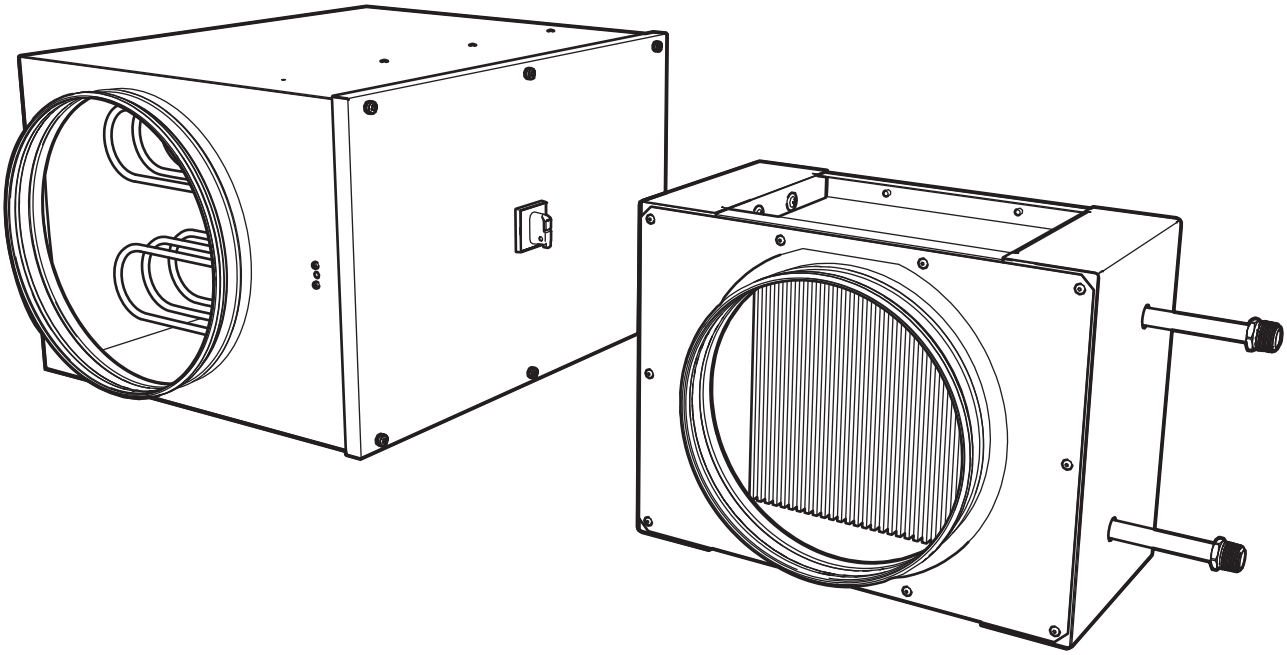

ecovent® mini
heat recovery

Duct Mounted Heaters

Operation & Maintenance Manual

VES

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VES Ref. ID. VES-DSG-0010
Issue 03
May 2024
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.

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

Contents

Introduction 1

The ecovent® **mini** series duct mounted heater batteries bring wide versatility to existing and new ventilation installations. Intelligent control options for BMS, plus thyristor (EHB option) or valve actuator (LPHW option) make this the ideal solution to accurately heat individual spaces.
ecovent® **mini** duct mounted heater batteries are both simple and easy to maintain, suitable for operating temperatures between -5 to +40°C.
These heaters are designed to work with ecovent® **mini** units only, mounted directly to the unit or in-line with adjacent ductwork. Both EHB and LPHW coil versions come with spigots designed to match the associated ecovent® **mini** heat recovery unit.

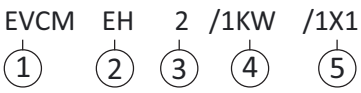
For further technical details regarding dimensions and weights, contact VES on **023 8046 1150**, quoting the sales order (SO) number and the unit type as found on the unit nameplate or visit www.ves.co.uk.

Nomenclature 2

Part Number Coding

	Point description	Point Variants	Description
1	Product	**EVCM**	ecovent® **mini**
2	Heating Option	**EH**	Electric heating
		HW	Hot water coil
3	Size	**1**	ecovent® **mini** size 1
		2	ecovent® **mini** size 2
		3	ecovent® **mini** size 3
4	Heater Size	**/0.5 to 3.0kW**	kW rating for EH
		/01	Coil option 1 for HW
		/02	Coil option 2 for HW
5	Thyristor Supply	**/Null**	
		/1X1	1 Phase
		/1X3	3 Phase

Typical Example EVCMEH2/1KW/1X1



Receipt of Goods & Handling 3

Immediately upon receipt of goods, check for possible damage in transit paying particular attention to coil connections and unit casing.
Also check to ensure that any ancillary items are included. These will normally be supplied fitted or taped to the unit (in the case of small items).

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.

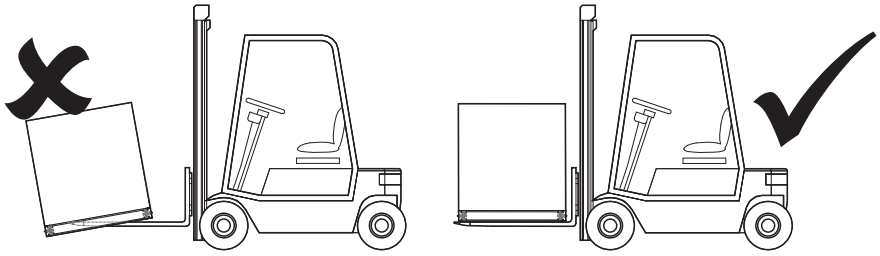
Installation 4

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.
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.

Caution ⚠ Mounting hangers, door furniture, isolators etc. extend beyond the casework and so are vunerable to accidental 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 properly. The centre of gravity may be offset from the centre of the unit; this needs to be taken into consideration when lifting the unit.

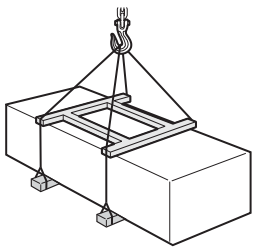
Fork Lifting Detail
Fig. 1



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

Lifting Detail
Fig. 2

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.

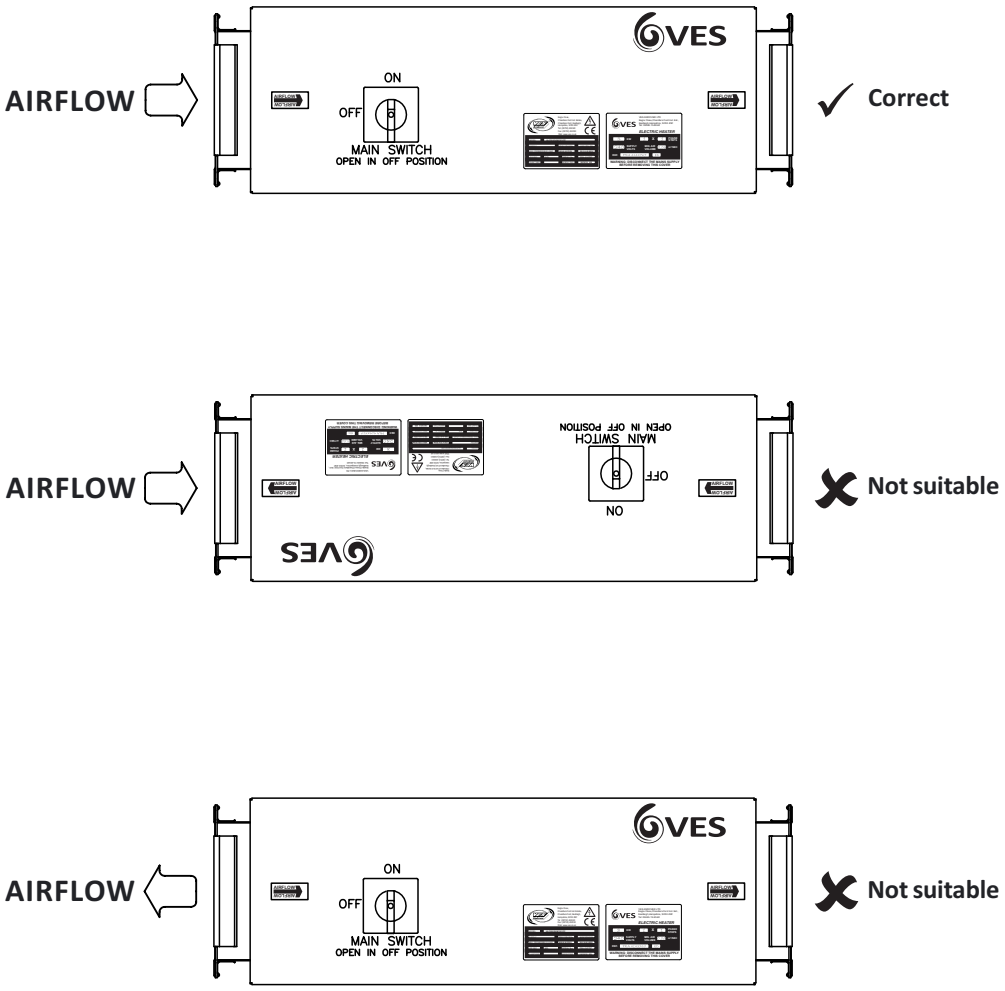


Installation 4 Continued

Important

Where units have been supplied without feet fitted, take all necessary measures and precautions to ensure the unit if fully supported and does not rely on adjoining ductwork for full weight bearing.
Only experienced fitters should undertake this work. Take all necessary safety precautions when working in elevated positions.

Mounting Detail
Fig. 3



Important

When hanging units from drop-rods, ensure that the load is evenly spread and that **ALL** feet are used within the support, including those for fitted silencers if included.
Ensure that the drop rod used is selected appropriatedly to accomodate the load of the unit.
Please consult the unit outline drawing for specific unit weight when choosing suitable fixings.

Installation 4 Continued

Duct/Unit Installation

A differential pressure switch is used within the system to detect a loss of airflow throughout the system. It is used to switch off the ancillary electric heater to prevent the unit from overheating and causing hazardous situations.

Important For the airflow pressure switch to function correctly, ensure the pitot tapping points are connected to the ancillary electric heater and the ecovent mini unit using appropriate tubing. The ancillary heater has a dedicated pitot tapping point located externally on its casework. The ecovent mini unit has a ø20mm blind grommet, which can be utilized.

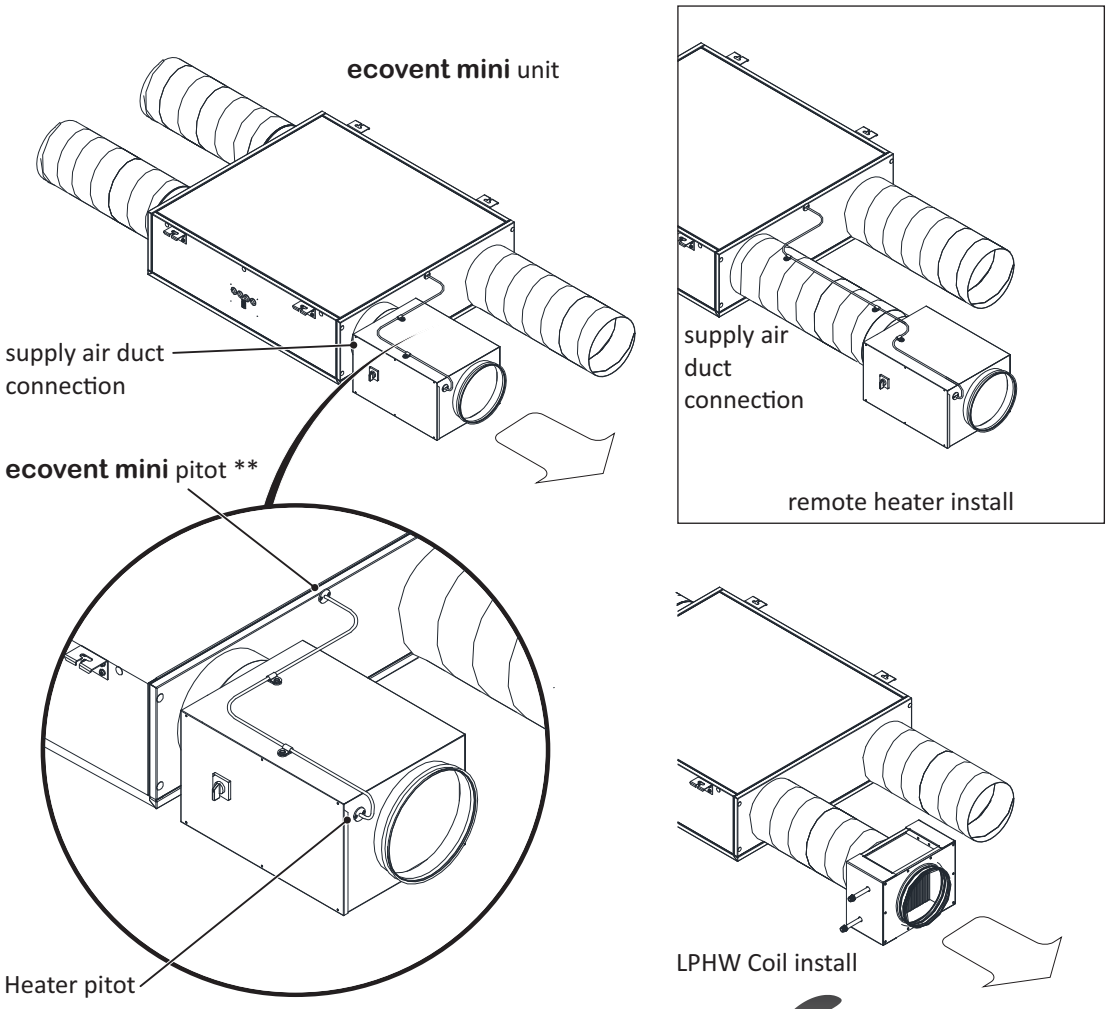
Caution Ensure adequate protection and strain relief is given, and in doing so also ensure that no internal components are damaged during this installation. Please note that the fan impeller is situated directly behind this ø20mm hole.
Insert the pitot tubing **no more than 25mm** into the **ecovent mini** unit

Important Check all pitot tubing to ensure there are no sharp bends or kinks. Tubing should be supported where necessary.

Failure to do so will cause the heater to malfunction and could result in a loss of heating.

Important A hard-wired connection between the heater and **ecovent mini** unit is required. **See page 9**

Mounting Detail with ecovent mini
Fig. 4



** Exact AHU pitot position may differ depending on unit size.
Please see the **ecovent mini** O&M for full details

Installation 4 Continued

Electric Heater Batteries

On **ecovent /-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.T. 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 thermal cutout which will break contacts when the duct temperature rises above 70 °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 damage.

Caution

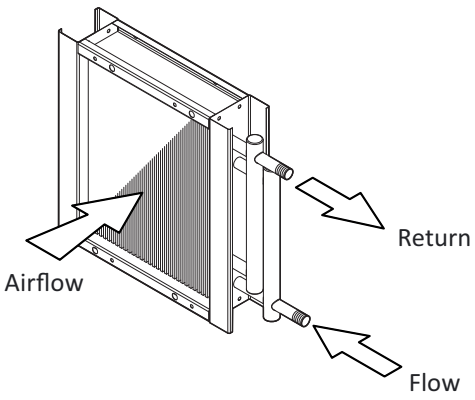
Heating coils do not cool immediately when the hot water supply is cut off. The residual heat must be dissipated to avoid damage. The continuous running of the fan after shutdown resolves this, by operation of a run-on timer.
The recommended length of run-on is **2 minutes minimum**.

LPHW Coils

On **ecovent / -W** units, a Low Pressure Hot Water (LPHW) coil will be installed. The coils are normally suitable for LPHW at 80 °C flow and 60 °C return temperature (see the unit outline drawing for confirmation). 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 in duty.

Typical LPHW Coil

Fig. 6



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.

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 & Installation 5

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 put 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.

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.

Warning

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

Important

This document refers to 0-10 V control input.
In some cases a 4-20 mA control input may have been provided.

Warning

Caution

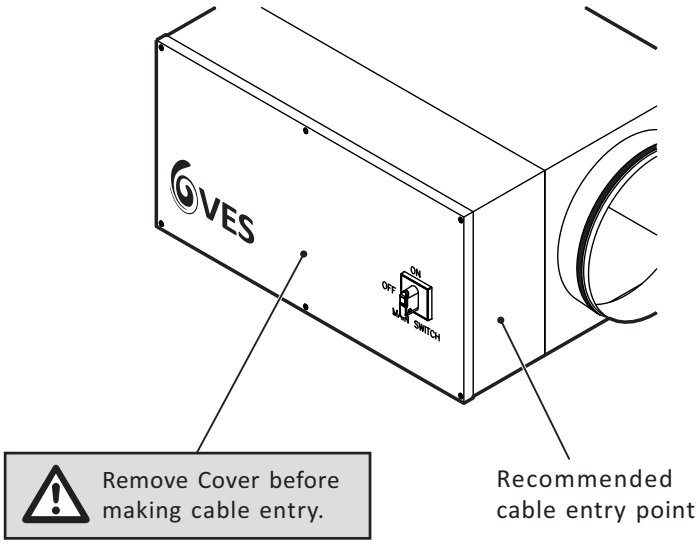
Important

- Supply to the heater should be 1ph or 3ph and a neutral - refer to name plate for correct supply.
- The heater is fitted with a manual reset high temperature cutout which has NC (normally closed) terminals and an air flow pressure switch. This is connected in series with the main contactor coil circuit, to remove power from the heater in the event of over-temperature or airflow failure. **Under no circumstances is this circuit to be by passed.**
- Ensure sufficient earth connection to terminal is provided.
- The speed controller must not switch off fan independent of control system or allow airflow to fall below stated volume on the electric heater battery.
- Fan run on timer required. Turn off 0-10 V heat demand signal 2 minutes before fan enable signal.
- Separate cables should be installed for 0-10 VDC, Control signal and 24 VAC switched enable signal in compliance BS7671/2018.

Important

It is recommended that the cable entry point should be at the end of the control section as shown in the figure below.
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.

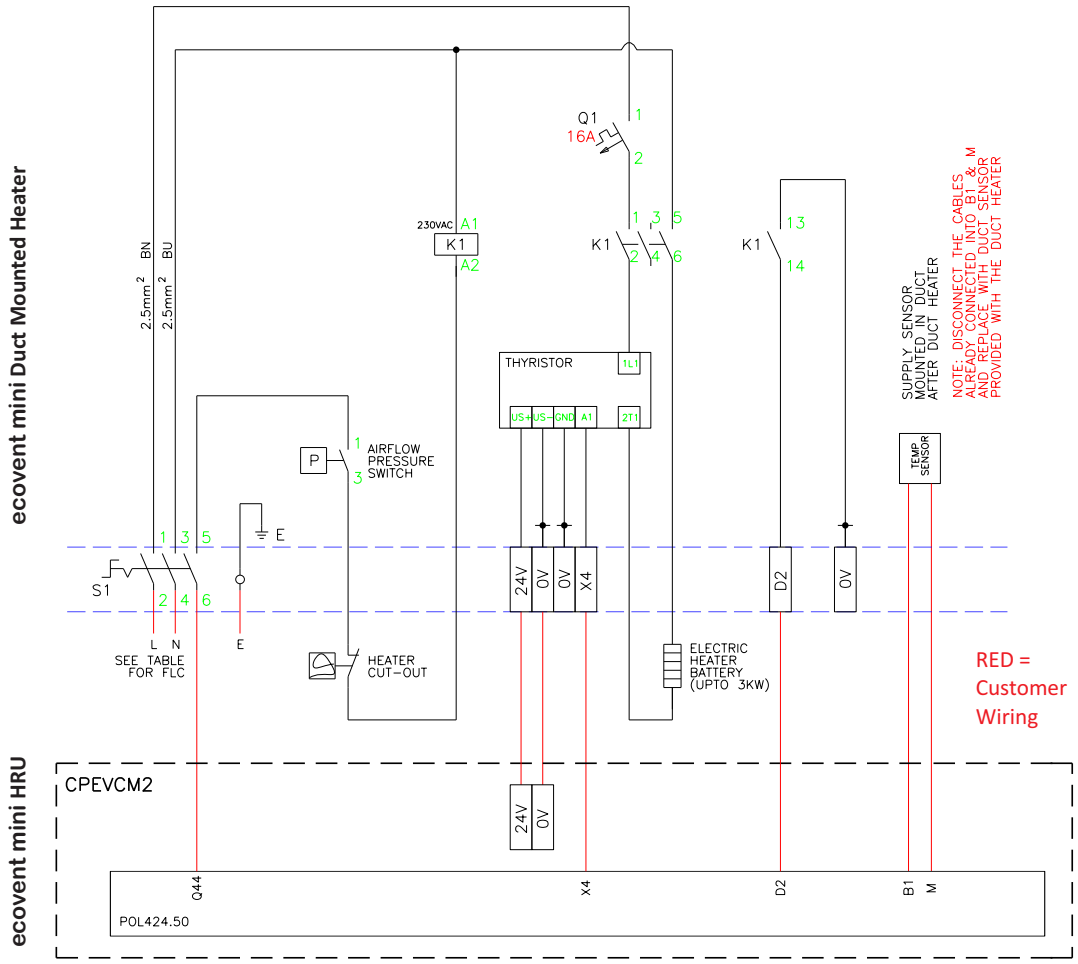
Recommended cable entry point
Fig. 7



Standard Wiring & Installation 5 Continued

The following wiring diagrams are a guide to installing the standard fan and actuator options found on mini duct heater 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 **02380 46 11 50**, quoting the sales order (SO) number and unit type as found on the unit name plate.

BMS 1ph example wiring diagram Fig. 8

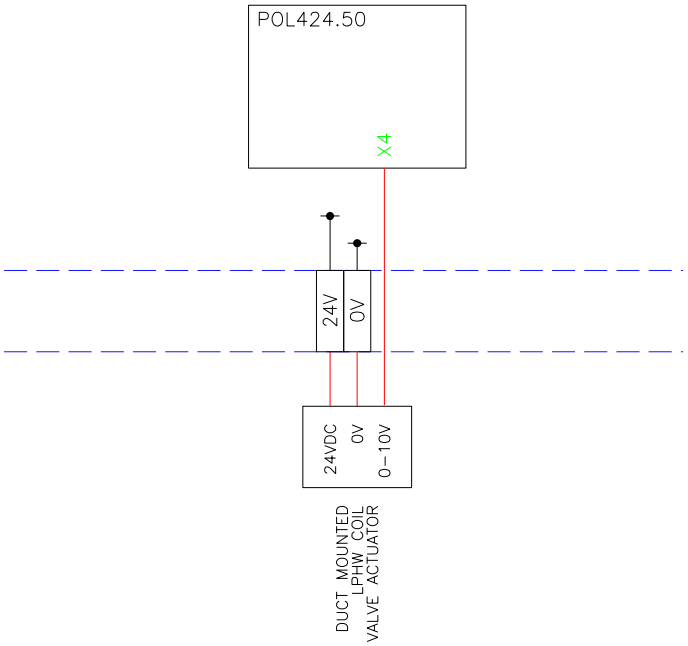


EHB Size vs Full Load Current Guide	
1.0kW	4.35A
1.5kW	6.52A
2.0kW	8.70A
2.5kW	10.87A
3.0kW	13.04A

Warning **Caution** **Important** Note: Please refer to order acknowledgement for specific controls wiring information and heater load.

Standard Wiring & Installation 5 Continued

Typical Coil Valve Actuator connection example wiring diagram
Fig. 9

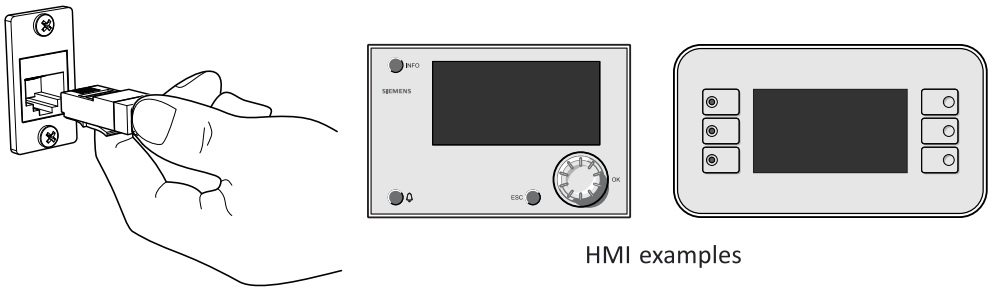


Important

ecovent® **mini** units are equipped with temperature sensors as standard, including a supply air temperature sensor integrated inside the unit. If an ecovent® **mini** duct heater is installed, it will include a new duct-mounted supply temperature sensor.
To ensure proper system operation, disconnect the cables currently connected to **B1** and **M** in the controls section and replace them with the new duct sensor provided.
If the sensor is supplied by others, ensure it is of type **LG-Ni1000** or equivalent.
Ensure the sensor is mounted according to the instructions provided in the box.

ecovent® **mini** units come fitted with controls as standard, they are supplied as a plate-mounted panel located within the air handling unit. All units feature an RJ45 socket at the cable entry point to enable connection of the control interface (HMI). This allows setup and commissioning of the unit to be carried out via a handheld HMI, which can be left connected or removed as required.

RJ45 Socket/HMI connection point
Fig. 10



HMI examples

Important

For all units with fitted controls, please see the accompanying wiring diagram for full details or contact VES Customer Services Department on **02380 461150** , quoting the sales order (SO) number and, quoting the sales order (SO) number and unit type as found on the unit name plate.
For specific details on controls setup, please see the main product O&M **ID Ref: VES-DSG-0005.**

Maintenance 6

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

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.

Caution

A failure to keep up with cleaning maintenance could result in the increase of potential risks and fire hazards. Ensure the unit is incorporated into a regular cleaning schedule.

Caution

Care must be taken when working on the unit due to potential hot surfaces. Allow the unit to completely cool before commencing any works.

The heater duct should be cleaned at least every 6 months, however this may need to be adjusted depending on use of the system. Refer to **TR/19** "*Guide to good practice - cleanliness of ventilation system*" or similar for guidance as to the recommended frequency of maintenance. A failure to clean the duct on a regular basis could result in loss of fan performance or cause a potential fire risk.

Spares & repairs

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

Tel: 02380 46 11 50

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

ecovent® mini
heat recovery

Duct Mounted Heaters

Operation & Maintenance Manual

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VES is a trading name of VES Andover Ltd.
Registered in England No. 02303719.
Registered Office as above.

Eagle Close, Chandlers Ford Industrial Estate, Chandlers Ford, Eastleigh, Hampshire, SO53 4NF
Tel: +44 (0) 2380 46 11 50 email: info@ves.co.uk web: www.ves.co.uk

UK Declaration of Conformity

This declaration is issued under the sole responsibility of the product manufacturer.

Product:	Heatline
Type:	HL
Manufacturer:	VES Andover Ltd.
Date:	13th December 2022

The object of the declaration described above is in conformity with the relevant UK Statutory Instruments and their amendments:

2016 No. 1091	The Electromagnetic Compatibility Regulations
2008 No. 1597	The Supply of Machinery (Safety) Regulations 2008

We hereby declare that the product described above, to which this declaration of conformity refers to, is in conformity with the essential requirements of the following standards:

BS EN IEC 61000-6-4:2019	Electromagnetic compatibility (EMC) - Generic standards
BS EN 61000-3-3:2013+A2:2021	Electromagnetic compatibility (EMC)-Limits
BS EN 61000-6-2:2005	Electromagnetic compatibility (EMC). Generic standards - Immunity for industrial environments
BS EN 60204-1:2018	Safety of machinery — Electrical equipment of machines

Name:	**Signature**	**Position of Signatory:**
A. Reade		Director
J. Atack		Head of Design

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