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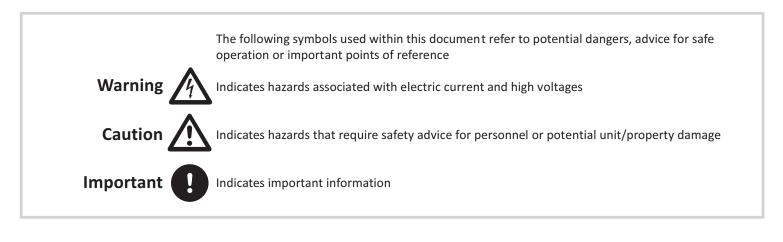
web: www.ves.co.uk VES Ref. ID.1500 Issue D May 2022 Original Instructions

### Conventions

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** and following the 'Download O & M's' link.



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Introduction1Ecovent® EVHR is a hybrid ventilation unit with an optimised duty of 0.50m³/s and a boost<br/>capacity of 0.70m³/s. Units are available as a master/slave pair.<br/>The EVHR unit is suitable for ceiling/roof mounting with vertical airflow, internal locations only.<br/>A weatherproof roof terminal is also available.

As standard, each unit will have been supplied either pre-wired to a fitted control panel or pre-wired termals, 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 **023 8046 1150**, quoting the sales order (SO) number and the unit type as found on the unit nameplate, or alternatively visit **www.ves.co.uk**.



page

Nomenclature	
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Part Number Coding

Point Description	Point Variants	Details (as appropriate)
1 Product	EV	Ecovent <sup>®</sup> Heat Recovery Units
2 Heat Recovery type	HR	Hybrid Roof Ventilation Units
3 Unit Size	4	Sequential see unit outline for details
4 Fan Type	7	Centrifugal EC fan
5 Fan Size	3, 4	Sequential
6 Phase	-1	230V 50Hz Single Phase
7 Main Heating		
	/w	LPHW Coil
	/E	Electric Heater Battery
8 Main Filter	Null	No filter
9 Control Panel Section	Null	No Controls
	/MS01	Fitted control panel (master) V1
	/SV01	Fitted control panel (slave) V1
	/MS02	Fitted control panel (master) V2
	/SV02	Fitted control panel (slave) V2
10 Energy Monitoring	Null	No system
	/EM	Energy Monitoring
11 Gas Proving System	Null	No system
	/GF	Gas Proving System (Flamefast)
	/GM	Gas Proving System (Merlin)
12 Connection	/GL	Supply/Extract Grilles
	/SP/GL	Supply Spigot/Extract Grille
	/GL/SP	Supply Grille/Extract Spigot
	/SP/SP	Supply Spigot/Extract Spigot
13 Colour	Null	Galvanised finish
	/R9010	RAL Colour as specified
14 Finish	MT	Matt
	SG	Semigloss
	FG	Full Gloss
	LT	Leatherette
15 Powder Coat Type	Null	As colour
16 Variation	/0001	Sequential

Typical Example

EVHR474-1/CPSC/MS/GL/R9010SG/0253

EV HR 4 7 4 -1	/MS01		/GL /	/R9010	SG	/0253
12345678	9	1011	12	13	14	15 16



Receipt of Goods and Handling
and Handling
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 is unable to accept any claim for damaged or missing goods.
Installation 4

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 such that component failure 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. 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 safe maintenance, consideration must also be given by the installer for adequate illumination of the unit location. Further consideration should be given to the unit's position and secured into place as appropriate.

Caution

Mounting hangers, door furniture etc. extend beyond the casework, so are vulnerable to damage. Take necessary precautions so as not to cause damage whilst handling the unit.

The weight of each unit/section is specified on the outline drawing and the total unit weight will be displayed on the unit inspection label. When lifting the unit using a fork lift truck ensure the whole unit is supported by the full length of the forks. It may be necessary to use fork extensions to fully support the unit. The centre of gravity may be offset from the centre of the unit; this needs to be taken into consideration when lifting the unit.

Fork Lifting Detail Fig. 1



Handle with care. Failure to fully support the unit during lifting may result in damage to the unit casework

Lifting Detail Fig. 2

Caution

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



### Installation

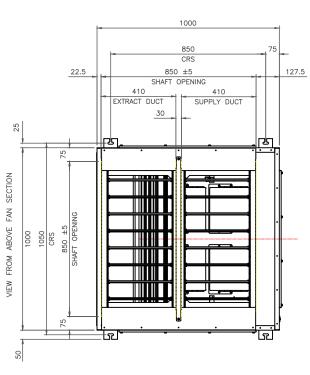
#### Continued

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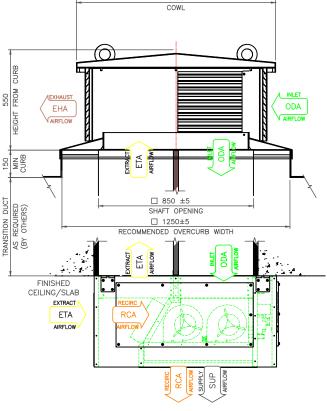
**Ecovent**<sup>®</sup> **EVHR** units are designed to be mounted flush against the underside of the ceiling slab, connected to a purpose-made terminal or turret. The connecting duct needs to be split so as to differentiate between the supply and extract airflows. Clearance is required on all faces of the fan section allowing access to both sides to the fans, the rear to the controls section and clearance to the grilles.

### Typical installation detail

Fig. 3



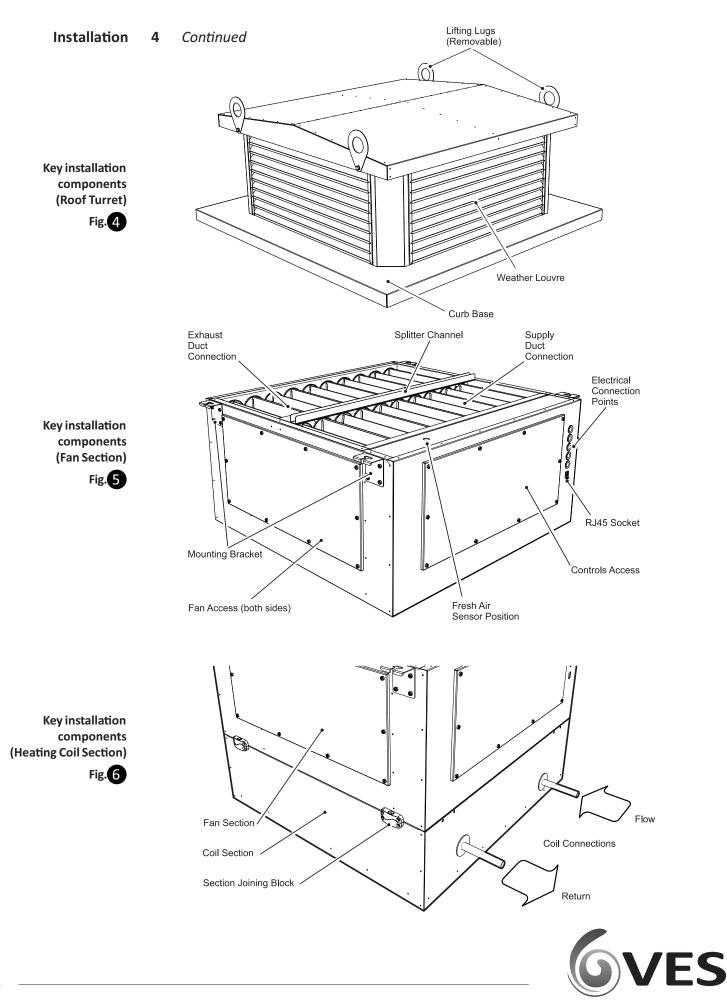
VIEW FROM ABOVE FAN SECTION



1100

(SECTIONAL VIEW)

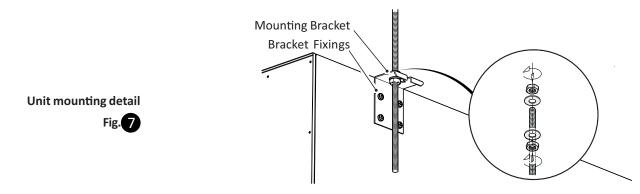






**Ecovent**<sup>®</sup> **EVHR** units fan sections are supplied with hangers suitable for drop-rod or ceiling-void mounting, with supply and discharge airflow in the vertical plane. For alternative mounting please consult your outline drawing as supplied with the unit, or refer to VES Customer Services for further information.

Secure drop rods/unit with the appropriate fixings as shown below **7**.



When hanging units from drop-rods, ensure that the load is evenly spread and that **ALL** brackets are used within the support. Ensure that the drop rod/fixing used is selected appropriately to accommodate the load of the unit.

**Ecovent**<sup>®</sup> **EVHR** units feature fresh air (supply) and exhaust ducts and as previously stated, are intended to be mounted flush. In order to ensure that the two opposing airflows are separated, a site-specific splitter (by others) MUST be incorporated into the installation. A 30mm wide removable channel has been included on the top of the fan section and bottom of the turret to assist with alignment.

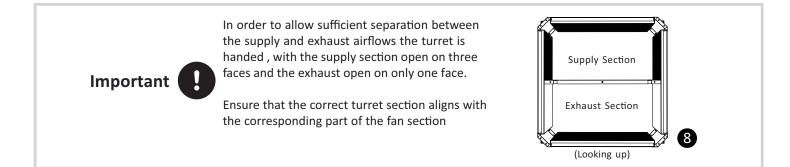
The fresh air sensor is supplied loose inside the controls section to avoid damage during transit. Install inside the fresh air duct using the gland position provided.

Refer to the unit outline for confirmation of the handing and ductwork arrangement as required.



Important

Separator channels are **NOT** structural and are included as part of the unit sealing only. When moving assembled units ensure that **ALL** sections are fully supported.



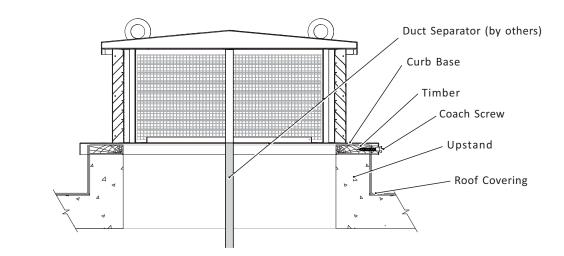


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### Installation

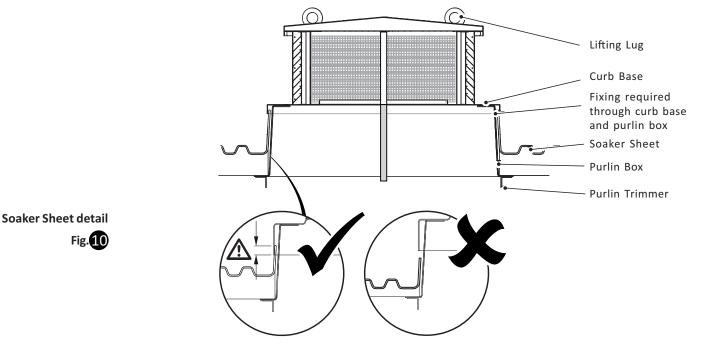
#### Continued

Turret with curb base mounting The roof turret terminal is designed to sit on top of a prepared roof upstand, for further dimensional details refer to the unit outline drawing. We recommend that each turret be fixed to the upstand with coach screws or similar , through the side of the curb base into the timber upstand see This is especially important as strong winds could be encountered in exposed locations.



Before cutting into the roof ensure that the correct profile base has been purchased. All roof apertures must be independently supported by structural trimmers in accordance with local building regulations, in order to protect plant weight and support any service personnel. The EVHR turret is designtied to be mounted horizontally level only, not pitched.

This installation may require more than one engineer as access to both the roof and ven lated area will be required.



**Caution** A lt is important that the height of the purlin box support be adjusted to ensure that the curb base overlaps the soaker sheet correctly (see above). This can be achieved by adjusting the position of the purlin trimmer. Failure to set this correctly will compromise the integrity of the the roof and may lead to leakage.



Curb mounting detail

Fig. 9

Installation EVHR/W LPHW Coil Units

#### Continued

4

**Ecovent**<sup>®</sup> **EVHR** units are offered in a LPHW heating variant. The coil section is secured to the fan section using self-locating joining brackets. The coil section is square in profile and can be reconfigured to allow alternate coil connection positions relative to the fan section should that be required.

Coils should be piped according to any relevant local codes of practice. As standard EVHR coils are supplied with a 1" BSP connection. All external piping is to be supported independently from the coil. The flow connection is nearest the bottom of the unit.



It is important the connecting pipework route does not obscure any of the fan section access.



It is important that 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. **EVHR** LPHW units are fitted with a coil temperature sensor as standard and ensuring that boilers run continuously in low ambient temperatures can help prevent possible damage.

On **Ecovent® EVHR/ -W** units, a Low Pressure Hot Water (LPHW) coil will be installed. The coils are normally suitable for low pressure hot water with a range of between 80  $\sim$  40 °C flow and between 70  $\sim$  30 °C return temperature. 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.

Important

Repositioning the coil section is best done **BEFORE** installing the unit at roof/ceiling level.

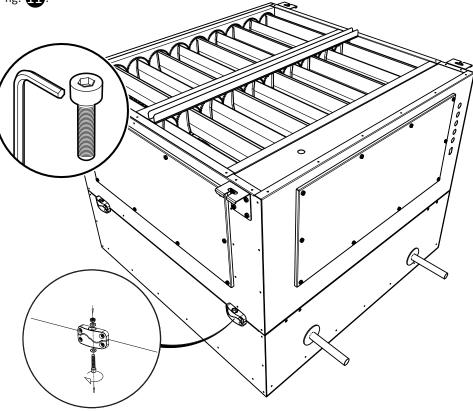


When repositioning the coil section the casework for both sections **MUST** be fully supported. A supply temperature sensor is positioned within the coil section and hardwired to the control panel, separating the sections too far apart may result in damage to critical components. A service loop has been provided to aid rework. Ensure the sensor cable is stowed within the coil section when reassembling the sections so as not to trap the cable between the joints.



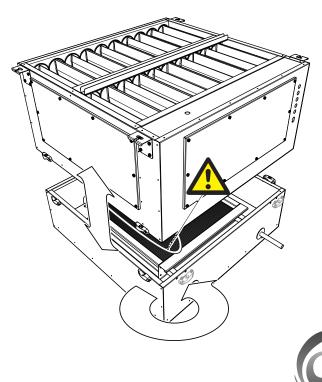
# Installation 4 Continued

Coil Section Reorientation With the unit fully supported, remove the 4 joining block fixings using a 6mm hex key as shown in fig. 1

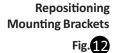


Coil Section reconfiguration Fig.

Taking care with the supply sensor cable, separate the sections. If rotating the coil section  $+/-90^{\circ}$  reposition the coil section joing bracket to the next face as shown in fig. (2). This bracket repositioning is not required for a 180° rotation.



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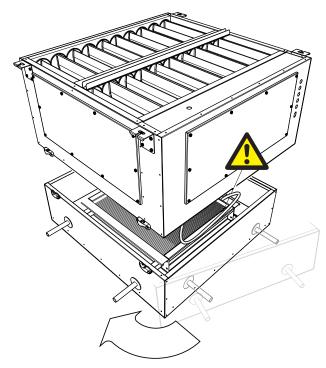


# Installation 4

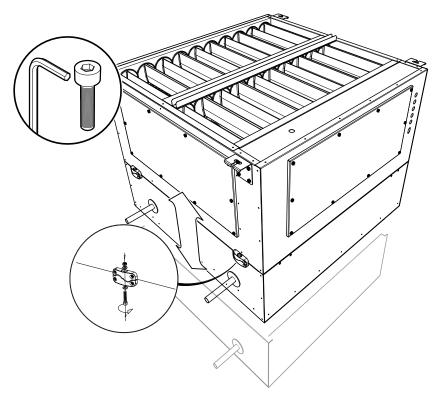
Coil section Reassembly

### Continued

Rotate the sec ons to match the required configuration as shown in fig. (1), again take care with the sensor cable. If at floor level, this is easiest to achieve by lifting and rotating the fan section.



Ensuring all joining brackets are securely fastened to the casework, reassemble the two sections by retightening the four joining brackets and drawing the sections together as shown in fig. (14), Again take care with the sensor cable.



Rejoining the sections Fig.



# Standard Wiring 5 and Fan Installation



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.T Regulations, only competent Electricians should be allowed to affect any electrical work to our units.

A cable entry point is provided at the control section.

It is the responsibility of the installer to ensure that a suitable cable gland (giving adequate protection and strain relief) is fitted, and in doing so also ensure that no internal components are damaged during this installation. Make certain all swarf is removed before use.

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.



Important

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

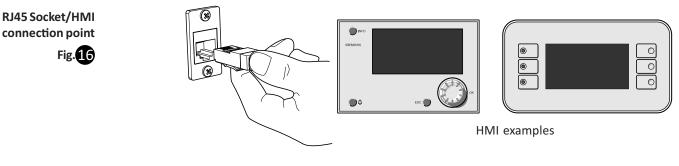
The following wiring diagrams are a guide to installing the standard fan and actuator options found on **Ecovent**<sup>®</sup> **EVHR** units. If in any doubt, for units with fitted VES controls or for special versions of the units, consult the wiring diagram in your document pack or contact VES Customer Services on **023 8046 1150**, quoting the sales order (SO) number and unit type as found on the unit name plate.

For incorrect fan rotation, check with the VES Customer Services for advice, on 023 8046 1150.

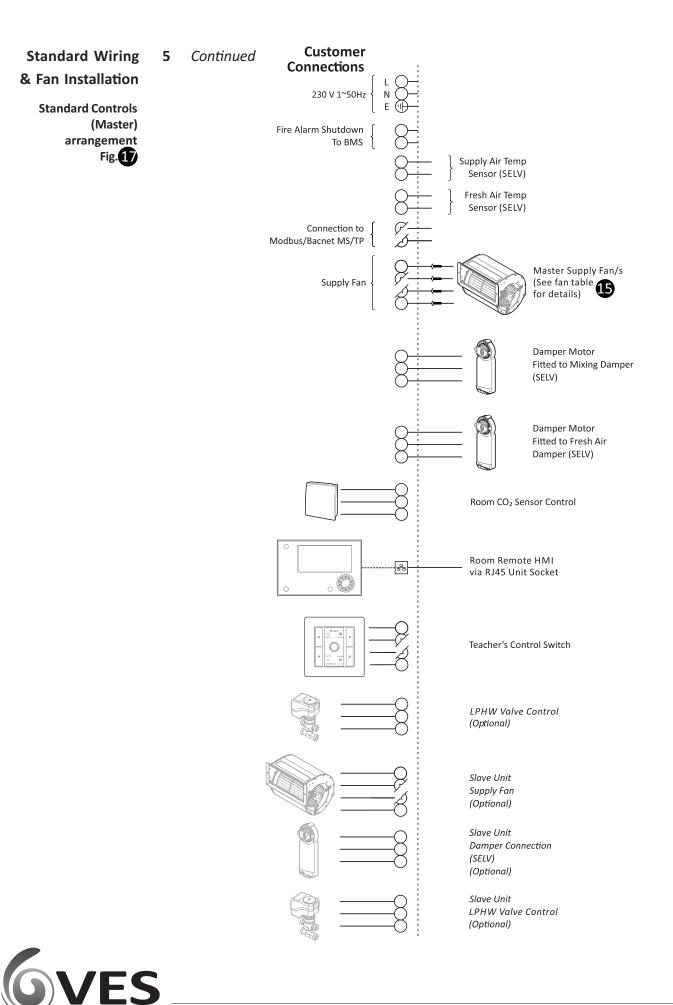


Size	Phase	Motor Size	Voltage	Fan Speed (rpm)	Full Load Current	Speed Control	Fans per unit
EVHR474-1	1 Phase	0.100 kW	230 VAC	1410	0.83 A	EC	4

Units fitted with master controls feature an RJ45 socket at the cable entry point to enable connection of the controls interface (HMI). This allows setup and commissioning of the unit to be carried out via a handheld HMI, which can be left connected and mounted in a more appropriate position or removed as required.





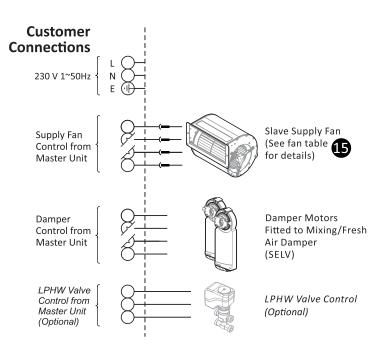


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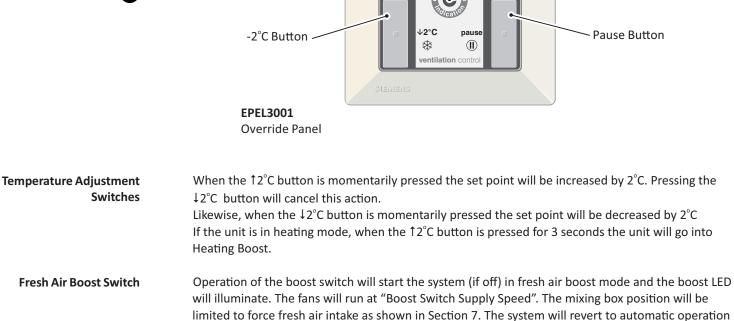
## Standard Wiring & Fan Installation

Standard Isolator (Slave) arrangement Fig.





# **Standard Wiring** 5 Continued & Fan Installation The following gives an overview of the current and previous versions of Room override panel. Important For details regarding its full opera on and the full controls philosophy, please contact VES Controls Department on 023 8046 1150 for further information **Controls arrangement** For each room an information and override panel is provided to allow the user to override the automatic controls. 2022 The panel comprises: • Fresh Air Boost switch Pause switch • Temperature Adjustment switches +/- 2 °C • Open windows indication **©VES Boost Button** +2°C Button ~ $\Diamond$ 2 **Open Window Indication Override Panel** Fig. (19)



after a pre-set period "Boost Switch Duration" or if the switch is pressed again. A short time delay will prevent rapid mode switching by unauthorised operatives. Operation of the Boost switch will run the unit to maximum set speed and modulate the dampers to allow maximum amount of fresh air possible without affecting room temperature. If the unit is off, operation of the Boost switch will start the system in boost mode. The system will revert to automatic operation after a preset period or if the switch is operated again. A time delay will prevent rapid mode switching by unauthorised operatives.



Standard Wiring & Fan Installation	5	Continued
Pause Switch		Operation of the Pause switch will pause the system. The system will revert to automatic operation after a preset period or if the switch is operated again. A time delay will prevent rapid mode switching by unauthorised operatives.
Open Windows Indication		The open windows indication shall illuminate when the external temperature reaches a suitable level to encourage manual window opening. The centre LED will illuminate if the external temperature exceeds "Window Open Minimum External Temperature" (default maximum 5°C between the room setpoint and external air temperature). Alternatively, the LED will illuminate if the room CO <sub>2</sub> level exceeds the CO <sub>2</sub> Setpoint" to encourage manual opening of the windows to assist the unit in achieving target conditions.
Diagnostic Mode		Diagnostic mode is used to give a simple indication of any alarms that may be present in the system. Further examination can be made via connections with the BMS or through a handheld HMI.
		If the <b>Boost and Pause switches are pressed together</b> and held down for three seconds the teachers panel will temporarily enter a diagnostic mode. All the LEDs on the teacher panel will flash up together to show that the panel has entered diagnostic mode. 10 seconds later all the LEDs on the teacher panel will again flash up together to show that the panel has exited diagnostic mode. In diagnostic mode specific alarms are indicated by the following LED sequences:

### Diagnostic Mode Fig. 20

LED	Solid On / Flashing	Alarm		
↑2°C	On	1x Supply Fan Trip		
12°C	Flashing	More than 1x Supply Fan Trip		
↓2°C	On	Peristaltic Pump Trip		
Boost	On	Slave / Extract Fan Trip		
Open Windows	On	Frost Hazard		
Open Windows	Flashing	No Hot Water Alarm		

Important

When in diagnostic mode if the Boost switch is pressed, all present alarms will be acknowledged.



# Standard Wiring & Fan Installation

### 5 Continued

For each room an information and override panel is provided to allow the user to override the automatic controls.

Controls arrangement Pre 2022

The panel comprises:

- Boost/Pause switch (retractive)
- Boost/System Healthy active indication (orange)
- +/- 2 °C Temperature trim switch (retractive) [EPEL2014 only]
- Versions with 'open window' indication also available

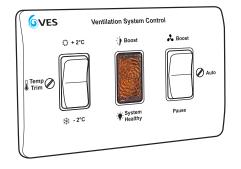
Operation of the Boost switch will run the unit to maximum set speed and modulate the dampers to allow maximum amount of fresh air possible without affecting room temperature. If the unit is off, operation of the Boost switch will start the system in boost mode. The system will revert to automatic operation after a preset period or if the switch is operated again. A time delay will prevent rapid mode switching by unauthorised operatives. The Boost/System Healthy indication will illuminate with an asymmetric pulse.

Operation of the Pause switch will pause the system. The system will revert to automatic operation after a preset period or if the switch is operated again. A time delay will prevent rapid mode switching by unauthorised operatives. The Boost/System Healthy indication will stop illuminating until the unit resumes normal operation.

Operation of the  $+/-2^{\circ}$ C Temperature trim switch will allow the user override of the room design temperature by  $+2^{\circ}$ C or  $-2^{\circ}$ C. This is limited to  $2^{\circ}$ C either side of the setpoint, the system will revert to automatic operation after a preset period.

In addition, pressing and holding the +2°C button for more than 3 seconds will initiate the heating boost mode. This will cause the fan to run at boost speed, call for full heating and put the unit into full recirculation. Pressing and holding the -2°C button will cancel this action or after a preset period the system will revert to automatic operation. The plate indicators will flash once as confirmation for either action.

For details regarding older switchplate designs or special versions please contact VES Customer Services on **023 8046 1150 for further information** 





**EPEL2014** Override Panel c/w temperature trim **EPEL2010** Override Panel (no trim)

Important

Fig. 21

**Override Panels** 

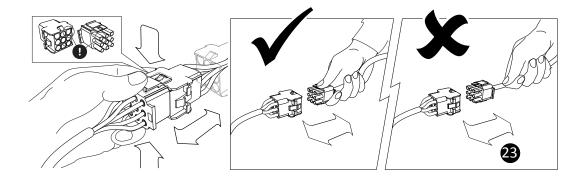
The system healthy indicator will illuminate when the unit is operational. In the event of a system failure, the indicator will be off and the buttons will be unresponsive e.g pressing the boost button results in no boost indication. Should this situation arise the system should be checked for a possible fault.



	Maintenance 6	
	Important	Before attempting to carry out any work on VES units, all accompanying documentation including warning labels on the unit must be referenced. Should it be necessary to remove any component, ensure they 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.
10		
	Warning	Before attempting to carry out any maintenance work, investigative or repair work on our units, the unit <b>MUST BE COMPLETELY ISOLATED</b> 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 complete standstill. 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 come to a complete stop before attempting any work on the unit



**Ecovent**<sup>®</sup> **EVHR** units feature plug & socket connections to allow easy removal/replacement of key components. Separate the plug connection by hand (tools not required) by pressing the top/ bottom clasp mechanism to open 2 and pulling the plug/socket apart . **DO NOT** pull the cables to separate the assembly 23.



On reconnection, the assembly features a locating lug to ensure correct orientation. Once rejoined, lock the connection together again using the corresponding system as shown. Note the plugs are handed and forcing an incorrect connection may result in damage to the plug.

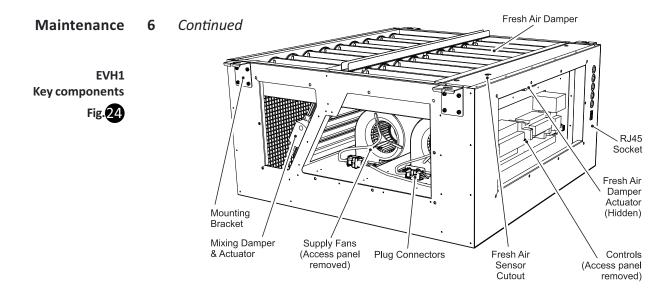


To separate the assembly, hold the plugs to pull them apart. **DO NOT** pull the cables.



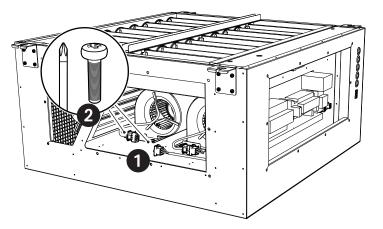
Plug & socket operation Fig. 2223

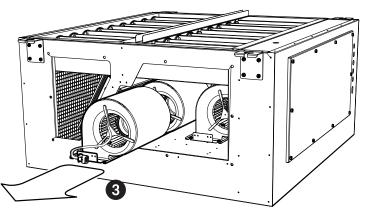
### ecovent Hybrid Roof Ventilation Units



**Ecovent**<sup>®</sup> **EVHR** roof units feature 4 double inlet centrifugal fans mounted on fan plates in pairs. Each fan plate is secured into place using 4No. M6 fixings.

To remove the fans, ensure the unit is fully isolated and that any moving components have come to a halt. Remove both side access panels. ① Separate the connecting fan plug and socket at both sides, using the procedure as detailed on page 15. ② Remove and keep the 4 M6 fixings, 2 each side and ③ carefully slide the fan plate assembly out through either side access, taking care not to snag any adjacent components. Ensure when replacing any components that all fixings are reinstated, that the plug and socket are correctly assembled and that loose cables are safely stowed away from all moving parts.





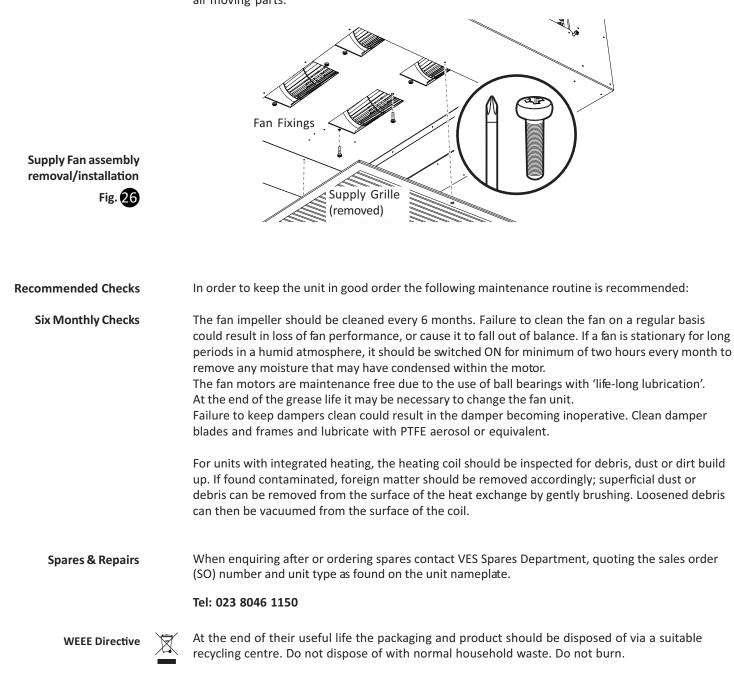
Supply Fan assembly removal/installation Fig. 25



#### Maintenance 6 Continued

Supply Fan assembly removal/installation

**For units prior to March 2019**, the fans are mounted directly onto the fan bulkhead. To remove the fans, ensure the unit is fully isolated and that any moving components have come to a halt. Remove the side access panels. Separate the connecting fan plug and socket, using the procedure as detailed on page 10. Carefully remove the double deflection grille from the bottom of the unit retaining the fixings, and remove the fixings holding the appropriate fan. Remove the fan through the side access and replace as required. Again ensure all fixings are reinstated, that the plug and socket are correctly assembled and that loose cables are safely stowed away from all moving parts.



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







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