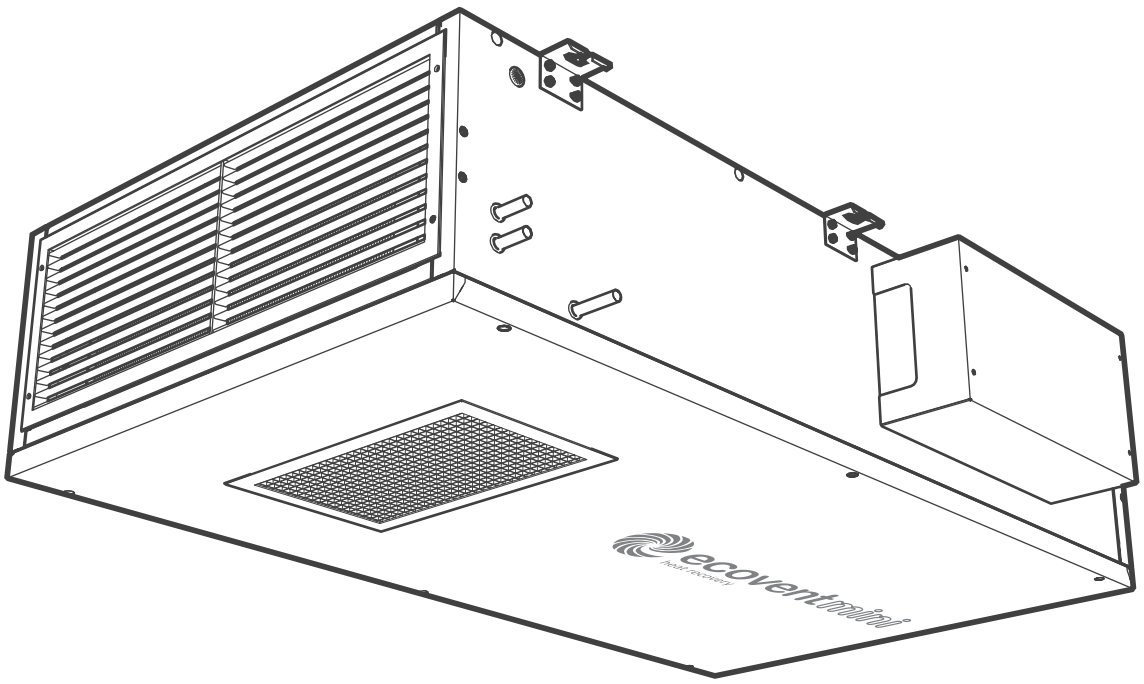

ecoventmini®

EVFC Fan Coil Units

Operation & Maintenance Manual

VES

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VES Ref. ID. VES-DSG-0028
Issue 01
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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 features a Fan Coil Unit, with duties up to 0.50 m³/s.
Suitable for either ceiling void or internal locations, as standard each unit will have been supplied pre-wired to a terminal box or fitted control panel, as specified at the time of order.
The standard operating temperature of these units is -20 to +40°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 visit www.ves.co.uk.

Nomenclature 2

Part Number Coding

	Point Description	Point Variants	Details (as appropriate)
1	Product	**EV**	Ecovent® Units
2	Heat Recovery type	**FC**	**mini** Series *(Fan Coil Units)*
3	Unit Size	**0...3**	Sequential see unit outline for details
4	Fan Type	**3...5**	Centrifugal EC fan
5	Fan Size	**2...7**	Sequential
6	Phase	**-1**	230V 50Hz Single Phase
7	Unit Configuration	**/FP**	Flat Plantroom
8	Main Heating	**Null**	No Heating
		-E	Electric Heater Battery
		-W	LPHW Coil
9	Infill	**/DS**	Double skinned panel construction
10	Handing *(denotes plane of main access and position controls access relative to the supply airflow LIDSAF)*	**/LB**	Left/Bottom Access
		/RB	Right/Bottom Access
11	Main Filter	**Null**	No filter*
12	Control Panel Section	**/CPSC**	Fitted control panel
		/ISC	Fitted isolator/speed controller
13	Colour	**Null**	Galvanised finish
		/R7004	Powdercoated finish, RAL7004 etc...
14	Finish	**MT**	Matt
		SG	Satin Gloss
		FG	Full Gloss
		LT	Leatherette
15	Powder Coat Type	**Null**	As colour
		/IT	Internal powdercoated only
		/BT	Internal/External powdercoated
16	Special	**/S**	Special (non-standard) Unit

** Although the unit itself does not feature filtration, the optional room-side plenum ancillary does include a version with G4 or F7 filtration. Please see your order acknowledgement for confirmation of ancillary items.*

Typical Example EVFC353-1/FP-W/DS/LB/G4/CPSC/R9010LT

EV	FC	3	5	3	-1	/FP	-W	/DS	/LB	/G4	/CPSC	/R9010LT			
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯

Receipt of Goods & Handling 3

Immediately upon receipt of goods, check for possible damage in transit paying particular attention to fan impellers, drain 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.

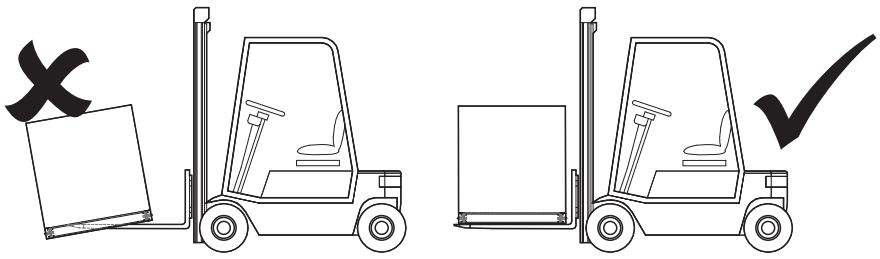
Installation 4

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.
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.

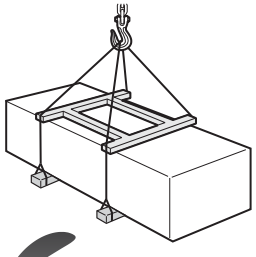
Fork Lifting Detail
Fig. 1



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

Lifting Detail
Fig. 2

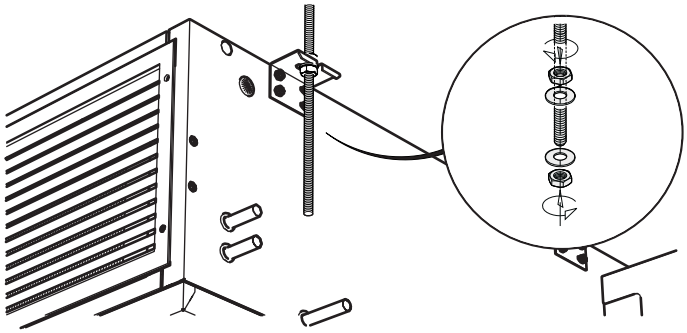
Units are to be rigged and lifted using spreaders, taking into account the weight of the unit, and lifting gear should be arranged so as not to bear on the casework see right.



Installation 4 Continued

ecovent® **EVFC** units are supplied with feet suitable for ceiling-void mounting, by use of drop-rod mounting, in bottom access orientation, with airflow in the horizontal plane. For alternative mounting please consult your specific unit outline drawing as supplied or refer to VES customer Services for further information.
Secure drop rods/unit with the appropriate fixings as shown below. 3

Unit mounting detail
Fig. 3

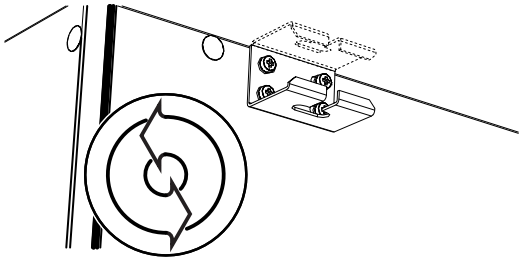


Important

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.

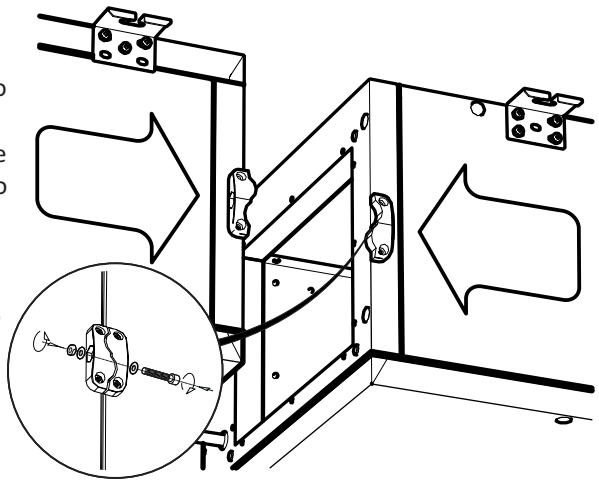
Alternate Mounting
Fig. 4

For installations using a metal framing systems (such as unistrut etc.) the feet can be rotated 180° to allow for better ceiling clearance.
Carefully remove/retain the fixings and reposition the feet as required.
Ensure all fixings are correctly reinstated and tighten to 8Nm.



Section joining detail
Fig. 5

When units and ancilllary modules are supplied separately, it is important that all sections are joined together securely prior to positioning and installation.
This should be assembled using self adhesive rubber tape at the joints prior to assembly to prevent possible air leakage; replace with similar if damaged.
Finish the assembly by installing the joint fixings to both parts, brackets are secured to the casework using M6 Pozi screws.
Tighten together using a 6mm hex key, drawing both sections together evenly.



Caution

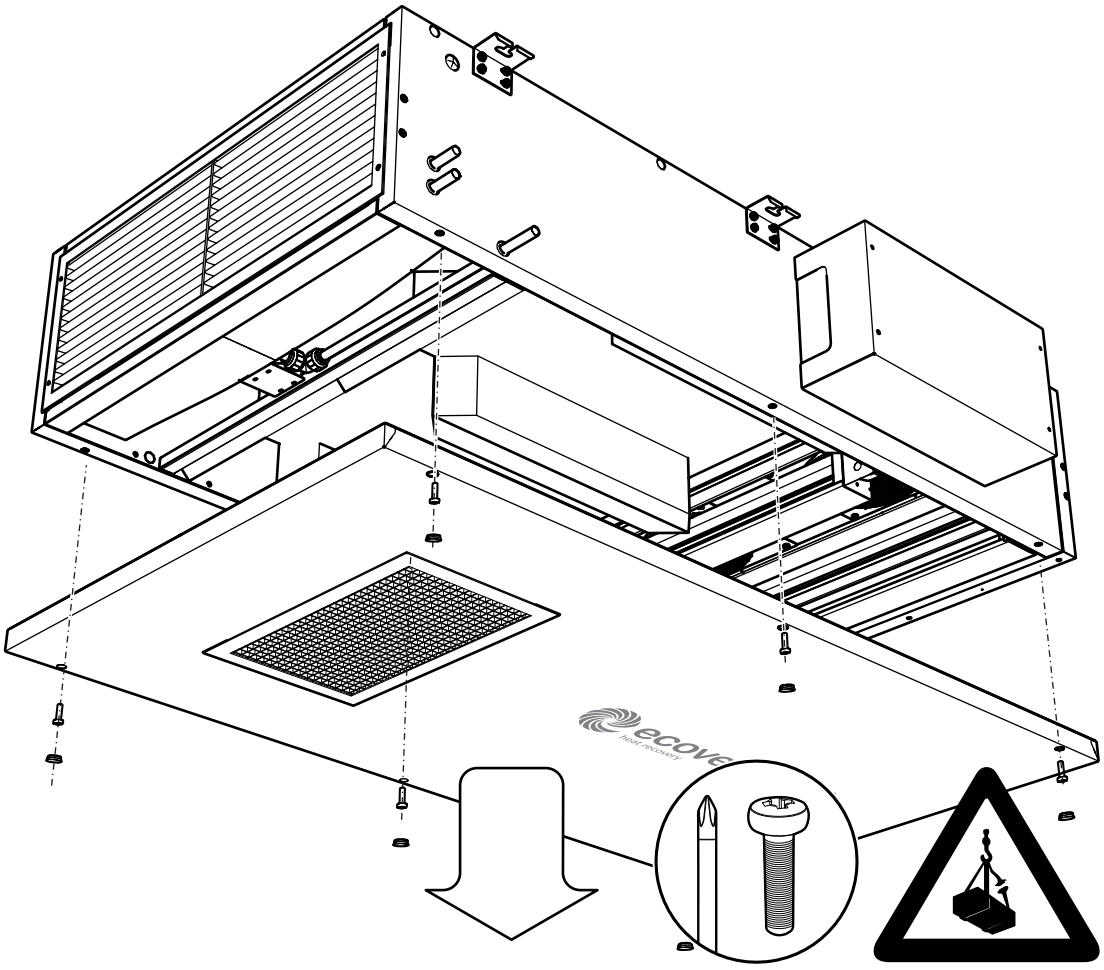
Joining brackets are **NOT** structural and are included as part of the unit sealing only.
When moving assembled units ensure that **ALL** sections are fully supported.

Installation 4 Continued

Access

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 given time to come to a complete stop before attempting any work to the unit

The main bottom Access panels are held into position using 6No. M6 Panhead Pozi Fixings.
To remove, ensure the access panels are fully supported. Carefully remove/retain the black cover caps and remove the screw fixings retained within. Ensure all fixings are correctly reinstated and tighten to 8Nm upon re-assembly.



Unit Access
Fig. 6

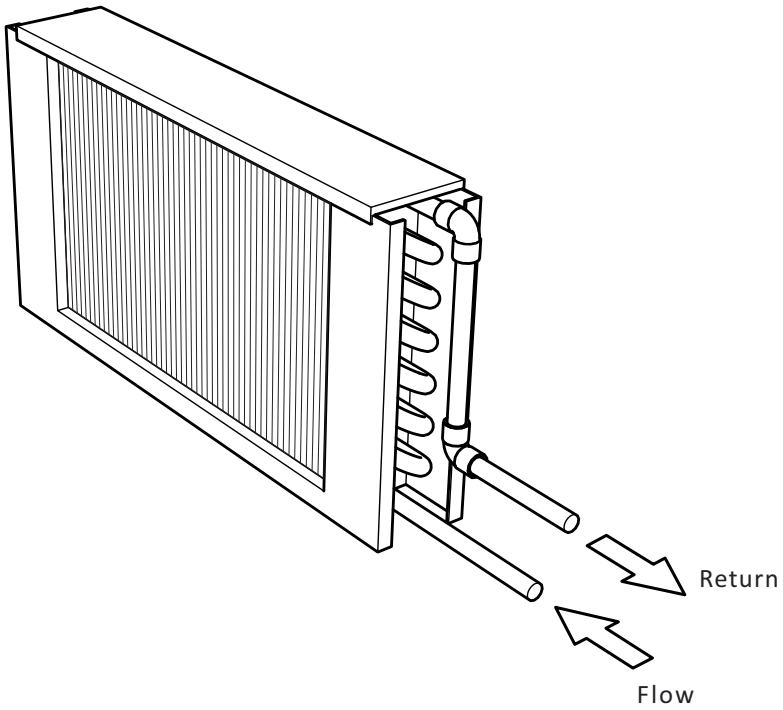
Important For units with ancillary electric heating (EHB) please see the appropriate product O&M

Installation 4 *Continued*

Coils should be piped according to any relevant local codes of practice. As standard EVH coils are supplied with a Ø15mm plain stub suitable for push-fit connections. All external piping is to be supported independently from the coil. The flow connection is nearest the bottom of the unit (see below)

Caution ⚠ 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. EVFC LPHW units are fitted with a coil temperature sensor as standard, ensuring that boilers run continuously in low ambient temperatures can help to prevent damage.

Coils are normally suitable for low pressure hot water with a range of between 80 ~ 40 °C flow and between 70 ~ 30 °C return temperature. The coil should be regularly vented so as to avoid potential air locks, resulting in a fall off of duty.



Typical LPHW Coil
Fig. 7

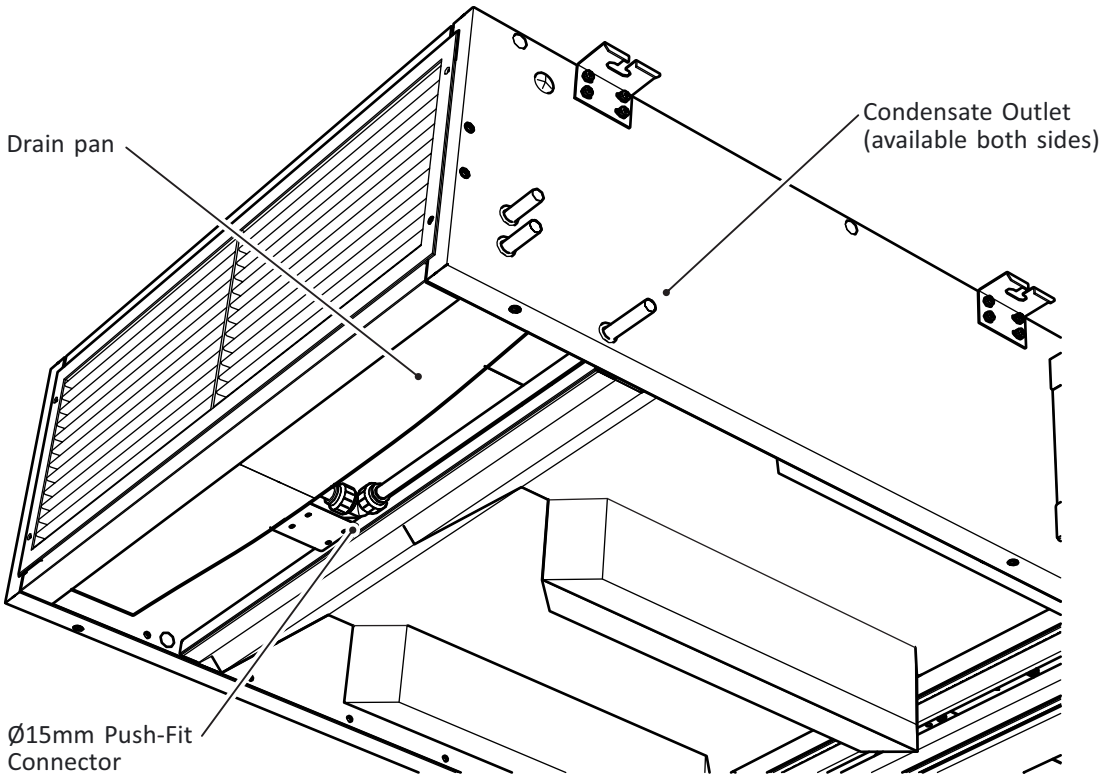
It is recommended that a check be made as to whether any treatment is required to the water supply for prevention of corrosion and scaling of the equipment. Information regarding the necessary action to be taken can be obtained from the relevant Local Water Supply Authority. The unit will have been supplied 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.

Installation 4 Continued

Condensation

When the unit is used in conjunction with a chilled water system, comfort cooling is possible. In certain conditions this operation may produce condensate. To help deal with this the unit is fitted with a drain pan terminated to a Ø15mm internal drain spigot and a push fit elbow connector. Join through the case using the hole provided into the connector, trap as required and terminate via an appropriate waste system or by use of a peristaltic pump.
The connection is suitable for either side handing and if not required blank the hole in the casework with a 20mm blind grommet.

Typical Ecovent Drainpan Installation Fig. 8



Typical trapping detail Fig. 9

Drain pan fitted to a heat exchanger, diagrams show situation with fan operational.

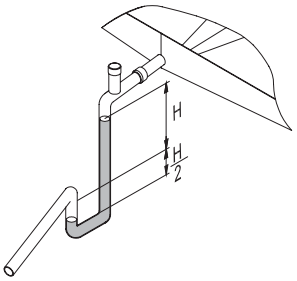
Drain to open tundish as shown above.

DIM H = TOTAL STATIC PRESSURE mm Wg + S

S = SAFETY ALLOWANCE 25mm

Example: If H=250Pa (25mm) + safety allowance (25mm) = 50mm

Negative pressure



Caution

It is important that the drain be allowed to clear without obstruction. Ensure that the unit is mounted level and the drainpan is angled so that water drains towards the drain spigot as the drain may have moved during transit/installation.
Failure to do this may result in excess condensation within the unit and possible flooding.

Standard Wiring & Fan Installation 5

Warning

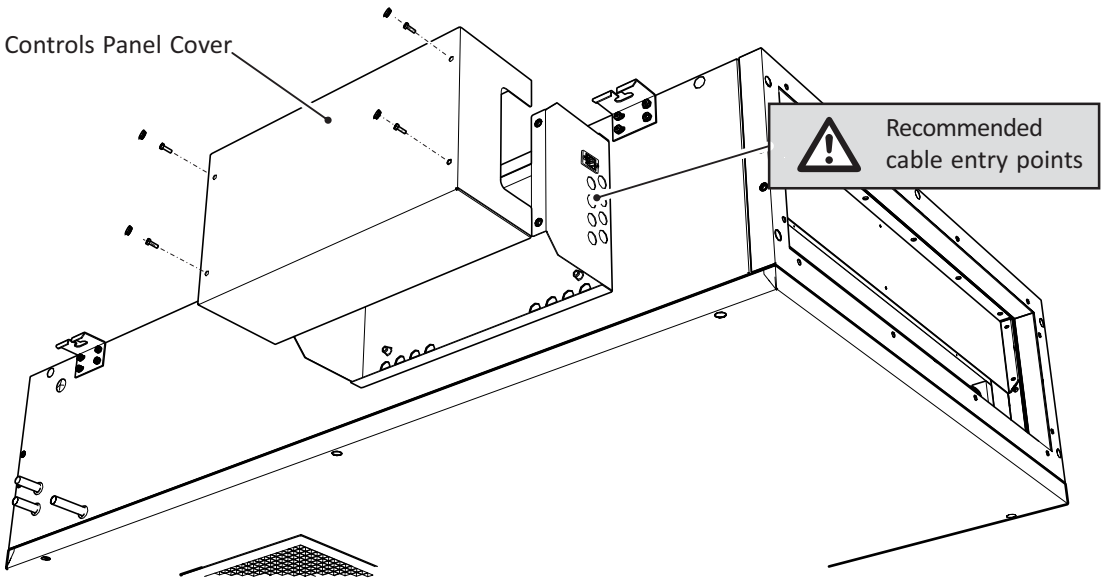
The electrical supply **MUST BE FULLY ISOLATED** before attempting to affect any work on this unit. All electrical connections to any unit must be carried out in accordance with the current edition of the I.E.T. Regulations, only competent Electricians should be allowed to affect any electrical work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

Important

It is recommended that the cable entry point should be at the side of the unit as shown below in figure 10. 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.
Take particular care to note the position of the drain and associated pipework. Make certain any swarf produced is removed before use.
It is the installer's responsibility to supply earth protection through the building installation device and a dedicated, isolated power 220-240VAC 50Hz supply with overload protection, to account for motor start up currents. See below for specific fan details Fig. 11
The installer must provide a switched fused spur. The spur must be a 5 Amp, double pole connection point that is local to the unit (contact separation of the fused spur switch should be at least 3mm).

Warning

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



Recommended cable entry points
Fig. 10

Important

For all units with fitted controls and for ancillary items, please see the accompanying wiring diagram and accompanying O&M 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.

Standard Fan Details
Fig. 11

Size	Phase	Motor Size	Voltage	Fan Speed rpm	Full Load Current	Speed Control
353-1	1	0.170 kW	230 VAC	2860	1.75 A	EC

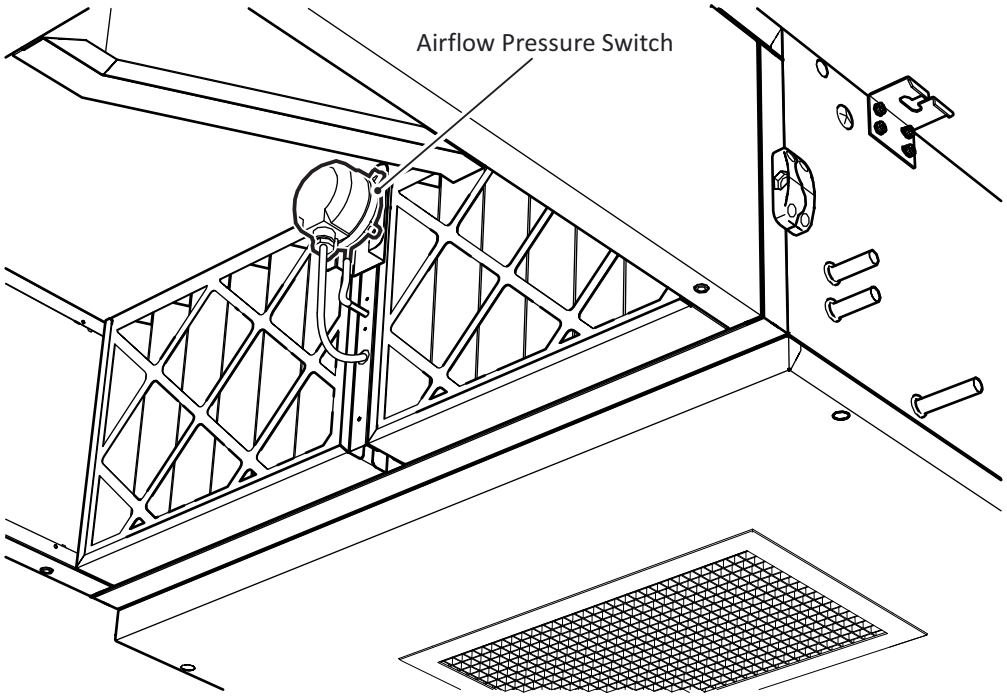
Standard Wiring & Fan Installation

Key Components
EVFCPA300
Outlet plenum

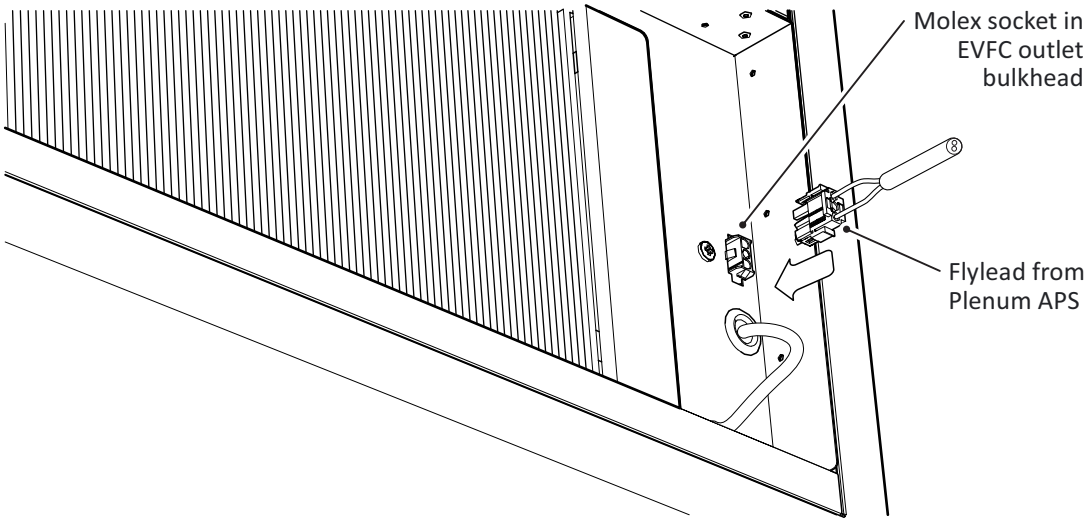
5 Continued

ecovent® **EVFC** outlet plenums including filters include an airflow pressure switch as standard terminated to a flying lead and molex plug (see fig 13). The EVFC unit is configured as standard to accept the pressure switch connection and a molex plug and socket is provided to suit.
Make sure the plug and socket connection is full made and the flylead is safely stowed inside the unit and not trapped or pinched when joining the units together.
Adjustment to the pressure switch will require the removal of the main access panel. Carefully remove/retain the black cover caps and remove the screw fixings retained within. Ensure all fixings are correctly reinstated and tighten to 8Nm upon re-assembly.

Important ! It is important to make this electrical connection **BEFORE** fully assembling the two sections together



Plenum airflow pressure switch detail
Fig. 12



Airflow pressure switch connection detail
Fig. 13

Maintainance 7

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. See Fig. 19

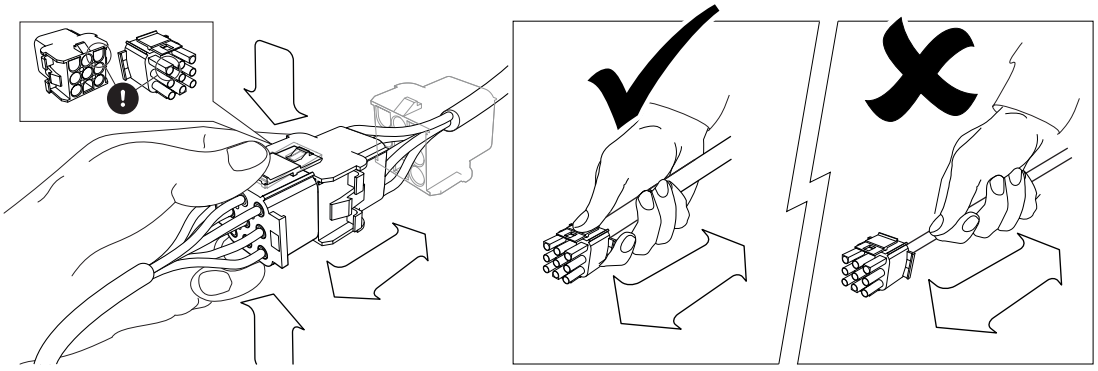
Caution

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

Should it be necessary to remove any components from the unit casework take care to ensure that all components are correctly supported during their removal. Remove lids from the unit, exposing the key components. Damper and bypass assemblies are held into position using pozi fixings. Remove the required components with care and ensure that all components are replace correctly.

ecovent® **EVFC** units feature plug & socket connections to allow easy removal/replacement of key components. Separate the plug connection by hand by pressing the top/bottom clasp mechanism to open

Plug & socket operation
Fig. 14



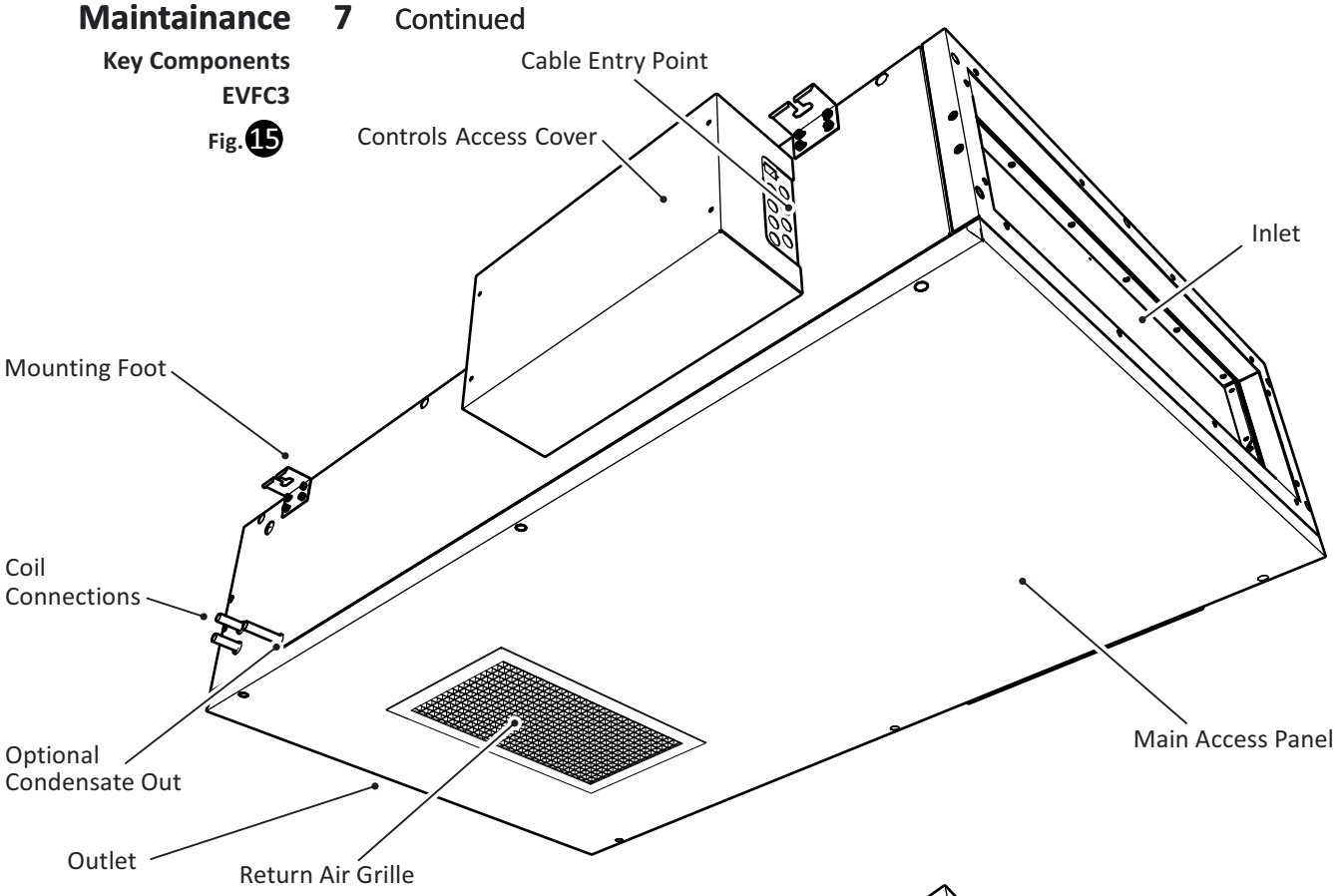
On reconnection, the assembly features a locating lug to ensure correct orientation. Once rejoined, lock the connection together again using the system as shown.
Note the plugs are handed and forcing an incorrect connection may result in damage to the plug.

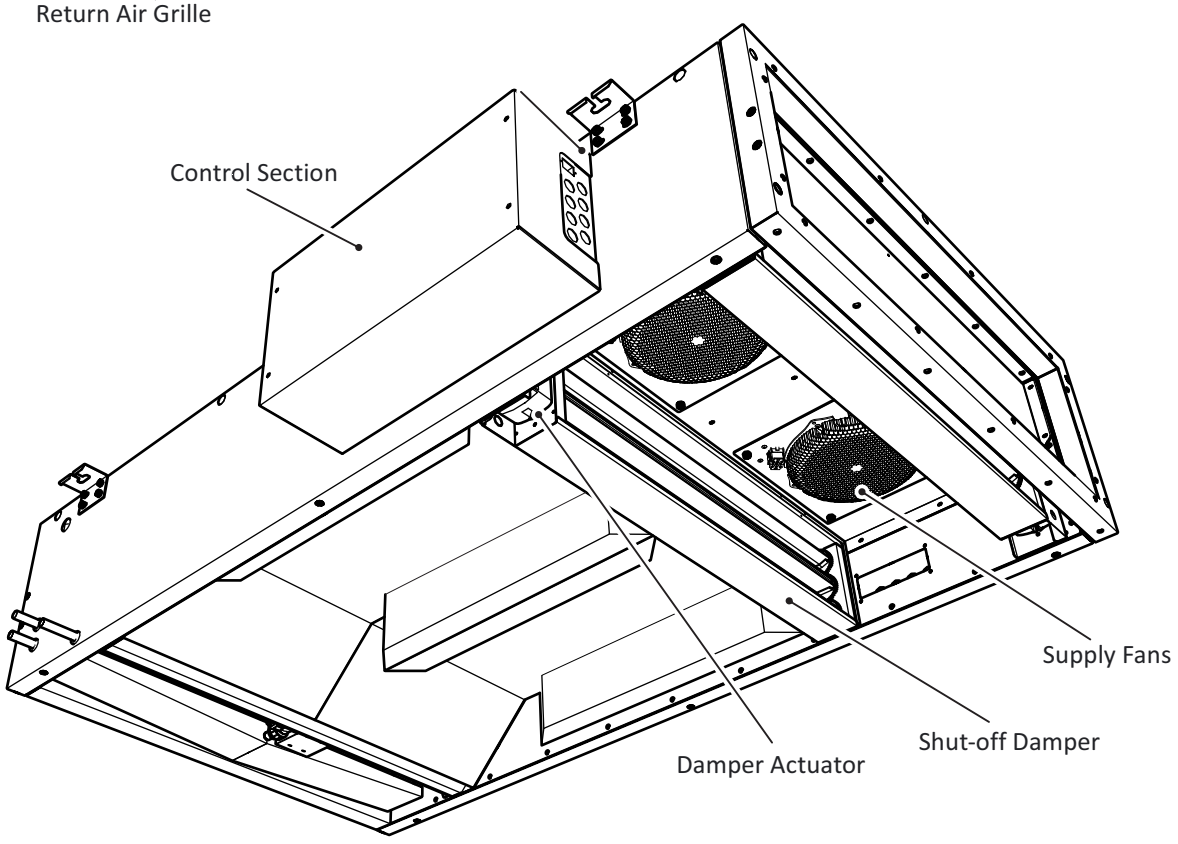
Caution

Gently pull apart the plugs to separate, **DO NOT pull the cables to separate the assembly**

Maintainance 7 Continued

Key Components
EVFC3
Fig. 15





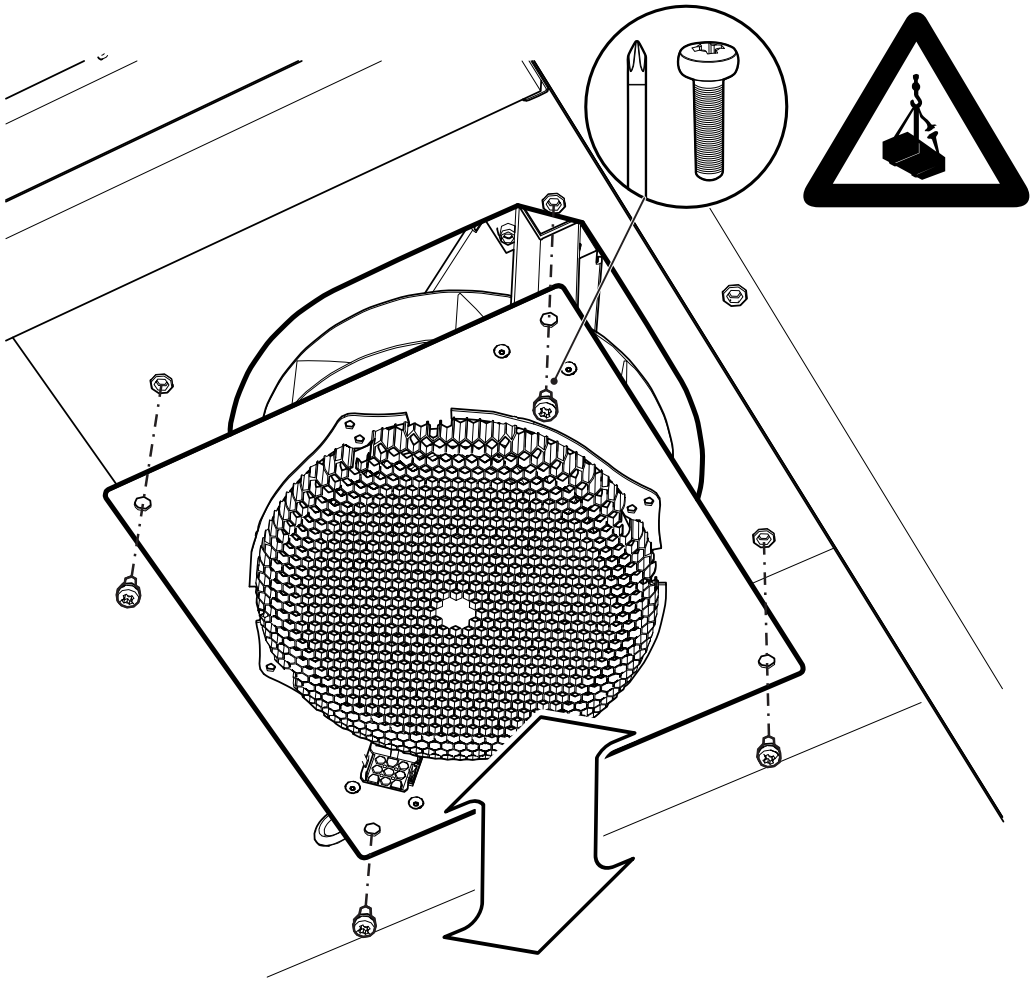
Note: Unit shown LHS Bottom Access

Maintainance 7 Continued

Important

ecovent®**EVFC** units feature a bulkhead-mounted fan plate assembly.
Ensure that special care is taken when removing/replacing components/assemblies from bottom-access units. For larger components this may require the use of two or more persons.
It is important to keep the fan assembly supported at all times; the fan assembly should not be considered supported until all fixings are securely tightened.

ecovent® **EVFC** units feature a pair of single inlet centrifugal fan mounted on a support assembly.
To remove, ensure the unit is fully isolated, unplug as per fig 14 undo the four screws and carefully remove the fan/support assembly, retaining all fixings.
When replacing the fan assembly, ensure all fixings are reinstated and the plug connector is correctly reconnected. The fan bulkhead cutout is handed to ensure correct orientation of the fan assembly within the unit. Ensure the connection socket on the fan plate is closest to the associated plug/flying lead.



Fan removal
Fig. 16

Maintainance 7 Continued

Recommended Checks

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

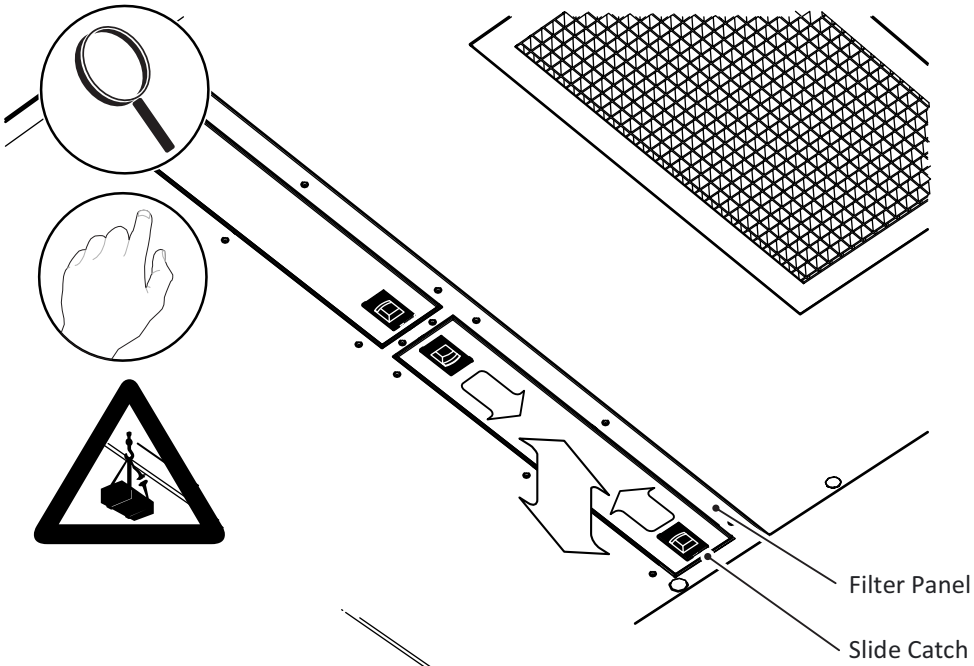
Three Monthly Checks

If incorporated within an adjacent outlet plenum, 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. The filters may be accessed via dedicated access doors on the bottom of the unit. Tools should not be required for filter removal.

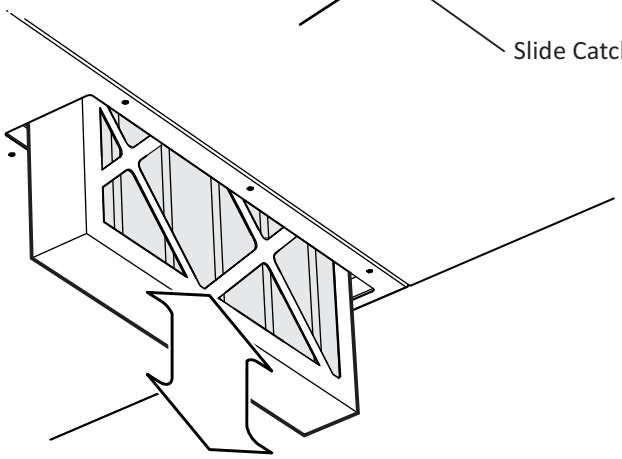
Caution ⚠

Filter doors are not self-supporting. Take care to support the doors during the removal process, ensure that the doors are replaced correctly and that **The Slide Catches Are Fully Engaged.**
It is important to replace damaged catches, which can be ordered from VES Spares Department

Filter Panel Operation
Fig. 17



Filter Panel Operation
Fig. 18



To replace, dispose of the old filters responsibly, note the airflow direction arrow on the new filter. Slide the clean filter into the unit and replace the filter doors.
Take care to stow the support lead safely within the unit and ensure the filter door is correctly seated with **All The Slide Catches Fully Engaged.**

Maintainance 7 Continued

The fan impeller requires cleaning every six months. Neglecting regular cleaning may lead to a decrease in fan performance or cause it to become unbalanced. If a fan remains stationary for extended periods in a humid environment, it should be turned on for a minimum of two hours each month to eliminate any condensed moisture within the motor.
The fan motors are maintenance-free because they use ball bearings with "life-long lubrication." However, when the grease life of the bearings expires, it becomes necessary to either replace the bearings or the entire fan unit. The standard lifespan of bearings under normal usage conditions is approximately 30,000 to 40,000 hours.
Failure to maintain clean dampers could result in their malfunctioning. To prevent this, clean the damper blades and frames and lubricate them with PTFE aerosol or an equivalent lubricant.
If it becomes necessary to remove the damper, follow a similar process as removing the heat exchanger: disconnect and remove the damper actuator, undo the four pozi fixings on either side of the assembly, and lower the damper out of the unit. When replacing the damper, ensure all fixings are properly reattached and the actuator is reconnected.
Please ensure that the drain pan and drain connection are clear of debris so that any condensate produced can freely drain away. If a pump is installed, inspect the sensor and float for contamination and clean them if necessary using a 95/5% water/chlorine solution. Also, inspect all associated pipework and replace any damaged or blocked pipes. Spare replacement pipes can be obtained from VES. If a comprehensive service is needed, it may be necessary to dismantle the unit's casework to access certain components. If it is necessary to remove the damper, follow these steps: unscrew the spindle that holds it in place on the blade, slide the spindle/actuator out from the damper, and then remove the damper side fixings.

Twelve Monthly Checks

ecovent® **EVFC** units are supplied with a powdercoat paint finish as standard.
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: 02380 461150

Spare Parts List

Fig.19

Part Number	Part Description
ZE0331/47/30	Fan Assembly (size 3)
GSD141.1A	Damper Actuator
EVCMDF300	Size 3 Filter G4 (Optional)
EVCMPF300	Size 3 Filter F7 (Optional)
PSGN1012	Filter Pressure Switch
FX001007	Filter Door Slide Latch
FX002404	ø15.9mm Hole Domed Cover Cap
ELEX2010/0250	Filter Door Restraint

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

ecoventmini

EVFC Fan Coil Units

Operation & Maintenance Manual

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