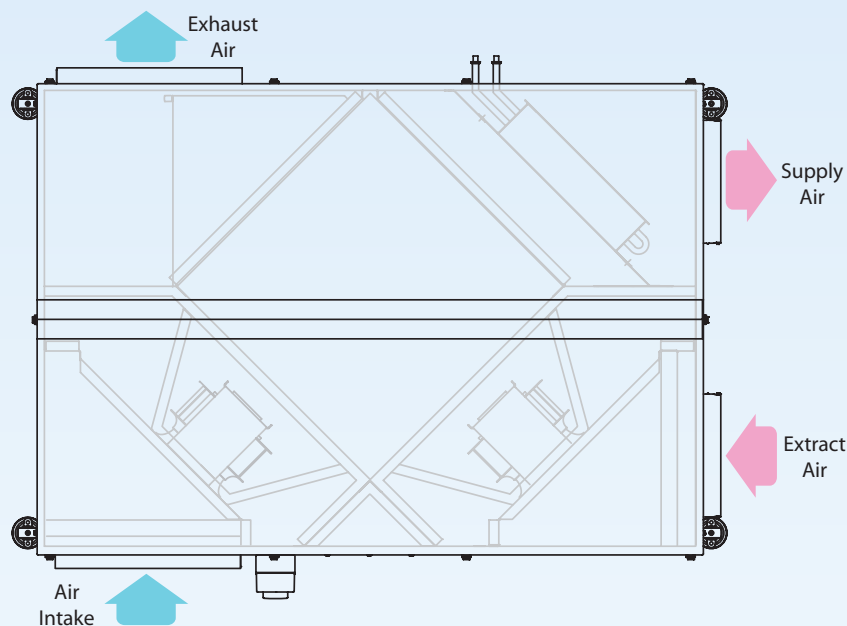


# Sizes 0,1&2 Weatherproof Units

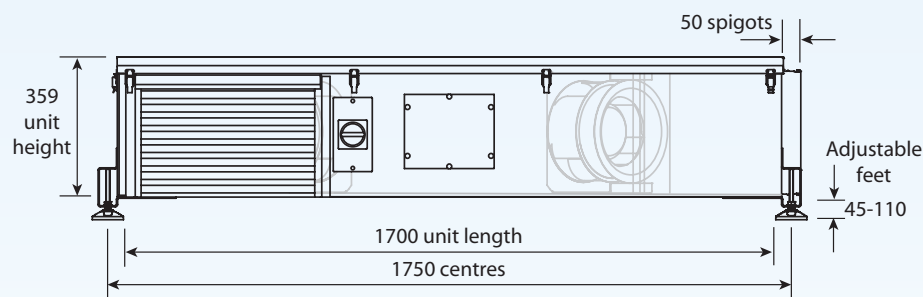
- Flat horizontal units with top access.
- Unit can be handed in one of two configurations.
- Fitted hot water or electric heater.
- Isolators fitted on fan side of unit.
- Self levelling mounting feet are adjustable from 45 - 110mm.



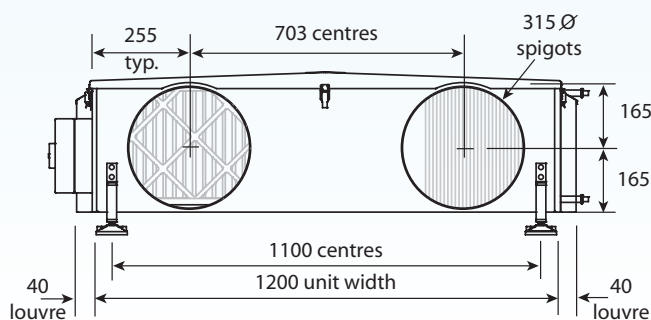
Plan View



Side View



End View



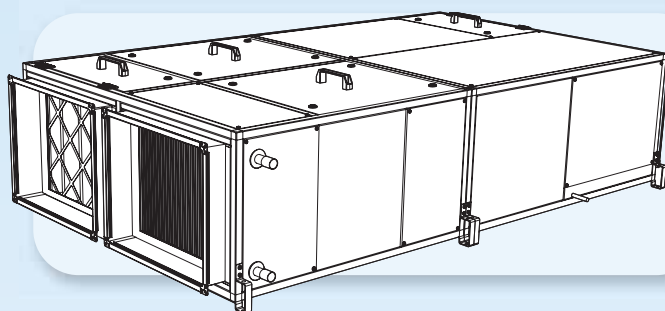
**Unit weight  
120kgs**

- Fan, filter, heater access via removable lids.
- Isolators, controls, air flow and filter pressure switches will be mounted on fan side of unit.
- No pump or trap necessary to drain pan on weatherproof unit.

## Sizes 3, 4, 5 & 6 Plantroom Units

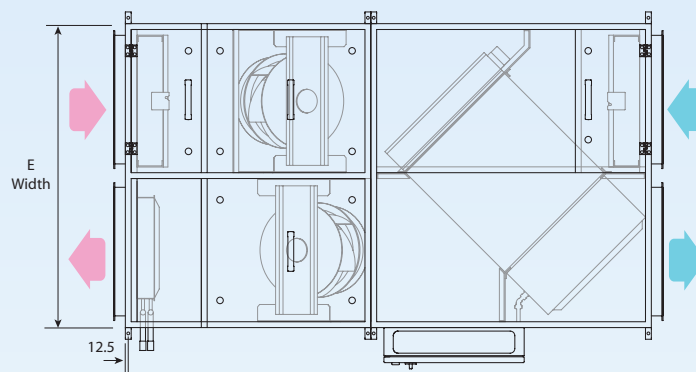
### Flat Units

- Flanged connections 20mm Mez.
- Handings may be left or right hand side.
- Optional controls fitted on supply side.
- Silencers can be fitted direct to units.

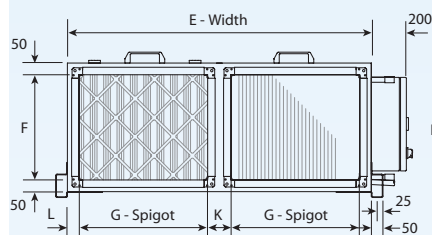


Plan View

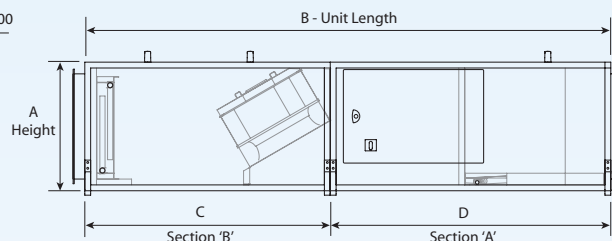
Top or bottom access to filters, fans and damper motor



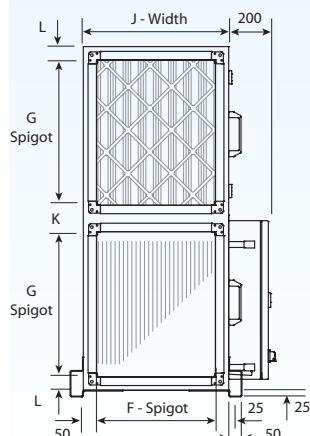
End View  
(typical both ends)



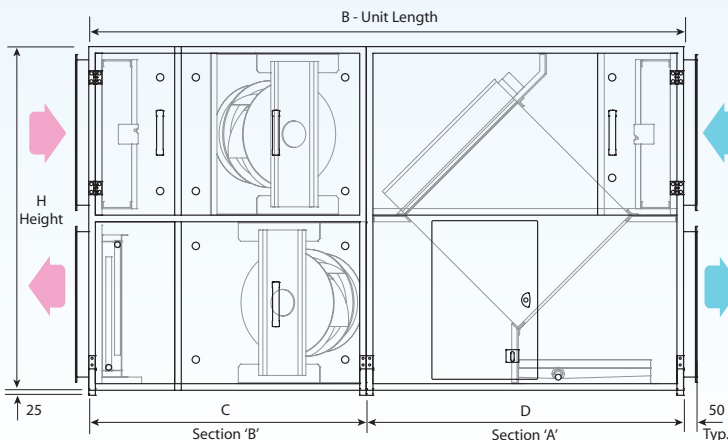
Side View



End View  
(typical both ends)



Side View



### Stacked Units

Access and controls can be left or right hand side.

Note access requirements to side of unit for maintenance:  
Size 3 & 4 - 600mm  
Size 5 & 6 - 850mm

## Dimensions (mm)

| Unit Size | A   | B    | C    | D    | E    | F   | G   | H    | J   | K   | L  | Weight kg<br>Section 'A' | Weight kg<br>Section 'B' |
|-----------|-----|------|------|------|------|-----|-----|------|-----|-----|----|--------------------------|--------------------------|
| 3 & 4     | 550 | 2250 | 1050 | 1200 | 1300 | 450 | 550 | 1300 | 550 | 100 | 50 | 154                      | 114                      |
| 5         | 650 | 2600 | 1150 | 1450 | 1550 | 550 | 650 | 1550 | 650 | 100 | 75 | 228                      | 143                      |
| 6         | 700 | 2650 | 1200 | 1450 | 1675 | 600 | 700 | 1675 | 700 | 125 | 75 | 246                      | 167                      |

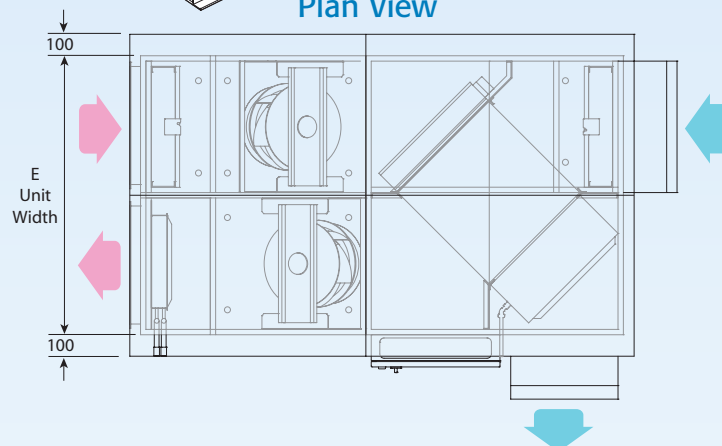
# Sizes 3,4,5&6 Weatherproof Units

## Flat Units

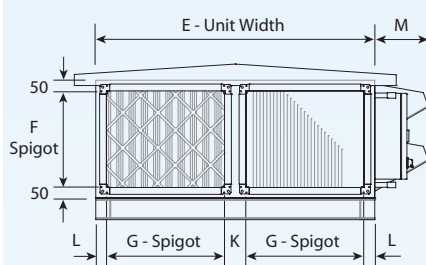
- Handings may be left or right hand side
- Optional controls fitted on supply side.
- Flanged connections 20mm Mez
- Silencers can be fitted direct to unit.



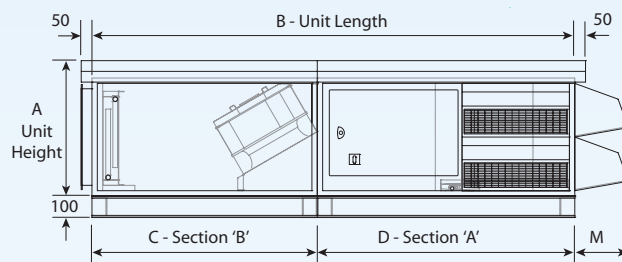
Plan View



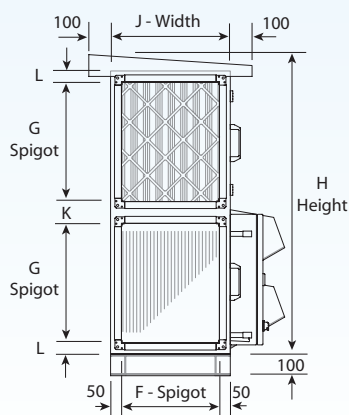
End View



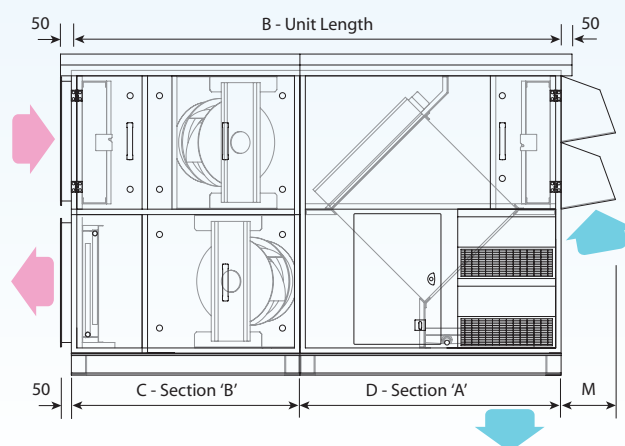
Side View



End View



Side View



## Stacked Units

Access and controls can be left or right hand side.

## Dimensions (mm)

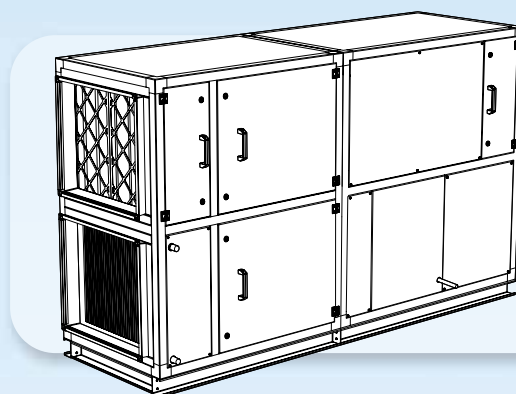
| Unit Size | A   | B    | C    | D    | E    | F   | G   | H    | J   | K   | L  | M   | Weight kg<br>Section 'A' | Weight kg<br>Section 'B' |
|-----------|-----|------|------|------|------|-----|-----|------|-----|-----|----|-----|--------------------------|--------------------------|
| 3 & 4     | 625 | 2250 | 1050 | 1200 | 1300 | 450 | 550 | 1375 | 550 | 100 | 50 | 250 | 180                      | 127                      |
| 5         | 725 | 2600 | 1150 | 1450 | 1550 | 550 | 650 | 1550 | 650 | 100 | 75 | 300 | 228                      | 143                      |
| 6         | 775 | 2650 | 1200 | 1450 | 1675 | 600 | 700 | 1750 | 700 | 125 | 75 | 300 | 246                      | 167                      |



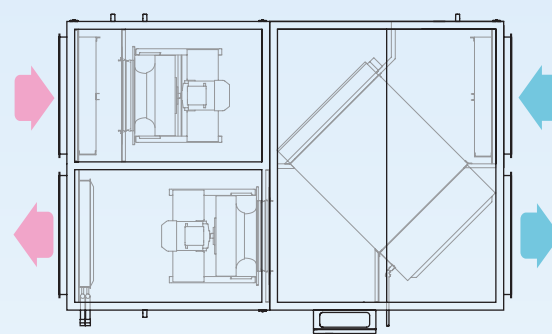
## Sizes 7,8 & 9 Plantroom Units

### Flat Units

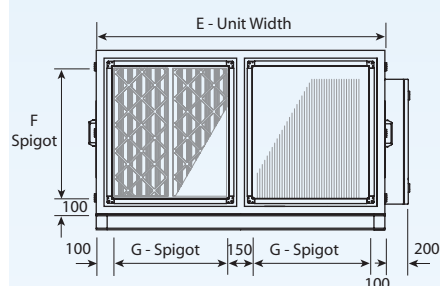
- Side access to filters, fans, damper motor.
- Handings may be left or right hand side.
- Inverters fitted inside of the unit with a keypad on the outside.
- Optional controls fitted on supply side.
- Units supplied in two sections.
- All flanges 30mm Mez.
- Silencers can fit direct to unit.



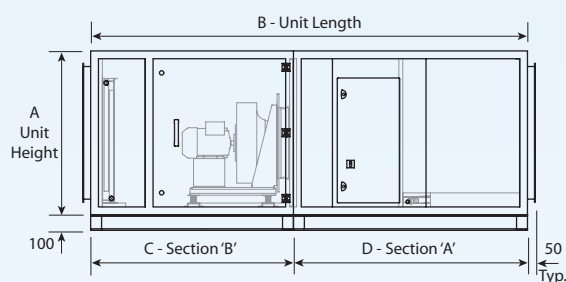
Plan View



End View  
(typical both ends)

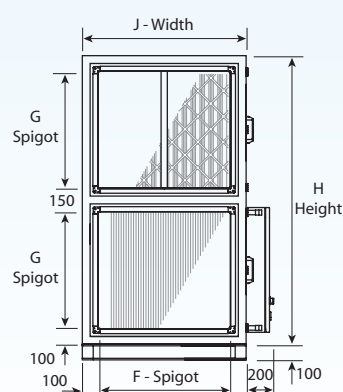


Side View

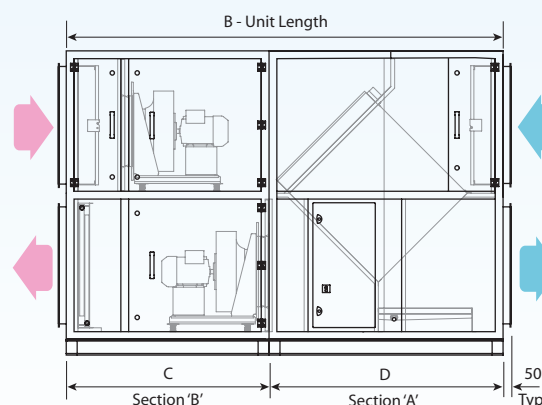


### Stacked Units

End View  
(typical both ends)



Side View



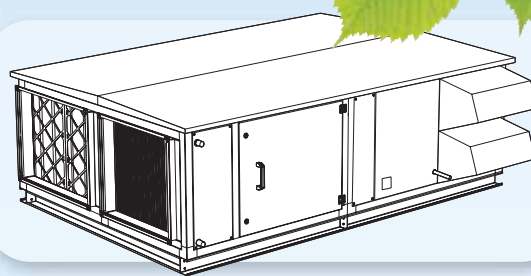
### Dimensions (mm)

| Unit Size | A    | B    | C    | D    | E    | F    | G   | H    | J    | Weight kg<br>Section 'A' | Weight kg<br>Section 'B' |
|-----------|------|------|------|------|------|------|-----|------|------|--------------------------|--------------------------|
| 7         | 900  | 2800 | 1300 | 1500 | 1600 | 700  | 625 | 1600 | 900  | 289                      | 282                      |
| 8         | 1050 | 2800 | 1300 | 1500 | 1850 | 850  | 750 | 1850 | 1050 | 347                      | 346                      |
| 9         | 1200 | 2925 | 1425 | 1500 | 2150 | 1000 | 900 | 2150 | 1200 | 429                      | 436                      |

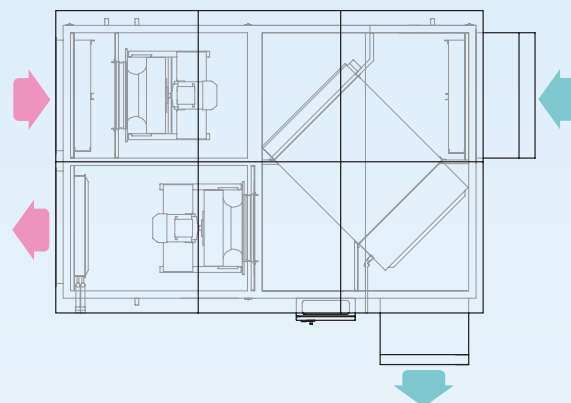
# Sizes 7,8 & 9 Weatherproof Units

## Flat Units

- Side access to filters, fans, damper motor.
- Handings may be left or right hand side.
- Inverters fitted inside of the unit with a keypad on the outside.
- Optional controls fitted on supply side.
- Units supplied in two sections.
- All flanges 30mm Mez.
- Silencers can fit direct to unit.

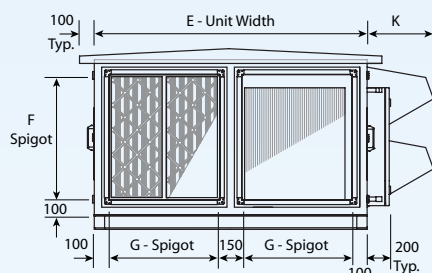


Plan View

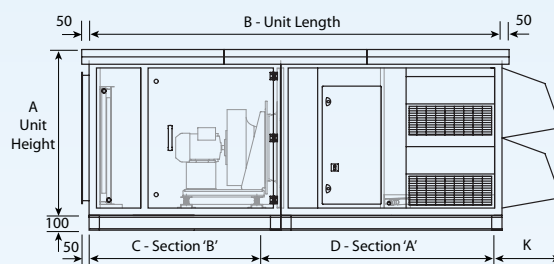


Note access requirements to side of unit for maintenance:  
Size 7 - 850mm  
Size 8 - 900mm  
Size 9 - 1000mm

End View

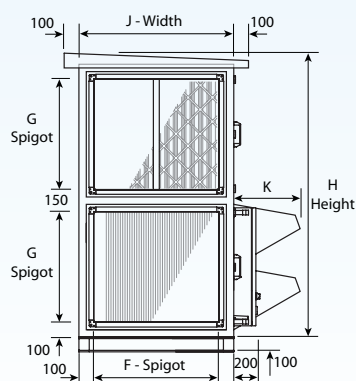


Side View

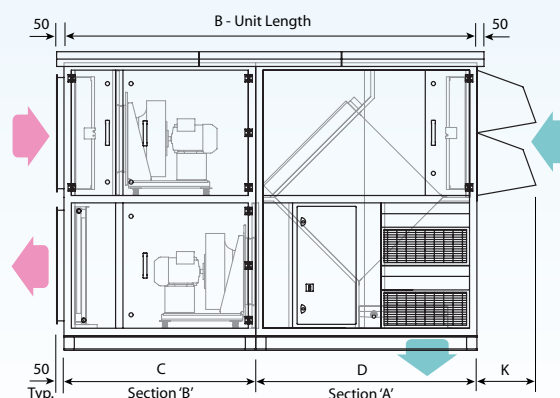


## Stacked Units

End View



Side View



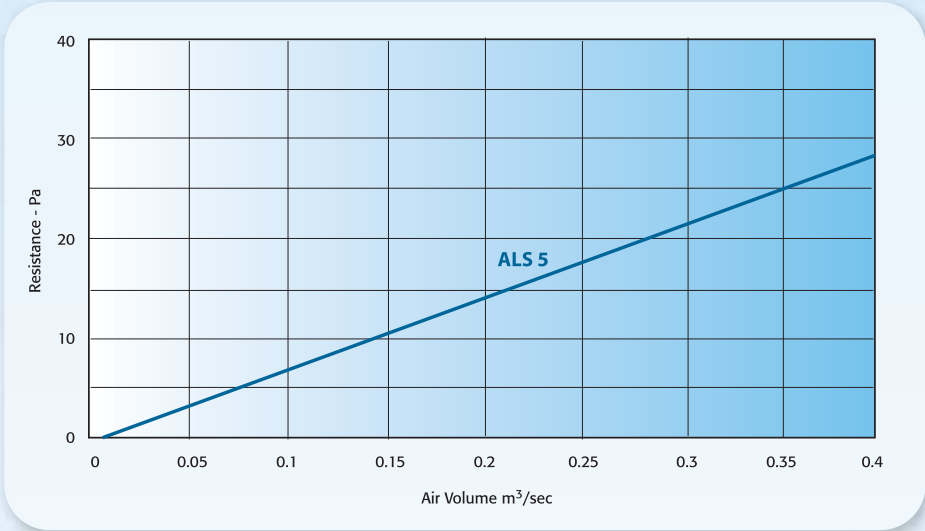
## Dimensions (mm)

| Unit Size | A    | B    | C    | D    | E    | F    | G   | H    | J    | K   | Weight kg<br>Section 'A' | Weight kg<br>Section 'B' |
|-----------|------|------|------|------|------|------|-----|------|------|-----|--------------------------|--------------------------|
| 7         | 975  | 2800 | 1300 | 1500 | 1600 | 700  | 625 | 1675 | 900  | 350 | 325                      | 300                      |
| 8         | 1125 | 2800 | 1300 | 1500 | 1850 | 850  | 750 | 1925 | 1050 | 450 | 393                      | 362                      |
| 9         | 1275 | 2925 | 1425 | 1500 | 2150 | 1000 | 900 | 2225 | 1200 | 550 | 486                      | 452                      |

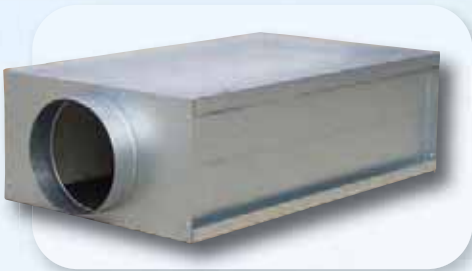
# Silencers

➤ All silencers designed to fit directly to Ecovent NRG unit if required.

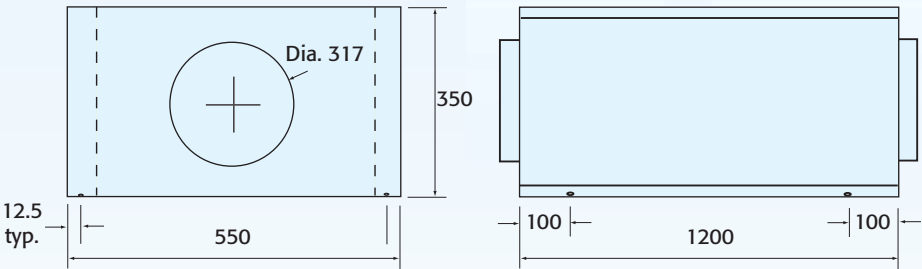
## Selection Curve - ECO NRG P Size 0, 1 & 2



|  |   |
|--|---|
| <b>Ecovent NRG P unit</b><br><b>0, 1 &amp; 2</b> | <b>Silencer Model</b><br><b>ALS 5/1200/STD/CS</b> |
|--|---|



## Dimensions - mm



Fixing holes in top and bottom flanges 11mm diameter.  
Silencer spigots designed to fit over Ecovent unit spigots.

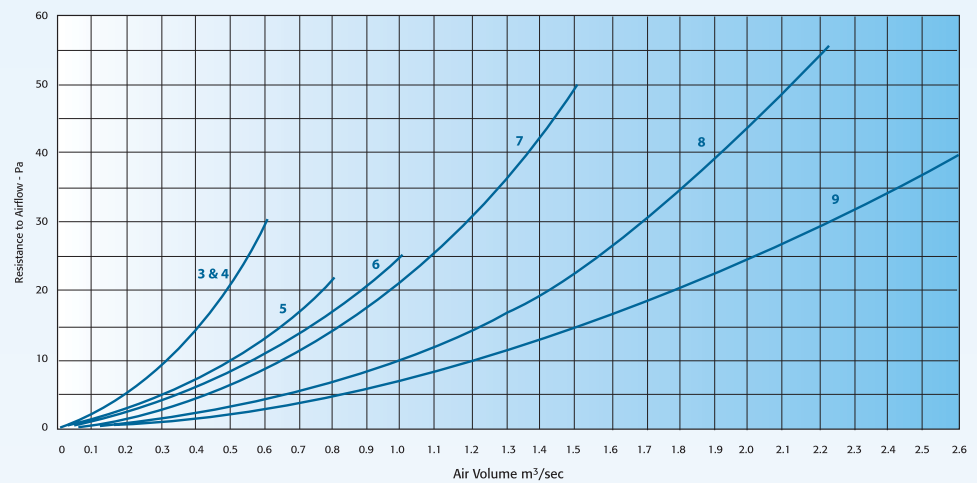
## Silencer attenuation - Insertion Loss - dB

| Eco NRG P Model | Silencer Model    | Centre Frequency Hz |     |     |     |    |    |    |    |
|-----------------|-------------------|---------------------|-----|-----|-----|----|----|----|----|
|                 |                   | 63                  | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| 0, 1 & 2        | ALS 5/1200/STD/CS | 6                   | 8   | 12  | 19  | 28 | 30 | 24 | 21 |

Silencers constructed with galvanised sheet steel cases and circular spigots to match the Ecovent NRG P unit.  
Silencer infill - resin bonded mineral wool slab with glass tissue facing to airways.

# Silencers

## Selection Curves - ECO NRG Sizes 3-9



## Silencer attenuation - Insertion Loss - dB

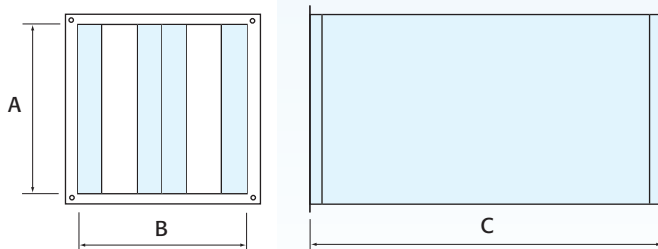
| Eco NRG Model | Silencer Model    | Centre Frequency Hz |     |     |     |    |    |    |    |
|---------------|-------------------|---------------------|-----|-----|-----|----|----|----|----|
|               |                   | 63                  | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| 3             | NRG VA 300/1300/P | 5                   | 9   | 16  | 30  | 39 | 39 | 31 | 26 |
| 4             | NRG VA 400/1300/P | 5                   | 9   | 16  | 30  | 39 | 39 | 31 | 26 |
| 5             | NRG VA 500/1600/P | 6                   | 12  | 22  | 39  | 48 | 48 | 40 | 28 |
| 6             | NRG VA 600/1600/P | 6                   | 11  | 21  | 37  | 46 | 46 | 38 | 27 |
| 7             | NRG VA 700/1600/P | 7                   | 13  | 24  | 41  | 50 | 50 | 42 | 30 |
| 8             | NRG VA 800/1600/P | 7                   | 12  | 22  | 38  | 47 | 47 | 34 | 25 |
| 9             | NRG VA 900/1600/P | 8                   | 15  | 26  | 43  | 50 | 50 | 45 | 32 |

Silencers constructed using galvanised sheet steel, with Mez flanges to match Ecovent NRG unit.  
Acoustic splitters - resin bonded mineral wool slab, with glass tissue facing, retained by perforated galvanised steel sheet.

Optional powder coat finish for weatherproof units.

Silencers to be fitted in plane to suit AHU spigot i.e. heights and widths are interchangeable.

## Dimensions - mm



| Model             | A    | B   | C    |
|-------------------|------|-----|------|
| NRG VA 300/1300/P | 450  | 550 | 1300 |
| NRG VA 400/1300/P | 450  | 550 | 1300 |
| NRG VA 500/1600/P | 550  | 650 | 1600 |
| NRG VA 600/1600/P | 600  | 700 | 1600 |
| NRG VA 700/1600/P | 700  | 625 | 1600 |
| NRG VA 800/1600/P | 850  | 750 | 1600 |
| NRG VA 900/1600/P | 1000 | 900 | 1600 |

Note:  
A & B  
dimensions  
can be  
reversed.



### Hot Water Heater Batteries

#### Performance Data

- Based on EAT -5°C.
- Low pressure hot water LPHW 82 / 71°C.
- VES Sales Department can advise coil data for other conditions.

| Model    | Air Volume<br>m³/sec | Maximum<br>Leaving Air<br>Temp °C | Maximum<br>kW<br>Output | Water Flow<br>Rate<br>l/sec | Water<br>Pressure<br>KPa | Coil<br>Connection<br>Size BSP |
|----------|----------------------|-----------------------------------|-------------------------|-----------------------------|--------------------------|--------------------------------|
| 0, 1 & 2 | 0.100                | 48                                | 6.5                     | 0.14                        | 4.0                      | 1/2"                           |
|          | 0.125                | 45                                | 7.6                     | 0.17                        | 5.5                      |                                |
|          | 0.150                | 41                                | 8.4                     | 0.19                        | 6.5                      |                                |
|          | 0.175                | 37                                | 9.0                     | 0.20                        | 7.5                      |                                |
|          | 0.200                | 35                                | 9.6                     | 0.21                        | 8.4                      |                                |
|          | 0.225                | 32                                | 10.0                    | 0.23                        | 9.3                      |                                |
|          | 0.250                | 30                                | 10.5                    | 0.24                        | 10.1                     |                                |
|          | 0.275                | 28                                | 11.0                    | 0.25                        | 10.9                     |                                |
|          | 0.300                | 27                                | 11.4                    | 0.26                        | 11.7                     |                                |
|          | 0.325                | 25                                | 11.8                    | 0.27                        | 12.5                     |                                |
|          | 0.350                | 24                                | 12.2                    | 0.27                        | 13.2                     |                                |
|          | 0.375                | 23                                | 12.5                    | 0.28                        | 13.9                     |                                |
|          | 0.400                | 22                                | 12.9                    | 0.29                        | 14.6                     |                                |
| 3        | 0.150                | 46                                | 9.3                     | 0.21                        | 3.0                      | 1"                             |
|          | 0.250                | 38                                | 13.0                    | 0.29                        | 4.0                      |                                |
|          | 0.400                | 29                                | 16.5                    | 0.36                        | 6.0                      |                                |
|          | 0.500                | 25                                | 18.2                    | 0.40                        | 7.0                      |                                |
| 4        | 0.200                | 44                                | 11.8                    | 0.26                        | 3.0                      | 1"                             |
|          | 0.300                | 37                                | 15.2                    | 0.34                        | 5.0                      |                                |
|          | 0.450                | 29                                | 18.5                    | 0.41                        | 7.0                      |                                |
|          | 0.600                | 24                                | 21.1                    | 0.47                        | 9.0                      |                                |
| 5        | 0.300                | 41                                | 16.9                    | 0.38                        | 4.0                      | 1 1/4"                         |
|          | 0.450                | 35                                | 21.7                    | 0.48                        | 6.0                      |                                |
|          | 0.650                | 29                                | 26.8                    | 0.60                        | 7.0                      |                                |
|          | 0.800                | 25                                | 29.1                    | 0.65                        | 8.0                      |                                |
| 6        | 0.300                | 45                                | 18.4                    | 0.41                        | 4.0                      | 1 1/4"                         |
|          | 0.500                | 35                                | 24.2                    | 0.54                        | 7.0                      |                                |
|          | 0.750                | 31                                | 33.0                    | 0.73                        | 10.0                     |                                |
|          | 1.000                | 25                                | 36.3                    | 0.81                        | 12.0                     |                                |
| 7        | 0.400                | 44                                | 23.9                    | 0.53                        | 5.0                      | 1 1/4"                         |
|          | 0.700                | 33                                | 32.2                    | 0.71                        | 6.0                      |                                |
|          | 1.000                | 27                                | 38.7                    | 0.86                        | 8.0                      |                                |
|          | 1.250                | 24                                | 43.8                    | 0.97                        | 10.0                     |                                |
| 8        | 0.500                | 45                                | 30.6                    | 0.68                        | 3.0                      | 1 1/2"                         |
|          | 1.000                | 33                                | 46.5                    | 1.03                        | 6.0                      |                                |
|          | 1.400                | 27                                | 54.2                    | 1.20                        | 7.0                      |                                |
|          | 1.800                | 23                                | 61.8                    | 1.38                        | 8.0                      |                                |
| 9        | 0.600                | 44                                | 35.6                    | 0.80                        | 4.0                      | 1 1/2"                         |
|          | 1.250                | 32                                | 55.9                    | 1.24                        | 5.0                      |                                |
|          | 1.850                | 25                                | 67.2                    | 1.50                        | 7.0                      |                                |
|          | 2.500                | 21                                | 79.0                    | 1.75                        | 9.0                      |                                |

- The above coils consist of two rows of copper tubes mechanically bonded into plate type aluminium fins.
- The headers and return bends are also copper, terminating in standard BSP connections.
- Air vent and drain fitted outside of unit.

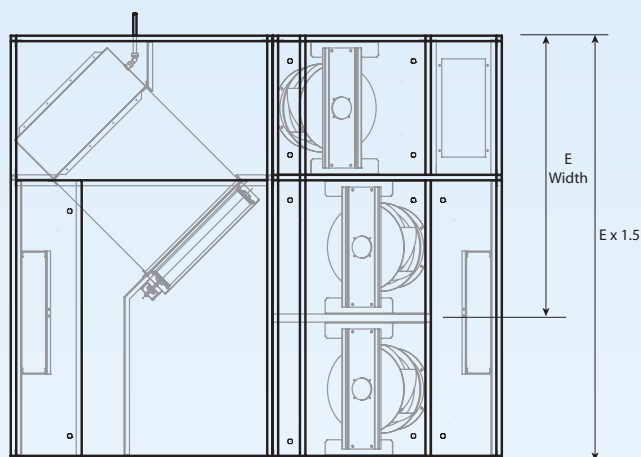
# Twin extract fan option

- With a plate heat exchanger there is no cross-contamination of airflow, so it is possible to extract air from contaminated sources, and incorporate run and standby extract fans with an autochangeover facility within the controls.
- This facility is available with all tubular framed units i.e. size 3 through to size 9, including flat or stacked, plantroom or weatherproof.
- The case will be wider or higher to accommodate the extra fan as detailed below.

## Flat Configuration



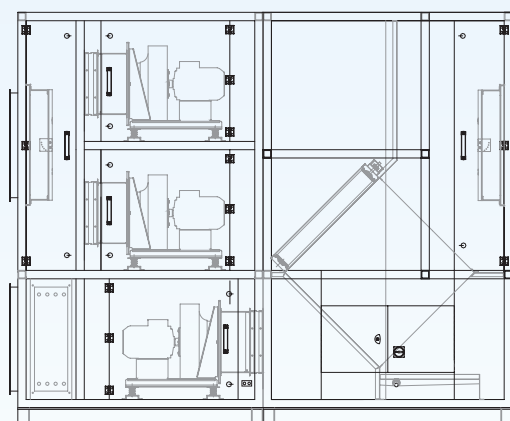
## Plan View



## Stacked Configuration



## Side Elevation



Check height of stacked units with sales office.



Backdraught shutters will be fitted behind each fan, and the fans will automatically change over every 12 hours of operation under the dictate of the AF 500 controller.

### Sizes 7, 8 and 9 air volume and pressure commissioning

- ▶ The centrifugal plug fans have infinite adjustment and control by inverter, with real energy savings as the speed is reduced.
- ▶ Very low SFP (specific fan power).
- ▶ Virtually maintenance free – no belts to check or replace.

#### Instant and accurate measuring of the air volume.

It is done right at the fan:

- ▶ The differential static pressure (Pdiff) is measured across the fan section and the tapping on the fan inlet ring using a micromanometer.
- ▶ There is a k factor for each size of fan:
  - Size 7 = 154
  - Size 8 = 197
  - Size 9 = 308
- ▶ To determine the air volume multiply the square root of the pressure differential by the k factor

ie:  $Q_v(m^3/hr) = k \text{ factor} \times \sqrt{P_{diff}}$

#### Example:

Size 7 unit k factor = 154

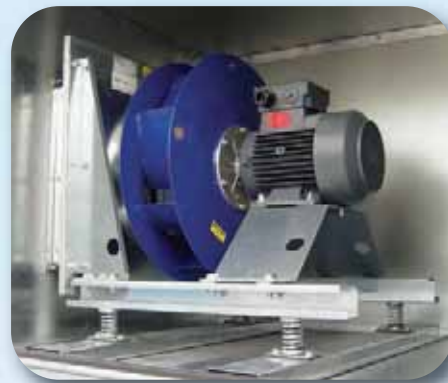
Static pressure differential at fan 700Pa

$Q_v = 154 \times \sqrt{700} = 4074 \text{ m}^3/\text{hr}$

To simplify this calculation further a differential pressure diagram for each fan is published in the O & M instructions for these products.

The fans on each size 7-9 Ecovent NRG unit are connected with the tubing and skin fittings to the outside of the unit case, so no drilling or special parts are necessary. Just plug in the micromanometer, read the pressure differential, and calculate the air volume.

There will be no need for duct traverses.



BSRIA

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VES reserve the right to amend product specifications and details without notice.