

# OPERATING AND MAINTENANCE INSTRUCTIONS

## ENVIROTEC AIR HANDLING UNITS

### SUPPLY

Check that the voltage and other circuit details stamped on the motor plate agree with your supply. Take a note of the unit serial number for future reference.

### CONNECTIONS

A diagram of connections for the motors will be found in the terminal box.

### STARTING

Motors up to and including 4kw will generally be wired for direct on line starting as standard, unless specifically ordered for star delta starting. Generally motors from 5.5kw upwards will be wound for star delta starting.

### ROTATION

An arrow, on the fan casing, will indicate the correct rotation of the fan impeller, the motor must be connected accordingly.

A trial connection of the supply for 3 phase fans is recommended. Should the rotation be found incorrect, correction can be achieved by interchanging any two supply phases.

### LUBRICATION

Motors and fans are fitted with 'Sealed for Life' bearings and generally require no lubrication. Outside shaft bearings (where fitted) and motor bearings should be lubricated with Shell or B.P. Evergrease LS3 or a suitable equivalent every 12 months of continuous running.

### FILTERS, GENERALLY

*Do* check filters on a regular basis.

*Don't* leave dirty filters in units for long periods without replacement.

*Do* replace filters for electric units on a more regular basis. This is especially important as the lack of airflow through a blocked filter can cause the air temperature to rise dramatically and operate the high temperature cut out. In an extreme case damage beyond repair could be caused. Please note poor filter maintenance will invalidate the warranty.

*Do* inspect the unit after it has been running for two weeks to establish a time-scale within which the filters should be changed. This will vary on environmental conditions and so intervals between filter changing will be different.

*Do* remove dirty or blocked filters even if no immediate replacement is available. This will avoid costly damage.

### CLEANING

Inner & outer ahu 'skins' should be cleaned with hot soapy water and a soft cloth.

*Don't* spill cleaning materials over the motor and wiring.

*Do* brush out dirt and dust etc. from the motor, fan impeller, fan casing and shafts.

*Do* use a vacuum cleaner and brush to remove dust from the heater or cooling coil fins and motor ventilation holes to ensure that motor cooling is maintained at maximum efficiency.

### V BELTS

Belts should be checked for wear and tension monthly and should be adjusted or replaced if necessary.

### DOOR SEALS

These should be inspected and replaced to ensure everyday wear and tear does not allow rain to get inside the unit.

### SPARES

*Do* contact Envirotec for all replacement consumable items. Major items such as fans, heating elements etc can be replaced with original design components supplied by Envirotec.

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### 1. SAFETY PROCEDURES

Most accidents that occur during the operation and maintenance of machinery are the result of failure to observe basic safety rules or precautions. An accident can often be avoided by recognising a situation that is potentially hazardous.

When handling, operating or carrying out maintenance on the unit, personnel must use safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of users in the UK is drawn to the Health and Safety at Work Act, 1974, and the current issue of the Regulations of the Institution of Electrical Engineers.

Envirotec Ltd cannot anticipate every possible circumstance that might represent a potential hazard. The warnings included in this document are therefore not all-inclusive. If the user employs an operating procedure, an item of equipment or a method of working that is not specifically recommended by Envirotec Ltd he must ensure that the unit will not be damaged or made unsafe, and that there is no risk to persons or property.

### 2. MAINTENANCE & REPAIR PRECAUTIONS

Competent personnel under a qualified supervisor must only carry out maintenance, repairs or modifications.

If replacement parts are needed use only genuine Envirotec spare parts.

2.1 High operating temperatures are attained by some components during normal operation. Ensure all electric heating elements or hot water coils have cooled sufficiently to allow safe handling. If work is to be carried out while unit is operating normally, appropriate body protection against hot surfaces should be worn.

2.2 Do not open any access panels or touch electrical components while voltage is applied unless it is necessary for measurements, tests or adjustments. Only a qualified electrician equipped with the proper tools, and wearing appropriate body protection against electrical hazards should carry out such work. Before removing any panels from the enclosure, or dismantling any part of the unit, isolate from the main electrical power supply. Lock the isolator in the 'OFF' position and remove the fuses. Attach a label to the isolator switch carrying the warning 'WORK IN PROGRESS – DO NOT APPLY VOLTAGE'. Do not switch on electrical power or attempt to start the unit if a warning label is attached.

2.3 Units incorporating LTHW heating coils must be isolated from the water supply before undertaking any work. Attach a label to any closed isolating valves carrying the warning 'WORK IN PROGRESS – DO NOT ADJUST VALVE'. Do not open valve or attempt to start unit if a warning label is attached.

2.4 When Envirotec products are installed over doorways or within the ceiling framework, most maintenance or repair work will be carried out at heights in excess of 2 metres. Suitable precautions should be taken to ensure that any access equipment used, ladders, towers, etc., are isolated from passing human traffic by the use of an appropriate barrier/notice system. Any barriers used should be positioned at a suitable distance to remove risk of injury to passing personnel from dropped tools/components. All equipment used to gain access to work at height must be properly secured, and manned by sufficient support staff to meet National/Local safety regulations.

2.5 Attention should be paid to the weight of units or individual components, particularly when being removed from the original installed location. Suitable lifting equipment, including slings, straps, hooks, etc, should be used as appropriate.

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### 3. GENERAL MAINTENANCE

Before undertaking any maintenance work, users must have read and understood sections 1 & 2 of this document.

3.1 To ensure the efficient operation of Envirotec products the user must check performance regularly and carry out the necessary adjustments/maintenance. Personnel accustomed to servicing and maintaining mechanical equipment should have no difficulty in carrying out the work required, but if assistance or information is required the user should refer to Envirotec Ltd.

3.2 Access to the internal components varies across the different product types. Where access is gained via removable panels, care should be taken to ensure the panel can be adequately supported when removed, particularly when working at height. Where hinged drop down grilles are used, sufficient room & support should be provided to allow full opening.

### 4. CLEANING

As with most electrical/mechanical equipment, cleanliness is vital to ensure the correct and efficient operation of Envirotec products. Make regular inspections to ensure internal components are free from dust and dirt. Suitable protective clothing should be worn. Where cleaning is required the following points should be observed:

4.1 Do not use any flammable liquid to clean any part of the unit. If chlorinated hydrocarbon non-flammable fluids are used for cleaning, safety precautions must be taken against any toxic vapours that may be released.

4.2 External panels and grilles where fitted, should be cleaned with hot soapy water and a soft cloth. As the paint finish is to be maintained, avoid the use of abrasives or strong detergents.

4.3 Fans, motors, electrical components, and internal casing should be cleaned with the use of a soft brush, e.g. paintbrush, and vacuum cleaner. Particular care should be taken to avoid damaging the heating elements/coil, or fan impeller.

4.4 Filters of the 'throwaway' type (see 'FILTERS' section below) are not to be cleaned by washing. Light dust deposits can be removed by the careful use of a soft brush and vacuum cleaner. Where heavy dust or dirt contamination exists, the filter should be renewed.

4.5 Filters of the 'washable' type (see 'FILTERS' section below) can be removed and washed to remove dust and dirt deposits. Loose deposits should be removed prior to washing by the careful use of a soft brush and vacuum cleaner. Filter should be washed using a mild detergent solution and left to dry naturally before refitting. While washing inspect for signs of damage or degradation of the filter media, and renew if appropriate.

4.6 Clean and tighten all electrical connections.

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#### 5.0 FILTERS

Certain Envirotec products are fitted with high performance filtration equipment. The filters fitted to Envirotec products may be of the 'throwaway' type, where only limited cleaning is possible before the filters are renewed, or the 'washable' type where repeated washing is possible before renewal is necessary. The operational life of the filters is dependent upon local site conditions; therefore monthly checks should be made to determine the interval for renewal.

Prolonged operation with restricted airflow through dirty filters can have a detrimental effect on the heating and cooling outputs, as well as putting unnecessary strain on the motor or motors resulting in reduced component life. Please note that poor filter maintenance could invalidate the warranty.

#### 6.0 WIRING

Regularly check the unit for loose connections or frayed wiring. Clean and tighten all connections and repair or renew all frayed or damaged wires and cables. Take care not to damage the wiring when working on the unit. When refitting wires and cables make sure they will not be damaged in service by chafing or by contact with a hot surface. Always refer to the appropriate wiring diagram when refitting any components previously removed or renewed

#### 7.0 LUBRICATION

The majority of Envirotec products utilise 'sealed-for-life' bearings that do not require periodic lubrication. Fan or motor assemblies within a well-maintained unit can be expected to give many years of trouble free operation. When the fan or motor assembly reach the end of their normal service life, it will usually be indicated by an increase in noise, vibration, and operating temperature. At this point the faulty assembly should be renewed.

#### 8.0 SPARE PARTS

Envirotec support all products with a comprehensive spare parts policy, with most components available from stock. It is strongly recommended that only genuine Envirotec spare parts be used in any maintenance operation.

#### 9.0 REFURBISHMENT

Envirotec offer a comprehensive refurbishment service that can extend the useful service life of older equipment. This option also extends to the upgrade of existing units; to meet changed site conditions perhaps. Advantages of refurbishment over renewal include reduced costs, minimum downtime, and less disruption. Contact Envirotec Sales Office for further information.

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