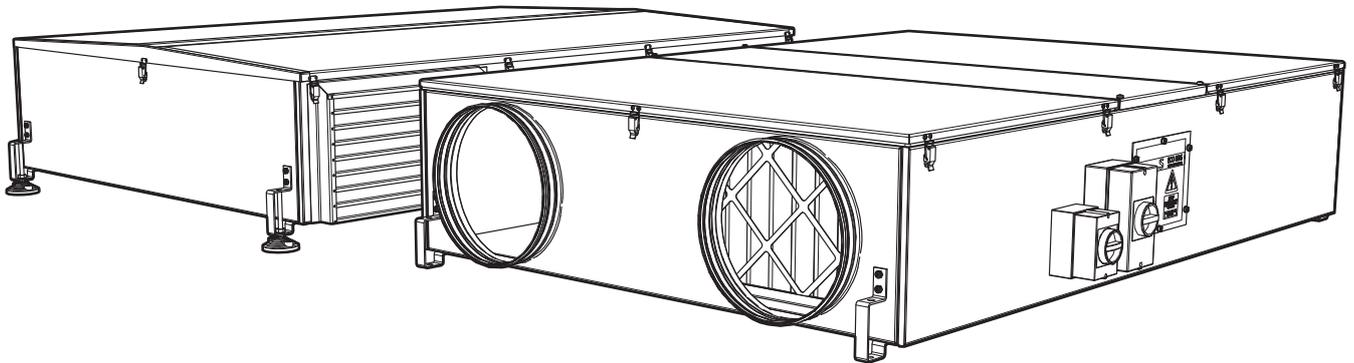


# ecovent **NRGP** Air Handling Units

## Installation, Operation and Maintenance Manual



**Important**  This manual must be read in full before Installation, Operation and Maintenance of the units supplied

Please ensure that this document is passed to the end user. This manual forms an integral part of the product and should be kept for the working life of the product. Additional copies of this and supporting documents are available by contacting VES or by visiting [www.ves.co.uk](http://www.ves.co.uk) and following the 'Download O & M's' link.

The following symbols used within this document refer to potential dangers, advice for safe operation or important points of reference

**Warning**  Indicates hazards associated with electric current and high voltages

**Caution**  Indicates hazards that require safety advice for personnel or potential unit/property damage

**Important**  Indicates important information

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**Introduction** **1** The **NRGP** series is a range of air handling units, with duties upto 0.4m<sup>3</sup>/s. Suitable for either plantroom, ceiling void or external locations. As standard, each unit will have been supplied pre-wired to an external isolator(s) or fitted control panel, as specified at the time of order.  
 The standard operating temperature of these units is -20 to +35°C.

For further technical details regarding dimensions and weights, contact VES on **08448 15 60 60**, quoting the sales order (SO) number and the unit type as found on the unit nameplate, or alternatively visit [www.ves.co.uk](http://www.ves.co.uk).

# ecovent **NRGP** Air Handling Units

## Installation, Operation and Maintenance Manual

<b>Nomenclature</b>	<b>2</b>	Point Description	Point Variants	Details (as appropriate)
Part Number Coding		1 Product	<b>NRGP</b>	ecovent NRGF Air Handling Units
		2 Unit Size	<b>0...2</b>	Sequential see unit outline for details
		3 Fan Type	<b>5...6</b>	Backward curve centrifugal fan
		4 Fan Size	<b>2...5</b>	Sequential
		5 Phase	<b>-1</b>	230V 50Hz Single Phase
			<b>-3</b>	400V 50Hz Three Phase
		6 Wiring	<b>Null</b>	Not appropriate
			<b>S</b>	Star
			<b>D</b>	Delta
		7 Unit Configuration	<b>/P</b>	Plantroom (flat)
			<b>/W</b>	Weatherproof (flat)
		8 Main Heating	<b>Null</b>	No Heating
			<b>-E</b>	Electric Heater Battery
			<b>-W</b>	LPHW Coil
		9 Infill	<b>Null</b>	15mm double skinned, acoustic infill
		10 Handing	<b>/T1</b>	Left/Top Access
		<i>(denotes position of supply airflow LIDSAF Confirmation on page 3)</i>	<b>/T2</b>	Right/Top Access
			<b>/B1</b>	Left/Bottom Access
			<b>/B2</b>	Right/Bottom Access
		11 Main Filter	<b>Null</b>	No filter
			<b>/F</b>	EU4 Pleated Filter
			<b>/R5...R9</b>	High efficiency pleated filter
		12 Control Panel Section	<b>Null</b>	No fitted controls
			<b>/I</b>	Pre-wired isolator/s
			<b>/CP</b>	Fitted control panel
			<b>/SC1</b>	Fitted speed controller/s
			<b>/SC2</b>	Fitted control panel/speed controller/s
		13 Twin Fan	<b>Null</b>	No twin fan
			<b>/TF</b>	Twin Fan Extract configuration
		14 Colour	<b>Null</b>	Galvanised finish
			<b>/R7004</b>	Powdercoated finish, RAL7004 etc...
		15 Powder Coat Type	<b>Null</b>	As colour
			<b>/IT</b>	Internal powdercoated only
			<b>/BT</b>	Internal/External powdercoated
		16 Special	<b>/S</b>	Special (non-standard) Unit

Typical Example

**NRGP255-1/P-W/T1/F/CP/S**

NRGP 2 5 5 -1 /P -W /T1 /F /CP /S  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯

# ecovent **NRGP** Air Handling Units

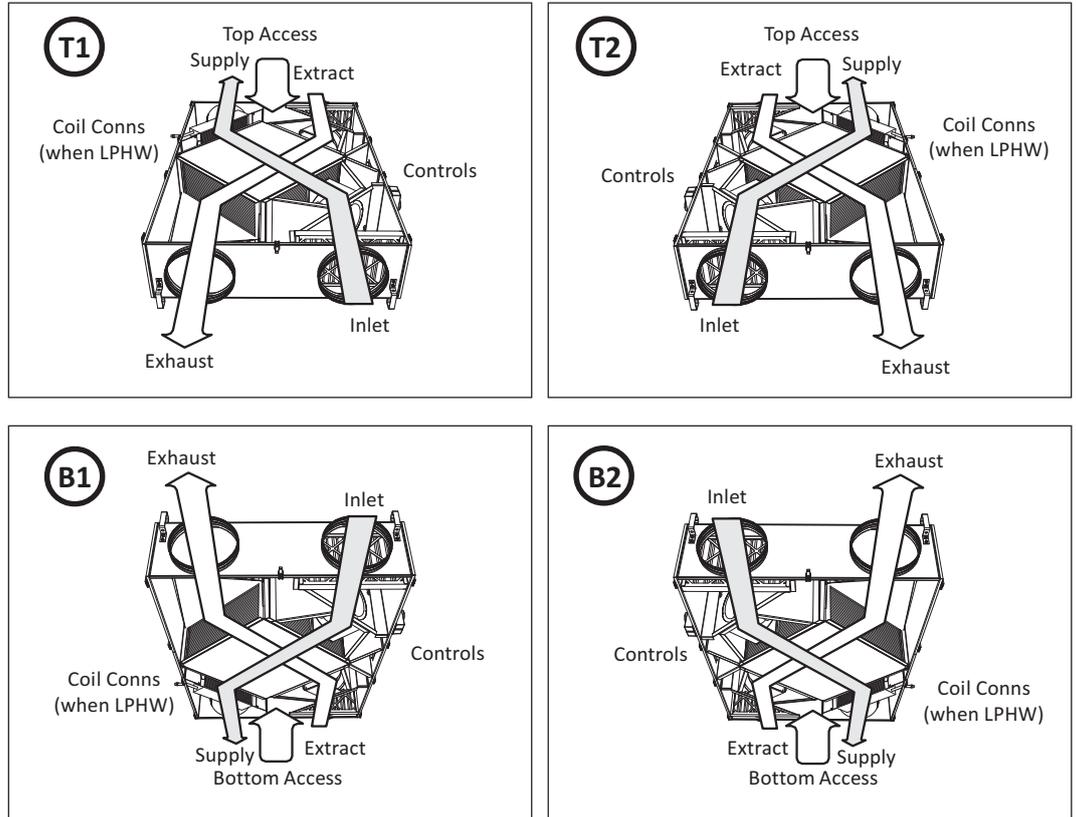
## Installation, Operation and Maintenance Manual

### Nomenclature 2 Continued

Part Number Coding

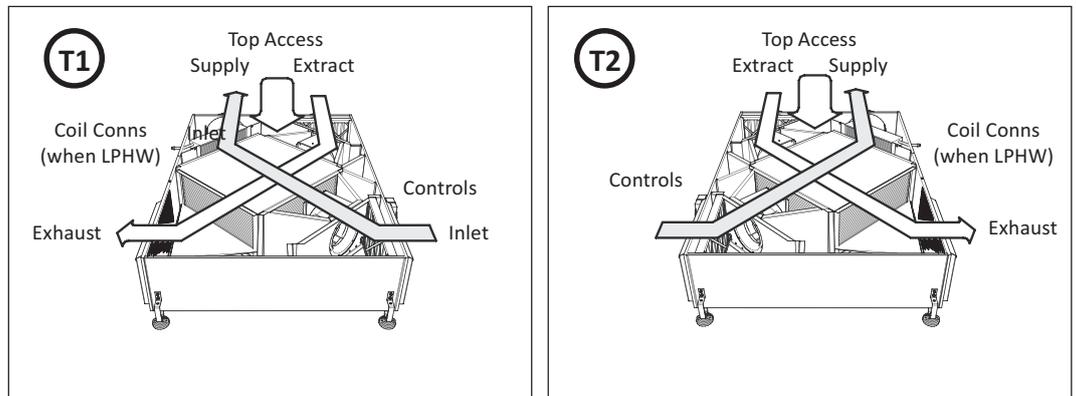
#### Plantroom configuration

Fig. 1



#### Weatherproof configuration

Fig. 2



# ecovent **NRGP** Air Handling Units

## Installation, Operation and Maintenance Manual

### Receipt of Goods & Handling **3**

Immediately upon receipt of goods, check for possible damage in transit paying particular attention to fan impellers, coil connections and unit casing. Prior to installation please check to ensure alignment and smooth rotation of the impeller after transit. Also check to ensure that any ancillary items are included. These will normally be supplied fitted or, in the case of small items, taped to the unit. In the event of any damage having occurred or if any item is found to be missing, it is essential to inform VES Andover Ltd. within **7 days** of delivery quoting sales order number and the unit type, as found on the unit nameplate. After this period, VES would be unable to accept any claim for damaged or missing goods.

### Installation **4**

The entire system must be considered for safety purposes and it is the responsibility of the installer to ensure that all of the equipment is installed in compliance with the manufacturer's recommendations, with due regard to the current HEALTH AND SAFETY AT WORK ACT and conforms to all relevant statutory regulations.

Where a unit is installed so that a failure of components could result in injury to personnel, precautions should be taken to prevent such an injury. If the unit is installed where there is a reasonable possibility of persons or objects coming into contact with the impeller whilst operational, a guard should be fitted or steps taken to prevent this. It is the installer's responsibility to ensure that access panels are not obstructed in any way and safe working access for maintenance must be provided in accordance with Health and Safety and Building Regulations. For confirmation of required access please see the appropriate unit outline drawing.

For optimum unit performance, careful consideration must be paid to the location of the unit in relation to the ductwork and associated items; placing the unit directly adjacent to a bend in ductwork will impede airflow and reduce performance. Consideration must also be given by the installer for adequate illumination of the unit location in order for safe maintenance. Further consideration should be given to the unit's position and secured into place as appropriate. This is especially important with external mounting as the wind and elements may effect the overall stability of the unit.

#### Caution



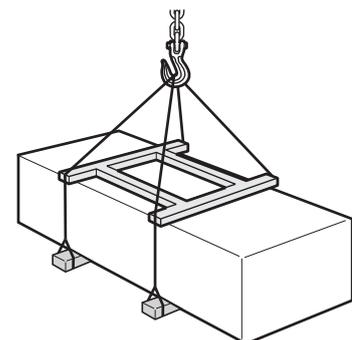
Handles, lids, housings and coil connections must NOT be used as lifting points

#### Lifting Detail

Fig. **3**

When moving the unit, handle with care and in such a manner as to avoid damaging the external finish as this may reduce the ability to resist corrosion.

Units are to be rigged and lifted using spreaders, taking into account the weight of the unit, and lifting gear should be arranged so as not to bear on the casework see right.



#### Caution



Units should only be supported using the support feet as provided by VES with the unit. Contact VES before attempting to support the unit using alternative methods. Only experienced fitters should undertake this work. Take necessary safety precautions when working in elevated positions.

#### Important



For associated components (speed controllers, controls) please refer to the relevant accompanying O&M

# ecovent NRGP Air Handling Units Installation, Operation and Maintenance Manual

## Installation 4 Continued

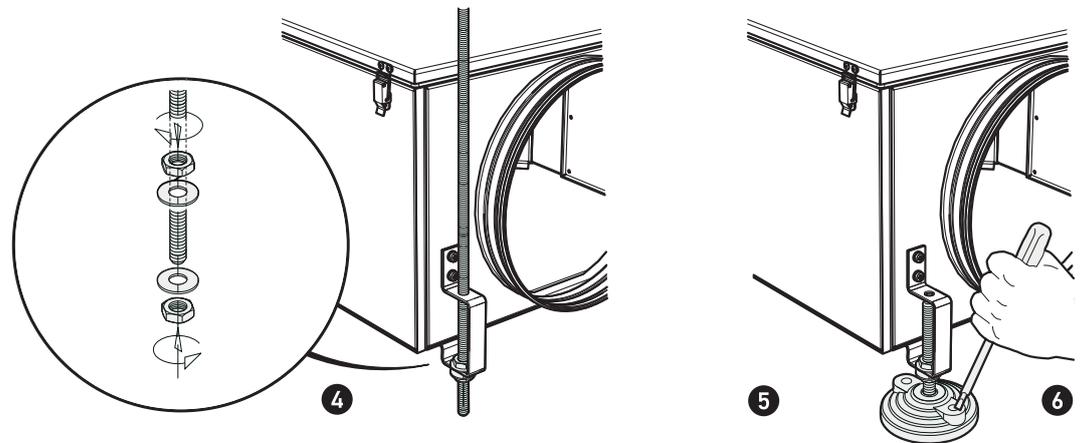
NRGP units are supplied with feet suitable for floor or ceiling-void mounting, either by use of drop-rod mounting, in either top or bottom access orientation, with airflow in the horizontal plane. For alternative mounting please consult your outline drawing as supplied with the unit, or refer to VES Customer Services for further information.

Secure drop rods/unit with M10 fixings as shown below ④.

Self-levelling feet are available for floor mounting, with M10 fixings as per drop rods ⑤. If required the unit can be further secured to the floor via knockout fixings holes on the feet, fixings to be supplied by others ⑥.

Unit mounting detail

Fig. ④ ⑤ ⑥



### Important !

When hanging units from drop-rods, ensure that the load is evenly spread and that all feet are used within the support. It is important that the unit is level to ensure all components operate correctly.

### Drain Pan

A drain pan has been provided for use in particular conditions when condensation may form within the heat exchanger in the unit. The drain pan has been specifically designed for use with a peristaltic pump assembly, also available from VES, and is not been specifically design for trapping by conventional methods.

**Note a pump is not normally required for external/weatherproof units.** Should condensation be an issue, it is recommended that an elbow be fitted to the drain spigot connection and terminated through the base of the unit and allowed to drain onto the roof.

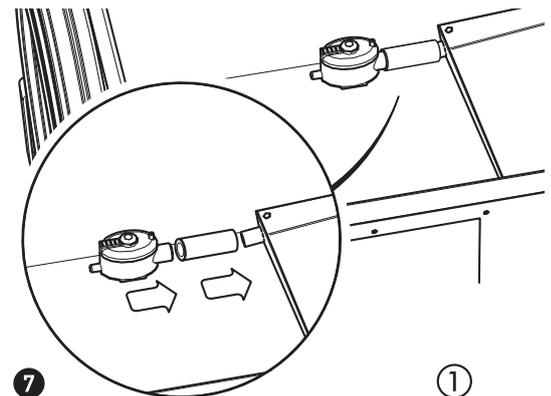
### Important !

For full fitting/installation instructions see the documentation accompanying the pump assembly.

### Pump installation

Fig. ⑦

- ① Fit the pump sensor to the drain pan connection as shown, using the blond rubber tubing provided.
- ② It is not essential for this sensor to be secured to an adjacent surface and once attached via the connection tubing it should be self supporting, however it is important that the pump sensor is level. Failure to do so may cause the pump sensor to become inoperative and so disable the pump.

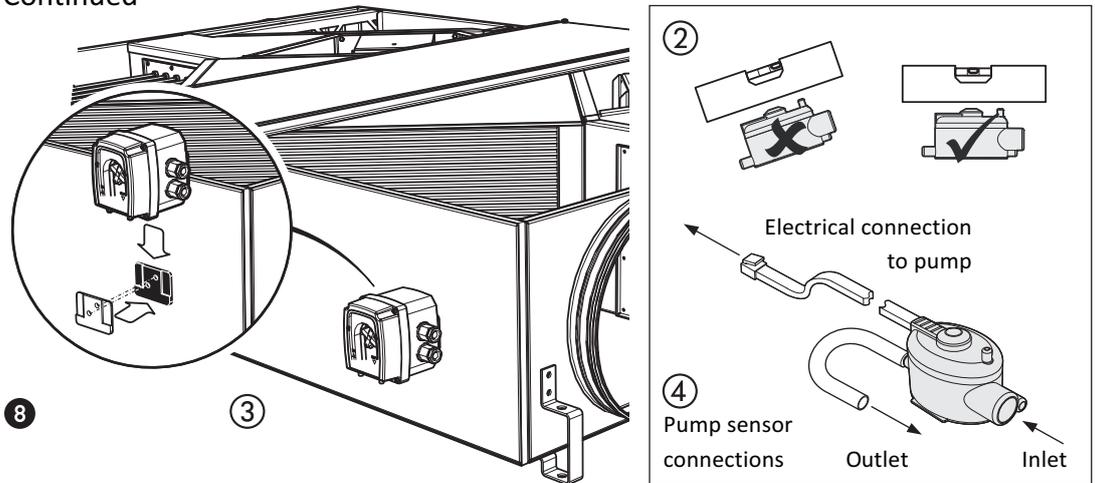


# ecovent **NRGP** Air Handling Units

## Installation, Operation and Maintenance Manual

### Installation 4 Continued

Pump installation  
Fig. 8



- ③ Fix the pump mounting plate to the unit in a position best suited for full access. Ensure placement is the correct way up, taking special notice on bottom access units. Slide the pump down onto the bracket and secure into position as shown.
- ④ Make the required connections to the pump from the pump sensor as per the pump O&M, ensuring that all associated pipe work and wiring inside the unit is carefully stowed so as not to foul on any moving components. Gland/grommet the casework as required.
- ⑤ Connect the drain to an appropriate waste system.
- ⑥ Follow the post-installation instructions as supplied with the pump.

### Electric Heater Batteries

On **NRGP / -E** units, an electric heater battery (EHB) will be installed. Supply to the heater should be 1Phase or 3Phase with separate neutrals; confirmation of this can be found on the unit nameplate. Cables should be of silicone rubber, fibreglass or of a similar high temperature insulated type and be installed to current

**I.E.E. Regulations**, ensuring a sufficient earth connection to the terminal provided. Care should be taken not to overstrain the terminal pillars as this may permanently damage the elements.

### Caution

The heater is fitted with a manual-reset high temperature cutout with normally closed (NC) terminals and is set to break if the duct temperature rises above 130°C.

It is important that the cutout is connected to the safety circuit so the heater is isolated in the event of overheating caused by airflow failure.

The electrical supply must be isolated before attempting to reset the manual cut-out and should be given sufficient time to cool. For further information regarding electric heaters please see **VES Ref. ID431**.

If a speed controller is fitted to the system, it must not stop the fan independently of the control system, or allow airflow to fall below the stated volume on the electric heater battery. Suitable speed controllers without on/off switches are available from VES Andover.

### Coils

Coils should be piped according to any relevant local codes of practice. Where threaded connections are supplied, the only approved method of jointing method is by use of Boss white and hemp. The thread fitted to the coil is to be supported at all times whilst making joints. All external piping is to be supported independently from the coil. Fluid filters are recommended.

### Caution

It is important that water and steam coils are protected against damage from extreme weather conditions during the winter season. If the water is allowed to freeze in the coil system, damage may occur potentially bursting pipes and resulting in emergency problems.

Fitting a frost thermostat at the unit inlet and ensuring that boilers run continuously in low ambient temperatures can help to prevent this.

# ecovent **NRGP** Air Handling Units

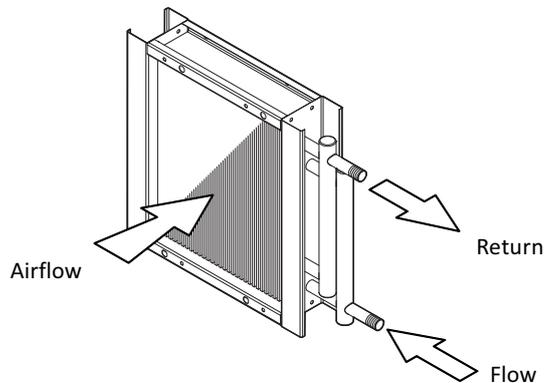
## Installation, Operation and Maintenance Manual

### Installation 4 Continued

**Caution**  Heating coils do not cool immediately when the hot water supply is cut off. The residual heat must be dissipated to avoid damage. The continuous running of the fan after shutdown resolves this, by operation of a run-on timer. The recommended length of run-on is **2 minutes minimum**.

#### Hot Water (LPHW) Coils

On **NRGP / -W** units, a Low Pressure Hot Water (LPHW) coil will be installed. The coils are normally suitable for LPHW at 82°C flow and 71°C return temperature. LPHW coils are supplied as standard with an air vent and drain plug located on the pipe work immediately adjacent to the coil connections on the AHU. The air vent should be at the highest point, with the drain at the lowest. The coil should be regularly vented so as to avoid potential air locks, resulting in a fall off of duty. It is recommended that a check be made as to whether any treatment is required to the water supply for prevention of corrosion and scaling of the equipment. Information regarding the necessary action to be taken can be obtained from the relevant Local Water Supply Authority.



Typical LPHW Coil  
Fig. 9

The unit will have been supplied with connections either left or right-hand side looking in direction of airflow. Please see order acknowledgement for confirmation of this handing. Should you need to alter this please consult VES as unit adjustment may invalidate your warranty.

### Standard Wiring 5 & Fan Installation

**Warning**  The electrical supply **must be fully isolated** before attempting to affect any work on this unit. All electrical connections to any unit must be carried out in accordance with the current edition of the I.E.E Regulations, only competent Electricians should be allowed to affect any electrical work to our units.

**Important**  It is the customer's responsibility to supply earth fault protection through the building installation device and a dedicated, isolated power supply with overload protection, to account for motor start up currents. See the fan wiring diagram for specific fan details on page 9 Fig. **11 12**.

**Warning**  Do not connect any unit to an electrical supply voltage outside of the specification.

The following wiring diagrams are a guide to installing the standard fan and actuator options found on **NRGP** units. If in any doubt, for units with fitted VES controls or for special versions of the units, consult the wiring diagram in your document pack or contact VES Customer Services Department on **08448 15 60 60**, quoting the sales order (SO) number and unit type as found on the unit name plate. For incorrect rotation of single phase fans, check with the VES Service Department for advice, on **08448 15 60 60**.

# ecovent **NRGP** Air Handling Units

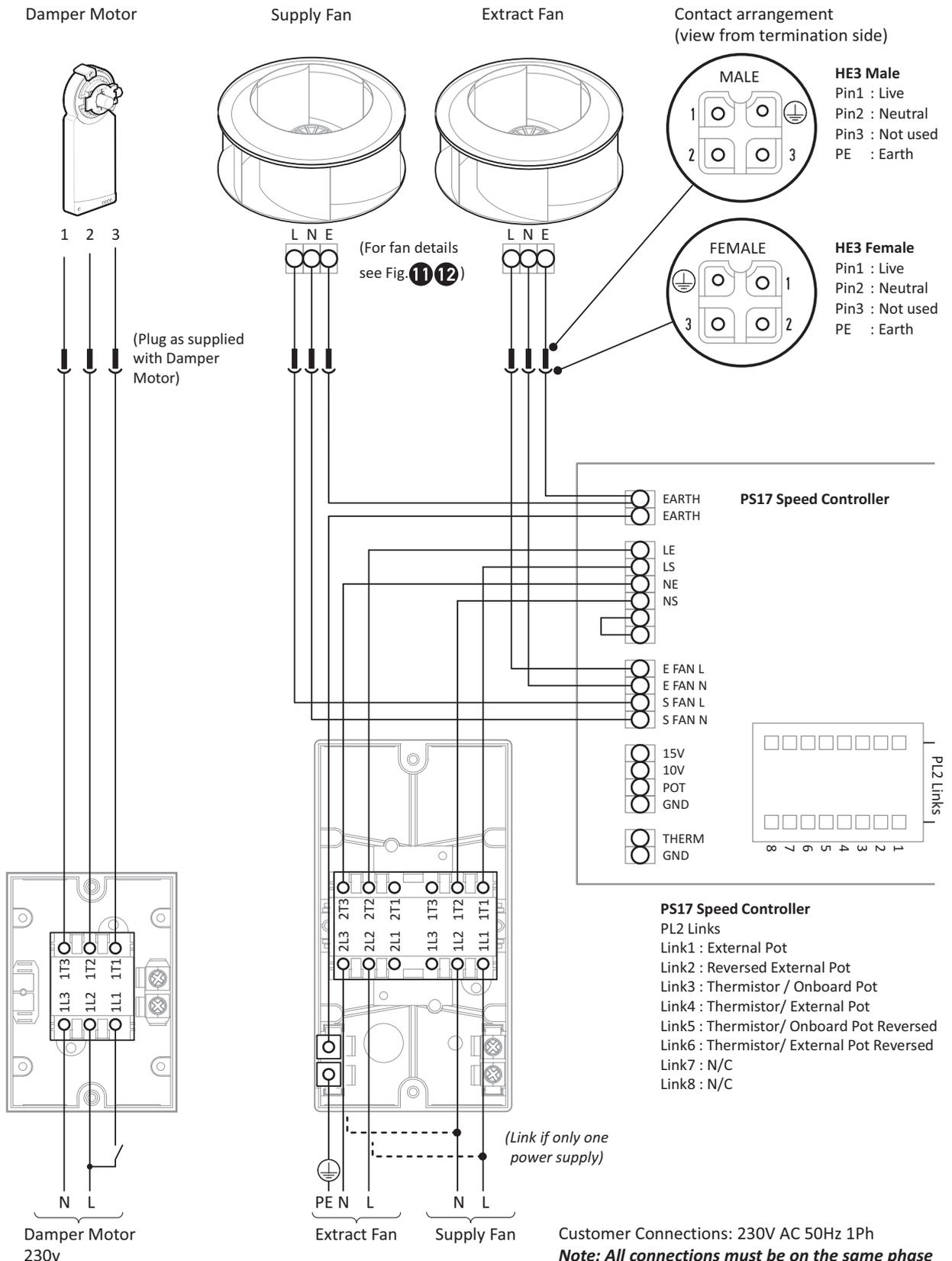
## Installation, Operation and Maintenance Manual

### Standard Wiring 5 Continued

### & Fan Installation

Standard wiring arrangement

Fig. 10



# ecovent **NRGP** Air Handling Units

## Installation, Operation and Maintenance Manual

### Standard Wiring & Fan Installation 5 Continued

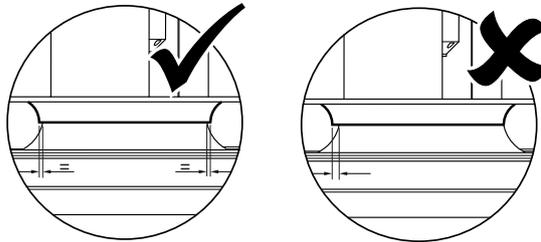
Standard fan details  
Fig. 11

Model		230V 1PH 50Hz			
NRGP Unit	Fan	Motor Power (kW)	FLC (A)	SC (A)	C400V (μF)
0	ZC0211	0.14	0.60	1.00	4
1	ZC0301	0.20	0.86	1.70	6

Standard fan details  
Fig. 12

Model		230V 1PH 50Hz			
NRGP Unit	Fan	Motor Power (kW)	FLC (A)	SC (A)	C400V (μF)
2	ZB501	0.40	1.70	4.50	8

Fan alignment details  
Fig. 13



### Important !

Prior to starting the unit it is important to ensure that the fans are free running, and should any components have moved during transit take care to ensure they are realigned to allow correct operation/rotation. A trial spin by hand should indicate if the fan is rubbing. To align, loosen either the fan plate fixings or the inlet ring, adjust and retighten, see figure 13 above. The same should be applied to any wiring looms which may have become unfastened; ensure that loose wiring is securely stowed away from any moving components.

**NRGP** units are supplied with a PS17 dual fan speed controller for commissioning; see the accompanying speed controller documentation for further operational details.

### Maintainance 6

### Important !

Before attempting to carry out any work on our units, all accompanying documentation including warning labels on the unit must be referenced.

Should it be necessary to remove any component ensure that these are secured into position once reinstalled. It is critical that after any maintenance work has been conducted that all components removed/replaced be refitted correctly by a competent engineer.

### Warning ⚡

Before attempting to carry out any maintenance work, investigative or repair work on our units, the unit **MUST BE COMPLETELY ISOLATED** from its electrical supply. Ensure a minimum of two minutes after electrical disconnection before removing access panels. This will allow any moving parts to come to a rest. Care should also be taken when accessing external units as the wind and elements may cause moving parts to 'windmill'.

In general, this series of units require little maintenance. In the unlikely event of component failure, spares are available from stock at VES Andover Ltd.

### Caution !

When accessing the unit ensure the access panels are handled/opened in a controlled manner so as to avoid damage to the unit or injury to personnel. This is particularly important with bottom access units. Ensure the AHU has been allowed to completely cool before attempting any work to the unit

# ecovent NRG Air Handling Units

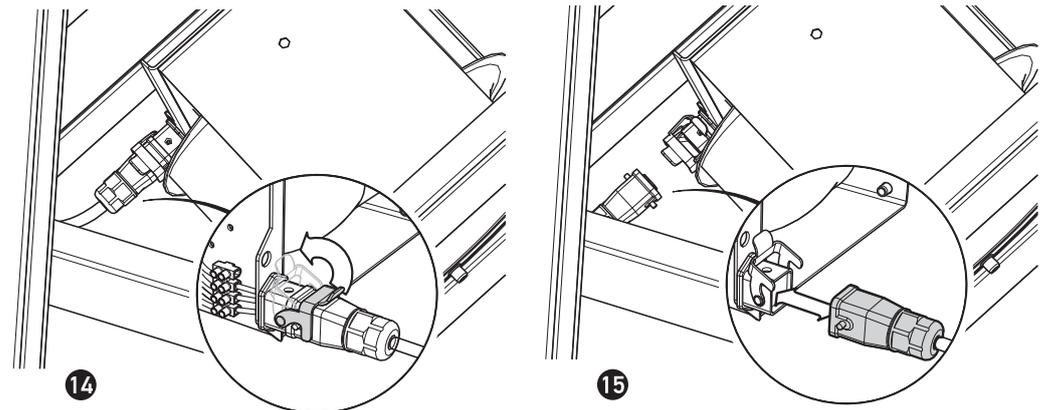
## Installation, Operation and Maintenance Manual

### Maintenance 6 Continued

All NRG units feature plug & socket connections to allow easy removal/replacement of key components. For fan removal follow the instruction below.

**Caution**  Separate the plug connection by hand (tools not required) by lifting the locking lever **14** and pulling the plug/socket apart **15**. **DO NOT** pull the cable to separate the assembly.

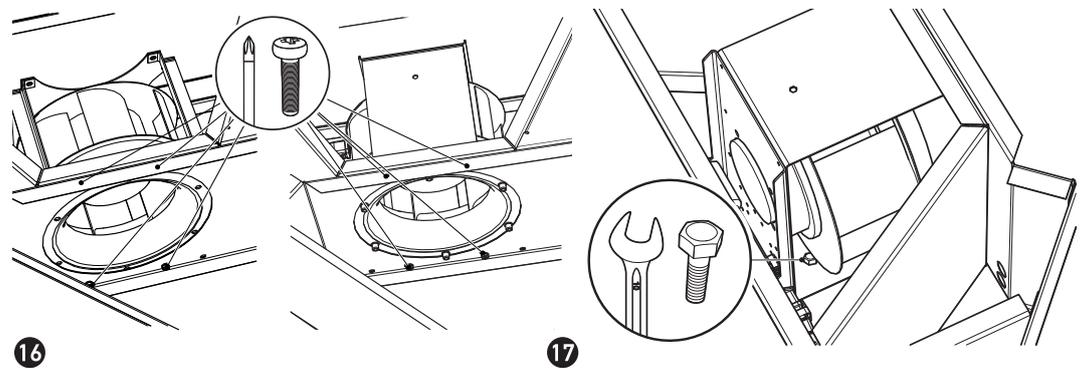
Fan assembly removal  
 Fig. **14** **15**



On reconnection, the connection features a locating lug to ensure correct orientation. Once rejoined, lock the connection together again using the locking lever as shown.

The fan support/assembly is held into place with 4 M6 fixings located on the inlet side of the fan bulkhead as shown below **16**. Ensure when replacing the assembly that all fixings are replaced correctly.

Fan assembly removal  
 Fig. **16** **17**



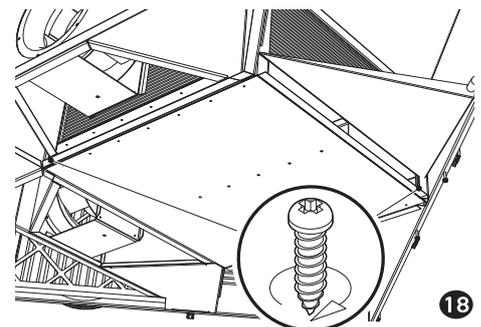
Please note, that on some bottom access units, an additional M6 setscrew fixing is used, located between the fan impeller and the casework **17**. Ensure when reinstating the unit that all fixings are replaced correctly and check that the fan impellers are free running. Adjust as necessary for correct alignment.

For bottom access units, should it be necessary to remove the heat exchanger from the unit casework take care to ensure that all components are correctly supported during their removal.

Remove the lids and central mullion from the unit, exposing the bypass damper. As an additional safety measure the bypass is held into place using PK screws as shown **18**.

Heat exchanger removal  
 Fig. **18**

Remove the required components with with care and ensure all components are replaced correctly.



# ecovent **NRGP** Air Handling Units

## Installation, Operation and Maintenance Manual

### Maintenance 6 Continued

**Recommended Checks** In order to keep the unit in good order the following maintenance routine is recommended:

**Three Monthly Checks** Filters should be inspected every three months. If they are found to be heavily soiled or damaged in any way they should be replaced. Spare filters can be ordered from VES Spares Department.

**Six Monthly Checks** The fan impeller should be cleaned every 6 months. Failure to clean the fan on a regular basis could result in loss of fan performance, or cause it to fall out of balance. If a fan is stationary for long periods in a humid atmosphere, it should be switched ON for minimum of two hours every month to remove any moisture that may have condensed within the motor.  
Failure to keep dampers clean could result in the damper becoming inoperative. Clean damper blades and frames and lubricate with PTFE aerosol or equivalent.  
The heat exchanger matrix should be inspected for debris, dust or dirt build up. If found contaminated, foreign matter should be removed accordingly; superficial dust or debris can be removed from the surface of the heat exchange by gently brushing. Loosened debris can then be vacuumed from the surface of the matrix or flushed through with warm water. Stubborn deposits can be removed by using a low pressure washer with an approved detergent solution. The solution temperature should not exceed 50 °C. When using any pressure device care must be taken not to damage the heat exchanger matrix.

**Caution**  Under NO circumstances should the heat exchanger be steam cleaned.

Ensure the drain pan and the drain connection is free from debris ensuring any condensate produced can freely drain away. Should a full service be required it may be necessary to disassemble the unit casework to gain access to some components.

**Twelve Monthly Checks** **NRGP** units are supplied with both unpainted galvanised sheet steel cases and powder coat paint finish. Check all painted items to ensure that they have not deteriorated, particularly where adverse environmental conditions prevail. Re-paint as necessary. Matching paint can be supplied upon request.

**Spares & Repairs** When enquiring after or ordering spares contact VES Spares Department, quoting the sales order (SO) number and unit type as found on the unit nameplate.

**Tel: 08448 15 60 60 • Fax: 02380 26 12 04**

**WEEE Directive**  At the end of their useful life the packaging and product should be disposed of via a suitable recycling centre. Do not dispose of with normal household waste. Do not burn.



**PLEASE ENSURE THAT THIS DOCUMENT IS PASSED ON TO THE END USER**

We reserve the right to alter the specification without notice ©VES Andover Ltd. 2010.

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## ecovent **NRGP** Air Handling Units Installation, Operation and Maintenance Manual

### **CE** Declaration of Conformity

Date: 1st March 2010  
Product: ecovent NRG Air Handling Unit  
Type: NRG  
Manufacturer: VES Andover Limited

The product above is produced in accordance with EC Council Directives:

2004/108/EC (Electromagnetic Compatibility Directive)

2006/95/EC (Low Voltage Directive)

2006/42/EC (Machine Directive)

The European Harmonised Standards applied are:

BS EN ISO 12100, BS EN ISO 13857:2008, EN61000, EN 60204-1, BS EN 60950-1:2002

Basis of Self attestation:

Quality Assurance to ISO 9001-2000, BSI Reg. Firm Cert. No. Q5375

Signature of Manufacturer:



Position of Signatory:

Director

## ecovent **NRGP** Air Handling Units Installation, Operation and Maintenance Manual

### Warranty

All VES Andover Products come with a one year guarantee from date of dispatch, which covers parts and labour.

You can now extend this with the following options:

Option 1. **FREE extended Warranty**

We can offer you a maintenance agreement that keeps this equipment in tip-top condition. If you take out this agreement, we will extend the warranty **free of charge for up to 5 years**, providing the regular maintenance agreement remains in place.

Option 2. **12-24 Month Extended Warranty**

12-24 months from the date of dispatch. This can be covered at a cost of just 3% of order value. (minimum charge £50.00).

Option 3. **12-36 Month Extended Warranty**

12-36 months from date of dispatch. For this cover, the charge is 6% of order value (Minimum charge £80)

Please State which option you require when you place your order. A transferable certificate will then be issued to you.

*Please note, this offer excludes condensing units. We would be happy to quote you for these separately.*

**Register for separate spares reminders and get a 10% discount**

Register for this free service and we will automatically send you a regular reminder detailing the consumable spares for this unit, together with their current list prices.

**You will then be entitled to a 10% discount off any spares.**

To arrange any of these options

**Phone: 08448 15 60 60**  
**or Email: spares@ves.co.uk**

Stating the sales order and reference number from the unit.